Shepherd Gilmour
Consulting Engineers

PHASE II GEOENVIRONMENTAL SITE ASSESSMENT

Land at Barnhill Street / Raby Street
Moss Side
Manchester

Prepared for:

Caddick Construction Ltd / Mosscare St Vincent's Housing Group Ltd

Shepherd Gilmour Infrastructure Ltd
Phoenix House
Cross Street
Manchester
M2 4JF

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Barnhill Street, Moss Side
Phase II Geoenvironmental Site Assessment
October 2025

SGI

Phoenix House
43 Cross St
Manchester
M2 4JF

Registered in England
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PREPARED BY	G. Snape	G. Snape	
QUALIFICATIONS	BSc, FGS	BSc, FGS	
CHECKED BY	J. Sheridan	J. Sheridan	
QUALIFICATIONS	MeSci, FGS, MIEnvSci, CSci	MeSci, FGS, MIEnvSci, CSci	
AUTHORISED BY	Damien Schofield	Damien Schofield	
QUALIFICATIONS	BSc (Hons), MSc	BSc (Hons), MSc	

EXECUTIVE SUMMARY

Site Address	Land off Barnhill Street/Raby Street, Moss Side, Manchester M14 4SS	
Grid Reference	E 383934, N 395772	
Site Area	0.65 Ha	
Proposed Development	The client intends to construct a residential development of around 212 units comprising a mixture of 1, 2, 3 and 4 bed flats between 5 to 10 storeys high, and 7 No. 3-storey town houses.	
Current Site Use	The site comprises a generally rectangular parcel of open land with grassed open space in the north and scrubland in the south and southwest. Existing terraced residential properties are present in the southeast. The site topography primarily even except for two bunds along the northern and western boundary.	
Site History	Historical mapping from circa 1840 shows the site to comprise residential units in the south with the remaining site marked as open land. By 1891 residential housing is marked across the central section of the site. A picture theatre is also present in the east, north of the residential properties. The structures remain marked on mapping from until 1985-1990, and aerial images from 2000 show the picture theatre and majority of residential houses in the north and west to have been demolished, some residential units remain in the south that are later demolished by 2015. Imagery from 2022 show the site to be overgrown with self-seeded vegetation and semi mature – matures trees, as well as an advertisement billboard present in the northwest of the site.	
Environmental Setting	**Drift Geology**	Glacial Till – CLAY, SAND and GRAVEL
	Bedrock Geology	Chester Pebble Beds Formation – SANDSTONE.
	Faults	No faults are located within 250 m of the site.
	Hydrogeology	Deposits beneath the site are classified as a principal bedrock aquifer with secondary (undifferentiated) superficial aquifer. The Groundsure report indicates that the subject site is located within a groundwater source protection zone, with the northern section of the site recorded within the inner catchment (SPZ 1). The majority of the site is located in the outer catchment in the south of the site (SPZ 2). As a result, it is likely that groundwater on site will recharge the underlying aquifer and thus increasing the sensitivity of the aquifer. Two groundwater abstraction points are located circa 70 m north of the site and are used for industrial process water and general cooling. Based on the local topography and location of surface watercourses it is considered likely that shallow groundwater, if present, will flow in a northerly direction.
	Hydrology	The nearest surface water feature is Corn Brook, which is culverted beneath the Bridgewater Wellness Clinic, located 68 m to the northwest.
	Flood Risk	The site is predominately located in a Flood Zone 2 for surface water flooding, with a section in the middle of the site not located in an identified flood zone. A record associated with surface water flooding may relate to drains unable to cope in an extreme rainfall event. It is recommended that any drains at the site be subject to regular maintenance.

Utility Locations	• There are LP gas mains along the northern, southern, southeastern and southwestern boundaries of the site. An IP gas main is present to the north. • The site is bound by LV lines in all directions and there are LV spurs onto site along all boundaries. • There are 6-6.6 kV lines along the eastern and southern boundaries. • Stat plans show water supply pipes along the eastern and western boundary, with branches entering the northern half of the site. The CMS utility survey indicates a water supply pipe crossing the northern half of the site E-W connecting the two entry points shown on the stat plans. • Foul/combines waste sewers are shown in the roads/pavements surrounding the site. None are recorded within the site boundary but are likely to be present associated with former developments. • There are BT lines along the western and southern boundaries, with an overhead spur extending north from the centre point of the southern boundary to approximately halfway into the site. • There are EUNetwork ducts and several chambers along the northern site boundary. • There is visible street lighting along all site boundaries. • Several further unidentified services were marked out by the GPR survey conducted prior to breaking ground. Services should be mapped before commencing further works.
Landfill Sites and Ground Gases	One historical landfill is located circa 161 m northwest of the site at Moss Side Shopping Centre, Hulme, with the waste type indicated as inert and industrial. Four waste exemptions are located within 250 m of the site.
Invasive Plant Species	No invasive plant species were observed during the site walkover.
Radon	The Envirocheck report indicates that the site is situated in an area where less than 1% of homes are above the "Action Level" and that the BGS reports that full protective measures are not necessary for the construction of new dwellings or extensions.
Coal Mining/Land Stability	The site is not affected by shallow coal mining therefore no assessment is required.
Hazardous Installations	No hazardous installations that could potentially prejudice the proposed construction of a residential development have been identified within influencing distance of the subject site.
UXO Risk	The regional unexploded bomb risk at the site is anticipated to be moderate.

GROUND INVESTIGATION

Ground Investigation Works	SGi has completed an intrusive ground investigation comprising: • 6 x Rotary Boreholes (Openhole to 10.00 m bgl with Cored follow-on to base) • 6 x Window Sample Probeholes with Dynamic Probe follow-on (to rockhead) • 6 x Environmental Monitoring Well Installations • 8 x Mechanically Excavated Trial Pits • Gas and groundwater monitoring
Ground Conditions	**MADE GROUND** Made Ground was encountered in each of the exploratory holes, from ground level to a maximum proven depth of 2.20 m bgl (WS104), but generally less than 2.00 m deep. The full depth of Made Ground remained unproven in TP105 and TP108 due to encountering potential services. A layer of reworked Topsoil was identified across the majority of the site to depths of 0.10 – 0.40 m bgl, described as brown slightly gravelly fine to medium sand with occasional rootlets and gravels of fine to coarse angular to subrounded of brick, mudstone, sandstone, glass and rare metal. Beneath the reworked Topsoil, and from ground level in locations where reworked Topsoil wasn't identified, Made Ground comprised reddish, dark brown and grey multicoloured sandy gravel with frequent cobbles with occasionally high ash content. The gravel comprised fine to coarse angular to subrounded of brick, glass, concrete, sandstone, mudstone, slate rare metal, timber, clinker and plastic, with cobbles of angular of brick and concrete. Frequent relict brick and concrete foundations and masonry were encountered in the Made Ground at depths generally between 0.50 – 1.50 m bgl. A layer of concrete hard standing was identified from ground level – 0.10 m bgl in RB101 and in RB106 between 1.90 – 2.10 m bgl. Bitumen bonded cobble setts were also encountered between 0.30 – 0.40 m bgl in TP101.
	SUPERFICIAL DEPOSITS Natural superficial deposits were encountered beneath the Made Ground to a maximum proven depth of 8.80 m bgl (RB105 and RB106). The material was described as a firm to stiff greyish brown slightly sandy slightly gravelly CLAY with gravel of fine to coarse angular to rounded sandstone, mudstone and rare coal. Granular soils were occasionally encountered beneath the Made Ground in the centre-west and southwest of the site as follows: • Yellow and grey clayey sandy GRAVEL – TP103 (0.60-2.00 m). • Orange and grey clayey fine to medium SAND – TP104 (1.00-1.70 m) • Greyish brown very clayey gravelly fine to coarse SAND – TP106 (1.10-1.90 m) • Loose light greyish brown clayey fine to coarse SAND – WS105 (1.40-2.30m) • Light brown slightly clayey fine to medium SAND – WS106 (1.50-1.80m) Greyish brown and a reddish-brown SAND and GRAVEL were encountered beneath the CLAY (7.50 – 8.80 m bgl) in RB101, RB104, RB105 and RB106, with gravel of fine to coarse angular to rounded of sandstone, mudstone and coal (likely to be completely weathered sandstone).

Ground Conditions	**SOLID** Weathered red SANDSTONE was confirmed in the rotary boreholes from rockhead (top) depths of between 7.80 – 8.80 m bgl, becoming shallower towards the northeast. The SANDSTONE was found to be poorly cemented and interbedded with sand and gravel bands, resulting in poor core recovery during drilling. Where intact, the SANDSTONE was generally inferred to be weak/moderately weak to c. 20 m bgl, becoming medium strong (less weathered with improved recovery) beyond
	GROUNDWATER Three water strikes were recorded between 2.00-4.20 m bgl (approx. 30.69-28.38 m AOD) during the intrusive investigation. Depth to water across the six monitoring visits ranged between 3.14-3.89 m bgl (approx. 29.50-28.75 m AOD) in WS101 and 4.18-6.00 m bgl (approx. 28.46-26.64 m AOD) in RB101.

CONTAMINATED LAND ASSESSMENT

Human Health	A single exceedance of the Tier 2 screening values for lead was identified within the Made Ground at WS105 (0.60 m bgl). Exceedances of non-volatile Benzo(a)Pyrene, Benzo(b)Fluoranthene and Dibenzo(a,h)Anthracene have been found in the Made Ground across the site. Assessment of the PAH ratios indicate that the PAHs are likely derived from combustion of grass/wood/coal and carbonisation (burning) in an urban background. The risk to end users is expected to be minimised where hardstanding is present within the proposed development as this will prevent exposure to impacted soils on site. A suitable clean cover system will be required in proposed private gardens as well as landscaping and communal garden areas to mitigate the risk of direct exposure to impacted soils.
Controlled Waters	The underlying principal bedrock aquifer is considered the primary receptor. An isolated DWS exceedance of Chromium III has been found in one leachate sample (WS102), however, the Chromium III concentration within the corresponding soil sample was not found to be significantly elevated. Furthermore, no exceedances of Chromium III were identified in the groundwater sample analysed, indicating downward and/or lateral migration is not occurring. The presence of predominantly cohesive (low permeability) superficial deposits beneath the Made Ground and overlying the bedrock aquifer would likely inhibit downward migration. The risk to the aquifer is therefore considered very low. In respect of surface water receptors, Metals and PAHs have been found in exceedances of EQS values; however, the culverted Corn Brook is located >50 m from the site and likely to be lined, therefore the sensitivity is reduced. Ground conditions are also likely to comprise predominantly low permeability cohesive deposits that will impede lateral migration. The risk to surface water receptors is therefore considered very low.
Ground Gas	Methane concentrations did not exceed 0.1% v/v (analyser LoD) apart from an anomalous elevated result (1.2% v/v) in RB101 during the first visit, with a maximum methane GSV of 0.0017 l/hr. Carbon dioxide concentrations were recorded between 0.1-3.0% v/v over the six visits, with a maximum GSV of 0.0031 l/hr. Characteristic Situation 1 (CS1) is appropriate for the site and specialist gas protection measures are not necessary.
Potable Water Infrastructure	A UKWIR Risk Assessment will be required to confirm the most suitable potable water supply pipework.

GEOTECHNICAL ASSESSMENT

Underground Obstructions	Relict foundations were identified in all of the trial pits between 0.20-1.50 m bgl. A layer of bitumen-bonded cobble setts was identified within TP101 between 0.30-0.40 m bgl. All obstructions will require grubbing out and re-engineering before replacement, to facilitate the installation of piled foundations.
Allowable Bearing Capacity (ABC)	A localised area of soft CLAY with an ABC of 37.56 kN/m^2 was identified in WS101 between 2.00-2.45 m bgl. In general, however, the superficial CLAY deposits were found to be firm becoming very stiff with increasing depth, with an ABC ranging between 65.74-298.50 kN/m^2. Granular/SAND deposits were encountered in four locations in the centre-west of the site. SPT tests were undertaken in WS105 (only) and results indicated the material to be loose with an equivalent ABC of c 80 kN/m2. SANDSTONE bedrock was encountered from around 7.00-8.00 m bgl. The results of UCS tests indicate the SANDSTONE to be very weak to moderately weak with ABC of c. 2900-15200 kN/m^2. It should be noted that the SANDSTONE was found to be largely uncemented, leading to poor core recovery.
Foundation Options	Given the proposed development will include apartment blocks up to 10 storeys in height, it will be necessary to construct the proposed structures utilising piled foundations capable of transferring the structural loads to the bedrock. In respect of the proposed townhouses in the east of the site, it may be possible to carry out ground improvement using vibro stone columns (VSC) to uniformly densify the Made Ground and increase the bearing capacity to support reinforced strip foundations. It should be noted that the south eastern quarter of the site has not been investigated, therefore a conservative contingency should be made for piling all structures.
Building Floor Slabs	Suspended floor slabs are recommended for the proposed residential development. A ground bearing slab will be viable, but it will need to be constructed on a granular sub-base with the thickness designed by a structural engineer to ensure that settlement tolerance is taken into consideration.
Heave Precautions	The results indicate the soils to be of low and medium volume change potential in accordance with the classification system utilised by the LABC/NHBC industry guidance. It is recommended that allowances be made for worst case (medium) volume change potential when designing foundations and floor slabs. Heave precautions will be required to the internal face of a foundation less than 1.50 m in depth. Heave precautions will be required to the underside of floor slabs (where there is no 200 mm void) and pile ground beams are required within the modelled influencing distance of trees.
Soakaway Drainage	SGi has completed falling head tests in WS101 and WS103 to assess the potential infiltration potential of the soils. Both monitoring wells screened the granular Made Ground. Results concluded an infiltration rate of 1.34 x 10-06 m/s (poor). The natural strata are generally cohesive and therefore considered unlikely to offer good or reliable infiltration potential.
Sulphate Assessment	Results indicated that natural soils at the site meet Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s while an overall DS-2, AC-1s classification is made for the Made Ground on-site.
Waste Characterisation	Any material that is to be disposed off-site should undergo assessment using Technical Guidance WM3: Waste Classification – Guidance on the classification and assessment of waste.

Enabling Earthworks	Development levels are unknown at this time; however, significant cut-and-fill works are not anticipated. If required, as part of the earthworks design, materials should be assessed and characterised prior to re-use in the construction of upfill to a geotechnical design. All future earthworks should be completed in accordance with a Geotechnical Design Report (GDR) that will consider the ground model within the context of the potential for settlement induced by surcharge from earthworks, dynamic and permanent loading of the development and all known hazards.
Civil Engineering Excavations	No evidence of running sands or shallow bedrock have been identified during the investigation and site observations indicated that excavations should be feasible in the near surface with normal plant. Relict foundations and potential infilled basements have been identified across the site which will require complete excavation/grubbing out.

RECOMMENDATIONS

Based on the findings of the intrusive site investigation, the following additional works are recommended to be completed in due course:

- Further investigation in southeastern sector of the site when access is available;
- Foundations to be designed by suitably qualified Structural Engineer;
- UK Water Industry Research (UKWIR) Risk Assessment;
- Remediation and Enabling Works Strategy, and;
- Piling Risk Assessment

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DRAWING LIST

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18-145-002	Proposed Development Plan
18-145-003	Historical Features Plan
18-145-004	Site Features Plan
18-145-005	Exploratory Hole Location Plan
18-145-006	Depth of Made Ground Plan
18-145-007	Depth to Bedrock Plan

1. INTRODUCTION

1.1. BACKGROUND

SGi has been commissioned by Caddick Construction Ltd / Mosscare St Vincent's Housing Group Ltd (the client) to undertake a detailed Phase II Geoenvironmental Site Assessment at the land off Barnhill Street/Raby Street in Moss Side, Manchester, herein referred to as the site.

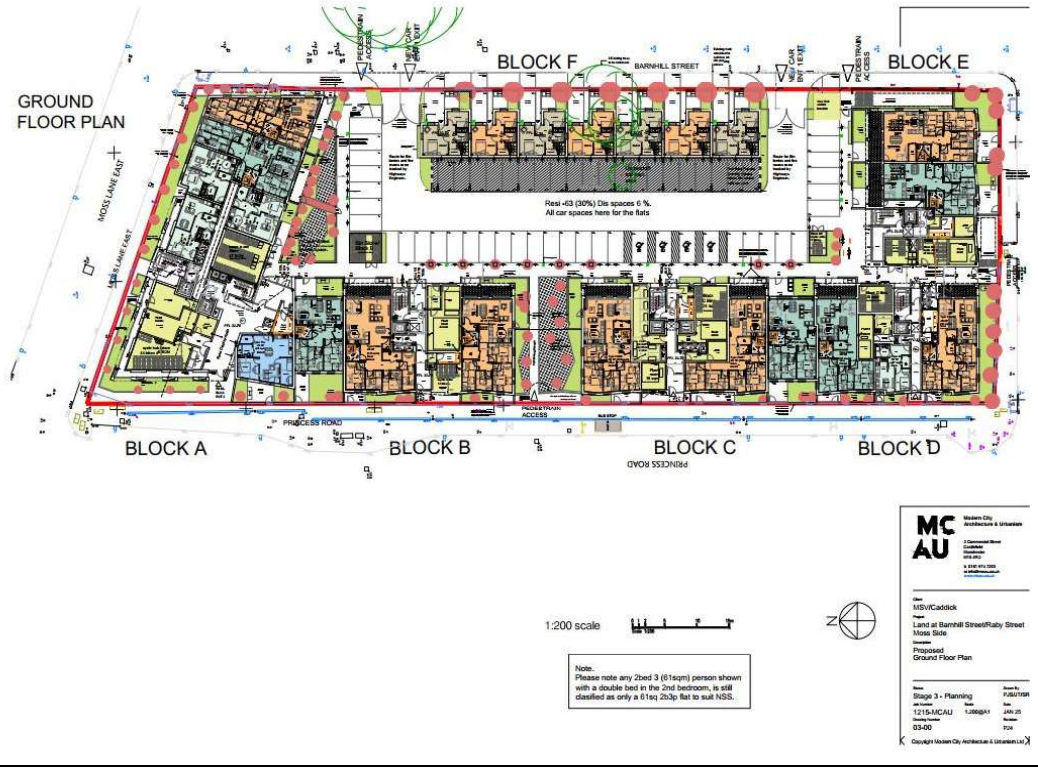
This report is required to determine potential contaminated land liabilities, remediation requirements, and geotechnical engineering works that will be required as part of the proposed development.

1.2. PROPOSED DEVELOPMENT

The client intends to construct a residential development of around 212 units comprising a mixture of 1,2, 3 and 4 bed flats between 3 to 10 storeys high, and 7 town houses.

A Proposed Development Scheme for the site is presented in Figure 1.1 (below) and as Drawing 18-145-002 (Appendix III).

FIGURE 1.1 PROPOSED DEVELOPMENT PLAN



1.3. OBJECTIVES

The objectives of the geoenvironmental assessment are as follows:

- Undertake a preliminary stage of sampling and analysis to provide an overview of the environmental issues identified.
- Assess the implications of any potential environmental risks, liabilities, and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors.
- Assess the geotechnical information and provide preliminary recommendations in relation to foundations, pavement construction, and floor slabs.
- Provide recommendations regarding future works required.

1.4. SCOPE OF WORKS

The scope of work includes the following elements:

- Design of suitable intrusive ground investigation;
- 8 No. mechanically excavated trial pits (TP101-TP108);
- 6 No. window sample probeholes (WS101-WS106) with super heavy dynamic probe follow-on (to rockhead/refusal);
- 6 No. rotary open hole and cored boreholes (RB101-106);
- 6 No. environmental monitoring well installs (RB101, RB106, WS101, WS103, WS104, WS106);
- In-situ geotechnical testing;
- Chemical and geotechnical laboratory analysis;
- Groundwater monitoring and sampling;
- Ground gas monitoring;
- Contamination risk assessment and conceptual site model;
- Geotechnical assessment and interpretation; and
- Factual and interpretive reporting.

1.5. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.6. CONFIDENTIALITY

SGi has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from SGi; a charge may be levied against such approval.

2. GROUND INVESTIGATION

2.1. PREVIOUS REPORTS

A Phase 1 Geoenvironmental Site Assessment (Ref: 18-145-R1-3) dated July 2025) has been completed for the site by E3P.

The pertinent findings are summarised as follows:

Site History

- Historical mapping from circa 1840 shows the site to comprise residential units in the south with the remaining site marked as open land. By 1891 residential housing is marked across the central section of the site. A picture theatre is also present in the east, north of the residential properties. The structures remain marked on mapping from until 1985-1990, and aerial images from 2000 show the picture theatre and majority of residential houses in the north and west to have been demolished, some residential units remain in the south that are later demolished by 2015. Imagery from 2022 show the site to be overgrown with self-seeded vegetation and semi mature – matures trees, as well as an advertisement billboard present in the northwest of the site.

Geology

- Drift Geology: Glacial Till – CLAY, SAND and GRAVEL
- Bedrock Geology: Chester Pebble Beds Formation – SANDSTONE.
- Faults: No faults are located within 250 m of the site.

Summary of CSM/overall risk assessment

Human Health

- The site has been subject to phases of historical development including terraced housing, and a picture house which may have resulted in contamination.
- Made Ground underlying the site are a potential source of heavy metals, PAHs, asbestos, ground gas and harmful vapours Although it is unlikely impacted soils may be present underlying the site given the limited scale of development.
- Any remaining footprints from the former buildings on the site are likely to have asbestos containing materials present within the building fabric due to the age of construction. These will require identification and specialist removal prior to demolition. Asbestos may be present within any of the Made Ground soils, due to demolition of the former structures.
- The risk to future residential end users from contaminated soils is considered to be low to moderate.

Controlled Waters

- The risk to controlled waters is considered to be Moderate given the presence of a Principal Aquifer below the site, it's classification within an SPZ and the proximity of Corn Brook.
- The risk is anticipated as low to moderate given the presence of low permeability superficial deposits.

Ground Gas

- Significant thicknesses of Made Ground associated with the former development and demolition activities are anticipated across the site.

2.2. GENERAL OVERVIEW

A ground investigation has been designed with exploratory holes advanced to maximise site coverage in relation to the proposed development scheme.

The investigation has also been used to collect geotechnical information to assist in the design and construction of the proposed development.

Exploratory fieldwork was completed between 1st and 4th July 2025. The works are summarised in Table 2.1.

2.3. SCOPE OF INVESTIGATION

TABLE 2.1 SUMMARY OF FIELDWORK

POTENTIAL SOURCE / RATIONALE	LOCATION / HOLE	TYPE	MAXIMUM DEPTH (m bgl)	MONITORING WELLS RESPONSE ZONE (m bgl)
Depth to bedrock / general ground conditions of the soil horizons underlying the proposed development.	WS101	Window Sample Probehole with Super Heavy Dynamic Probe follow-on (to rockhead/ refusal)	5.45 (WS) 6.90 (DP)	1.60 – 5.10
	WS102		5.45 (WS) 7.70 (DP)	N/A
	WS103		5.45 (WS) 8.00 (DP)	0.50 – 2.00
	WS104		5.45 (WS) 7.90 (DP)	2.20 – 5.20
	WS105		5.45 (WS) 7.40 (DP)	N/A
	WS106		5.45 (WS) 7.80 (DP)	0.50 – 1.50

POTENTIAL SOURCE / RATIONALE	LOCATION / HOLE	TYPE	MAXIMUM DEPTH (m bgl)	MONITORING WELLS RESPONSE ZONE (m bgl)
Identification of relict foundations / general ground conditions of the soil horizons underlying the proposed development.	TP101	Mechanically Excavated Trial Pit	2.85	N/A
	TP102		2.75	
	TP103		2.80	
	TP104		2.10	
	TP105		0.60	
	TP106		2.40	
	TP107		2.40	
	TP108		1.50	
Investigation of deeper ground conditions and coring of bedrock.	RB101	Rotary Open + Cored Borehole	35.00	3.00 – 10.00
	RB102		25.00	N/A
	RB103		25.00	
	RB104		25.00	
	RB105		25.00	
	RB106		25.00	4.00 – 10.00

Window sample probeholes were advanced to undertake in-situ detailed geotechnical testing, obtain environmental samples and install groundwater and ground gas monitoring wells. Dynamic probing was undertaken from the base of the probeholes to obtain in-situ geotechnical testing information at greater depth and determine depths to rockhead.

Mechanically excavated trial pits were advanced to identify relict foundations and investigate general ground conditions within shallow soil horizons.

Rotary openhole boreholes were advanced to rockhead with rock coring completed beyond to obtain rock core for geotechnical laboratory testing to inform pile design.

The exploratory hole locations are illustrated in Drawing 18-145-005 (Appendix III). The ground conditions encountered are recorded on the logs, presented in Appendix V.

The locations and levels were surveyed by GPS to Ordnance Datum with an accuracy of <10 mm.

Return visits were made to monitor installations for groundwater levels and gas concentrations. In addition, where sufficient water was encountered wells were purged and samples of groundwater were recovered for chemical analysis.

2.4. IN-SITU STANDARD PENETRATION TESTING (SPT)

In-situ geotechnical testing was conducted within the window sample probeholes between ground level and 5.00 m bgl using the standard penetration test (SPT) and, where the ground is granular, a 60° cone (SPT(C)) was used instead of the sampling tube.

The results are shown on the probehole logs in Appendix V and presented in Table 3.4.

2.5. SUPER HEAVY DYNAMIC PROBING (SHDP)

Super heavy dynamic probing was used to extend each of the window sample probeholes to greater depths. SHDPs were extended to depths of between 6.90 m bgl and 8.00 m bgl.

The number of blows required to advance a 90° nose cone on the end of 35 mm diameter rods over a 100 mm interval were recorded to give N100 values. The 63.5kg hammer was dropped through a height of 750 mm.

The results of the SHDPs have been presented as N100 vs depth profiles and are presented in Appendix V alongside the corresponding window sample probehole log.

N300 values have been derived by accumulating the sum of three consecutive blow counts equivalent to a total 300 mm penetration. This depth of penetration is consistent with the depth of penetration from the SPT tests undertaken throughout the window sample probeholes.

The equivalent SPT value at each 1.00 m increment has been presented in Table 3.4.

2.6. LABORATORY ANALYSIS

Selected soil samples were submitted for a range of chemical determinants comprising:

- Metals;
- pH, total sulphate, water-soluble sulphate (2:1 extract);
- Sulphide, Cyanide and Phenols;
- Total and Speciated Polycyclic Aromatic Hydrocarbons (PAHs).
- Asbestos Identification and Quantification.
- Banded Total Petroleum Hydrocarbon (TPH).
- VOCs/SVOCs.

Eurofins Chemtest undertook the analytical work, and the testing results are included in Appendix VI and discussed in Section 4.

Selected samples were submitted to Murray Rix Laboratory where the following geotechnical tests were undertaken:

Soils

- Natural Moisture Content.
- Liquid and Plastic Limit – One Point Method.

Rock Cores

- Point Load.
- Unconfined Compressive Strength.

Laboratory analysis sheets are included in Appendix VIII and are summarised in Section 5.

3. GROUND AND GROUNDWATER CONDITIONS

3.1. LIMITATIONS OF INVESTIGATION

Statutory utility plans and the on-site GPR survey identified numerous services within the site and at the site periphery. A 15-metre easement was applied to an intermediate pressure (IP) gas main running E-W along the northern site boundary, and where possible a 5 m easement was adopted from all other identified services on-site. Furthermore, two trial pits were terminated early due to possible service indicators (TP105 & TP108).

The southeastern sector of the site was occupied by terraced residential properties and a gated area. Access was not permitted at the time of the investigation.

3.2. SUMMARY OF GROUND CONDITIONS

The ground investigation generally confirms the published geology and identifies the strata set out in Table 3.1.

TABLE 3.1 SUMMARY OF STRATA

HOLE	DEPTH TO STRATUM (m bgl)					
	MADE GROUND	CLAY	SAND	SAND AND GRAVEL	GRAVEL	SANDSTONE
WS101	0.00-1.60	1.60-5.45	-	-	-	6.90*
WS102	0.00-2.10	2.10-5.45	-	-	-	7.70*
WS103	0.00-2.10	2.10-5.45	-	-	-	8.00*
WS104	0.00-2.20	2.20-5.45	-	-	-	7.90*
WS105	0.00-1.00	1.00-1.40 2.30-5.45	1.40-2.30	-	-	7.40*
WS106	0.00-1.50	1.80-4.20	1.50-1.80	-	-	7.80*
TP101	0.00-0.85	0.85-2.85	-	-	-	-
TP102	0.00-1.60	1.60-2.75	-	-	-	-
TP103	0.00-0.60	2.00-2.80	-	-	0.60-2.00	-
TP104	0.00-1.00	1.70-2.10	1.00-1.70	-	-	-
TP105	0.00-0.60	-	-	-	-	-
TP106	0.00-1.10	1.90-2.40	1.10-1.90	-	-	-
TP107	0.00-1.40	1.40-2.40	-	-	-	-
TP108	0.00-1.50	-	-	-	-	-
RB101	0.00-1.50	1.50-7.50	7.50-7.80	-	-	7.80-35.00+
RB102	0.00-2.05	2.05-8.70	-	-	-	8.70-25.00+
RB103	0.00-1.80	1.80-8.30	-	-	-	8.30-25.00+

HOLE	DEPTH TO STRATUM (m bgl)					
	MADE GROUND	CLAY	SAND	SAND AND GRAVEL	GRAVEL	SANDSTONE
RB104	0.00-0.90	0.90-7.70	-	7.70-8.60	-	8.60-25.00+
RB105	0.00-1.90	1.90-8.30	-	8.30-8.80	-	8.80-25.00+
RB106	0.00-2.10	2.10-8.40	8.40-8.80	-	-	8.80-25.00+

Notes:
*Rockhead has been inferred based on refusal in super heavy dynamic probe test.

3.3. MADE GROUND

Made Ground was encountered in each of the exploratory holes, from ground level to a maximum proven depth of 2.20 m bgl (WS104), but generally less than 2.00 m deep. The full depth of Made Ground remained unproven in TP105 and TP108 due to encountering potential services.

A layer of reworked Topsoil was identified across the majority of the site to depths of 0.10 – 0.40 m bgl, described as brown slightly gravelly fine to medium sand with occasional rootlets and gravels of fine to coarse angular to subrounded of brick, mudstone, sandstone, glass and rare metal.

Beneath the reworked Topsoil, and from ground level in locations where reworked Topsoil wasn't identified, Made Ground comprised reddish, dark brown and grey multicoloured sandy gravel with frequent cobbles with occasionally high ash content. The gravel comprised fine to coarse angular to subrounded of brick, glass, concrete, sandstone, mudstone, slate rare metal, timber, clinker and plastic, with cobbles of angular of brick and concrete.

Frequent relict brick and concrete foundations and masonry were encountered in the Made Ground at depths generally between 0.50 – 1.50 m bgl.

A layer of concrete hard standing was identified from ground level – 0.10 m bgl in RB101 and in RB106 between 1.90 – 2.10 m bgl.

Bitumen bonded cobble setts were also encountered between 0.30 – 0.40 m bgl in TP101.

A Depth of Made Ground Plan is presented in Appendix III as drawing 18-145-006.

3.4. SUPERFICIAL DEPOSITS

Natural superficial deposits were encountered beneath the Made Ground to a maximum proven depth of 8.80 m bgl (RB105 and RB106).

The material was described as a firm to stiff greyish brown slightly sandy slightly gravelly CLAY with gravel of fine to coarse angular to rounded sandstone, mudstone and rare coal.

Granular soils were occasionally encountered beneath the Made Ground in the centre-west and southwest of the site as follows:

- Yellow and grey clayey sandy GRAVEL – TP103 (0.60-2.00 m).
- Orange and grey clayey fine to medium SAND – TP104 (1.00-1.70 m)
- Greyish brown very clayey gravelly fine to coarse SAND – TP106 (1.10-1.90 m)
- Loose light greyish brown clayey fine to coarse SAND – WS105 (1.40-2.30m)
- Light brown slightly clayey fine to medium SAND – WS106 (1.50-1.80m)

Greyish brown and a reddish-brown SAND and GRAVEL were encountered beneath the CLAY (7.50 – 8.80 m bgl) in RB101, RB104, RB105 and RB106, with gravel of fine to coarse angular to rounded of sandstone, mudstone and coal. This is likely to be completely weathered bedrock.

3.5. SOLID GEOLOGY

Weathered red SANDSTONE was confirmed in the rotary boreholes from rockhead (top) depths of between 7.80 – 8.80 m bgl, becoming shallower towards the northeast.

The SANDSTONE was found to be poorly cemented and interbedded with sand and gravel bands, resulting in poor core recovery during drilling. Where intact, the SANDSTONE was generally inferred to be weak/moderately weak.

Rockhead has also been inferred from refusals during dynamic probing from the base of the window sample probeholes. Refusals were encountered in the SHDPs at depths between 6.90 m (WS101) and 8.00 m bgl (WS103), which are generally consistent with the depth of rockhead confirmed in the rotary boreholes.

A Depth to Bedrock Plan is presented in Appendix III as drawing 18-145-007. It should be noted that the plan only shows rockhead confirmed by rotary drilling and does not include the depth of rockhead inferred from SHDPs due to the nature of the test (i.e. no sample recovery).

3.6. GROUNDWATER

Three water strikes were encountered during the course of the intrusive investigation, as listed in Table 3.2 below.

TABLE 3.2 SUMMARY OF IDENTIFIED WATER STRIKES

LOCATION	DEPTH OF STRIKE (m bgl)	APPROXIMATE STRIKE LEVEL (m AOD)	STRATUM	DETAILS
TP103	2.00	30.69	GRAVEL	Slow ingress
WS101	2.10	30.54	CLAY	Strike
WS102	4.20	28.38	CLAY	Strike

Water level monitoring was undertaken during the monitoring visits using an electronic dip meter and interface probe to record the depth to groundwater and the thickness of any free-phase hydrocarbon product.

- Depth to water across the six monitoring visits ranged between 3.14-3.89 m bgl (approx. 29.50-28.75 m AOD) in WS101 and 4.18-6.00 m bgl (approx. 28.46-26.64 m AOD) in RB101.
- In RB101, depth to water was recorded between 4.16-4.20 m bgl during Visits 1 & 2, increasing to between 5.95-6.00 m bgl over the rest of the monitoring visits. Conversely, depth to water in WS101 fell from between 3.85-3.89 m bgl (Visits 1 & 2) to between 3.15-3.20 m bgl (Visits 3-6).
- RB106, WS104 and WS106 were found to have been destroyed between the time of completing the ground investigation and the first monitoring visit.

3.7. VISUAL AND OLFACTORY EVIDENCE OF CONTAMINATION

The following visual and olfactory evidence of potential contamination has been identified during the site investigation:

- Driller's logs note a 'heavily contaminated' odour between 0.10-1.50 m bgl in RB101.
- Hydrocarbon sheen encountered between 0.40-0.85 m bgl in TP101, underlying a bitumen-bonded cobble layer identified between 0.30-0.40 m bgl.

3.8. OBSTRUCTIONS

Multiple underground obstructions including relict foundations were encountered during the intrusive investigation, as listed below in Table 3.3.

TABLE 3.3 SUMMARY OF IDENTIFIED UNDERGROUND OBSTRUCTIONS

LOCATION	DEPTH (m bgl)	OBSTRUCTION
TP101	0.30-0.40	Bitumen bonded cobble setts
TP102	0.30-1.20	Brick and concrete foundations
TP103	0.40-0.50	Potential brick foundations
TP104	0.30-1.10	Brick foundations
TP105	0.20-0.60	Brick and concrete foundations
		Potential services – relict water and electrical lines identified
TP106	0.60-1.10	Brick foundations
TP107	0.40-1.40	Brick and concrete foundations
TP108	0.30-1.50	Potential brick and concrete foundations
		Potential services – electrical service tape identified

3.9. SOIL CONSISTENCY

Results of the standard penetration tests, including derived undrained shear strengths derived from SPTs are included in Table 3.4.

TABLE 3.4 STANDARD/CONE PENETRATION TEST RESULTS

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING CAPACITY (kN/m^2)*
WS101	1.00	MG: Sandy Gravel	10	10.08	Medium Dense	N/A	N/A	N/A	**100.81**
	2.00	Gravelly CLAY	4	3.65	N/A	**Very low strength**	**Soft**	18.27	**37.56**
	3.00	Gravelly CLAY	14	12.18	N/A	Medium strength	Stiff	60.88	**125.16**
	4.00	Gravelly CLAY	18	15.21	N/A	High strength	Very Stiff	76.04	**156.33**
	5.00	Gravelly CLAY	22	18.25	N/A	High strength	Very Stiff	91.26	**187.63**
	6.00	Dynamic Probe – Inferred CLAY /SAND	†N300 = 17	13.94	N/A	N/A	N/A	N/A	139.38
	6.90	Dynamic Probe – Inferred CLAY /SAND	†N300 = 50	40.70	N/A	N/A	N/A	N/A	407.04
WS102	1.00	MG: Sandy Gravel	10	10.08	Medium Dense	N/A	N/A	N/A	100.81
	2.00	Gravelly CLAY	8	7.31	N/A	**Low strength**	Firm	36.54	75.13
	3.00	Gravelly CLAY	14	12.18	N/A	Medium strength	Stiff	60.88	125.16
	4.00	Gravelly CLAY	15	12.67	N/A	Medium strength	Stiff	63.36	130.28
	5.00	Gravelly CLAY	21	17.42	N/A	High strength	Very Stiff	87.11	179.10
	6.00	Dynamic Probe – Inferred CLAY/SAND	9	7.38	N/A	N/A	N/A	N/A	73.79

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING CAPACITY (kN/m^2)*
WS102	7.00	Dynamic Probe – Inferred CLAY/SAND	34	27.66	N/A	N/A	N/A	N/A	276.61
	7.70	Dynamic Probe – Inferred SANDSTONE	50	40.53	N/A	N/A	N/A	N/A	405.26
WS103	1.00	MG: Sandy Gravel	6	6.05	**Loose**	N/A	N/A	N/A	60.49
	2.00	Gravelly CLAY	8	7.31	N/A	**Low strength**	Firm	36.54	75.13
	3.00	Gravelly CLAY	20	17.39	N/A	High strength	Very Stiff	86.97	178.80
	4.00	Gravelly CLAY	30	25.35	N/A	High strength	Very Stiff	126.73	260.55
	5.00	Gravelly CLAY	35	29.04	N/A	High strength	Very Stiff	145.18	298.50
	6.00	Dynamic Probe – Inferred CLAY/SAND	†N300 =17	13.94	N/A	N/A	N/A	N/A	139.38
	7.00	Dynamic Probe – Inferred CLAY/SAND	†N300 = 48	39.05	N/A	N/A	N/A	N/A	390.51
	8.00	Dynamic Probe – Inferred SANDSTONE	†N300 = 50	40.47	N/A	N/A	N/A	N/A	404.73
WS104	1.00	MG: Gravelly clay	4	4.03	N/A	**Low strength**	Firm	20.16	41.46

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING CAPACITY (kN/m^2)*
WS104	2.00	Gravelly CLAY	7	6.39	N/A	**Low strength**	Firm	31.97	65.74
	3.00	Gravelly CLAY	15	13.04	N/A	Medium strength	Stiff	65.22	134.10
	4.00	Gravelly CLAY	16	13.52	N/A	Medium strength	Stiff	67.59	138.96
	5.00	Gravelly CLAY	21	17.42	N/A	High strength	Very Stiff	87.11	179.10
	6.00	Dynamic Probe – Inferred CLAY/SAND	†N300 = 20	16.4	N/A	N/A	N/A	N/A	163.98
	7.00	Dynamic Probe – Inferred CLAY/SAND	†N300 = 39	31.73	N/A	N/A	N/A	N/A	317.29
	7.90	Dynamic Probe – Inferred SANDSTONE	†N300 = 50	40.49	N/A	N/A	N/A	N/A	404.90
WS105	1.00	MG: Gravelly Clay	4	4.03	N/A	**Low strength**	Firm	20.16	41.46
	2.00	Clayey SAND	9	8.22	**Loose**	N/A	N/A	N/A	82.22
	3.00	Gravelly CLAY	14	12.18	N/A	Medium strength	Stiff	60.88	125.16
	4.00	Gravelly CLAY	13	10.98	N/A	Medium strength	Stiff	54.92	112.91
	5.00	Gravelly CLAY	17	14.10	N/A	Medium strength	Stiff	70.52	144.98

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING CAPACITY (kN/m^2)*
WS105	6.00	Dynamic Probe – Inferred CLAY/SAND	†N300 = 19	15.58	N/A	N/A	N/A	N/A	155.78
	7.00	Dynamic Probe – Inferred CLAY/SAND	†N300 = 50	40.68	N/A	N/A	N/A	N/A	406.78
	7.40	Dynamic Probe – Inferred SANDSTONE	†N300 = 50	40.59	N/A	N/A	N/A	N/A	405.85
WS106	1.00	MG: Gravelly Clay	9	9.07	N/A	Medium strength	Stiff	45.37	93.27
	2.00	Gravelly CLAY	8	7.31	N/A	**Low strength**	Firm	36.54	75.13
	3.00	Gravelly CLAY	16	13.91	N/A	Medium strength	Stiff	69.57	143.04
	4.00	Gravelly CLAY	8	6.76	N/A	Low strength	Firm	33.79	69.48
	5.00	No recovery (assumed gravelly CLAY)	17	14.10	N/A	Medium strength	Stiff	70.52	144.98
	6.00	Dynamic Probe – Inferred CLAY/SAND	†N300 = 11	9.02	N/A	N/A	N/A	N/A	90.19
	7.00	Dynamic Probe – Inferred CLAY/SAND	†N300 = 30	24.41	N/A	N/A	N/A	N/A	244.07

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING CAPACITY (kN/m^2)*
WS106	7.80	Dynamic Probe – Inferred SANDSTONE	†N300 = 50	40.51	N/A	N/A	N/A	N/A	405.07
RB101	13	Uncemented SANDSTONE (SAND)	50	35.87	N/A×	N/A	N/A	N/A	358.75
	16	SANDSTONE	50	32.40	N/A×	N/A	N/A	N/A	324.03
	19	SANDSTONE	50	29.53	N/A×	N/A	N/A	N/A	295.30
	20	SANDSTONE	50	28.67	N/A×	N/A	N/A	N/A	286.72
	23	SANDSTONE	50	26.34	N/A×	N/A	N/A	N/A	263.35
	26	SANDSTONE	50	24.29	N/A×	N/A	N/A	N/A	242.85
	29	SANDSTONE	50	22.46	N/A×	N/A	N/A	N/A	224.59
	32	SANDSTONE	50	20.81	N/A×	N/A	N/A	N/A	208.13
RB102	13	SANDSTONE	50	35.87	N/A×	N/A	N/A	N/A	358.75
	16	SANDSTONE	50	32.40	N/A×	N/A	N/A	N/A	324.03
	19	SANDSTONE	50	29.53	N/A×	N/A	N/A	N/A	295.30
	21	SANDSTONE	50	27.86	N/A×	N/A	N/A	N/A	278.56
	24	SANDSTONE	50	25.62	N/A×	N/A	N/A	N/A	256.24

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING CAPACITY (kN/m^2)*
RB103	13	SANDSTONE	50	35.87	N/A×	N/A	N/A	N/A	358.75
	16	SANDSTONE	50	32.40	N/A×	N/A	N/A	N/A	324.03
	19	SANDSTONE	50	29.53	N/A×	N/A	N/A	N/A	295.30
	21	SANDSTONE	50	27.86	N/A×	N/A	N/A	N/A	278.56
	24	SANDSTONE	50	25.62	N/A×	N/A	N/A	N/A	256.24
RB104	12	SANDSTONE	50	37.21	N/A×	N/A	N/A	N/A	372.13
	15	SANDSTONE	50	33.48	N/A×	N/A	N/A	N/A	334.82
	18	SANDSTONE	50	30.43	N/A×	N/A	N/A	N/A	304.34
	21	SANDSTONE	50	27.86	N/A×	N/A	N/A	N/A	278.56
	24	SANDSTONE	50	25.62	N/A×	N/A	N/A	N/A	256.24
RB105	13	SANDSTONE	50	35.87	N/A×	N/A	N/A	N/A	358.75
	16	SANDSTONE	50	32.40	N/A×	N/A	N/A	N/A	324.03
	19	SANDSTONE	50	29.53	N/A×	N/A	N/A	N/A	295.30
	22	SANDSTONE	50	27.08	N/A×	N/A	N/A	N/A	270.78
RB106	12	SANDSTONE	50	37.21	N/A×	N/A	N/A	N/A	372.13
	15	SANDSTONE	50	33.48	N/A×	N/A	N/A	N/A	334.82

BOREHOLES	DEPTH (m bgl)	MATERIAL FIELD DESCRIPTION	CPT/SPT "N" VALUE	CORRECTED "N" VALUE $(N_1)_{60}$	TERZAGHI & PECK RELATIVE DENSITY (SANDS)	EUROCODE SOIL STRENGTH	CONSISTENCY (BS 5930)	TERZAGHI & PECK APPROXIMATE UNDRAINED SHEAR STRENGTH (kN/m^2)	ALLOWABLE BEARING CAPACITY (kN/m^2)*
RB106	18	SANDSTONE	50	30.43	N/A[x]	N/A	N/A	N/A	304.34
	21	SANDSTONE	50	27.86	N/A[x]	N/A	N/A	N/A	278.56
	24	SANDSTONE	50	25.62	N/A[x]	N/A	N/A	N/A	256.24

Notes
*The Allowable Bearing Capacity (ABC) should be considered indicative.
†The N300 value from the SHDP test has been used to derive an equivalent SPT N value at the depth specified.
The interpretation of in-situ mass undrained shear strength (cu) data from SPT Blow Count (N) results and the influence of the Plasticity Index (PI) was reported in Standard Penetration Test in Insensitive Clays and Soft Rocks. Stroud (1974). The standard penetration test and the engineering properties of glacial materials subsequently. Stroud and Butler (1975) and (1989).
The interpretation of density and allowable bearing capacity on sands is derived from Soil Mechanics in Engineering Practice Terzaghi, K. & Peck, R.B. 1996.
[x]Where SPTs have been undertaken in SANDSTONE, an equivalent density has not been specified due to the material being rock.

Results generally indicate increasing SPT N values/soil strength and equivalent allowable bearing capacity with depth, with refusals generally encountered in the SHDPs around 7.00-8.00 m, coincident with the approximate depth of rockhead recorded in the rotary borehole logs.

3.10. SOIL PLASTICITY

The liquid and plastic limits of selected samples have been determined using the cone penetrometer method and the rolling thread test. These tests enable determination of an average plasticity index (PI) for each "type" of clay.

PI results are compared against guidance given in the NHBC standards, Chapter 4.2, which advocates the use of modified plasticity index (I'p), defined as: $I'p = Ip \times (\% < 425\ \mu m/100)$

Results of the testing are summarised in Table 3.5. Full results are presented in Appendix VIII.

TABLE 3.5 SUMMARY OF PLASTICITY INDEX TEST RESULTS

LOCATION	DEPTH (m)	NATURAL MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX (%)	PASSING 425 µm SIEVE (%)	MODIFIED PLASTICITY INDEX	NHBC VOLUME CHANGE POTENTIAL
TP107	2.20	22.3	38	16	22	90	19.8	Low
WS106	3.00	15.7	34	14	20	85	17	Low
TP103	1.40	18.0	38	15	23	68	15.64	Low
WS104	2.00	24.9	38	15	23	88	20.24	Medium
TP101	2.30	27.3	36	14	22	97	21.34	Medium

The results indicate the soils to be of low and medium volume change potential in accordance with the classification system utilised by the LABC/NHBC industry guidance. It is recommended that allowances be made for worst case (medium) volume change potential when designing foundations and floor slabs.

3.11. UNCONFINED COMPRESSIVE STRENGTH

Unconfined compressive strength testing was performed on several intact cores of SANDSTONE obtained from RB101-106.

Results are summarised in Table 3.6 (in increasing depth order). Full results are presented in Appendix VIII.

TABLE 3.6 SUMMARY OF UNCONFINED COMPRESSIVE STRENGTH

LOCATION	DEPTH (m)	DIAMETER (mm)	LENGTH (mm)	Load Failure (kN)	UCS (MPa)	Failure Mode
RB104	12.00-12.17	70	140	52.4	13.6	Split vertically top to bottom with no visible end defects
RB106	12.37-12.52	70	140	59	15.3	Split vertically top to bottom with no visible end defects
RB105	16.00-16.18	71	142	27.6	7.0	Split vertically top to bottom with no visible end defects
RB101	16.31-16.43	71	142	44.4	11.2	Split vertically top to bottom with no visible end defects
RB106	18.00-18.29	71	142	28.4	7.2	Split vertically top to bottom with no visible end defects
RB102	19.00-19.25	70	140	58.1	15.1	Split vertically top to bottom with no visible end defects
RB103	19.39-19.50	70	140	39.1	10.2	Split vertically top to bottom with no visible end defects
RB101	23.58-23.75	71	142	60.2	15.2	Split vertically top to bottom with no visible end defects
RB105	24.23-24.37	71	142	34.8	8.8	Split vertically top to bottom with no visible end defects
RB101	34.43-34.70	70	140	11.3	2.9	Split vertically top to bottom with no visible end defects

Overall, the results appear to indicate reduction in rock strength with depth; however, it should be noted, rock core recovery was generally poor and samples may not be entirely representative of the in-situ rock strength.

3.12. POINT LOAD TESTS

Point index load tests were performed on samples of SANDSTONE obtained throughout boreholes RB101-105 advanced to assess the suitability of the bedrock.

Results are summarised in Table 3.7. Full results are presented in Appendix VIII.

TABLE 3.7 SUMMARY OF POINT LOAD TEST DATA

LOCATION	DEPTH (m)	TEST TYPE	ORIENTATION	FAILURE LOAD (kN)	UNCORRECTED POINT LOAD STRENGTH INDEX (Is) - MPa	POINT LOAD STRENGTH INDEX (Is50) - MPa	CALCULATED UCS (MPa)
RB103	13.06-13.13	D	Diametral	1.1	0.23	0.26	6.24
RB105	13.26-13.39	D	Diametral	0.4	0.08	0.10	2.40
RB104	21-21.14	D	Diametral	0.4	0.08	0.10	2.40
RB102	24.45-24.50	A	Axial	2.8	0.53	0.63	15.12
RB101	29.18-29.27	D	Diametral	0.6	0.12	0.14	3.36

In a paper titled "Using the Point Load Test to Determine the Uniaxial Compressive Strength of Coal Measure Rock", Rusnak and Mark indicate that early studies (Bieniawski, 1975; Broch and Franklin, 1972) conducted on hard, strong rocks, found that relationship between UCS and the point load strength could be expressed as:

$$UCS = KIs_{50} = 24Is_{50}$$

Where K is the conversion factor and Is_{50} is the corrected point load strength index. The conversion factor appears as a broad range, however, the value of 24 has been identified as an average result of published calculated conversion factors for sandstone stratum globally.

The results of the point load tests indicate the SANDSTONE strength to vary between 0.14-0.63 (MPa) which equates to 140-630 kN/m².

However, given the point load tests were completed on small rock fragments, the results of the UCS tests are considered more representative. The MPa range from UCS tests was found to be 2.90-15.20, equating to 2900-15200 kN/m².

Table 3.8 outlines the term associated with each MPa strength banding outlined in EN ISO 14689-1.

TABLE 3.8 DESCRIPTIVE TERMS OF ROCK STRENGTH

TERM	STRENGTH (MPA)
Extremely Weak	0.6-1.0
Very Weak	1-5
Weak	5-12.5
Moderately Weak	12.5-25
Medium Strong	25-50
Strong	50-100
Very Strong	100-250
Extremely Strong	>250

Utilising this conversion and Table 3.8, based on the point load and UCS tests, the testing indicates the SANDSTONE rock strength to be very weak to moderately weak.

3.13. pH AND SULPHATE

pH and soluble sulphate content analysis has been undertaken at the chemical laboratory. Results are summarised in Table 3.9. Full results are presented in Appendix VI.

TABLE 3.9 SUMMARY OF pH AND SULPHATE DATA

LOCATION	MATERIAL TYPE	DEPTH (m)	SO_4 IN 2:1 WATER/SOIL (g/l)	pH VALUE	CLASSIFICATION
TP101	MADE GROUND	0.1	<0.010	8.3	DS-1, AC-1s
TP101	MADE GROUND	0.6	0.17	7.9	DS-1, AC-1s
TP102	CLAY	2.2	<0.010	7.6	DS-1, AC-1s
TP103	MADE GROUND	0.2	<0.010	7.2	DS-1, AC-1s
TP103	MADE GROUND	0.5	0.020	7.2	DS-1, AC-1s
TP106	SAND	1.6	0.066	7.2	DS-1, AC-1s
TP108	MADE GROUND	1.2	**1.5**	7.2	**DS-2, AC-1s**
WS101	MADE GROUND	0.15	0.020	8.0	DS-1, AC-1s
WS101	CLAY	4.5	<0.010	8.9	DS-1, AC-1s
WS102	CLAY	2.8	0.051	8.5	DS-1, AC-1s
WS102	MADE GROUND	1.5	0.20	11.6	DS-1, AC-1s
WS103	MADE GROUND	0.1	0.011	8.1	DS-1, AC-1s
WS104	MADE GROUND	0.1	0.018	7.9	DS-1, AC-1s
WS104	CLAY	3.6	0.013	8.3	DS-1, AC-1s
WS105	MADE GROUND	0.6	0.35	9	DS-1, AC-1s
WS106	MADE GROUND	0.15	0.029	8.2	DS-1, AC-1s
WS106	MADE GROUND	0.9	**0.51**	8.3	**DS-2, AC-1s**

Results indicated that natural soils at the site meet Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with BRE *Special Digest 1* (2005).

Two of the twelve samples of Made Ground analysed (TP108 and WS106) fall into the DS-2 AC-1s classification.

With reference to BRE Special Digest 1 (2005), characteristic values can be used. For a dataset of >10 samples, the average of the highest 20% of soluble sulphate values is taken as the characteristic value, along with the average of the lowest 20% of pH values. In this case, the characteristic soluble sulphate value would be 0.79 g/l and the characteristic pH value would be 7.2, resulting in an overall DS-2, AC-1s classification for the Made Ground.

3.14. SOIL INFILTRATION

In-situ variable falling head permeability tests were undertaken within the monitoring well installations located in two probeholes (WS101 and WS103) to confirm soakaway potential. Both monitoring wells screened the granular Made Ground.

The results are presented in Table 3.9 and certificates are included within Appendix IX.

TABLE 3.10 SOIL INFILTRATION RESULTS

LOCATION	DEPTH (m)	MATERIAL	TEST NO.	SOIL INFLITRATION RATE (m/s)
WS101	1.60-5.10	Slightly gravelly CLAY	1	2.97×10^{-06}
WS103	0.50-2.00	Sandy GRAVEL	1	1.34×10^{-06}

Results concluded a worst-case infiltration rate of 1.34×10^{-06} m/s, which is considered poor in terms of infiltration potential.

The natural strata are generally cohesive and therefore also considered unlikely to offer good or reliable infiltration potential.

Based on the results and general ground conditions, soakaway drainage is unlikely to be viable for the development.

4. TIER 2 QUALITATIVE CONTAMINATED LAND RISK ASSESSMENT

SGi has undertaken a Tier 2 qualitative risk assessment to determine if any potential contaminants within the underlying soils and groundwater pose an unacceptable level of risk to the identified receptors.

4.1. DEVIATING SAMPLES

Deviating samples were to be avoided during the ground investigation by using best practice sampling procedures including the use of appropriate sampling containers and adhering to the laboratory holding times for each contaminant analysis undertaken.

4.2. HUMAN HEALTH RISK ASSESSMENT

At Tier 2 stage, the long-term (chronic) human health toxicity of the soil has been assessed by comparing the on-site concentrations of organic and inorganic compounds with generic assessment criteria (GAC) values published in LQM/CIEH S4UL (S4UL3267) for a residential end use with plant uptake and 1% Soil Organic Matter (SOM) in the first instance.

The results of this comparison have been summarised in Table 4.1 below.

Where Tier 2 screening values are not provided by LQM, other screening values have been used, and these are referenced in Table 4.1.

TABLE 4.1 SUMMARY OF INORGANIC AND HYDROCARBON TOXICITY ASSESSMENT FOR A RESIDENTIAL END USE WITH PLANT UPTAKE (1% SOM)

DETERMINAND	UNIT	GAC	N	MC	LOC. OF EX	PATH WAY	ASSESSMENT
Arsenic	mg/kg	37	17	12	None	1	No Further Action
Cadmium	mg/kg	11	17	0.82	None	1	No Further Action
Chromium (VI)	mg/kg	6	17	< 0.50	None	1	No Further Action
Lead**	mg/kg	200	17	260	WS105-0.60m	1	**Further Assessment**
Mercury	mg/kg	1.2	17	0.38	None	4	No Further Action
Nickel	mg/kg	130	17	29	None	1	No Further Action
Selenium	mg/kg	250	17	1	None	1	No Further Action
Copper	mg/kg	2400	17	96	None	1	No Further Action
Zinc	mg/kg	3700	17	210	None	1	No Further Action
Cyanide - Total	mg/kg	791	17	9.6	None	1	No Further Action
Phenols - Total	mg/kg	120	17	4.6	None	1	No Further Action
Asbestos	Fibres	N/A	12	No Asbestos Detected	None	3	No Further Action
Naphthalene	mg/kg	2.3	17	3.3	WS102-1.50m	4	**Further Assessment**
Acenaphthylene	mg/kg	170	17	0.3	None	2	No Further Action
Acenaphthene	mg/kg	210	17	3.3	None	1	No Further Action
Fluorene	mg/kg	170	17	2.6	None	1	No Further Action
Phenanthrene	mg/kg	95	17	16	None	2	No Further Action

DETERMINAND	UNIT	GAC	N	MC	LOC. OF EX	PATH WAY	ASSESSMENT
Anthracene	mg/kg	2400	17	4	None	2	No Further Action
Fluoranthene	mg/kg	280	17	21	None	2	No Further Action
Pyrene	mg/kg	620	17	18	None	2	No Further Action
Benzo(a)Anthracene	mg/kg	7.2	17	10	WS102-1.50m	2	**Further Assessment**
Chrysene	mg/kg	15	17	11	None	2	No Further Action
Benzo(b)Fluoranthene	mg/kg	2.6	17	11	TP101-0.10m TP101-0.60m TP102-2.20m TP103-0.20m TP103-0.50m WS101-0.15m WS102-1.50m WS105-0.60m WS106-0.15m	2	**Further Assessment**
Benzo(k)Fluoranthene	mg/kg	77	17	4.5	None	2	No Further Action
Benzo(a)Pyrene	mg/kg	2.2	17	9.7	TP101-0.10m TP101-0.60m TP102-2.20m TP103-0.20m TP103-0.50m WS102-1.50m WS105-0.60m WS106-0.15m	2	**Further Assessment**
Indeno(123-cd)Pyrene	mg/kg	27	17	5.3	None	2	No Further Action
Dibenz(a,h)Anthracene	mg/kg	0.24	17	1.6	TP101-0.10m TP101-0.60m TP102-2.20m TP103-0.20m TP103-0.50m TP108-1.20m WS101-0.15m WS102-1.50m WS104-0.10m WS105-0.60m WS106-0.15m	2	**Further Assessment**
Benzo(ghi)Perylene	mg/kg	320	17	5.3	None	2	No Further Action
TPH C6-C8 (aliphatic)*	mg/kg	100	17	< 1.0	None	1	No Further Action
TPH C8-C10 (aliphatic)*	mg/kg	27	17	3	None	1	No Further Action
TPH C10-C12 (aromatic)*	mg/kg	130	17	5.6	None	1	No Further Action
TPH C12-C16 (aromatic)*	mg/kg	140	17	19	None	1	No Further Action
TPH C16-C21 (aromatic)*	mg/kg	260	17	110	None	1	No Further Action
TPH C21-C35 (aromatic)*	mg/kg	1100	17	300	None	1	No Further Action

Notes
PL denotes pollutant linkage: PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation
Abbreviations: GAC = generic assessment criteria, n = number of samples, MC = maximum concentration; Loc of Ex = location of exceedance; NFD = no fibres detected.
* The Tier 1 GAC for the hydrocarbon fraction is derived from the CIEH assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. SGi has utilised the Tier 1 values for aliphatic compounds for the volatile and semi volatile fractions (C5-C12) and the Tier 1 values for aromatic compound for the non-volatile fractions (C12-C35). The comparison of a total (aliphatic/aromatic) compounds to an individual fraction is considered to be a conservative approach and satisfactory for the protection of human health.
**CL:AIRE C4SL

4.2.1. SUMMARY OF RESULTS

The results of this direct comparison indicate the concentrations of the following contaminants exceed the chosen GAC values for residential end us with plant uptake (1% SOM).

Inorganic Metalloids

- Lead

Polycyclic Aromatic Hydrocarbons

- Benzo(a)Anthracene
- Benzo(b)Fluoranthene
- Benzo(a)Pyrene
- Dibenz(a,h)Anthracene
- Naphthalene (semi-volatile)

It is acknowledged that the 1% SOM is conservative. Therefore, consideration has been given to the actual organic matter content within the Made Ground. The average SOM% for the material based on the laboratory analysis is 9%. The exceedances have therefore been reassessed against GAC values for residential ends use based on 6% SOM. The results of the reassessment are presented in Table 4.2.

TABLE 4.2 SUMMARY OF REVISED ASSESSMENT FOR A RESIDENTIAL END USE WITH PLANT UPTAKE (6% SOM)

DETERMINANT	UNIT	GAC (6% SOM)	MC	LOC. OF EX	PL	ASSESSMENT
Lead	mg/kg	200 (GAC unaffected by SOM)	260	WS105-0.60m	1	**Further Assessment**
Benzo(a)Anthracene	mg/kg	15	10	N/A	2	No Further Action
Benzo(a)Pyrene	mg/kg	3	9.7	TP101-0.10m TP101-0.60m TP102-2.20m TP103-0.20m WS102-1.50m WS105-0.60m	2	**Further Assessment**
Benzo(b)Fluoranthene	mg/kg	3.7	11	TP101-0.10m TP101-0.60m TP102-2.20m TP103-0.20m WS102-1.50m WS105-0.60m	2	**Further Assessment**
Dibenzo(a,h)Anthracene	mg/kg	0.3	1.6	TP101-0.10m TP101-0.60m TP102-2.20m TP103-0.20m TP103-0.50m TP108-1.20m WS101-0.15m WS102-1.50m WS104-0.10m WS105-0.60m	2	**Further Assessment**
Naphthalene	mg/kg	13	3.3	N/A	4	No Further Action

The revised assessment shows Benzo(a)Anthracene and Naphthalene concentrations are no longer in exceedance and only exceedances of Lead and non-volatile Benzo(a)Pyrene, Benzo(b)Fluoranthene and Dibenzo(a,h)Anthracene remain.

4.2.2. EXPOSURE PATHWAYS

The main exposure pathways based on the Tier 2 exceedances are:

- Soil ingestion (PL1), and;
- Dermal contact and ingestion (PL2).

4.2.3. DISCUSSION

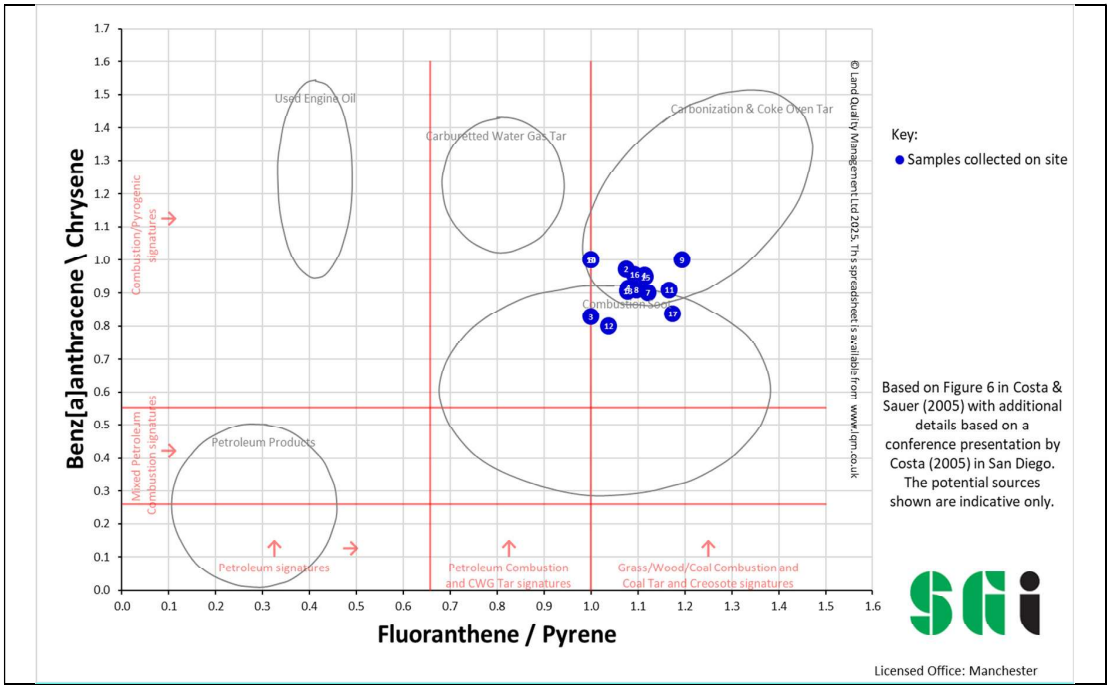
Inorganic Metalloids

A single exceedance of the Tier 2 screening values for lead was identified within the Made Ground at WS105 (0.60 m bgl).

Polycyclic Aromatic Hydrocarbons

Exceedances of non-volatile Benzo(a)Pyrene, Benzo(b)Fluoranthene and Dibenzo(a,h)Anthracene have been found in the Made Ground across the site. A PAH double ratio plot has been produced to determine the likely source/background of the PAHs, as presented in Figure 4.1.

FIGURE 4.1 PAH DOUBLE RATIO PLOT



The double plot ratio indicates that the PAHs within the Made Ground are likely to be derived from combustion of grass/wood/coal and carbonisation (burning) in an urban background.

This is concurrent with the high ash content noted in Made Ground soils during the site investigation.

The risk to end users is expected to be minimised where hardstanding is present within the proposed development as this will prevent exposure to impacted soils on site. A suitable clean cover system will be required in proposed private gardens as well as landscaping and communal garden areas to mitigate the risk of direct exposure to impacted soils.

4.3. CONTROLLED WATERS RISK ASSESSMENT

SGi has undertaken a controlled waters risk assessment for the site based on the consideration of the conceptual site model and the sensitive receptors which are summarised in Table 4.3.

TABLE 4.3 CONTROLLED WATERS CONCEPTUAL MODEL AND SENSITIVITY PROFILE

DISCUSSION		SENSITIVITY RATING
Contaminant Source		
Made Ground Made Ground has been confirmed across the site to a maximum depth of 2.20 m bgl. Elevated concentrations of heavy metals and PAHs have been encountered in the Made Ground, which may present a point source of leachable contamination.		**Low/Medium**
Pathway		
Vertical Migration Cohesive deposits were found at a depth range of between 0.90-8.70 m bgl in all locations except for TP105 and TP108, which were terminated prematurely due to obstructions. Granular deposits, where identified, generally fall between 0.60-2.30 m bgl with data from window sample probeholes show a minimum of 2.40 m of CLAY at the base of each location; this is likely limited by borehole depth. Rotary logs identify a minimum of 6.00 m of contiguous CLAY in every location between the minimum and maximum depths of 0.90-8.70 m bgl, indicating the site to be underlain by >5.00 m of contiguous low permeability cohesive deposits which will likely limit migration to the underlying Principal aquifer to some degree.		**Low**
Lateral Migration Granular Made Ground is present and granular superficial deposits have also been identified beneath the Made Ground in the centre west of the site (overlying cohesive deposits), which may facilitate lateral migration of perched groundwater. Groundwater strikes were recorded between 2.00-4.20 m bgl during the intrusive investigation. Depth to groundwater was however measured to range between 3.85-4.20 m bgl (approx. 28.71-28.44 m AOD) during follow-up monitoring visits completed to date, which is deeper than the maximum proven depth of Made Ground on site at 2.20 m bgl (WS104). The risk of mobilisation is therefore reduced.		**Medium**
Receptor		
Aquifer Classification in Superficial Drift Deposits	Secondary Undifferentiated Aquifer	**Low**
Aquifer Classification in Bedrock	Chester Formation – Principal Aquifer.	**High**
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	Site located within groundwater source protection zones 1 and 2. The site is not located within a drinking water protection zone.	**High**

Distance to the Closest Groundwater Abstraction Point	Two groundwater abstraction points are located circa 70 m north of the site. Sensitivity reduced due to water used as process water and general cooling.	**High**
Is the Site Located Within 50 m of a Surface Watercourse?	The nearest surface water feature is Corn Brook, which is culverted beneath the Bridgewater Wellness Clinic, located 68 m to the northwest.	**Low/Moderate**

The above assessment has identified the Made Ground as a potential source of contamination, which may be mobilised by shallow groundwater (if present). The Made Ground is predominantly underlain by cohesive/low permeability superficial strata, which will limit downward migration to the principal bedrock aquifer identified at c. 7-8 m bgl (primary receptor). The risk to the aquifer is considered low in the absence of a significant source and presence of a clay aquitard.

Lateral migration through granular Made Ground is considered possible, however, given the absence of a surface water receptor within influencing distance (50 m), and the closest being culverted and most likely lined, the risk to surface waters is considered low.

4.3.1. SUMMARY OF RESULTS

The Tier 2 assessment in line with LCRM (2023) has included a comparison of soil leachate analysis from samples of the Made Ground to environmental quality standards (EQS) in the first instance and drinking water standards (DWS) where EQS values are not available.

Groundwater samples were obtained from monitoring wells during the first monitoring visit, the results of which will be addended to this report in upon completion of laboratory testing.

Results are summarised in Table 4.4a and 4.4b. Full results are presented in Appendix VI.

TABLE 4.4a COMPARISON OF LEACHATE ANALYSIS WITH TIER 2 SCREENING LEVELS

DETERMINAND	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Arsenic	µg/l	50	10	3	7.6	None	No Further Action
Cadmium	µg/l	0.08-0.25	5	3	< 0.11	None	No Further Action
Chromium (VI)	µg/l	3.4	–	3	80	WS102 1.50m (EQS)	**Further Action Required**
Chromium (III)	µg/l	4.7	50	3	82	WS102 1.50m (EQS & DWS)	**Further Action Required**
Copper	µg/l	1	2000	3	8.9	TP101 0.60m (EQS) WS102 1.50m (EQS) WS106 0.90m (EQS)	**Further Action Required**
Lead	µg/l	1.2	10	3	< 0.50	None	No Further Action
Mercury	µg/l	–	1.0	3	< 0.05	None	No Further Action
Nickel	µg/l	4	20	3	0.91	None	No Further Action
Selenium	µg/l	–	10	3	3.6	None	No Further Action
Zinc	µg/l	10.9	–	3	< 2.5	None	No Further Action
pH	6–9			3	11.5	None	No Further Action
PAH							
Naphthalene	µg/l	2	10*	3	1.6	None	No Further Action
Anthracene	µg/l	0.1	10*	3	0.83	TP101 0.60m (EQS)	**Further Action Required**
Benzo[b]fluoranthene	µg/l	0.00017*	10*	3	< 0.10	None	No Further Action
Benzo[k]fluoranthene	µg/l	0.00017*	10*	3	< 0.10	None	No Further Action
Benzo(a)pyrene	µg/l	0.00017*	10*	3	< 0.10	None	No Further Action

DETERMINAND	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF SAMPLES	MAX CONC. IN LEACHATE	LOCATION OF EXCEEDANCE	ASSESSMENT
Indeno(123-cd)pyrene	µg/l	0.00017*	10*	3	< 0.10	None	No Further Action
Fluoranthene	µg/l	0.0063	10*	3	1.8	TP101 0.60m (EQS)	**Further Action Required**
Benzo(ghi)perylene	µg/l	1.7–4	10*	3	< 0.10	None	No Further Action
TPH Aromatic							
TPH C5-C7 (benzene)	µg/l	10	1	3	< 0.10	None	No Further Action
TPH C7-C8 (toluene)	µg/l	74	700	3	< 0.10	None	No Further Action
TPH C8-C10 (xylene)	µg/l	30	300	3	< 0.10	None	No Further Action
TPH C10-C12 (naphthalene)	µg/l	2	90	3	< 0.10	None	No Further Action
TPH C12-C16	µg/l	-	90	3	< 0.10	None	No Further Action
TPH C16-C35	µg/l	-	90	3	< 0.10	None	No Further Action
TPH Aliphatic							
TPH C5-C6	µg/l	–	1000[5]	3	< 0.10	None	No Further Action
TPH C6-C8	µg/l	–	1000[5]	3	< 0.10	None	No Further Action
TPH C8-C10	µg/l	–	300	3	< 0.10	None	No Further Action
TPH C10-C12	µg/l	–	300	3	< 0.10	None	No Further Action
TPH C12-C16	µg/l	–	300	3	< 0.10	None	No Further Action
TPH C16-C21	µg/l	–	300**	3	< 0.10	None	No Further Action
TPH C21-C35	µg/l	–	300**	3	< 0.10	None	No Further Action

TABLE 4.4b COMPARISON OF GROUNDWATER ANALYSIS WITH TIER 2 SCREENING LEVELS

DETERMINAND	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN GROUNDWATER	LOCATION OF EXCEEDANCE	ASSESSMENT
Arsenic	µg/l	50	10	1	0.32	None	No Further Action
Cadmium	µg/l	0.08-0.25	5	1	<0.11	None	No Further Action
Chromium (VI)	µg/l	3.4	–	1	<20	None	No Further Action
Chromium (III)	µg/l	4.7	50	1	<0.50	None	No Further Action
Copper	µg/l	1	2000	1	1.9	RB101 (EQS)	**Further Action Required**
Lead	µg/l	1.2	10	1	<0.50	None	No Further Action
Mercury	µg/l	–	1.0	1	<0.010	None	No Further Action
Nickel	µg/l	4	20	1	2.0	None	No Further Action
Selenium	µg/l	–	10	1	<0.50	None	No Further Action
Zinc	µg/l	10.9	–	1	4.4	None	No Further Action
pH	6–9			1	8.0	None	No Further Action
PAH							
Naphthalene	µg/l	2	10*	1	<0.50	None	No Further Action
Anthracene	µg/l	0.1	10*	1	<0.50	None	No Further Action
Benzo[b]fluoranthene	µg/l	0.00017*	10*	1	<0.50	None	No Further Action
Benzo[k]fluoranthene	µg/l	0.00017*	10*	1	<0.50	None	No Further Action
Benzo(a)pyrene	µg/l	0.00017*	10*	1	<0.50	None	No Further Action
Indeno(123-cd)pyrene	µg/l	0.00017*	10*	1	<0.50	None	No Further Action
Fluoranthene	µg/l	0.0063	10*	1	<0.50	None	No Further Action

DETERMINAND	UNIT	EQS [1, 2, 3] AA	DWS [3,4,5]	NO. OF GW SAMPLES	MAX CONC. IN GROUNDWATER	LOCATION OF EXCEEDANCE	ASSESSMENT
Benzo(ghi)perylene	µg/l	1.7–4	10*	1	<0.50	None	No Further Action
TPH Aromatic							
TPH C5-C7 (benzene)	µg/l	10	1	1	<0.10	None	No Further Action
TPH C7-C8 (toluene)	µg/l	74	700	1	<0.10	None	No Further Action
TPH C8-C10 (xylene)	µg/l	30	300	1	<0.10	None	No Further Action
TPH C10-C12 (naphthalene)	µg/l	2	90	1	<0.10	None	No Further Action
TPH C12-C16	µg/l	-	90	1	<0.10	None	No Further Action
TPH C16-C35	µg/l	-	90	1	<0.10	None	No Further Action
TPH Aliphatic							
TPH C5-C6	µg/l	–	1000[5]	1	<0.10	None	No Further Action
TPH C6-C8	µg/l	–	1000[5]	1	<0.10	None	No Further Action
TPH C8-C10	µg/l	–	300	1	<0.10	None	No Further Action
TPH C10-C12	µg/l	–	300	1	<0.10	None	No Further Action
TPH C12-C16	µg/l	–	300	1	<0.10	None	No Further Action
TPH C16-C21	µg/l	–	300**	1	<0.10	None	No Further Action
TPH C21-C35	µg/l	–	300**	1	<0.10	None	No Further Action

Notes Table 4.4
Solubility <0.01µg/l
AA – Annual Average
* Polyaromatic hydrocarbons (PAH) - Benzo(a)pyrene (BaP), Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)-perylene and Indeno(1,2,3-cd)-pyrene. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water
** There are no WHO Guideline Values for aliphatic fractions C16-C21 and C21-C35, therefore the guideline value for aliphatic fractions inclusive of C8-C16 (300µg/l) has been applied.

1. The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 (legislation.gov.uk)
2. The Water Supply (Water Quality) Regulations 2018 (legislation.gov.uk)
3. Guidelines for drinking-water quality, 4th edition, incorporating the 1st addendum (who.int)
4. CL:AIRE publishes Petroleum Hydrocarbons in Groundwater guidance (claire.co.uk)
5. A total TPH criteria of 1000 mg/kg will act as a surrogate criterion for remaining aliphatic and aromatic TPH fractions.

This comparison indicates that the testing results exceed the EQS and DWS values for the following compounds:

COMPOUNDS	LEACHATE	GROUNDWATER
Inorganic Metalloids	Chromium (VI) – EQS Chromium (III) – EQS; DWS Copper – EQS	Copper – EQS
Polycyclic Aromatic Hydrocarbons	Anthracene – EQS Fluoranthene – EQS	None

4.3.2. DISCUSSION

The principal bedrock aquifer (Chester Sandstone Formation) is considered to be the primary receptor due to the absence of any nearby surface water receptors, and has been confirmed beneath the site at depths between 6.90 – 8.80 m bgl. The exceedances of EQS values identified in the leachate and groundwater are therefore not considered further due to there being no viable pollutant linkage.

In respect of the risk to the principal bedrock aquifer, only Chromium III has been found in exceedance of the drinking water standards (DWS). This isolated exceedance was found in a sample of Made Ground taken from WS102 at 1.50 m bgl. The Chromium III concentrations within the corresponding soil sample analysed were not found to be significantly elevated and would therefore not be considered a point source.

Due to insufficient volumes of water in other wells, only one groundwater sample could be obtained (RB101). No exceedances of Chromium III were identified in the groundwater sample, indicating downward and/or lateral migration is not occurring.

Given the depth of groundwater recorded (3.85 – 4.20 m) is deeper than the Made Ground, it is unlikely that groundwater would rise to mobilise this contamination. Furthermore, the presence of predominantly cohesive (low permeability) superficial deposits beneath the Made Ground and overlying the bedrock aquifer would likely inhibit downward migration.

Given there is no significant source or viable migration pathway, the overall risk to the principal aquifer from site derived contamination is considered to be low.

4.4. GROUND GAS RISK ASSESSMENT

Hazardous ground gas qualitative risk assessment is based on a conceptual site model (CSM) similar to that used for soil and groundwater contamination sources (i.e., source pathway receptor pollutant linkages).

The risk can be assessed based on knowledge of the ground conditions and CSM and a measure of hazardous gas concentrations and gas flow at the site within monitoring standpipes.

4.4.1. SOURCES AND PATHWAYS OF GROUND GAS (CSM)

In this instance, the following potential sources of ground gas have been identified:

- Made Ground (historical development/infilled features).

There is potential for localised ground gas migration in proximity of the identified sources.

The CIRIA C665 guidance on gas risk assessment includes recommendations for periods and frequencies for monitoring visits. These recommendations take into account the nature of the proposed development and the likely generation potential of the source.

The proposed development comprises a high-rise residential scheme with a series of private residential dwellings proposed in the eastern sector, which to remain conservative would be best classified as a Type A development (high sensitivity) in accordance with BS8485:2015+A1:2019. Furthermore, it is considered that the likely generation potential of the identified gas sources (taking into account the likelihood of future increases in gas generation) would be best classified as very low.

Therefore, within the context of the proposed residential end-use and ground gas generation potential, the gas assessment requires six visits over three months, with at least two sets of readings at low or falling atmospheric pressure.

4.4.2. GROUND GAS RISK ASSESSMENT METHODOLOGY

The potential impact on the development from ground gases has been assessed with reference to standards and guidelines published in:

- CIRIA Report 665 – Assessing risks posed by hazardous ground gases to buildings (2007); and
- BS8485:2015+A1:2019 – Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings

BS8485 provides guidance on the level of gas protection requirements based upon the characteristic situation (CS) and the proposed development based on building type.

Therefore, in accordance with BS8485, based on the measured flow rates and hazardous gas concentrations, individual hazardous gas flow rates (Q_{hg}) shall be derived for each monitoring point, from which the site characteristic hazardous gas flow rate (Q_{hgs}), and then the Characteristic Situation (CS) can be determined.

The following equation should be utilised:

$$Q_{hg} = q\left(\frac{C_{hg}}{100}\right)$$

Where:
q is the measured flow rate (in litres per hour) of combined gases from the monitoring standpipe
C_{hg} is the measured hazardous gas concentration (in percentage volume/volume).

The subsequent derived gas screening value (GSV) should be the maximum Q_{hg} (flow rate x concentration as a percentage volume) for all the monitoring events.

A 'worst case check' may be carried out using the maximum recorded flow in any hole with the maximum concentration in any hole to present the plausible worst-case conditions. Adoption of the worst-case Q_{hg} requires thorough justification and reference to the CSM.

The final derived GSV can then be used to characterise the site as summarised in Table 4.5.

TABLE 4.5 SITE CHARACTERISATION BY GSV (BS8485:2015)

CS	HAZARD POTENTIAL	GSV (l/hr) FOR METHANE AND CARBON DIOXIDE	ADDITIONAL FACTORS
CS1	Very Low	< 0.07	Typically <1% methane concentration and <5% carbon dioxide concentration (otherwise consider an increase to CS2)
CS2	Low	< 0.70	Typical measured flow rate <70 l/h (otherwise consider an increase to CS3)
CS3	Moderate	< 3.5	N/A
CS4	Moderate to High	< 15	N/A
CS5	High	< 70	N/A
CS6	Very High	> 70	N/A

Notes
1. The CS is equivalent to the characteristic GSV in CIRIA C665.
2. The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter should be considered.
3. Gas Screening Value is the Borehole Gas Volume Flow Rate, in litres per hour, multiplied by the concentration in the air stream of the particular gas being considered.
4. The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment taking into account site-specific conditions.

4.4.3. MONITORING METHODOLOGY

Six monitoring wells were installed during the ground investigation, however, three of the six have since been destroyed. The remaining intact wells at the time of writing included WS101, WS103 and RB101.

Concentrations of methane (CH4), carbon dioxide (CO2) and oxygen (O2) were measured in thee remaining wells using a calibrated infrared gas analyser (GFM435) with gas flow rates measured using an integrated flow meter.

Gas measurements were recorded for a minimum of 300 seconds (5 minutes) at each location, increasing to 600 seconds if elevated concentrations identified, at which point the maximum concentration of CH4 and CO2, together with the lowest concentration of O2 were recorded.

The results of the ground gas monitoring are presented in Table 4.6.

In addition to the raw data, the results for each individual standpipe have been assessed with reference to guidance provided in BS8485:2015. Based on the initial peak measured flow rates and hazardous gas concentrations, individual hazardous gas flow rates (Qhg) have been derived for each monitoring point, from which an individual Characteristic Situation (CS) can ultimately be determined.

TABLE 4.6 SUMMARY OF GROUND GAS MONITORING RESULTS

WELL	DATE	CH_4 PEAK (%V/V)	CH_4 STEADY (%V/V)	CH_4 Q_{hg} (l/hr)	CO_2 PEAK (%V/V)	CO_2 STEADY (%V/V)	CO_2 Q_{hg} (l/hr)	O_2 (%V/V)	ATMOS (mb)	ATMOS. DYNAMIC	PEAK FLOW (l/hr)	STEADY FLOW (l/hr)	RESPONSE ZONE (m bgl)	DEPTH TO BASE (m bgl)	DEPTH TO WATER (m bgl)
RB101	16/07/2025	**1.7**	**1.2**	0.0017	1.5	0.3	0.0015	19	1011	Falling	0.1	0.1	3.00 - 10.00	7.00	4.20
	05/08/2025	0.1	0.1	0.0001	1.0	0.2	0.001	12	1009	Steady	0.1	0.1		7.00	4.18
	27/08/2025	0.1	0.1	0.0001	1.2	0.4	0.0012	19.6	996	Rising	0.1	0.1		6.70	5.95
	10/09/2025	0.1	0.1	0.0001	2.4	0.6	0.0024	19.3	997	Rising	0.1	0.1		6.80	6.00
	02/10/2025	0.1	0.1	0.0001	3.1	0.4	0.0031	19	1021	Falling	0.1	0.1		6.68	5.96
	15/10/2025	0.1	0.1	0.0001	2.5	0.3	0.0025	18.2	1028	Falling	0.1	0.1		6.65	6.00
WS101	16/07/2025	0.1	0.1	0.0001	0.3	0.3	0.0003	20.4	1011	Falling	0.1	0.1	1.50 - 5.00	4.40	3.89
	05/08/2025	0.1	0.1	0.0001	0.3	0.3	0.0003	20.5	1009	Steady	0.1	0.1		4.40	3.85
	27/08/2025	0.1	0.1	0.0001	3.0	3.0	0.003	18	996	Rising	0.1	0.1		4.40	3.15
	10/09/2025	0.1	0.1	0.0001	1.1	0.7	0.0011	20.3	997	Rising	0.1	0.1		4.40	3.20
	02/10/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	20.1	1021	Falling	0.1	0.1		4.42	3.14
	15/10/2025	0.1	0.1	0.0001	0.9	0.9	0.0009	17.6	1028	Falling	0.1	0.1		4.42	3.15
WS103	16/07/2025	0.1	0.1	0.0001	1.9	1.9	0.0019	19.1	1011	Falling	0.1	0.1	0.50 - 2.00	2.00	Dry
	05/08/2025	0.1	0.1	0.0001	1.9	1.9	0.0019	19.4	1009	Steady	0.1	0.1		2.00	Dry
	27/08/2025	0.1	0.1	0.0001	0.1	0.1	0.0001	1.8	996	Rising	0.1	0.1		2.00	Dry
	10/09/2025	0.1	0.1	0.0001	1.6	1.6	0.0016	19.4	997	Rising	0.1	0.1		2.00	Dry
	02/10/2025	0.1	0.1	0.0001	2.2	2.2	0.0022	16.4	1021	Falling	0.1	0.1		1.93	Dry
	15/10/2025	0.1	0.1	0.0001	2.6	2.6	0.0026	16.2	1028	Falling	0.1	0.1		1.93	Dry

Notes for Table 4.6

	CIRIA Characteristic Situation	Q_{hg}		
	CS1	<0.07	Typical Max CO2 <5 % Typical Max CH4 <1 %	Values in **BOLD** exceed CS1 Thresholds
	CS2	<0.7	Flow rate not to exceed 70 l/hr otherwise consider increase to CS3	Values in BLUE denote water above level of response zone (flooded)
	CS3	<3.5		
	CS4	<15	Quantitative Risk Assessment required to evaluate scope of protective measures	

4.4.4. SUMMARY OF MONITORING RESULTS

GROUNDWATER

Depth to water across the six monitoring visits ranged between 3.14-3.89 m bgl (approx. 29.50-28.75 m AOD) in WS101 and 4.18-6.00 m bgl (approx. 28.46-26.64 m AOD) in RB101.

In RB101, depth to water was recorded between 4.16-4.20 m bgl during Visits 1 & 2, lowering to 5.95-6.00 m bgl over the rest of the monitoring visits. Conversely, the water level in WS101 rose slightly over the course of the monitoring.

WS103 was recorded to be dry across all monitoring visits; this is likely to the shallow nature of the monitoring installation (2.00 m bgl).

BAROMETIC PRESSURE

Monitoring visits 1, 5 and 6 were undertaken during periods of relatively high but falling atmospheric pressure, with recorded pressures between 1011-1028 m bar.

Visit 2 was undertaken during a period of steady normal pressure, with a recorded pressure of 1009 m bar.

Monitoring visits 3 and 4 were undertaken during periods of rising low pressure, with recorded pressures between 996-997 m bar.

It is therefore considered that monitoring visits have been undertaken under representative atmospheric conditions.

GAS FLOW

Throughout the monitoring period, flow rates were recorded to be 0.1 l/hr, which represents the detection limit of the analyser.

GAS CONCENTRATIONS

Elevated methane concentrations of 1.2% v/v (1.7% v/v peak) were recorded at RB101 during Visit 1. No other elevated methane concentrations were recorded above 0.1% v/v at any location during the remaining visits.

Carbon dioxide was recorded at concentrations between 0.1-3.0% v/v.

4.4.5. DISCUSSION

An elevated methane concentration (1.2% v/v) was detected in RB101 during the first visit; however, methane concentrations did not exceed 0.1% v/v (analyser LoD) at any location during subsequent visits. This result is therefore considered to be anomalous with no continuous source of methane. The initial spike is considered likely to be related to the recent ground disturbance. Methane GSVs were recorded between 0.0001-0.0017 l/hr across the six visits.

Carbon dioxide concentrations were recorded between 0.1-3.0% v/v (3.1% v/v peak) over the six monitoring visits, with GSVs ranging from 0.0001-0.0031 l/hr.

Given that CS2 thresholds were not crossed at any standpipe across the six visits apart from the anomalous results at RB101 during Visit 1, a Characteristic Situation classification of CS1 is appropriate for the site and specialist gas protection measures are not necessary.

4.5. POTABLE WATER SUPPLY

A UK Water Industry Research (UKWIR) Risk Assessment will be required to confirm the most suitable potable water supply pipework.

4.6. DEVELOPED CONCEPTUAL SITE MODEL

Following the completion of the intrusive site investigation, chemical analysis and risk assessment, the conceptual model shown in Table 4.7 has been prepared for the site.

TABLE 4.7 DEVELOPED CONCEPTUAL MODEL

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	MITIGATION DISCUSSION	RESIDUAL RISK
SOURCES	**MIGRATION PATHWAYS**	**RECEPTORS**				
SOIL						
HUMAN HEALTH						
Made Ground Inorganic Metalloids, PAHs	Accidental ingestion and/or dermal contact with contaminated soil and/or leachate. **PL1/PL2** Inhalation of contaminated dust. **PL3**	Human Health – construction workers Human Health – end users	Likely	Mild	Elevated concentrations of metals and PAHs are present in the Made Ground deposits. Site personnel have a greater chance of coming into contact with contaminated soils, particularly during excavation and soil recovery works. **Recommendation:** Construction works to be completed with appropriate PPE and welfare facilities. A suitable clean cover system is required in communal garden and soft landscaping areas within the proposed development.	**Moderate/Low**
Made Ground Hydrocarbons, volatile PAHs	Inhalation of vapours. **PL4** Migration through permeable strata and preferential pathways. **PL5**	Human Health – end users Human Health – Site neighbours	Low likelihood	Minor	No historical sources of VOCs identified and no volatile contaminant exceedances identified to date. The vapour risk is therefore considered to be very low.	**Very Low**

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	MITIGATION DISCUSSION	RESIDUAL RISK
SOURCES	**MIGRATION PATHWAYS**	**RECEPTORS**				
Made Ground Asbestos (Asbestos containing materials (ACM) and loose fibres)	Inhalation (of fibres). Construction works disturbing bound material and releasing fibres. **PL3**	Human Health – construction workers Human Health – end users Human Health – Site neighbours	Low likelihood	Medium	Asbestos fibres have not been identified within any of the samples sent for analysis. The risk of ACMs cannot however be ruled out due to historical developments on-site. ACM may also be present in the terraced residential properties that remain in the southeast of the site. **Recommendation:** Pre-demolition asbestos survey required for buildings in the southeast. A watching brief should be completed during enabling works to identify any visible ACM. Cover system to garden and landscaped areas will prevent exposure to future site users. Construction works are to be completed with appropriate PPE and provision of welfare.	**Moderate/Low**
Made Ground (Ashy) Sulphate	Sulphate attack on concrete. **PL6**	Building concrete	Likely	Minor	The Made Ground soils meet class DS-2, AC-1s. Natural soils on-site meet DS-1, AC-1s. **Recommendation:** Concrete should be designed in accordance with the chemical testing results.	**Moderate/Low**

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	MITIGATION DISCUSSION	RESIDUAL RISK
SOURCES	**MIGRATION PATHWAYS**	**RECEPTORS**				
Made Ground Hydrocarbons, S/VOCs	Ingestion of tainted water supply. **PL7**	Human Health – End Users (via ingestion of tainted water supply)	Low likelihood	Mild	Generally low concentrations of TPH have been identified at pipeline depth (0.75-1.35 m bgl) and no elevated concentrations of VOCs/ SVOCs have been detected. **Recommendation:** Confirmation of the above findings via a UKWIR Risk Assessment will be required to confirm the most suitable potable water supply pipework.	**Low**
Made Ground Phytotoxic contaminants (Nickel, Copper, Zinc)	Direct contact (plant uptake). **PL8**	Flora	Low likelihood	Mild	Concentrations of Nickel Copper and Zinc were generally found to be less than 100 mg/kg, thus presenting a low risk to flora. **Recommendation:** A suitable cover system will be necessary in gardens and soft landscaping areas. to protect end users from direct contact. This will also provide a suitable growing medium for flora.	**Low**

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	MITIGATION DISCUSSION	RESIDUAL RISK
SOURCES	**MIGRATION PATHWAYS**	**RECEPTORS**				
CONTROLLED WATERS						
Made Ground Mobile contaminants (Metals, PAH)	Contact with contaminated groundwater. **PL2** Vertical/lateral migration **PL5**	Controlled Waters – Principal bedrock aquifer 6.90 – 8.80 m bgl	Unlikely	Mild	An isolated DWS exceedance of Chromium III has been found in one leachate sample, however, the Chromium III concentration within the corresponding soil sample was not found to be significantly elevated. Furthermore, no exceedances of Chromium III were identified in the groundwater sample analysed, indicating downward and/or lateral migration is not occurring. The presence of predominantly cohesive (low permeability) superficial deposits beneath the Made Ground and overlying the bedrock aquifer would likely inhibit downward migration.	**Very Low**
		Aquatic Ecosystems Controlled Waters – Culverted Corn Brook 68 m from site)	Unlikely	Mild	Metals and PAHs have been found in exceedances of EQS values; however, the culverted Corn Brook is located >50 m from the site and likely to be lined, therefore the sensitivity is reduced. Ground conditions are also likely to comprise predominantly low permeability cohesive deposits that will impede lateral migration.	**Very Low**

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	MITIGATION DISCUSSION	RESIDUAL RISK
SOURCES	**MIGRATION PATHWAYS**	**RECEPTORS**				
Contaminant Risk			Likelihood	Severity	Mitigation Discussion	Residual Risk
Sources	Migration Pathways	Receptors				
GROUND GAS						
Made Ground Methane and carbon dioxide	Inhalation of ground gas and accumulation of ground gas in confined spaces (asphyxiation or explosion). **PL4**	Human Health – Construction workers Human Health – Construction End users	Low likelihood	Mild	Methane concentrations did not exceed 0.1% v/v (analyser LoD) apart from an anomalous elevated result (1.2% v/v) in RB101 during the first visit, with a maximum methane GSV of 0.0017 l/hr. Carbon dioxide concentrations were recorded between 0.1-3.0% v/v over the six visits, with a maximum GSV of 0.0031 l/hr. **Recommendation:** Characteristic Situation 1 (CS1) is appropriate for the site and specialist gas protection measures are not necessary.	**Moderate/Low**
Radon	Inhalation of carcinogenic radon gas. **PL4**	Human Health – Construction workers Human Health – Construction End users	Unlikely	Minor	The site is in an area where less than 1% of homes are above the Radon Action Level, therefore no further assessment is required.	**Very low**

Notes:
Main Exposure Pathways: PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = vapour/gas inhalation; PL5 = vertical / lateral migration; PL6 = corrosion of concrete; PL7=tainting of water supply; PL8 = uptake by plants.

RISK ASSESSMENT MATRIX

FROM CIRA 552 (2001)		Consequence			
		SEVERE	MEDIUM	MILD	MINOR
Probability	HIGH LIKELIHOOD	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

5. GEOTECHNICAL ASSESSMENT

5.1. SITE PREPARATION

The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the *Manual of Contract Documents for Highway Works (MCHW)*. This should include the following:

- Demolition of all existing buildings and removal of all hardstanding.
- Roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting void infilled with suitable compacted engineered fill;
- Redundant services should be sealed off, grubbed out, and replaced with suitable compacted engineered fill;
- Buried structures and old foundations should be excavated from below the proposed development footprint with the resulting void backfilled.

5.2. ASSESSMENT OF POTENTIAL BEARING CAPACITIES

In due consideration of the identified ground conditions, in-situ, and laboratory geotechnical testing, SGi has assessed the net safe allowable bearing capacity (ABC) within the underlying natural stratum to assist in the detailed design of foundations and infrastructure and determine the target founding stratum. The results of this assessment are summarised in Table 5.1 below.

TABLE 5.1 SUMMARY OF ABC

GRANULAR SOILS			
Description	**Depth (Range m bgl)**	**Relative Density**	**Allowable Bearing Capacity (kN/m²)**
Clayey SAND (WS105)	2.00-2.45	Loose	82
COHESIVE SOILS			
Description	**Depth (Range m bgl)**	**Undrained Shear Strength (Cu) (kN/m2)**	**Allowable Bearing Capacity (kN/m²)**
Soft CLAY (WS101)	2.00-2.45	18	38
Firm CLAY (WS102-WS104, WS106)	2.00-4.45	32-37	66-75
Stiff CLAY (WS101, WS102, WS104,-WS106)	3.00-5.45	55-71	113-145
Very Stiff CLAY (WS101-WS104)	3.00-5.45	76-145	156-299
ROCK			
SANDSTONE	>8.00	Very Weak to Moderately Weak	2400-15200

A localised area of soft CLAY with an ABC of 37.56 kN/m² was identified in WS101 between 2.00-2.45 m bgl. In general, however, the superficial CLAY deposits were found to be firm becoming very stiff with increasing depth, with an ABC ranging between 65.74-298.50 kN/m².

Granular/SAND deposits were encountered in four locations in the centre-west of the site. SPT tests were undertaken in WS105 (only) and results indicated the material to be loose with an equivalent ABC of c 80 kN/m2.

SANDSTONE bedrock was encountered from around 7.00-8.00 m bgl. The results of the point load tests indicate the SANDSTONE strength to vary between 0.14-0.63 (MPa) which equates to 140-630 kN/m². The MPa range from UCS tests (on larger intact core samples) was found to be 2.90-15.20, equating to 2900-15200 kN/m². It should be noted that the SANDSTONE was found to be largely uncemented, leading to poor core recovery.

5.3. FOUNDATION OPTIONS APPRAISAL

Given the proposed development will include apartment blocks up to 10 storeys in height, it will be necessary to construct the proposed structures utilising piled foundations capable of transferring the structural loads to the bedrock.

In respect of the proposed townhouses in the east of the site, it may be possible to carry out ground improvement using vibro stone columns (VSC) to uniformly densify the Made Ground and increase the bearing capacity to support reinforced strip foundations.

It should be noted that the south eastern quarter of the site has not been investigated, therefore a conservative contingency should be made for piling all structures.

The final foundation solution will be dependent on the structural loadings and elevation and should be designed by a suitably qualified structural engineer with detailed designs from a specialist piling contractor.

Where trees are currently or were historically present, their influence will need to be modelled to determine requirements for heave precautions to mitigate the potential for volumetric instability attributed to fluctuations in moisture content in accordance with the requirements of NHBC/LABC standards.

5.4. GROUND FLOOR SLABS

A suspended floor slab is recommended for the proposed residential end use.

A ground bearing slab will be viable, but it will need to be constructed on a granular sub-base with the thickness designed by a structural engineer to ensure that settlement tolerance is taken into consideration.

5.5. HEAVE PRECAUTIONS

The site has been proven to be underlain by clay soils which are susceptible to volumetric instability due to fluctuations in moisture content, particularly within influencing distance of trees as per the NHBC/LABC conjectures zones of influence.

The clay has been determined as being of low to medium volume change potential. Table 5.2 shows where heave precautions are required for a trench fill, pier and beam and pile and beam foundation types which are in the zone of influence of trees which are to remain or be removed.

TABLE 5.2 POSITION OF HEAVE PRECAUTIONS

SITUATION	TRENCH FILL	PIER AND BEAM	PILE AND BEAM
External trench fill and pier foundations. Unless NHBC is satisfied that the soil is not desiccated compressible material should be provided to the:	Inside faces of external wall foundations deeper than 1.50 m, based on the appropriate tree height.	All faces of pier foundations deeper than 1.50 m, based on the appropriate tree height.	N/A
External ground beams. Unless NHBC is satisfied that the soil is not desiccated, compressible material or void formers should be provided to the:	N/A	Inside faces	Inside faces
Internal trench fill foundations and ground beams. Compressible material required:	No	No	No
External and internal ground beams. Compressible material, void former or void should be provided to the underside of:	N/A	All	All
Heave precautions required for proposed trees where the soil is not desiccated:	No	No	No

Note:
Information taken from NHBC Standards 2025, Chapter 4.2, Table 8 – Position of heave precautions

A summary of heave precautions is presented in Table 5.3.

TABLE 5.3 SUMMARY OF HEAVE PRECAUTIONS

VOLUME CHANGE POTENTIAL	VOID DIMENSION AGAINST SIDE OF FOUNDATION AND GROUND BEAM	VOID DIMENSION UNDER GROUND BEAMS, AND SUSPENDED IN-SITU CONCRETE GROUND FLOOR	VOID DIMENSION UNDER SUSPENDED PRECAST CONCRETE AND TIMBER FLOORS[1]
High	35 mm	150 mm	300 mm
Medium	25 mm	100 mm	250 mm
Low	0 mm	50 mm	200 mm

In addition to the requirements of the 'Drainage' section, drainage near trees should incorporate additional provisions. Where there is a volume change potential within the ground, the provisions include:

- Increased falls to cater for any ground movement.
- Deeper and wider backfill of granular material.
- A drainage system that is capable of movement should heave and shrinkage occur.
- Drainage pipes should not be encased in concrete.
- Additional clearance is required where drains pass through the structure of a building to allow for additional movement.

5.6. DRAINAGE

Soakaway drainage is unlikely to be suitable due to the poor infiltration results obtained during the falling head tests and the presence of cohesive superficial deposits.

If soakaway drainage is to be further considered, full BRE 365 testing must be completed to inform the detailed design.

5.7. CONCRETE DURABILITY

Based upon the results of the chemical analyses it is considered that subsurface concrete can be designed where specified (Section 3.12) in accordance with Design Sulphate Class DS-1 and DS-2, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with the recommendations provided in BRE *Special Digest 1* (2005).

5.8. EXCAVATIONS

Site observations indicated that excavations should be feasible in the near surface with normal plant.

TABLE 5.4 CIVIL ENGINEERING EXCAVATION RISK MATRIX

RISK ITEM	PRESENT	COMMENT
Running Sands	No	Running sand has not been identified.
Water Ingress	No	Shallow groundwater was not encountered during the ground investigation or subsequent monitoring undertaken to date. However, if encountered during the ground works, water ingress will require localised dewatering/sump pumping during the construction of site drainage infrastructure. Ingress of water into foundation excavation will potentially flood foundation excavations, limiting the viability of spread foundations to be constructed.
Shallow Bedrock	No	Rockhead has been encountered at depths of c. 7.00-8.00 m bgl.
Relict Foundations	Yes	Relict foundations including cobble setts and potential basements have been identified across the site. All relict foundations including basements will require grubbing out and reengineering to accommodate foundation solutions within the proposed development.

5.9. GEOTECHNICAL RISK REGISTER

POTENTIAL ABNORMAL CONSTRAINT	LOCATION ON-SITE	ESTIMATED AREA OF SITE AT RISK (%)	ASSESSMENT AND MITIGATION
Remediation of Contaminated Soils	All	100	Elevated concentrations of PAHs and inorganic metalloids have been identified within the Made Ground across the site. A suitable clean cover system will be required for gardens and soft landscaping areas within the proposed development.
Artificially Levelled and Filled Platforms	All	100	The site has likely been artificially levelled to some degree given historical development across all sectors.
Obstructions	All	100	Relict foundations including cobble setts and potential basements have been identified across the site. All relict foundations including basements will require grubbing out and reengineering to accommodate foundation solutions within the proposed development.
Trench Collapse	All	100	Trial pits were observed to be stable, however granular Made Ground (backfilled basements) is likely to be loosely compacted and therefore possibly prone to collapse. Provision should be made for battering back excavations.
Mature Trees	South west Periphery	30	The south west of the site was historically overgrown with trees, scrub and vegetation. Trees are present in the east and at the periphery. An arboriculture survey required to determine areas of potential tree influence. Where trees have been removed prior to being surveyed, worst case assumptions should be made for height and water demand when calculating tree influence.
Peat	N/A	N/A	Peat has not been identified.
Running Sands	N/A	N/A	Running sands have not been identified.
Ground Dissolution	N/A	N/A	Data searches indicate no hazard.
Low Permeability Ground	All	100	Falling head tests were completed in WS101 and WS103 to assess the potential infiltration potential of the soils. Both monitoring wells screened the granular Made Ground. Results concluded an infiltration rate of 1.34 x 10^{-06} m/s (poor). The natural strata are generally cohesive and therefore considered unlikely to offer good or reliable infiltration potential.
Services	All	10	A review of service plans as well as GPR surveying undertaken during site works has identified a number of services within the site boundary which should be considered sensitive in this case. Piling may not be possible within close proximity to any sensitive infrastructure to be retained.

POTENTIAL ABNORMAL CONSTRAINT	LOCATION ON-SITE	ESTIMATED AREA OF SITE AT RISK (%)	ASSESSMENT AND MITIGATION
Abnormal Foundation Solutions	All	100	Piled foundations will be required to achieve the required loadings.
Areas Not Investigated	Southeast	25	Part of southeastern sector not investigated due to current residential dwellings and fenced off area.
Enabling Earthworks	All	100	All proposed earthworks will need to be designed by a suitably qualified geotechnical engineer in accordance with NHBC Chapter 4.6. The earthworks design will incorporate a Geotechnical Specification for Earthworks that will define protocols to ensure no unacceptable future risk.

5.10. CONSTRUCTION ACTIVITY AND INSPECTION

The following activities and inspections should be incorporated into the site works:

- Due to the variability of soils on site, it is recommended that sufficient allowance be made for the inspection of formations and sub-formations to foundations and pavement construction;
- Excavations, where access is required, should be subject to a risk assessment from a competent person and, where appropriate, mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97 should be utilised;
- It is considered that dewatering may be required, especially following periods of heavy rainfall. Discharge of any water should be agreed upon with the relevant regulatory body and be undertaken under a trade effluent discharge, where required. Measures to remove silt and suspended solids may be required and consideration should be given to the provision of space for settling tanks or an attenuation pond;
- Where access to confined spaces is required, appropriate mitigation measures should be addressed within the construction stage health and safety plan; and
- The presence of potential contamination and mitigation measures should be addressed as part of the construction stage health and safety plan and should include measures to design out the risks, reduce their impact, and, finally, include the use of personnel protective equipment (PPE).

5.11. FURTHER WORKS

Based on the findings of the intrusive site investigation, the following additional works are recommended to be completed in due course:

- Further investigation in southeastern sector of the site when access is available;
- Foundations to be designed by suitably qualified Structural Engineer;
- UK Water Industry Research (UKWIR) Risk Assessment;
- Remediation and Enabling Works Strategy, and;
- Piling Risk Assessment.

END OF REPORT

APPENDIX I
LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between SGi and the client as indicated in Section 1.3.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover, reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. SGi cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by SGi is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by SGi in this connection without their explicit written agreement there to by SGi.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II
GLOSSARY

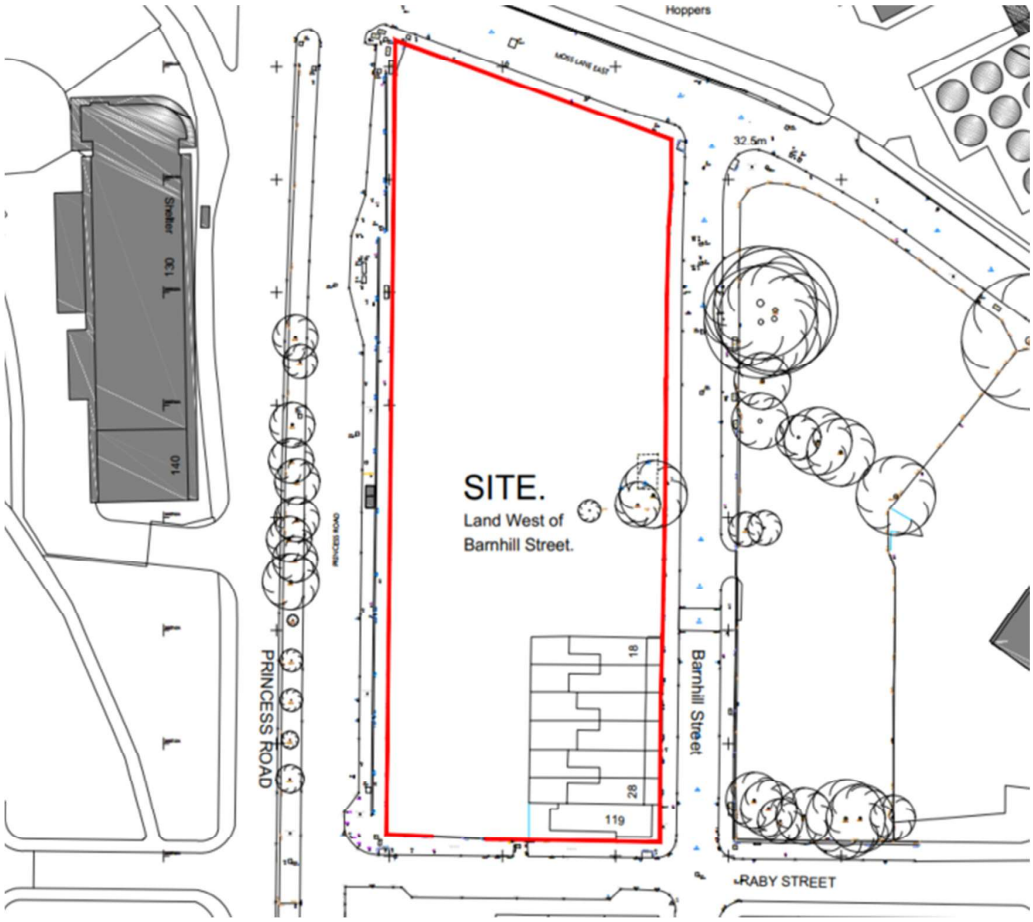
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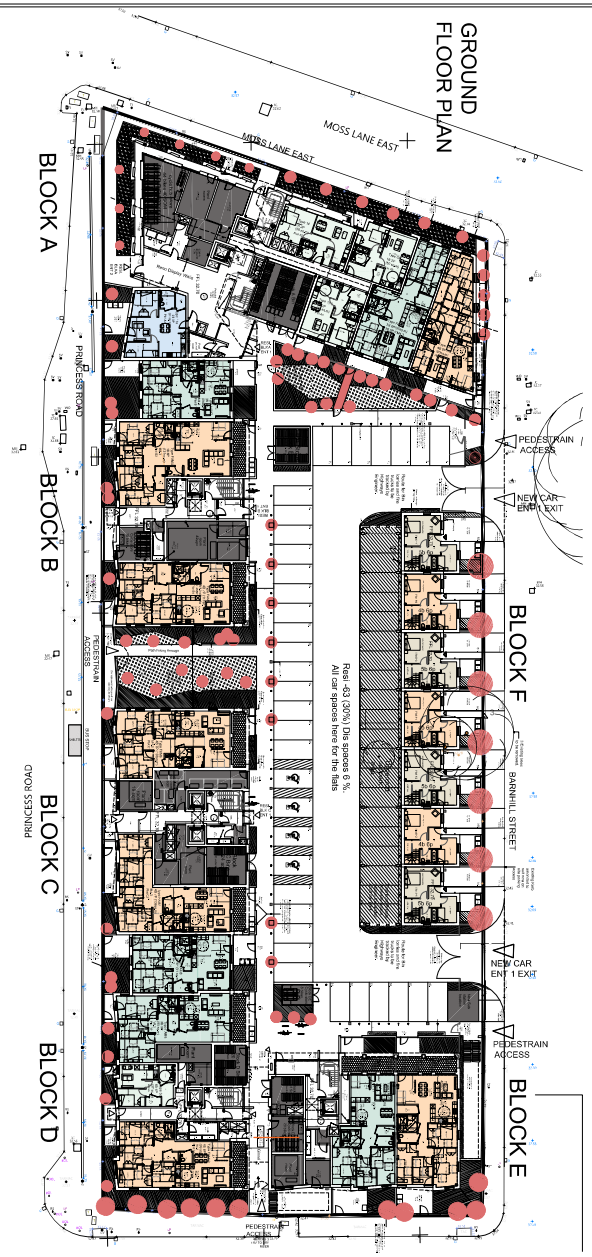
ACM	Asbestos-containing material	**MMP**	Materials management plan
ADS	Acoustic design statement	**ND**	Not detected
AST	Above-ground storage tank	**NDP**	Nuclear density probe
BGS	British Geological Survey	**NMP**	Noise management plan
BSI	British Standards Institute	**NPSE**	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	**NR**	Not recorded
CA	Coal Authority	**PAH**	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	**PCB**	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	**PI**	Plasticity index
CIRIA	Construction Industry Research Association	**PID**	Photo ionisation detector
CLEA	Contaminated land exposure assessment	**POS**	Public open space
CML	Council of Mortgage Lenders	**PPE**	Personnel protective equipment
CoC	Contaminants of concern	**ProPG**	Professional practice guidance
CSM	Conceptual site model	**QA**	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	**SGV**	Soil guideline value
DWS	Drinking water standard	**SPH**	Separate-phase hydrocarbon
EA	Environment Agency	**SPT**	Standard penetration test
EQS	Environmental quality standard	**SVOC**	Semi-volatile organic compound
FFL	Finished floor level	**TPH**	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	**TPH CWG**	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	**UKWIR**	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	**UST**	Underground storage tank
HCV	Health criteria value	**VCC**	Vibro-concrete column
ICSM	Initial conceptual site model	**VOC**	Volatile organic compound
LEL	Lower explosive limit	**VRSC**	Vibro-replacement stone columns
LMRL	Lower method reporting limit	**VSC**	Vibro-stone columns

LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	**WHO**	World Health Organisation
MCV	Moisture condition value	**WRAP**	Waste and Resources Action Programme
MIBK	Methyl isobutyl ketone	**WTE**	Water table elevation
m	Metres	**ppm**	Parts per million
km	Kilometres	**mg/m^3**	Milligram per metre cubed
% v/v	Percent volume in air	**m bgl**	Metres below ground level
mb	Millibars (atmospheric pressure)	**m bcl**	Metre below cover level
l/hr	Litres per hour	**mAOD**	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	**kN/m^2**	Kilonewtons per metre squared
ppb	Parts per billion	**µm**	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	**SSRT**	Site Specific Remediation Target
PSD	Particle Size Distribution	**DD**	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	**Mc**	Moisture Content
ρ	Bulk Density	**GPR**	Ground Penetrating Radar
NDP	Nuclear Density Probe	**FFL**	Finished Floor Level
LEL	Lower Explosive Limit	**UKWIR**	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	**LOD**	Limit of Detection

APPENDIX III
DRAWINGS

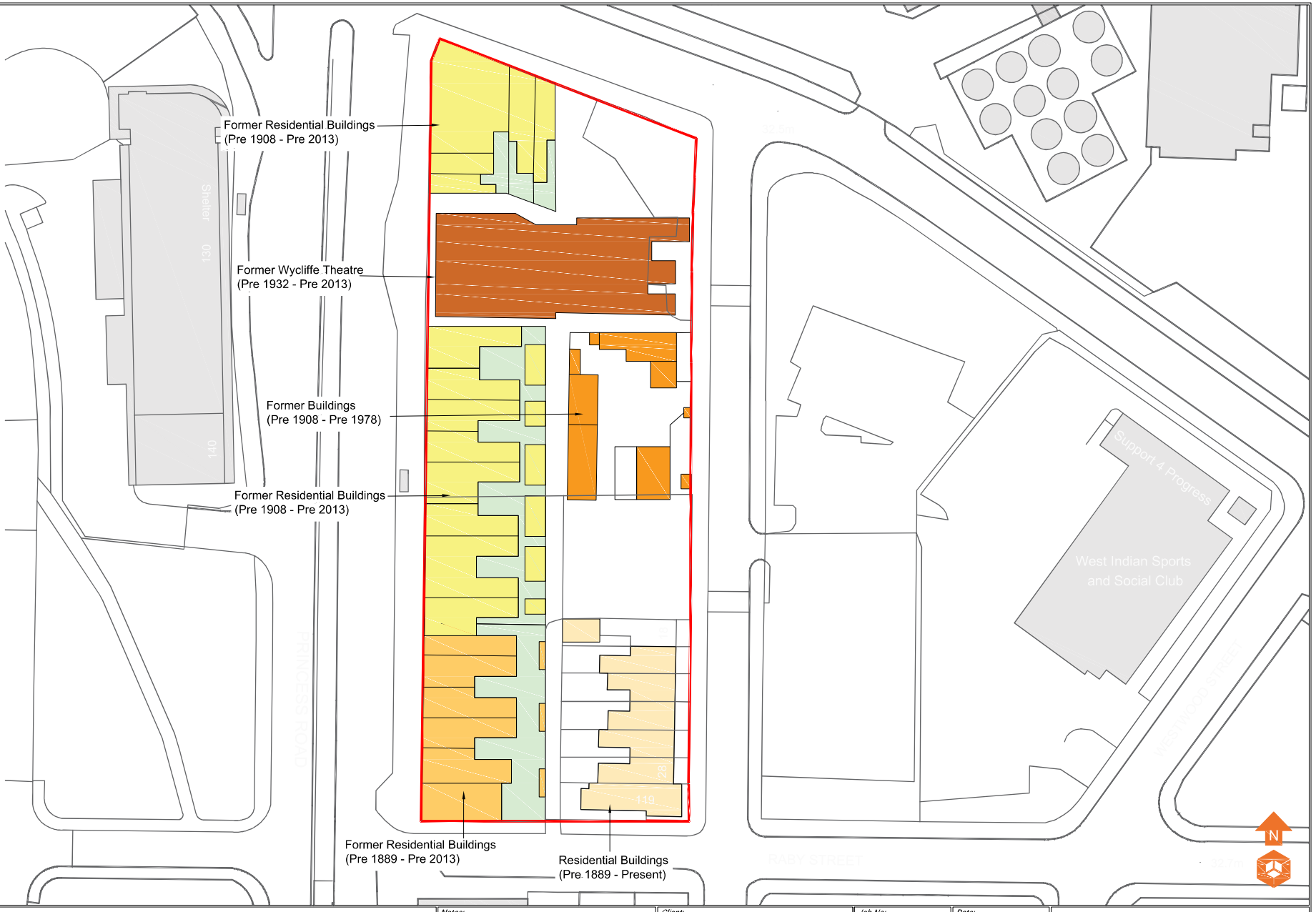
DRAWING 18-145-001 – SITE LOCATION PLAN





	Notes:		Client: SGI	Job No: 18-145	Date: 23.07.2025	e3p Environmental Engineering Partnership Ltd, Taylor Road, Trafford Park, Urmston, Manchester, M41 7f Q, Tel: 0161 707 9612, E-mail: info@e3p.co.uk, Website: www.e3p.co.uk
				Drawing No: 002	Scale: NTS	
P1	REVA	23.07.2025	TG	CO	CO	Job Title: Barnhill Street, Moss Side
Phase	Issue	Date	Drawn	Checked	PM	Drawing Title: Proposed Development Plan

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Historical Features

- Former Residential Buildings (Pre 1889 - Pre 2013)
- Former Residential Buildings (Pre 1908 - Pre 2013)
- Residential Buildings (Pre 1889 - Present)
- Former Buildings (Pre 1908 - Pre 1978)
- Former Wycliffe Theatre (Pre 1932 - Pre 2013)

Notes:

Client: SGI

Job No: 18-145

Date: 23.07.2025

Drawing No: 003

Scale: NTS

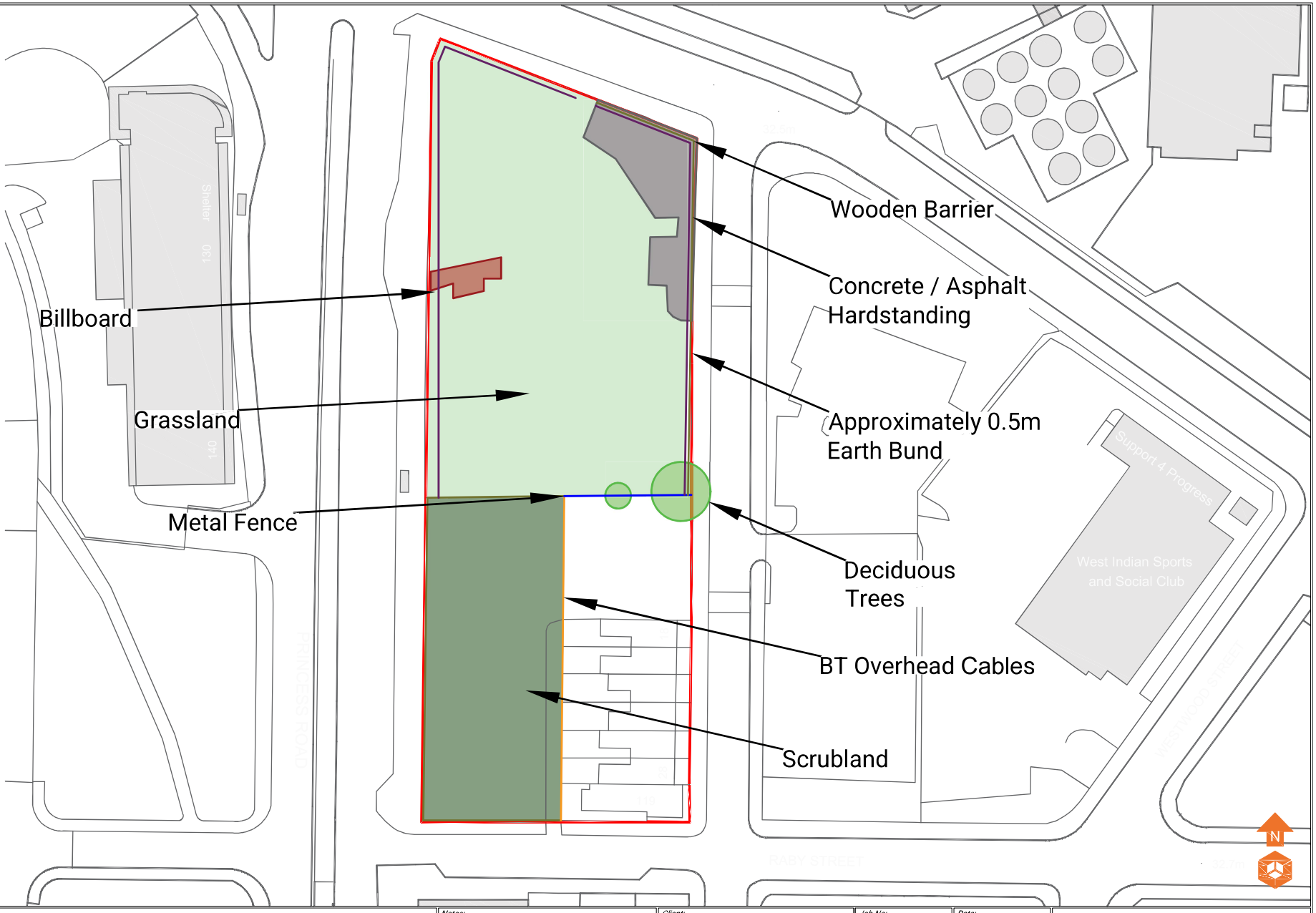
Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	23.07.2025	TG	CO	CO

Job Title: Barnhill Street, Moss Side

Drawing Title: Historical Features Plan

e3p
Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7f Q
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Historical Features

- Grassland
- Scrubland
- Deciduous Trees
- Concrete / Asphalt Hardstanding
- Billboard
- Wooden Barrier
- Approximately 0.5m Tall Earth Bund
- BT Overheads
- Metal Fence

Notes:

Client: SGI

Job No: 18-145

Date: 04.08.2025

Drawing No: 004

Scale: NTS

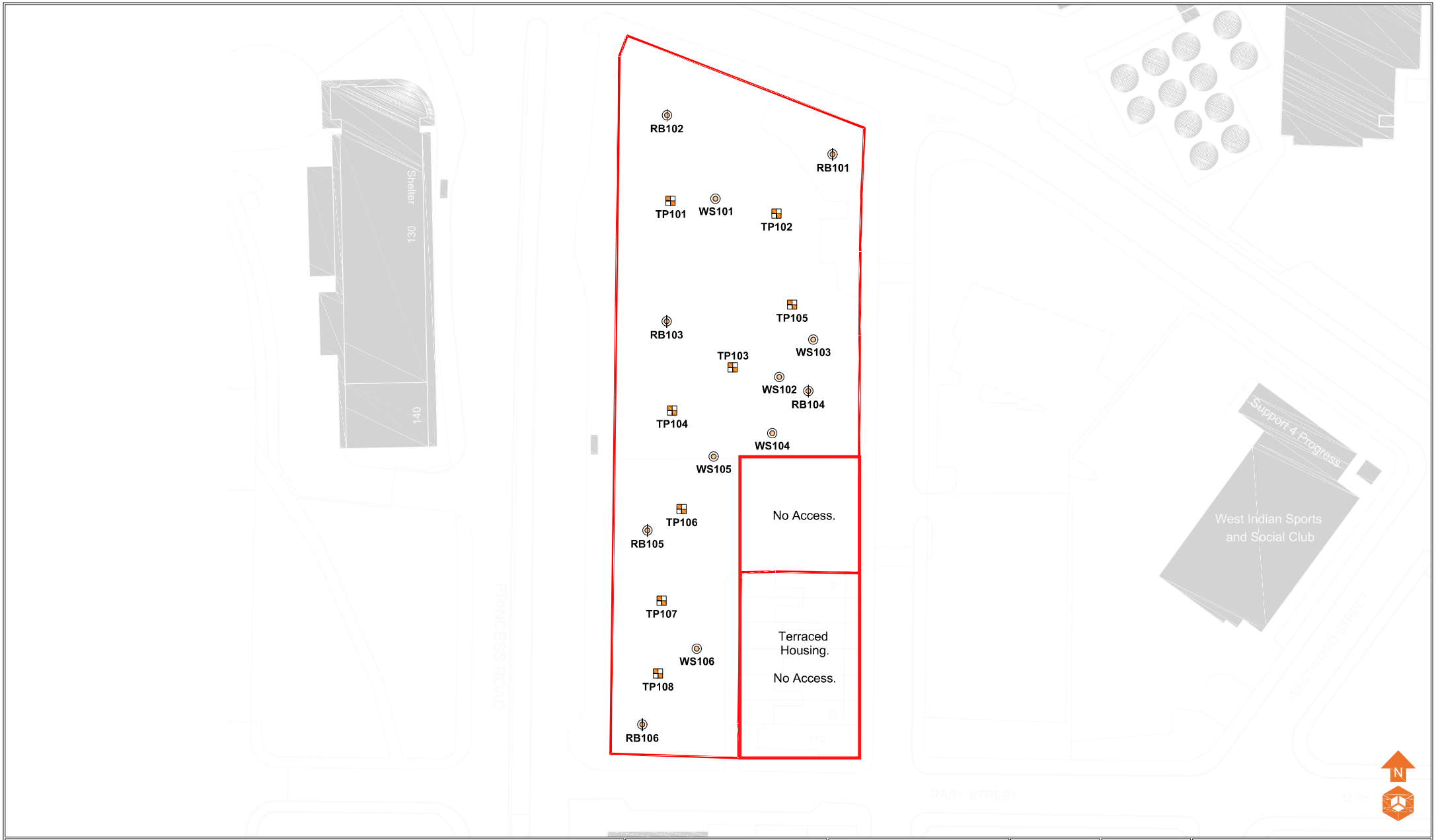
Phase	Issue	Date	Drawn	Checked	
P1	REVA	04.08.2025	TG	GB	CO

Job Title: Barnhill Street, Moss Side

Drawing Title: Site Features Plan

e3p
Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Location Symbols

- Approximate Window Sample Probehole Location (E3P June 2025)
- Approximate Trial Pit Location (E3P June 2025)
- Approximate Rotary Borehole Location (E3P June 2025)

Notes:

Client: SGI

Job No: 18-145

Date: 01.07.2025

Drawing No: 006

Scale: NTS

Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	01.07.2025	TG	GS	GS

Job Title: Barnhill Street, Moss Side

Drawing Title: Exploratory Hole Location Plan

e3p
Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7f Q
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Location Symbols

- Approximate Window Sample Probehole Location (E3P June 2025)
- Approximate Trial Pit Location (E3P June 2025)
- Approximate Rotary Borehole Location (E3P June 2025)

Made Ground Depth (m)

- Depth of Made Ground 0.40 - 0.79m
- Depth of Made Ground 0.80 - 1.19m
- Depth of Made Ground 1.20 - 1.59m
- Depth of Made Ground 1.60 - 1.99m
- Depth of Made Ground >2.00m

Notes:

Client: SGI

Job No: 18-145

Date: 11.08.2025

Drawing No: 007

Scale: NTS

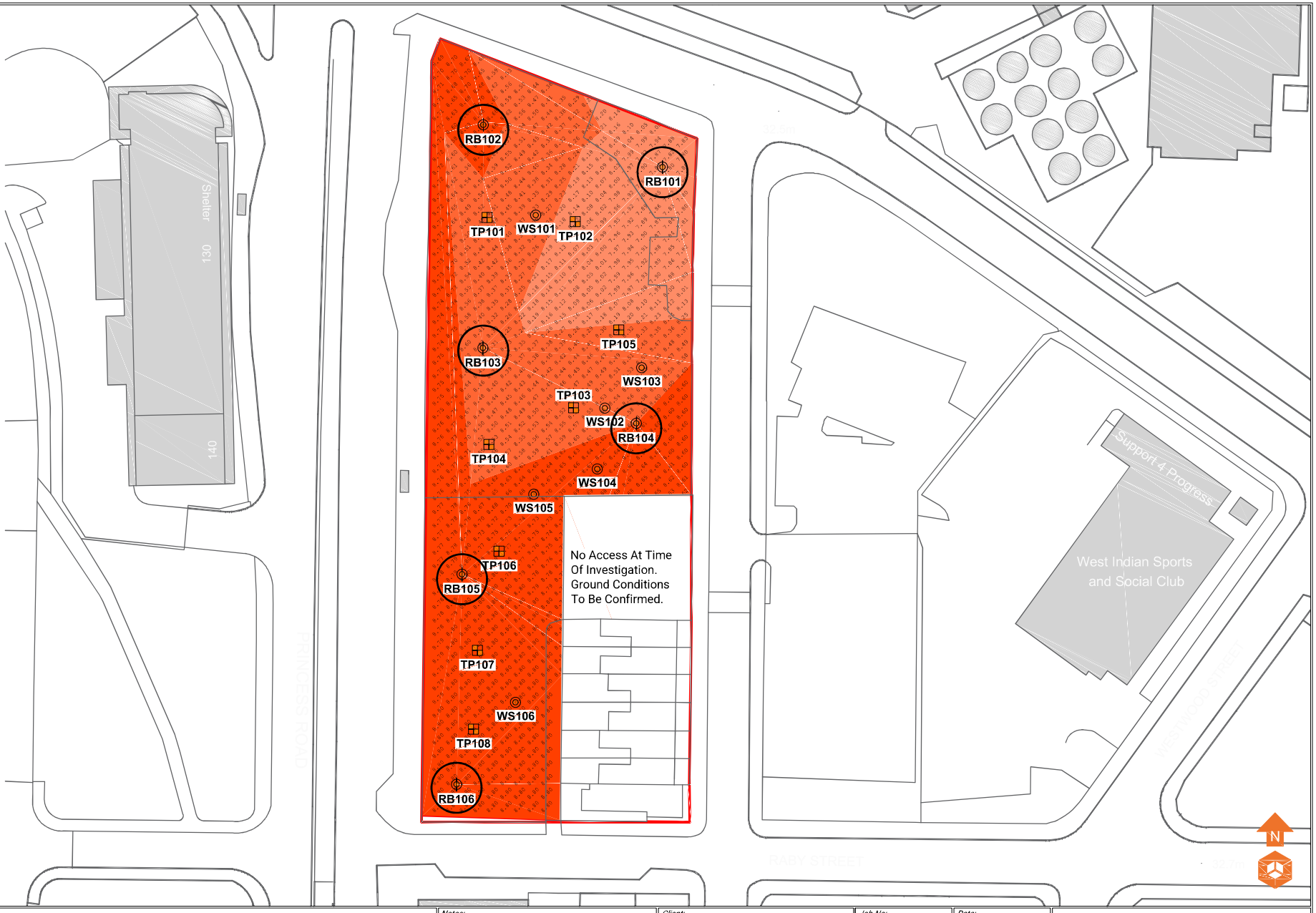
Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	11.08.2025	TG	GS	GS

Job Title: Barnhill Street, Moss Side

Drawing Title: Depth Of Made Ground Plan

Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Location Symbols

- Approximate Window Sample Probehole Location (E3P June 2025)
- Approximate Trial Pit Location (E3P June 2025)
- Approximate Rotary Borehole Location (E3P June 2025)

Bedrock Depth (m)

- Depth to Bedrock 7.80 - 8.19m
- Depth to Bedrock 8.20 - 8.59m
- Depth to Bedrock >8.60m
- Bedrock Confirmed in Rotary Borehole

Notes:

Client: SGI

Job No: 18-145

Date: 11.08.2025

Drawing No: 012

Scale: NTS

Phase	Issue	Date	Drawn	Checked	PM
P1	REVA	11.08.2025	TG	GS	GS

Job Title: Barnhill Street, Moss Side

Drawing Title: Depth To Bedrock Plan

e3p
Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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APPENDIX IV
PHOTOGRAPHS

PLATE 1 – WINDOW SAMPLER (EASTERN SECTOR)



PLATE 2 – REINSTATED WOODEN BARRIER (NORTHEASTERN SECTOR)



PLATE 3 – UTILITY SURVEY MARKINGS (CENTRAL SECTOR)



PLATE 4 – ENVIRONMENTAL MONITORING WELL INSTALL (RB101)



PLATE 5 – ROCK CORES (RB101)



PLATE 6 – BITUMEN-BONED COBBLE SETTS (TP101)



PLATE 7 – BRICK FOUNDATIONS (TP104)



PLATE 8 – BRICK AND CONCRETE FOUNDATIONS (TP107)



PLATE 9 – BRICK AND CONCRETE FOUNDATIONS WITH RELICT SERVICES (TP105)



PLATE 10 – ARISINGS (WS104)



APPENDIX V EXPLORATORY HOLE LOGS

Rotary Core Log

RB101
Sheet 1 of 4

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383884.00	395823.00	32.64	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-26

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Coring: Core Run	Coring: TCR (%)	Coring: SCR (%)	Coring: RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
										32.54	(0.10) 0.10		MADE GROUND: Concrete.
													MADE GROUND: Reddish dark grey slightly sandy gravel with high ash content. Gravel is fine to coarse, angular to subrounded of brick, concrete, mudstone and sandstone.
											(1.40)		
										31.14	1.50		Greyish brown slightly gravelly CLAY with occasional bands of fine to coarse SAND. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
											(6.00)		
										25.14	7.50		Greyish brown gravelly fine to coarse SAND. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
											(0.30)		
										24.84	7.80		No recovery. Assumed uncemented red SANDSTONE (Drillers Logs).
											(5.20)		

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring Well installed. 5. Response zone 3.00-10.00 m bgl. 5. Heavily contaminated odour between 0.10-1.50 m bgl. 6. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 35.00m RC

Logger
G. Snape

Rotary Core Log

RB101
Sheet 2 of 4

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383884.00	395823.00	32.64	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-26

Client Shepherd Gilmour Infrastructure Limited
Consultant G. Snape
Contractor DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
													As previous page.
		13.00	SPT(C)	N=50 for 70mm (11,14/50 for 70mm)	10.00 13.00	0	0	0		19.64	13.00 (0.06)		
										19.58	13.06 (0.33)		Uncemented red SANDSTONE. Recovered as dense reddish brown fine to medium SAND.
										19.25	13.39 (0.12)		*Non intact, dense reddish brown fine to medium SAND. (13.00 - 13.06m)*
										19.13	13.51 (0.11)		
										19.02	13.62 (0.05)	NR NR NR	Very weak very thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE.
										18.97	13.67 (0.12)	NR NR NR	*Natural fracture, undulating smooth, 90°. (13.09m)*
										18.85	13.79	NR NR NR	*Natural fracture, undulating smooth, 110°. (13.11 - 13.13m)*
					13.00 16.00	26	19	0				NR NR NR	*Natural fracture, undulating smooth, 85°. (13.19m)*
											(2.21)	NR NR NR	*Natural fracture, stepped smooth, 85°. (13.24 - 13.25m)*
												NR NR NR	*Natural fracture, undulating rough, 90°. (13.27m)*
												NR NR NR	*Natural fracture, stepped rough, 90°. (13.33 - 13.34m)*
												NR NR NR	Uncemented red SANDSTONE. Recovered as dense reddish brown fine to medium SAND.
		16.00	SPT(C)	N=50 for 60mm (25,0/50 for 60mm)						16.64	16.00 (0.31)		*Natural fracture, undulating rough, 90°. (13.39m)*
										16.33	16.31 (0.16)		*Non intact, dense reddish brown fine to medium SAND. (13.39 - 13.51m)*
										16.17	16.47	NR NR NR	Very weak very thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE.
												NR NR NR	*Natural fracture, undulating rough, 90°. (13.51m)*
												NR NR NR	*Natural fracture, stepped rough, 95°. (13.55 - 13.57m)*
					16.00 19.00	16	15	4				NR NR NR	Uncemented red SANDSTONE. Recovered as dense reddish brown fine to medium SAND.
											(2.53)	NR NR NR	*Non intact, dense reddish brown fine to medium SAND. (13.62 - 13.67m)*
												NR NR NR	Very weak very thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE.
												NR NR NR	*Natural fracture, planar rough, 85°. (13.75m)*
												NR NR NR	No recovery.
		19.00	SPT(C)	N=50 for 40mm (25,0/50 for 40mm)						13.64	19.00 (0.42)		*Natural fracture, undulating smooth, 85°. (13.79m)*
													No recovery. (13.79 - 16.00m)
					19.00 20.00	87	87	10		13.22	19.42 (0.34)		Moderately weak very thinly bedded weathered reddish brown fine to medium grained SANDSTONE.
										12.88	19.76 (0.11)		*Non intact. (16.00 - 16.02m)*
										12.77	19.87 (0.13)	NR NR NR	
										12.64	20.00		

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring Well installed. 5. Response zone 3.00-10.00 m bgl. 5. Heavily contaminated odour between 0.10-1.50 m bgl. 6. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 35.00m RC

Logger
G. Snape

Rotary Core Log

RB101
Sheet 3 of 4

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383884.00	395823.00	32.64	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-26

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		20.00	SPT(C)	N=50 for 50mm (25,0/50 for 50mm)									*Natural fracture, planar rough, 95°. (16.02m)*
											(0.94)		*Natural fracture, planar smooth, 90°. (16.08m)*
													Natural fracture, undulating rough, 85°. (16.13m)
													Natural fracture, planar rough, 90°. (16.18m)
										11.70	20.94	NR NR NR	*Natural fracture, undulating smooth, 95°. (16.21m)*
												NR NR NR	*Natural fracture, undulating smooth, 95°. (16.26m)*
					20.00 23.00	31	31	4				NR NR NR	Weak thinly laminated extremely weathered reddish brown MUDSTONE.
												NR NR NR	*Natural fracture, undulating rough, 95°. (16.31m)*
												NR NR NR	*Natural fracture, planar rough, 90°. (16.43m)*
											(2.06)	NR NR NR	No recovery.
												NR NR NR	*Natural fracture, undulating rough, 95°. (16.47m)*
												NR NR NR	*No recovery. (16.47 - 19.00m)*
												NR NR NR	Medium strong very thinly bedded reddish brown fine to medium grained SANDSTONE.
		23.00	SPT(C)	N=50 for 40mm (25,0/50 for 40mm)						9.64	23.00		*Natural fracture, planar rough, 100°. (19.00 - 19.02m)*
											(0.77)		*Natural fracture, undulating rough, 90°. (19.06m)*
										8.87	23.77	NR NR NR	*Natural fracture, stepped rough, 85°. (19.12m)*
					23.00 25.00	39	39	10				NR NR NR	*Natural fracture, stepped rough, 90°. (19.17 - 19.18m)*
												NR NR NR	*Natural fracture, stepped rough, 95°. (19.22m)*
												NR NR NR	*Natural fracture, undulating rough, 95°. (19.24m)*
											(1.23)	NR NR NR	*Natural fracture, stepped rough, 100°. (19.29 - 19.31m)*
												NR NR NR	*Natural fracture, undulating rough, 80°. (19.33 - 19.34m)*
										7.64	25.00	NR NR NR	*Natural fracture, stepped rough, 95°. (19.41 - 19.42m)*
											(0.53)		Moderately weak very thinly bedded weathered reddish brown fine to medium grained SANDSTONE.
					25.00 26.00	97	90	23		7.11	25.53		*Natural fracture, stepped smooth, 90°. (19.51m)*
											(0.44)		*Natural fracture, undulating rough, 95°. (19.59m)*
		26.00	SPT(C)	N=50 for 70mm (25,0/50 for 70mm)						6.67	25.97		*Natural fracture, stepped rough, 80°. (19.65 - 19.66m)*
										6.64	(0.03)		*Natural fracture, stepped rough, 90°. (19.71 - 19.72m)*
										6.46	26.00	NR NR NR	Medium strong thickly laminated reddish brown fine grained SANDSTONE.
											(0.18)	NR NR NR	*Natural fracture, stepped rough, 95°. (19.76 - 19.78m)*
											26.18	NR NR NR	No recovery.
					26.00 27.00	18	18	0				NR NR NR	*Natural fracture, stepped smooth, 90°. (19.87m)*
											(0.82)	NR NR NR	*No recovery. (19.87 - 20.00m)*
												NR NR NR	Medium strong thickly laminated reddish brown fine to medium grained SANDSTONE.
										5.64	27.00	NR NR NR	*Natural fracture, undulating rough, 95°. (20.00m)*
										5.53	(0.11)		*Natural fracture, stepped rough, 100°. (20.10 - 20.12m)*
											27.11	NR NR NR	*Natural fracture, stepped rough, 95°. (20.15 - 20.16m)*
					27.00 28.00	11	11	11				NR NR NR	*Drilling fracture, undulating rough, 90°. (20.23m)*
											(0.89)	NR NR NR	*Natural fracture, planar rough, 85°. (20.27m)*
												NR NR NR	*Natural fracture, undulating smooth, 90°. (20.29 - 20.30m)*
												NR NR NR	*Natural fracture, planar smooth, 95°. (20.35m)*
										4.64	28.00	NR NR NR	
											(0.33)		
										4.31	28.33		
										4.23	(0.08)		
					28.00 29.00	41	41	0			28.41	NR NR NR	
											(0.59)	NR NR NR	
												NR NR NR	
		29.00	SPT(C)	N=50 for 45mm (25,0/50 for 45mm)						3.64	29.00	NR NR NR	
											(0.33)		
										3.31	29.33		
					29.00 30.00	33	33	10				NR NR NR	
											(0.67)	NR NR NR	
												NR NR NR	
												NR NR NR	
										2.64	30.00	NR NR NR	

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring Well installed. 5. Response zone 3.00-10.00 m bgl. 5. Heavily contaminated odour between 0.10-1.50 m bgl. 6. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 35.00m RC

Logger
G. Snape

Rotary Core Log

RB101
Sheet 4 of 4

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383884.00	395823.00	32.64	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-26

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
										2.34	(0.30) 30.30	NR NR NR	*Natural fracture, planar smooth, 95°. (20.39m)*
					30.00 31.00	30	30	20				NR NR NR	*Natural fracture, planar rough, 175°. (20.35 - 20.43m)*
											(0.70)	NR NR NR	*Natural fracture, stepped smooth, 100°. (20.43m)*
												NR NR NR	*Natural fracture, undulating smooth, 90°. (20.50m)*
										1.64	31.00	NR NR NR	*Natural fracture, stepped rough, 140°. (20.58 - 20.63m)*
										1.41	(0.23) 31.23		*Natural fracture, undulating smooth, 95°. (20.66m)*
					31.00 32.00	44	24	10		1.20	(0.21) 31.44	NR NR NR	*Natural fracture, stepped smooth, 50°. (20.71 - 20.74m)*
											(0.56)	NR NR NR	*Natural fracture, undulating rough, 95°. (20.80m)*
		32.00	SPT(C)	N=50 for 30mm (25,0/50 for 30mm)						0.64	32.00	NR NR NR	*Natural fracture, undulating rough, 85°. (20.83m)*
													Natural fracture, planar rough, 95°. (20.88m)
					32.00 33.00	100	90	53					*Natural fracture, undulating rough, 70°. (20.92 - 20.94m)*
											(1.58)		No recovery.
													No recovery. (20.94 - 23.00m)
					33.00 34.00	100	90	44					Medium strong thinly laminated reddish brown fine to medium grained SANDSTONE.
										-0.94	33.58	× ×	*Non intact. (23.00 - 23.02m)*
											(0.42)	× ×	*Natural fracture, undulating smooth, 125°. (23.07 - 23.10m)*
										-1.36	34.00	× ×	*Natural fracture, undulating rough, 90°. (23.15m)*
					34.00 35.00	93	89	51					*Natural fracture, undulating smooth, 100°. (23.24 - 23.25m)*
											(0.93)		*Natural fracture, stepped rough, 90°. (23.33m)*
										-2.29	34.93	NR NR NR	*Natural fracture, stepped rough, 70°. (23.37 - 23.39m)*
										-2.36	(0.07) 35.00		*Natural fracture, undulating rough, 85°. (23.43m)*
													Natural fracture, undulating rough, 90°. (23.48m)
													Natural fracture, stepped smooth, 110°. (23.53 - 23.54m)
													Drilling fracture, planar rough, 80°. (23.58 - 23.59m)
													Natural fracture, stepped rough, 70°. (23.75 - 23.77m)
													No recovery.
													No recovery. (23.77 - 25.00m)
													Moderately weak to medium strong thinly laminated reddish brown fine to medium grained SANDSTONE.
													Natural fracture, undulating rough, 95°. (25.00m)
													Drilling fracture, undulating smooth, 95°. (25.08m)
													Non intact. (25.14 - 25.16m)
													Natural fracture, stepped rough, 105°. (25.21 - 25.23m)
													Natural fracture, undulating rough, 90°. (25.34m)
													Natural fracture, undulating rough, 90°. (25.45m)
													Medium strong thinly laminated weathered reddish brown fine to medium grained SANDSTONE.
													Natural fracture, stepped rough, 100°. (25.53 - 25.55m)
													Natural fracture, stepped rough, 95°. (25.62 - 25.63m)
													Natural fracture, stepped rough, 80°. (25.68 - 25.69m)
													Natural fracture, stepped rough, 90°. (25.76m)
													Non intact. (25.83 - 25.88m)

30.5 31.0 31.5 32.0 32.5 33.0 33.5 34.0 34.5 35.0 35.5 36.0 36.5 37.0 37.5 38.0 38.5 39.0 39.5 40.0

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring Well installed. 5. Response zone 3.00-10.00 m bgl. 5. Heavily contaminated odour between 0.10-1.50 m bgl. 6. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 35.00m RC

Logger
G. Snape

Rotary Core Log

RB102
Sheet 1 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383851.00	395831.00	32.36	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Coring: Core Run	Coring: TCR (%)	Coring: SCR (%)	Coring: RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
											(1.80)		MADE GROUND: Red, grey and brown multicoloured sandy gravel with frequent cobbles. Gravel is fine to coarse angular to subrounded of concrete, brick, mudstone, sandstone, glass, slate and rare plastic. Cobbles are angular to subangular of brick and concrete
										30.56	1.80		
											(0.25)		MADE GROUND: Red mottled brown sandy gravel with frequent cobbles. Gravel is fine to coarse, angular to rounded of brick, concrete, mudstone, sandstone, ceramic and rare metal. Cobbles are angular of brick.
										30.31	2.05		Greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
											(6.65)		
										23.66	8.70		Weathered red SANDSTONE interbedded with occasional fine to coarse GRAVEL bands. Gravel is fine to coarse, subangular to rounded of SANDSTONE.
											(1.30)		
										22.36	10.00		

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB102
Sheet 2 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383851.00	395831.00	32.36	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client Shepherd Gilmour Infrastructure Limited
Consultant G. Snape
Contractor DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
										22.21	(0.15) 10.15	NR NR NR	Moderately weak thinly bedded extremely weathered reddish brown medium grained SANDSTONE.
													Natural fracture, undulating smooth, 70°. (10.00m)
													Natural fracture, undulating rough, 80°. (10.09m)
													Natural fracture, stepped rough, 70°. (10.14 - 10.15m)
					10.00 13.00	5	5	0					No recovery.
													Natural fracture, undulating rough, 80°. (10.30m)
											(2.85)		*No recovery. (10.15 - 13.00m)*
		13.00	SPT(C)	N=50 for 70mm (25,0/50 for 70mm)						19.36	13.00		Medium strong thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE.
											(0.37)		
										18.99	13.37		*No recovery. (13.00 - 13.10m)*
													Natural fracture, stepped rough, 50°. (13.10 - 13.14m)
													Natural fracture, undulating smooth, 90°. (13.26m)
													Natural fracture, undulating rough, 120°. (13.35 - 13.37m)
					13.00 16.00	12	8	5					No recovery.
											(2.63)		*No recovery. (13.37 - 16.00m)*
		16.00	SPT(C)	N=50 for 55mm (25,0/50 for 55mm)						16.36	16.00		Medium strong thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE.
											(0.33)		
										16.03	16.33		*Natural fracture, undulating rough, 110°. (16.00 - 16.03m)*
													Natural fracture, planar rough, 90°. (16.09m)
													Natural fracture, undulating smooth, 95°. (16.15m)
													Natural fracture, undulating rough, 105°. (16.21 - 16.23m)
					16.00 19.00	11	9	0					*Natural fracture, stepped rough, 110°. (16.26 - 16.29m)*
											(2.67)		*Natural fracture, stepped rough, 95°. (16.32 - 16.33m)*
													No recovery.
													No recovery. (16.33 - 19.00m)
		19.00	SPT(C)	N=50 for 60mm (25,0/50 for 60mm)						13.36	19.00		Medium strong thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE.
											(0.50)		
					19.00 21.00	25	24	13		12.86	19.50		*Drilling fracture, planar rough, 90°. (19.00m)*
											(1.50)		*Natural fracture, undulating rough, 85°. (19.25m)*

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB102
Sheet 3 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383851.00	395831.00	32.36	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
												NR NR NR	*Natural fracture, stepped rough, 70°. (19.32 - 19.34m)*
												NR NR NR	*Natural fracture, planar rough, 90°. (19.40m)*
												NR NR NR	*Natural fracture, stepped rough, 75°. (19.47m)*
												NR NR NR	No recovery.
		21.00	SPT(C)	N=50 for 50mm (25,0/50 for 50mm)						11.36	21.00	NR NR NR	*Natural fracture, undulating rough, 85°. (19.50m)*
											(0.50)		*No recovery. (19.50 - 21.00m)*
										10.86	21.50	NR NR NR	Medium strong thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE.
												NR NR NR	*Natural fracture, stepped rough, 70°. (21.00m)*
												NR NR NR	*Natural fracture, planar rough, 90°. (21.09m)*
												NR NR NR	*Drilling fracture, planar smooth, 90°. (21.16m)*
					21.00 24.00	16	16	0				NR NR NR	*Natural fracture, planar rough, 100°. (21.20 - 21.21m)*
												NR NR NR	*Natural fracture, undulating rough, 90°. (21.25m)*
											(2.50)	NR NR NR	*Natural fracture, undulating smooth, 90°. (21.28m)*
												NR NR NR	*Natural fracture, planar smooth, 80°. (21.33 - 21.34m)*
												NR NR NR	*Natural fracture, stepped smooth, 85°. (21.44m)*
												NR NR NR	No recovery.
												NR NR NR	*Drilling fracture, planar smooth, 90°. (21.50m)*
												NR NR NR	*No recovery. (21.50 - 24.00m)*
		24.00	SPT(C)	N=50 for 45mm (25,0/50 for 45mm)						8.36	24.00		Medium strong thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE.
											(0.50)		
					24.00 25.00	50	50	0		7.86	24.50	NR NR NR	*Drilling fracture, planar smooth, 95°. (24.00m)*
											(0.50)	NR NR NR	*Natural fracture, undulating smooth, 85°. (24.06 - 24.07m)*
										7.36	25.00	NR NR NR	*Natural fracture, planar rough, 85°. (24.14m)*
													Natural fracture, planar smooth, 90°. (24.22m)
													Drilling fracture, planar smooth, 90°. (24.28m)
													Natural fracture, stepped smooth, 100°. (24.33 - 24.34m)
													Natural fracture, undulating rough, 85°. (24.38m)
													Natural fracture, planar smooth, 85°. (24.44 - 24.45m)
													Natural fracture, planar rough, 80°. (24.49 - 24.50m)
													No recovery.
													No recovery. (24.50 - 25.00m)
													End of Borehole at 25.00m

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB103
Sheet 1 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383851.00	395790.00	32.50	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
										32.30	(0.20) 0.20		MADE GROUND: Brown gravelly fine to medium sand with occasional rootlets (Reworked Topsoil). Gravel is fine to coarse, angular to subrounded of brick, mudstone, sandstone, slate, ceramic, concrete and rare metal.
											(1.60)		MADE GROUND: Black, brown and grey multicoloured slightly sandy gravel with high ash content. Gravel is fine to coarse, very angular to subrounded of brick, mudstone, sandstone, glass and rare metal.
										30.70	1.80		Greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
											(6.50)		
										24.20	8.30		No recovery. Assumed moderately weak thinly bedded weathered light reddish brown medium grained SANDSTONE.
											(1.70)		
										22.50	10.00		

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB103
Sheet 2 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383851.00	395790.00	32.50	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client Shepherd Gilmour Infrastructure Limited
Consultant G. Snape
Contractor DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
										22.18	(0.32) 10.32	NR NR NR	Moderately weak thinly bedded weathered light reddish brown medium grained SANDSTONE.
					10.00 13.00	11	5	0			(2.68)		*Non intact. (10.00 - 10.12m)* *Natural fracture, undulating smooth, 95°. (10.16 - 10.17m)* *Natural fracture, undulating smooth, 100°. (10.18m)* *Non intact. (10.18 - 10.25m)* *Natural fracture, planar rough, 90°. (10.25m)* *Natural fracture, stepped rough, 95°. (10.30m)*
		13.00	SPT(C)	N=50 for 40mm (25,0/50 for 40mm)						19.50	13.00		No recovery. *Natural fracture, stepped rough, 95°. (10.32m)* *No recovery. (10.32 - 13.00m)*
					13.00 16.00	6	4	0		19.32	(0.18) 13.18 (2.82)		Moderately weak thinly bedded weathered light reddish brown medium grained SANDSTONE. *Non intact. (13.00 - 13.06m)* *Natural fracture, stepped rough, 90°. (13.06m)* *Natural fracture, stepped rough, 100°. (13.13 - 13.15m)* No recovery. *Natural fracture, undulating smooth, 95°. (13.18m)* *No recovery. (13.18 - 16.00m)*
		16.00	SPT(C)	N=50 for 50mm (25,0/50 for 50mm)						16.50	16.00		Moderately weak thickly laminated extremely weathered medium grained SANDSTONE.
					16.00 19.00	13	12	0		16.10	(0.40) 16.40 (2.60)		*Natural fracture, undulating rough, 95°. (16.00 - 16.01m)* *Natural fracture, stepped rough. 95°. (16.08m)* *Natural fracture, undulating rough , 95°. (16.15m)* *Natural fracture, stepped smooth, 100°. (16.24m)* *Natural fracture, undulating rough, 85°. (16.29m)* *Natural fracture, stepped rough, 90°. (16.35 - 16.36m)* No recovery. *Natural fracture, stepped rough, 70°. (16.40m)* *No recovery. (16.40 - 19.00m)*
		19.00	SPT(C)	N=50 for 30mm (25,0/50 for 30mm)						13.50	19.00		Moderately weak thickly laminated extremely weathered fine to medium grained SANDSTONE.
					19.00 21.00	25	14	11		13.00	(0.50) 19.50 (1.50)		*Natural fracture, planar rough, 90°. (19.00m)* *Natural fracture, stepped smooth, 95°. (19.04m)*

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB103
Sheet 3 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383851.00	395790.00	32.50	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client Shepherd Gilmour Infrastructure Limited
Consultant G. Snape
Contractor DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
												NR NR NR	*Non intact. (19.04 - 19.14m)*
												NR NR NR	*Natural fracture, planar rough, 90°. (19.14m)*
												NR NR NR	*Natural fracture, stepped smooth, 95°. (19.20m)*
												NR NR NR	*Natural fracture, stepped rough, 100°. (19.30 - 19.31m)*
												NR NR NR	*Natural fracture, undulating rough, 95°. (19.39m)*
		21.00	SPT(C)	N=50 for 20mm (25,0/50 for 20mm)						11.50	21.00		
											(0.39)		No recovery.
										11.11	21.39	NR NR NR	*Natural fracture, planar rough, 90°. (19.50m)*
												NR NR NR	*No recovery. (19.50 - 21.00m)*
												NR NR NR	Moderately weak thinly bedded weathered light reddish brown medium grained SANDSTONE.
												NR NR NR	*Non intact. (21.00 - 21.04m)*
					21.00 24.00	13	12	0				NR NR NR	*Natural fracture, planar rough, 90°. (21.09 - 21.11m)*
												NR NR NR	*Natural fracture, unulating smooth, 95°. (21.18 - 21.19m)*
											(2.61)	NR NR NR	*Natural fracture, stepped rough, 85°. (21.22 - 21.23m)*
												NR NR NR	*Natural fracture, undulating smooth, 95°. (21.32m)*
												NR NR NR	No recovery.
												NR NR NR	*Natural fracture, undulating smooth, 95°. (21.39m)*
												NR NR NR	*No recovery. (21.39 - 24.00m)*
		24.00	SPT(C)	N=50 for 25mm (25,0/50 for 25mm)						8.50	24.00		
											(0.33)		Moderately weak to medium strong thickly laminated extremely weathered fine to medium grained SANDSTONE.
										8.17	24.33	NR NR NR	*Natural fracture, planar rough, 90°. (24.00m)*
					24.00 25.00	33	33	27				NR NR NR	*Natural fracture, planar smooth, 85°. (24.13 - 24.24m)*
											(0.67)	NR NR NR	*Natural fracture, undulating rough, 100°. (24.27m)*
												NR NR NR	*Drilling fracture, undulating rough, 100°. (24.29 - 24.30m)*
										7.50	25.00		*Natural fracture, planar rough, 105°. (24.31 - 24.33m)*
													No recovery.
													No recovery. (24.33 - 25.00m)
													End of Borehole at 25.00m

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB104
Sheet 1 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383879.00	395776.00	32.87	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Coring: Core Run	Coring: TCR (%)	Coring: SCR (%)	Coring: RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
										32.77	(0.10) 0.10		MADE GROUND: Brown slightly gravelly fine to medium sand with occasional rootlets (Reworked Topsoil). Gravel is fine to medium, subangular to subrounded of sandstone and rare plastic.
											(0.80)		
										31.97	0.90		MADE GROUND: Red mottled greyish brown sandy gravel with high ash content. Gravel is fine to coarse, angular to subrounded of brick, slate, glass, sandstone and concrete.
													Greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
											(6.80)		
										25.17	7.70		Reddish brown SAND AND GRAVEL. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone.
											(0.90)		
										24.27	8.60		No recovery. Assumed uncemented red SANDSTONE (Drillers Logs).
											(0.40)		
										23.87	9.00		Weak thickly laminated extremely weathered reddish brown fine grained SANDSTONE.
											(0.28)		
					9.00 12.00	9	8	0		23.59	9.28	NR NR NR NR NR NR NR NR NR NR NR NR	*Natural fracture, planar rough, 85°. (9.00 - 9.02m)* *Natural fracture, undulating smooth, 100°. (9.12 -*
											(2.72)		

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 2. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB104
Sheet 2 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383879.00	395776.00	32.87	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client Shepherd Gilmour Infrastructure Limited
Consultant G. Snape
Contractor DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
												NR NR NR	*9.15m)*
													Natural fracture, stepped smooth, 95°. (9.21m)
													No recovery.
													Natural fracture, planar smooth, 90°. (9.28m)
													Natural fractrue, undulating rough, 95°. (9.28 - 12.00m)
		12.00	SPT(C)	N=50 for 60mm (25,0/50 for 60mm)						20.87	12.00 (0.35)		Medium strong thickly laminated extremely weathered reddish brown fine grained SANDSTONE.
										20.52	12.35		*Drilling fracture, planar rough, 90°. (12.00m)*
													Natural fracture, undulating smooth, 85°. (12.17m)
													Natural fracture, undulating smooth, 80°. (12.31m)
					12.00 15.00	12	12	5			(2.65)		No recovery.
													Natural fracture, stepped rough, 110°. (12.35m)
													No recovery. (12.35 - 15.00m)
		15.00	SPT(C)	N=50 for 70mm (25,0/50 for 70mm)						17.87	15.00 (0.50)		Medium strong thickly laminated extremely weathered reddish brown fine grained SANDSTONE.
										17.37	15.50		*Natural fracture, stepped smooth, 90°. (15.00m)*
													Natural fracture, undulating smooth, 80°. (15.07 - 15.08m)
													Natural fracture, undulating rough, 100°. (15.15m)
													Natural fracture, undulating rough, 100°. (15.17m)
					15.00 18.00	17	17	7			(2.50)		*Natural fracture, undulating rough, 90°. (15.22m)*
													Natural fracture, undulating rough, 95°. (15.33m)
													Natural fracture, undulating smooth, 90°. (15.44m)
													Natural fracture, undulating rough, 105°. (15.48 - 15.50m)
													No recovery.
													No recovery. (15.50 - 18.00m)
		18.00	SPT(C)	N=50 for 40mm (25,0/50 for 40mm)						14.87	18.00 (0.28)		Medium strong thickly laminated extremely weathered reddish brown fine grained SANDSTONE.
										14.59	18.28 (0.14)		*Natural fracture, undulating smooth, 75°. (18.00 - 18.02m)*
										14.45	18.42 (0.08)		*Natural fracture, undulating smooth, 85°. (18.16m)*
					18.00 21.00	16	15	9		14.37	18.50 (2.50)		Weak thickly laminated extremely weathered reddish brown fine grained SANDSTONE.
													Natural fracture, stepped rough, 80°. (18.28 - 18.29m)
													Non intact. (18.36 - 18.42m)

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 2. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB104
Sheet 3 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383879.00	395776.00	32.87	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
												NR NR NR	Medium strong thickly laminated extremely weathered reddish brown fine grained SANDSTONE.
												NR NR NR	No recovery.
												NR NR NR	*Natural fracture, stepped rough, 90°. (18.50m)*
												NR NR NR	*No recovery. (18.50 - 21.00m)*
		21.00	SPT(C)	N=50 for 65mm (25,0/50 for 65mm)						11.87	21.00		
											(0.50)		Weak thickly laminated extremely weathered reddish brown fine to medium grained SANDSTONE.
										11.37	21.50		*Natural fracture, undulating rough, 85°. (21.00m)*
												NR NR NR	*Natural fracture, undulating rough, 85°. (21.14m)*
												NR NR NR	*Natural fracture, undulating rough, 90°. (21.18m)*
												NR NR NR	*Natural fracture, undulating smooth, 5°. (21.18 - 21.24m)*
					21.00 24.00	16	16	5				NR NR NR	*Natural fracture, undulating rough, 90°. (21.24m)*
												NR NR NR	*Natural fracture, stepped rough, 95°. (21.29 - 21.31m)*
											(2.50)	NR NR NR	*Natural fracture, stepped rough, 50°. (21.38 - 21.43m)*
												NR NR NR	*Natural fracture, undulating rough, 95°. (21.43 - 21.44m)*
												NR NR NR	No recovery.
												NR NR NR	*Natural fracture, undulating rough, 90°. (21.50m)*
												NR NR NR	*No recovery. (21.50 - 24.00m)*
		24.00	SPT(C)	N=50 for 55mm (25,0/50 for 55mm)						8.87	24.00		
											(0.50)		Weak thickly laminated extremely weathered reddish brown fine to medium grained SANDSTONE.
					24.00 25.00	50	30	10		8.37	24.50	NR NR NR	*Non intact. (24.00 - 24.04m)*
											(0.50)	NR NR NR	*Natural fracture, stepped smooth, 90°. (24.13 - 24.16m)*
										7.87	25.00	NR NR NR	*Natural fracture, stepped rough, 90°. (24.23 - 24.24m)*
													Non intact. (24.24 - 24.34m)
													Natural fracture, stepped rough, 95°. (24.34 - 24.35m)
													Non intact. (24.44 - 24.50m)
													No recovery.
													No recovery. (24.50 - 25.00m)
													End of Borehole at 25.00m

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 2. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB105
Sheet 1 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383847.00	395749.00	32.46	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Coring: Core Run	Coring: TCR (%)	Coring: SCR (%)	Coring: RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
											(1.90)		MADE GROUND: Dark brown sandy gravel. Gravel is fine to coarse, angular to subrounded of brick, glass, concrete, plastic, timber and ceramic.
										30.56	1.90		Greyish brown slightly gravelly CLAY with occasional bands of fine to coarse SAND. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
											(6.40)		
										24.16	8.30		Greyish brown SAND AND GRAVEL. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone.
											(0.50)		
										23.66	8.80		No recovery. Assumed uncemented red SANDSTONE (Drillers Logs).
											(1.20)		
										22.46	10.00		

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB105
Sheet 2 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383847.00	395749.00	32.46	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
										22.35	(0.11) 10.11		Red, grey and reddish brown GRAVEL. Gravel is medium to coarse, angular to subrounded of mudstone and sandstone.
											(0.46)		*Non intact. (10.00 - 10.11m)*
										21.89	10.57	NR NR NR	Moderately strong thickly laminated weathered reddish brown fine to coarse grained SANDSTONE.
					10.00 13.00	19	15	0					*Natural fracture, stepped rough, 85°. (10.16 - 10.17m)*
													Natural fracture, stepped rough, 85°. (10.21 - 10.22m)
													Natural fracture, undulating rough, 95°. (10.25m)
											(2.43)		*Natural fracture, undulating smooth, 80°. (10.34 - 10.35m)*
													Natural fracture, undulating rough, 170°. (10.35 - 10.43m)
													Natural fracture, stepped rough, 85°. (10.43m)
													Natural fracture, stepped rough, 90°. (10.51m)
		13.00	SPT(C)	N=50 for 85mm (16,9/41,9 for 10mm)						19.46	13.00		No recovery.
													Natural fracture, undulating smooth, 100°. (10.57m)
											(0.72)		*No recovery. (10.57 - 13.00m)*
										18.74	13.72	NR NR NR	Moderately weak thickly bedded weathered reddish brown fine grained SANDSTONE.
					13.00 16.00	24	21	11					*Natural fracture, stepped rough, 70°. (13.00 - 13.02m)*
													Natural fracture, stepped rough, 95°. (13.05 - 13.06m)
													Natural fracture, stepped rough, 110°. (13.14 - 13.17m)
													Drilling fracture, planar rough, 100°. (13.20 - 13.21m)
											(2.28)		*Natural fracture, stepped smooth, 100°. (13.25 - 13.26m)*
													Natural fracture, stepped rough, 80°. (13.39 - 13.41m)
													Natural fracture, stepped rough, 100°. (13.41 - 13.51m)
													Natural fracture, planar rough, 5°. (13.51 - 13.54m)
													Non intact. (13.63 - 13.72m)
		16.00	SPT(C)	N=50 for 65mm (25,0/50 for 65mm)						16.46	16.00		No recovery.
													No recovery. (13.72 - 16.00m)
											(1.00)		Moderately weak thinly bedded weathered reddish brown medium grained SANDSTONE.
													Natural fracture, undulating rough, 90°. (16.00m)
										15.46	17.00	NR NR NR	*Natural fracture, undulating rough, 95°. (16.18m)*
													Natural fracture, stepped rough, 90°. (16.23 - 16.25m)
					16.00 19.00	33	32	14					*Natural fracture, stepped rough, 100°. (16.30 - 16.32m)*
													Natural fracture, undulating rough, 80°. (16.39 - 16.40m)
													Drilling fracture, undulating smooth, 85°. (16.55m)
													Natural fracture, undulating rough, 90°. (16.59m)
											(3.00)		*Natural fracture, planar rough, 95°. (16.70m)*
													Natural fracture, undulating rough, 100°. (16.74m)
													Natural fracture, stepped rough, 95°. (16.81 - 16.83m)
		19.00	SPT(C)	N=50 for 60mm (19,6/50 for 60mm)									*Natural fracture, planar rough, 70°. (16.91 - 16.94m)*
													Natural fracture, stepped rough, 70°. (16.97 - 17.00m)
					19.00 22.00	21	19	4					No recovery.
													No recovery. (17.00 - 20.00m)
										12.46	20.00		

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB105
Sheet 3 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383847.00	395749.00	32.46	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
										12.29	(0.17) 20.17	NR NR NR	Moderately weak very thinly bedded extremely weathered reddish brown medium grained SANDSTONE.
												NR NR NR	*Non intact. (20.00 - 20.05m)*
											(0.83)	NR NR NR	*Natural fracture, undulating smooth, 90°. (20.09m)*
												NR NR NR	*Natural fracture, undulating rough, 95°. (20.14m)*
										11.46	21.00	NR NR NR	*Natural fracture, undulating smooth, 80°. (20.16 - 20.17m)*
											(0.45)		No recovery.
										11.01	21.45	NR NR NR	*No recovery. (20.17 - 21.00m)*
											(0.55)	NR NR NR	Medium strong very thinly bedded extremely weathered reddish brown medium grained SANDSTONE.
		22.00	SPT(C)	N=50 for 55mm (25,0/50 for 55mm)						10.46	22.00	NR NR NR	*Natural fracture, stepped rough, 140°. (21.00 - 21.05m)*
											(0.45)		*Natural fracture, undulating rough, 80°. (21.05m)*
										10.01	22.45	NR NR NR	*Natural fracture, undulating rough, 95°. (21.10m)*
											(0.55)	NR NR NR	*Natural fracture, stepped rough, 90°. (21.17 - 21.20m)*
												NR NR NR	*Natural fracture, undulating smooth, 95°. (21.22m)*
										9.46	23.00		*Natural fracture, planar rough, 95°. (21.26m)*
					22.00 25.00	48	46	28			(0.50)		*Natural fracture, planar rough, 95°. (21.29m)*
										8.96	23.50	NR NR NR	*Natural fracture, stepped rough, 95°. (21.41 - 21.42m)*
											(0.50)	NR NR NR	*Natural fracture, stepped rough, 85°. (21.44 - 21.45m)*
												NR NR NR	No recovery.
										8.46	24.00		*No recovery. (21.45 - 22.00m)*
											(0.50)		Medium strong very thinly bedded extremely weathered reddish brown medium grained SANDSTONE.
										7.96	24.50	NR NR NR	*Natural fracture, undulating smooth, 90°. (22.03 - 22.04m)*
											(0.50)	NR NR NR	*Natural fracture, undulating smooth, 90°. (22.10m)*
												NR NR NR	*Non intact. (22.13 - 22.16m)*
										7.46	25.00		*Natural fracture, undulating smooth, 85°. (22.16m)*
													Natural fracture, undulating rough, 90°. (22.23m)
													Natural fracture, stepped smooth, 100°. (22.33 - 22.35m)
													Natural fracture, undulating rough, 85°. (22.39m)
													No recovery.
													Natural fracture, undulating rough, 85°. (22.45m)
													No recovery. (22.45 - 23.00m)
													Medium strong very thinly bedded extremely weathered reddish brown medium grained SANDSTONE.
													Non intact. (23.00 - 23.03m)
													Natural fracture, undulating rough, 95°. (23.13 - 23.14m)
													Natural fracture, planar rough, 165°. (23.16 - 23.22m)
													Natural fracture, stepped rough, 95°. (23.22 - 23.24m)
													Natural fracture, undulating rough, 95°. (23.35 - 23.36m)
													Natural fracture, stepped rough, 95°. (23.40 - 23.43m)
													Natural fracture, planar rough, 160°. (23.47 - 23.50m)
													No recovery.

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 3. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB106
Sheet 1 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383846.00	395710.00	32.43	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Coring: Core Run	Coring: TCR (%)	Coring: SCR (%)	Coring: RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
											(1.90)		MADE GROUND: Dark brown sandy gravel. Gravel is fine to coarse, angular to subrounded of brick, glass, concrete, plastic, timber and ceramic.
										30.53	1.90 (0.20)		MADE GROUND: Concrete.
										30.33	2.10		Greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
											(6.30)		
										24.03	8.40 (0.40)		Reddish brown gravelly fine to coarse SAND. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone.
										23.63	8.80		No recovery. Assumed uncemented red SANDSTONE (Drillers Logs).
					9.00 12.00	0	0	0			(3.20)		*No recovery. (9.00 - 12.00m)*
													Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring well installed. 5. Response zone 4.00-10.00 m bgl. 6. Hand pitted to 1.20 m bgl. 5. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB106
Sheet 2 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383846.00	395710.00	32.43	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client Shepherd Gilmour Infrastructure Limited
Consultant G. Snape
Contractor DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
													As previous page.
		12.00	SPT(C)	N=50 for 70mm (25,0/50 for 70mm)						20.43	12.00 (0.20)		Uncemented red SANDSTONE. Recovered as dense reddish brown fine to medium SAND.
										20.23	12.20 (0.40)		*Non intact. (12.00 - 12.22m)*
					12.00 15.00	20	12	5		19.83	12.60 (2.40)	NR NR NR	Weak very thinly bedded extremely weathered reddish brown fine to medium grained SANDSTONE. *Natural fracture, undulating rough, 100°. (12.22 - 12.23m)* *Non intact. (12.27 - 12.29m)* *Non intact. (12.35 - 12.37m)* *Natural fracture, stepped smooth, 95°. (12.52 - 12.54m)*
		15.00	SPT(C)	N=50 for 55mm (25,0/50 for 55mm)						17.43	15.00 (0.78)		No recovery. *Natural fracture, undulating smooth, 95°. (12.60m)* *No recovery. (12.60 - 15.00m)* Medium strong thinly bedded weathered reddish brown fine to medium grained SANDSTONE. *Non intact. (15.00 - 15.05m)* *Natural fracture, stepped smooth, 95°. (15.14m)*
					15.00 18.00	26	24	4		16.65	15.78 (2.22)	NR NR NR	*Natural fracture, undulating rough, 100°. (15.23 - 15.24m)* *Natural fracture, stepped rough, 85°. (15.33m)* *Natural fracture, undulating rough, 85°. (15.41m)* *Natural fracture, stepped rough, 100°. (15.54 - 15.55m)* *Natural fracture, stepped smooth, 85°. (15.60 - 15.61m)* *Natural fracture, stepped rough, 95°. (15.66 - 15.67m)* *Natural fracture, undulating smooth, 95°. (15.73m)*
		18.00	SPT(C)	N=50 for 40mm (25,0/50 for 40mm)						14.43	18.00 (0.92)		No recovery. *Natural fracture, stepped smooth, 90°. (15.78m)* *No recovery. (15.78 - 18.00m)* Medium strong thinly bedded weathered reddish brown fine to medium grained SANDSTONE. *Natural fracture, undulating rough, 80°. (18.00m)*
					18.00 21.00	31	31	24		13.51	18.92 (2.08)	NR NR NR	*Natural fracture, planar rough, 95°. (18.29 - 18.30m)* *Natural fracture, undulating rough, 95°. (18.52m)* *Drilling fracture, planar rough, 95°. (18.55m)* *Natural fracture, stepped rough, 100°. (18.66 - 18.67m)* *Natural fracture, stepped rough, 45°. (18.67 - 18.73m)*

Continued on next page

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring well installed. 5. Response zone 4.00-10.00 m bgl. 6. Hand pitted to 1.20 m bgl. 5. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Rotary Core Log

RB106
Sheet 3 of 3

Hole Type	Easting	Northing	Ground Level (m)	Scale
RC	383846.00	395710.00	32.43	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Coring: Core Run	TCR (%)	SCR (%)	RQD (%)	Frac	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
												NR NR NR	*Natural fracture, undulating rough, 90°. (18.73m)*
												NR NR NR	*Natural fracture, stepped smooth, 70°. (18.82 - 18.84m)*
												NR NR NR	*Natural fracture, planar rough, 70°. (18.90 - 18.92m)*
		21.00	SPT(C)	N=50 for 50mm (25,0/50 for 50mm)						11.43	21.00	NR NR NR	No recovery.
													No recovery. (18.92 - 21.00m)
											(0.62)		Medium strong very thinly bedded brown mottled reddish brown medium grained SANDSTONE.
										10.81	21.62	NR NR NR	*Non intact. (21.00m)*
												NR NR NR	*Natural fracture, planar rough, 90°. (21.16m)*
												NR NR NR	*Natural fracture, undulating rough, 85°. (21.26 - 21.27m)*
					21.00 24.00	21	21	12				NR NR NR	*Natural fracture, undulating rough, 80°. (21.37 - 21.38m)*
											(2.38)	NR NR NR	*Natural fracture, undulating rough, 95°. (21.41 - 21.42m)*
												NR NR NR	*Natural fracture, planar rough, 110°. (21.50 - 21.51m)*
												NR NR NR	No recovery.
												NR NR NR	*Natural fracture, undulating rough, 95°. (21.62m)*
												NR NR NR	*No recovery. (21.62 - 24.00m)*
		24.00	SPT(C)	N=50 for 35mm (25,0/50 for 35mm)						8.43	24.00		Medium strong very thinly bedded brown mottled reddish brown medium grained SANDSTONE.
					24.00 25.00	50	50	50			(1.00)		*Drilling fracture, planar rough, 90°. (24.00m)*
													Natural fracture, undulating rough, 90°. (24.11m)
													Natural fracture, planar rough, 100°. (24.25 - 24.26m)
										7.43	25.00		*Natural fracture, undulating smooth, 100°. (24.50m)*
													No recovery.
													End of Borehole at 25.00m

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring well installed. 5. Response zone 4.00-10.00 m bgl. 6. Hand pitted to 1.20 m bgl. 5. Poor core recovery due to uncemented sandstone.

Method, Plant, Stability, Dimensions
0.00 - 25.00m RC

Logger
G. Snape

Trial Pit

TP101
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	383852.00	395815.00	32.62	1:25

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.10	ES			(0.30)		MADE GROUND: Brown gravelly fine to medium sand with occasional rootlets and cobbles (Reworked Topsoil). Gravel is fine to coarse, angular to subrounded of mudstone, sandstone, brick, concrete, glass and rare metal. Cobbles are angular of brick and concrete.
					32.32	0.30		
						(0.10)		MADE GROUND: Black mottled grey gravel with frequent cobbles. Gravel is medium to coarse, angular to subrounded of sandstone, concrete and bitumen. Cobbles are angular to subrounded of sandstone and concrete.
					32.22	0.40		
		0.60	ES+L			(0.45)		MADE GROUND: Black mottled brown slightly clayey sandy gravel with high ash content. Gravel is fine to coarse, angular to subrounded of mudstone, sandstone, brick, concrete and rare clinker and coal.
					31.77	0.85		Soft orange mottled grey very sandy slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded of mudstone and sandstone.
						(1.05)		
					30.72	1.90		Firm to stiff grey slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
		2.30	B			(0.95)		
					29.77	2.85		*End of Trial Pit at 2.85m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Bitumen bonded cobble path encountered between 0.30-0.40 m bgl. 5. Hydrocarbon sheen encountered between 0.40-0.85 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.85m TP
STABLE
L = 2.00m
W = 0.50m

Logger
G. Snape

Trial Pit

TP102
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	383868.00	395813.00	32.73	1:25

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
					32.63	(0.10) 0.10		MADE GROUND: Brown slightly gravelly fine to medium sand with occasional rootlets (Reworked Topsoil). Gravel is fine to coarse, subangular to subrounded of concrete, mudstone and sandstone.
						(0.90)		MADE GROUND: Black, brown and grey multicoloured slightly sandy gravel with high ash content. Gravel is fine to coarse, very angular to subrounded of brick, mudstone, sandstone, glass and rare metal.
					31.73	1.00		MADE GROUND: Black, orange and grey multicoloured gravelly sandy clay. Gravel is fine to coarse, angular to subrounded of mudstone, sandstone, brick and rare timber.
						(0.60)		
		2.20	ES		31.13	1.60		Firm to stiff grey slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
						(1.15)		
					29.98	2.75		*End of Trial Pit at 2.75m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Brick and concrete foundations encountered between 0.30-1.20 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.75m TP
STABLE
L = 2.00m
W = 0.50m

Logger
G. Snape

Trial Pit

TP103
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	383868.00	395779.00	32.69	1:25

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
		0.20	ES			(0.40)		MADE GROUND: Dark brown slightly gravelly fine to medium sand with occasional rootlets. Gravel is fine to medium, angular to subrounded of metal, brick, plastic, mudstone, sandstone, slate and concrete.
					32.29	0.40		
		0.50	ES			(0.20)		MADE GROUND: Dark brown gravelly fine to medium sand with high ash content. Gravel is fine to coarse, angular to subrounded of mudstone, sandstone, clinker, brick, ceramic and glass.
					32.09	0.60		Yellow mottled grey clayey sandy GRAVEL. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone.
		1.40	B			(1.40)		
	▽				30.69	2.00		Firm to stiff grey slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
						(0.80)		
					29.89	2.80		*End of Trial Pit at 2.80m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. Water strike with slow ingress encountered at 2.00 m bg. 4. Potential brick foundations encountered between 0.40-0.50 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.80m TP
STABLE
L = 2.00m
W = 0.50m

Logger
G. Snape

Trial Pit

TP104
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	383852.00	395772.00	32.73	1:25

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.20)		MADE GROUND: Brown gravelly fine to medium sand with occasional rootlets (Reworked Topsoil). Gravel is fine to coarse, angular to subrounded of brick, mudstone, sandstone, slate, ceramic, concrete and rare metal.
					32.53	0.20		
						(0.10)		
		0.30	B		32.43	0.30		MADE GROUND: Light brown slightly sandy gravel. Gravel is fine to coarse, angular to rounded of sandstone, mudstone, brick and ceramic.
						(0.70)		MADE GROUND: Red mottled brown sandy gravel with frequent cobbles. Gravel is fine to coarse, angular to subrounded of brick, mudstone and sandstone. Cobbles are subangular of brick.
					31.73	1.00		Orange mottled grey clayey fine to medium SAND.
						(0.70)		
					31.03	1.70		Firm to stiff grey slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
						(0.40)		
					30.63	2.10		*End of Trial Pit at 2.10m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Brick foundations encountered between 0.30-1.10 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.10m TP
STABLE
L = 2.00m
W = 0.50m

Logger
G. Snape

Trial Pit

TP105
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	383876.00	395793.00	32.61	1:25

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.20)		MADE GROUND: Brown slightly gravelly fine to medium sand with occasional rootlets (Reworked Topsoil). Gravel is fine to coarse, subangular to subrounded of brick, mudstone and sandstone.
					32.41	0.20		
						(0.40)		MADE GROUND: Dark brown mottled red gravelly fine to medium sand. Gravel is fine to coarse, angular to subrounded of mudstone, sandstone, brick, metal, ceramic, concrete, plastic and rare timber.
					32.01	0.60		*End of Trial Pit at 0.60m*

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0

Remarks
1. Terminated at 0.60 m bgl due to potential services including wire and water pipe. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Brick and concrete foundations encountered between 0.20-0.60 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 0.60m TP
STABLE
L = 2.00m
W = 0.50m

Logger
G. Snape

Trial Pit

TP106
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	383854.00	395753.00	32.56	1:25

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
					32.26	(0.30) 0.30		MADE GROUND: Dark brown gravelly fine to medium sand with frequent rootlets. Gravel is fine to coarse, angular to subrounded of brick, glass, concrete, plastic, timber and ceramic.
						(0.80)		MADE GROUND: Orangish brown gravelly clay with occasional cobbles and high ash content. Gravel is fine to coarse, angular to subrounded of brick, mudstone, sandstone, concrete, coal, slate and ceramic. Cobbles are angular of brick.
		1.60	ES		31.46	1.10		Greyish brown very clayey gravelly fine to coarse SAND. Gravel is fine to coarse, subangular to subrounded of mudstone and sandstone.
						(0.80)		
					30.66	1.90		Firm to stiff grey slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
						(0.50)		
					30.16	2.40		*End of Trial Pit at 2.40m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Brick foundations encountered between 0.60-1.10 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.40m TP
STABLE
L = 2.00m
W = 0.50m

Logger
G. Snape

Trial Pit

TP107
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	383850.00	395735.00	32.51	1:25

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
					32.11	(0.40) 0.40		MADE GROUND: Dark brown gravelly fine to medium sand with frequent rootlets (Reworked Topsoil). Gravel is fine to coarse, angular to subrounded of brick, slate, mudstone, sandstone, ceramic, glass and rare metal.
					31.11	(1.00) 1.40		MADE GROUND: Grey, brown and red multicoloured sandy gravel with frequent cobbles. Gravel is fine to coarse, angular to subrounded of brick, concrete, mudstone and sandstone. Cobbles are subangular of brick and concrete.
		2.20	B		30.61	(0.50) 1.90		Orange mottled grey slightly gravelly sandy CLAY. Gravel is fine to coarse, subangular to subrounded of mudstone and sandstone.
					30.11	(0.50) 2.40		Firm to stiff grey slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
								End of Trial Pit at 2.40m

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Brick and concrete foundations encountered between 0.40-1.40 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 2.40m TP
STABLE
L = 2.00m
W = 0.50m

Logger
G. Snape

Trial Pit

TP108
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	383849.00	395720.00	32.51	1:25

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-23	2025-06-23

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.30)		MADE GROUND: Dark brown slightly clayey gravelly fine to medium sand with occasional rootlets. Gravel is fine to coarse, angular to subrounded of brick, concrete, timber, ceramic, glass, mudstone and sandstone.
					32.21	0.30		MADE GROUND: Red mottled brown sandy gravel with frequent cobbles. Gravel is fine to coarse, angular to rounded of brick, concrete, mudstone, sandstone, ceramic and rare metal, plastic and fabric. Cobbles are angular of brick.
		1.20	ES+L			(1.20)		
					31.01	1.50		*End of Trial Pit at 1.50m*

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

Remarks
1. Terminated at 1.50 m bgl due to electrical service tape. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Potential brick and concrete foundations encountered between 0.30-1.50 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 1.50m TP
STABLE
L = 2.00m
W = 0.50m

Logger
G. Snape

Window Sampler

WS101
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	383861.00	395814.00	32.64	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.15	ES		32.39	(0.25) 0.25		MADE GROUND: Brown gravelly fine to coarse sand with occasional rootlets (Reworked Topsoil). Gravel is fine to coarse, angular to subrounded of mudstone, sandstone, brick and rare slate.
					32.19	(0.20) 0.45		MADE GROUND: Light brown sandy gravel. Gravel is fine to coarse, subangular to rounded of sandstone and rare ceramic and brick.
		1.00	SPT	N=10 (4,4/3,2,3,2)		(0.95)		MADE GROUND: Medium dense red slightly sandy gravel with occasional cobbles. Gravel is fine to coarse, angular to subrounded of brick and rare slate and sandstone. Cobbles are subangular of brick.
					31.24	1.40 (0.20)		MADE GROUND: Greyish brown slightly gravelly clay with occasional cobbles. Gravel is fine to coarse, angular to subrounded of brick, mudstone, sandstone and rare coal. Cobbles are subangular of brick.
	▽	2.00	SPT	N=4 (1,1/1,1,1,1)	31.04	1.60		Very stiff very high strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
						(1.40)		
		3.00	SPT	N=14 (2,3/3,3,4,4)	29.64	3.00		Stiff medium strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
						(1.00)		
		4.00	SPT	N=18 (3,3/4,4,5,5)	28.64	4.00		Very stiff high strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
		4.50	ES			(1.45)		
		5.00	SPT	N=22 (3,3/4,4,6,8)				
					27.19	5.45		*End of Borehole at 5.45m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. Water strike with moderate ingress encountered at 2.10 m bgl. 4. Monitoring well installed. 5. Response zone 1.60-5.10 m bgl. 6. Dynamic probing between 5.45-6.90 m bgl

Method, Plant, Stability, Dimensions
0.00 - 5.45m WS

Logger
G. Snape

Dynamic Probe

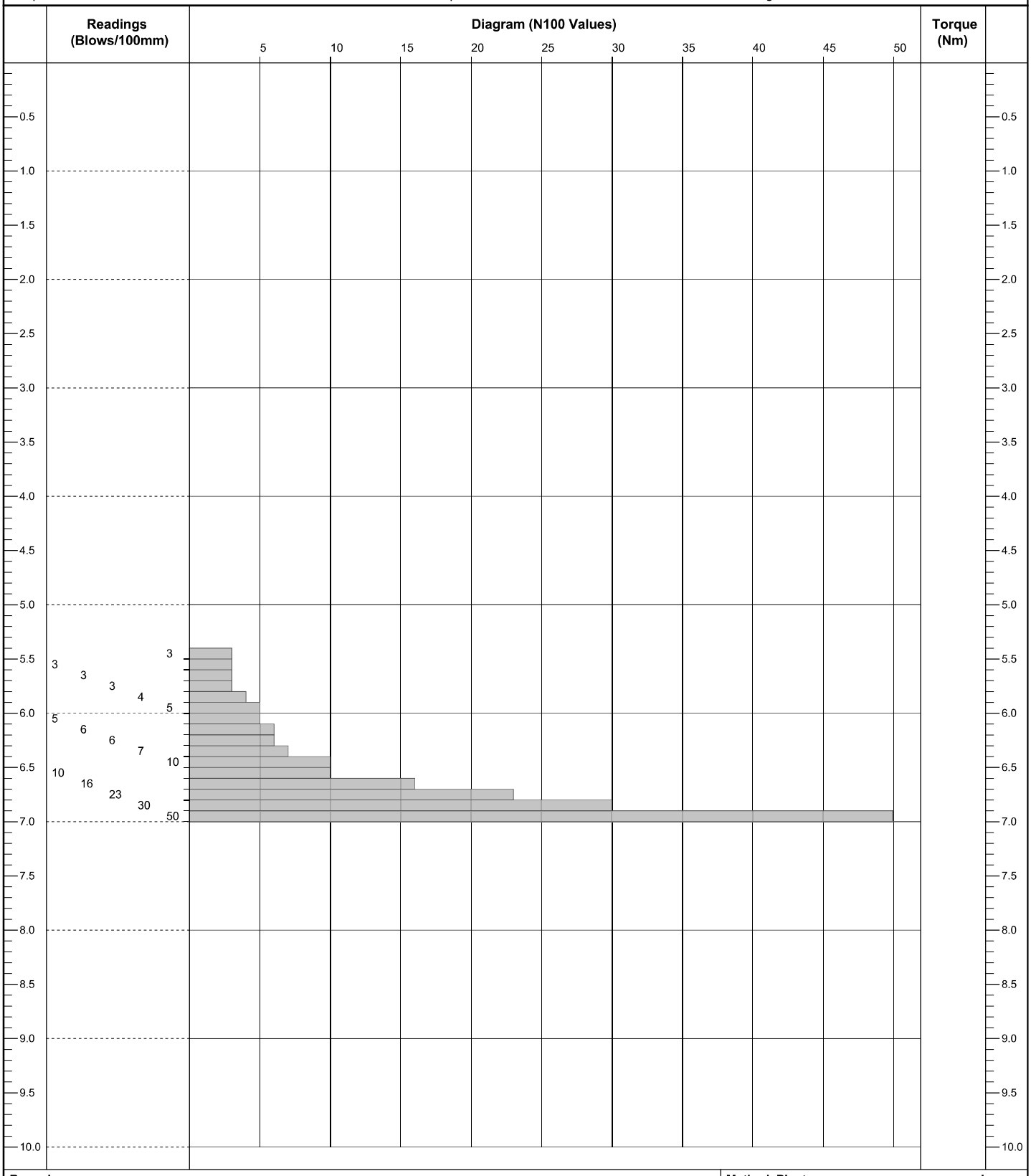
WS101 DP

Sheet 1 of 1

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPSH	383861.00	395814.00		1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client	Consultant	Contractor
Shepherd Gilmour Infrastructure Limited	G. Snape	DP Drilling Limited



Remarks

Method, Plant
5.45 - 6.90m DP

Logger
G. Snape

Hammer Weight (kg)
Hammer Drop (mm)
Cone Diameter (mm)
Cone Angle
Rod Diameter (mm)
Damper

Window Sampler

WS102
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	383874.00	395799.00	32.58	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES		32.38	(0.20) 0.20		MADE GROUND: Brown slightly gravelly fine to medium sand with occasional rootlets (Reworked Topsoil). Gravel is fine to medium, angular to subrounded of mudstone and sandstone.
		1.00	SPT	N=10 (1,8/4,2,2,2)		(1.90)		MADE GROUND: Medium dense red, grey and brown multicoloured sandy gravel with frequent cobbles. Gravel is fine to coarse angular to subrounded of concrete, brick, mudstone, sandstone, glass, slate and rare plastic. Cobbles are angular to subangular of brick and concrete.
		1.50	ES+L					
		2.00	SPT	N=8 (2,2/2,2,2,2)	30.48	2.10		Firm low strength greyish brown slightly sandy gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
		2.80	ES			(0.90)		
		3.00	SPT	N=14 (2,3/3,3,4,4)	29.58	3.00		Stiff medium strength greyish brown slightly sandy gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
	▽	4.00	SPT	N=15 (3,3/3,3,4,5)		(2.00)		
		5.00	SPT	N=21 (3,4/5,5,5,6)	27.58	5.00		Very stiff high strength greyish brown slightly sandy gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
						(0.45)		
					27.13	5.45		*End of Borehole at 5.45m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. Water strike with slow ingress encountered at 4.20 m bgl. 4. Dynamic probing between 5.45-7.70 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 5.45m WS

Logger
G. Snape

Dynamic Probe

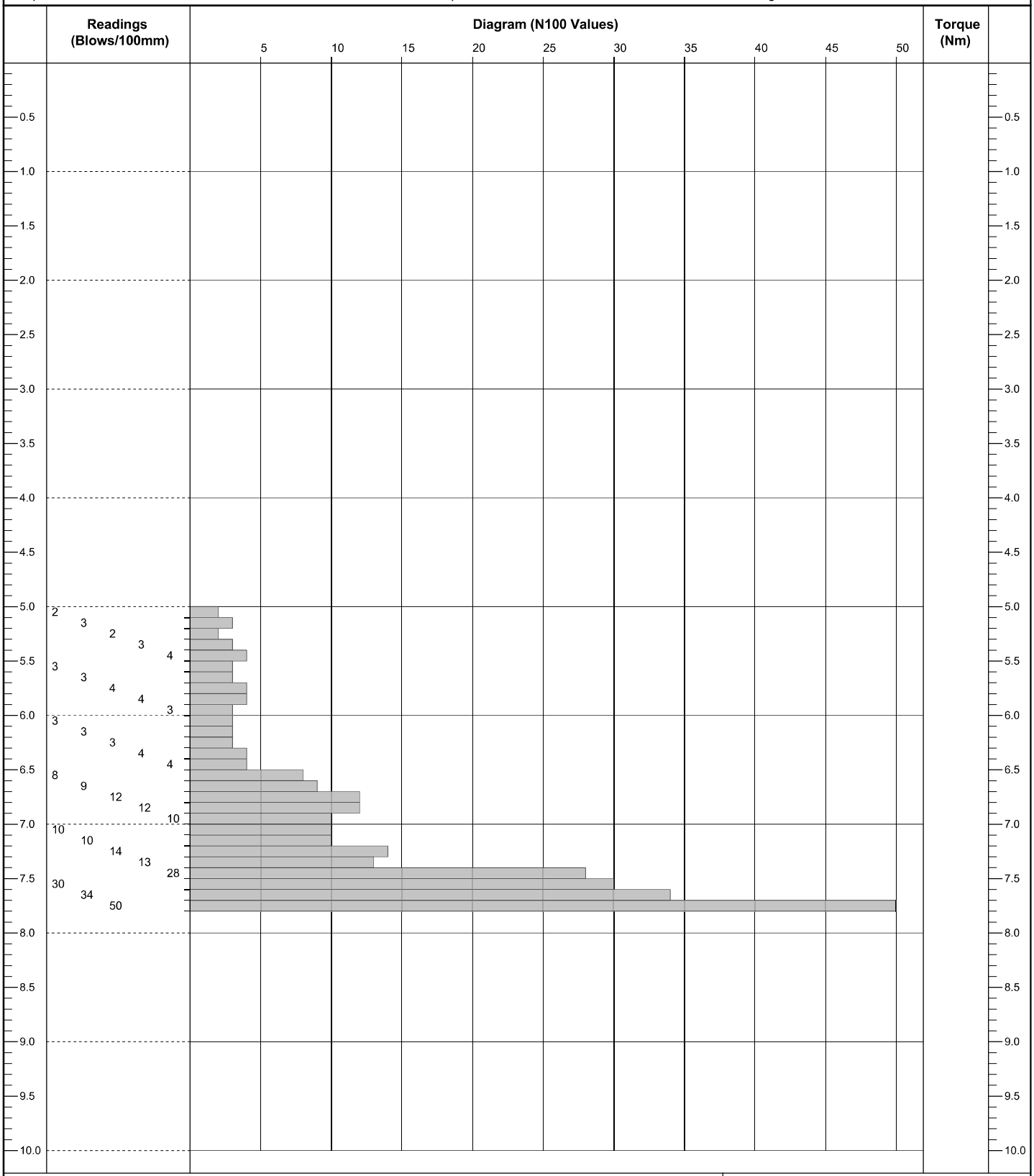
WS102 DP

Sheet 1 of 1

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPSH	383874.00	395799.00		1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client	Consultant	Contractor
Shepherd Gilmour Infrastructure Limited	G. Snape	DP Drilling Limited



Remarks

Method, Plant
5.45 - 7.70m DP

Logger
G. Snape

Hammer Weight (kg)
Hammer Drop (mm)
Cone Diameter (mm)
Cone Angle
Rod Diameter (mm)
Damper

Window Sampler

WS103
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	383880.00	395786.00	32.71	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES		32.61	(0.10) 0.10		MADE GROUND: Brown slightly gravelly fine to medium sand with occasional rootlets (Reworked Topsoil). Gravel is fine to medium, subangular to subrounded of sandstone and rare plastic.
		1.00	SPT	N=6 (1,1/2,2,1,1)		(2.00)		MADE GROUND: Loose red mottled greyish brown sandy gravel with high ash content. Gravel is fine to coarse, angular to subrounded of brick, slate, glass, sandstone and concrete.
		1.70	ES+L					
		2.00	SPT	N=8 (1,1/1,2,2,3)	30.61	2.10		Firm low strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
		2.50-3.00	U			(0.90)		
		3.00	SPT	N=20 (4,4/4,4,6,6)	29.71	3.00		Very stiff high strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
		4.00	SPT	N=30 (6,6/6,8,8,8)		(2.45)		
		5.00	SPT	N=35 (8,8/8,8,9,10)				
					27.26	5.45		*End of Borehole at 5.45m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring well installed. 5. Response zone 0.50-2.00 m bgl. 6. Dynamic probing between 5.45-8.00 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 5.45m WS

Logger
G. Snape

Dynamic Probe

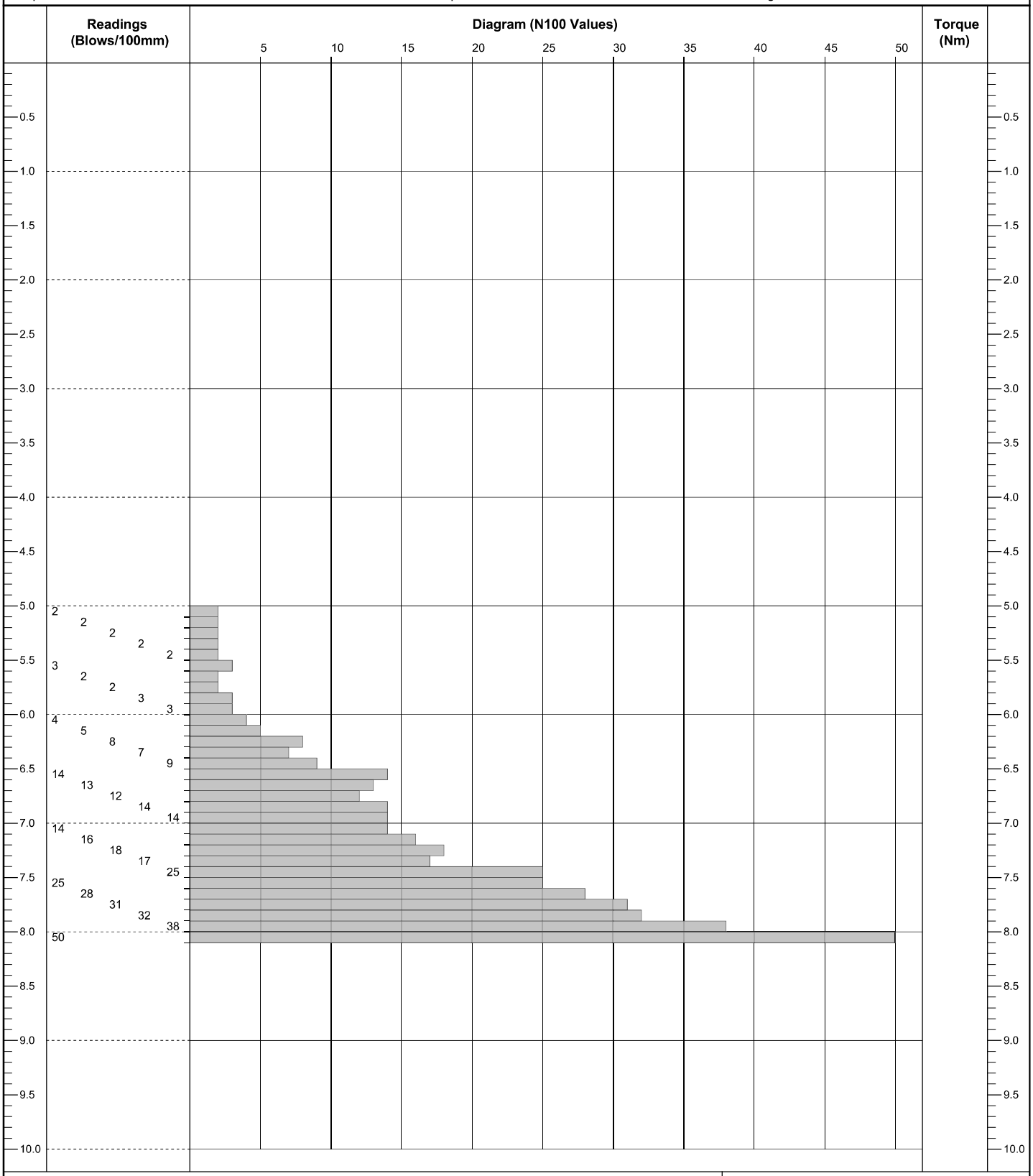
WS103 DP

Sheet 1 of 1

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPSH	383880.00	395786.00		1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client	Consultant	Contractor
Shepherd Gilmour Infrastructure Limited	G. Snape	DP Drilling Limited



Remarks

Method, Plant
5.45 - 8.00m DP

Logger
G. Snape

Hammer Weight (kg)
Hammer Drop (mm)
Cone Diameter (mm)
Cone Angle
Rod Diameter (mm)
Damper

Window Sampler

WS104
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	383872.00	395768.00	32.88	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.10	ES		32.78	(0.10) 0.10		MADE GROUND: Brown very clayey slightly gravely fine to medium sand with occasional rootlets (Reworked Topsoil). Gravel is fine to medium, angular to subrounded of brick and mudstone.
						(1.00)		MADE GROUND: Red, cream and brown multicoloured clayey sandy gravel with occasional cobbles. Gravel is fine to coarse, angular to rounded of brick sandstone, concrete, mudstone and rare plastic. Cobbles are subangular to brick.
		1.00	SPT	N=4 (1,1/1,1,1,1)	31.78	1.10		MADE GROUND: Firm low strength blackish brown sandy slightly gravelly clay. Gravel is fine to medium, angular to subrounded of coal, mudstone and sandstone.
						(0.70)		
					31.08	1.80 (0.20)		MADE GROUND: Orangish brown very sandy gravelly clay. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone.
		2.00	SPT	N=7 (1,1/1,2,2,2)	30.88	2.00 (0.20)		
					30.68	2.20		MADE GROUND: Soft blackish brown sandy slightly gravelly clay. Gravel is fine to medium, angular to subrounded of coal, mudstone and sandstone.
						(0.80)		Firm low strength greyish brown slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
		3.00	SPT	N=15 (2,2/3,3,4,5)	29.88	3.00		Stiff medium strength greyish brown slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
		3.60	ES					
		4.00	SPT	N=16 (3,3/4,4,4,4)		(2.00)		
		5.00	SPT	N=21 (3,4/4,4,6,7)	27.88	5.00		Very stiff high strength greyish brown slightly gravelly CLAY. Gravel is fine to medium, angular to rounded of mudstone, sandstone and rare coal.
						(0.45)		
					27.43	5.45		*End of Borehole at 5.45m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring well installed. 5. Response zone 2.20-5.20 m bgl. 5. Dyanmic probing between 5.45-7.90 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 5.45m WS

Logger
G. Snape

Dynamic Probe

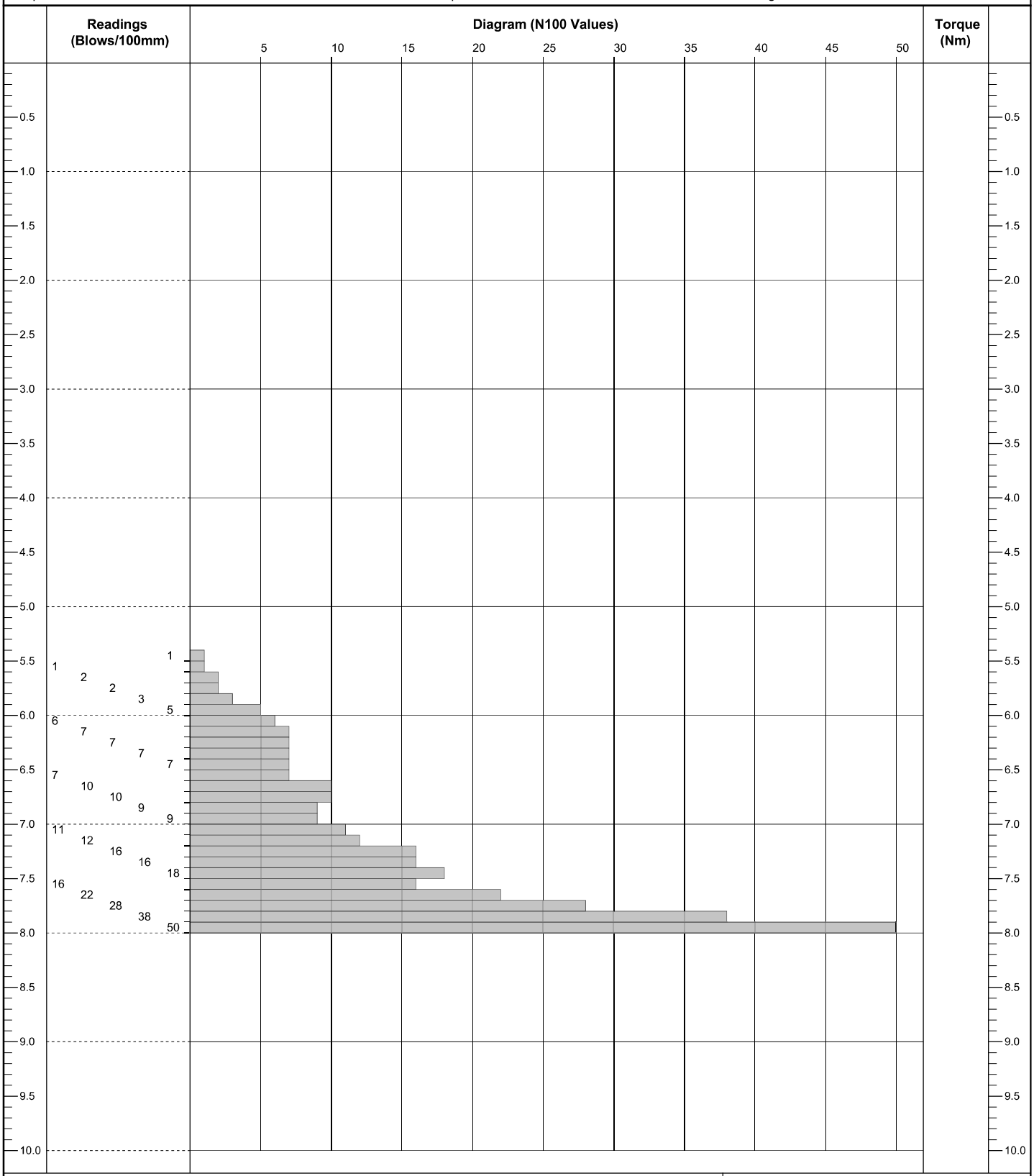
WS104 DP

Sheet 1 of 1

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPSH	383872.00	395768.00		1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client	Consultant	Contractor
Shepherd Gilmour Infrastructure Limited	G. Snape	DP Drilling Limited



Remarks

Method, Plant
5.45 - 7.90m DP

Logger
G. Snape

Hammer Weight (kg)
Hammer Drop (mm)
Cone Diameter (mm)
Cone Angle
Rod Diameter (mm)
Damper

Window Sampler

WS105
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	383860.00	395763.00	32.68	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
					32.48	(0.20) 0.20		MADE GROUND: Brown gravelly fine to coarse sand with occasional rootlets (Reworked Topsoil). Gravel is fine to coarse, angular to subrounded of brick, glass, mudstone, sandstone and rare concrete.
						(0.40)		
		0.60	ES		32.08	0.60		MADE GROUND: Blackish brown very sandy gravel. Gravel is fine to coarse, very angular to subrounded of slate, brick, sandstone, coal, glass and rare mudstone.
						(0.40)		
		1.00	SPT	N=4 (2,1/1,1,1,1)	31.68	1.00		MADE GROUND: Red, black and brown multicoloured sandy gravelly clay with low ash content. Gravel is fine to coarse, angular to subrounded of brick, coal, mudstone and sandstone.
						(0.40)		
					31.28	1.40		Firm low strength greyish brown silty CLAY.
						(0.90)		Loose light greyish brown clayey fine to coarse SAND.
		2.00	SPT	N=9 (2,2/2,2,2,3)				
					30.38	2.30		Stiff medium strength greyish brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
		3.00	SPT	N=14 (2,2/3,3,3,5)				
						(3.15)		
		4.00	SPT	N=13 (2,2/2,3,4,4)				
		5.00	SPT	N=17 (3,3/3,4,4,6)				
					27.23	5.45		*End of Borehole at 5.45m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Dynamic probing between 5.45-7.40 m bgl.

Method, Plant, Stability, Dimensions
0.00 - 5.45m WS

Logger
G. Snape

Dynamic Probe

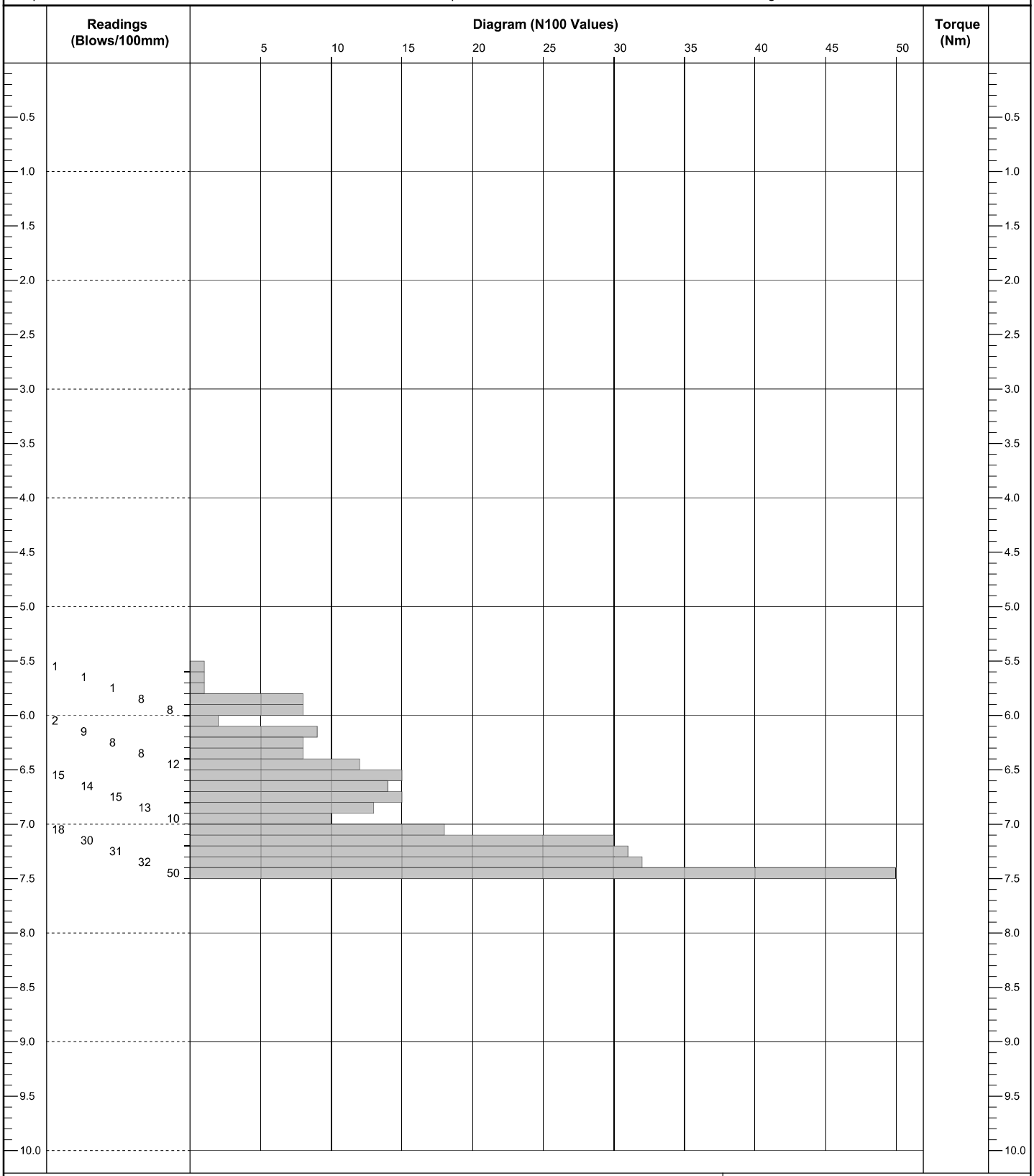
WS105 DP

Sheet 1 of 1

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPSH	383860.00	395763.00		1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-25	2025-06-25

Client	Consultant	Contractor
Shepherd Gilmour Infrastructure Limited	G. Snape	DP Drilling Limited



Remarks

Method, Plant
5.45 - 7.40m DP

Logger
G. Snape

Hammer Weight (kg)
Hammer Drop (mm)
Cone Diameter (mm)
Cone Angle
Rod Diameter (mm)
Damper

Window Sampler

WS106
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS	383857.00	395725.00	32.45	1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client
Shepherd Gilmour Infrastructure Limited

Consultant
G. Snape

Contractor
DP Drilling Limited

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.15	ES		32.25	(0.20) 0.20		MADE GROUND: Brown gravelly fine to medium sand with frequent rootlets (Reworked Topsoil). Gravel is fine to coarse, angular to subrounded of brick, mudstone, sandstone and rare glass.
		0.90 1.00	ES+L SPT	N=9 (2,2/2,2,2,3)	31.55	(0.70) 0.90		MADE GROUND: Brown sandy clayey gravel with occasional cobbles. Gravel is fine to coarse, very angular to subrounded of brick, glass, slate, ceramic, mudstone, sandstone and rare coal. Cobbles are subangular of brick.
					30.95	(0.60) 1.50		MADE GROUND: Stiff medium strength brown sandy gravelly clay. Gravel is fine to coarse, subangular to subrounded of mudstone, sandstone and rare brick.
					30.65	(0.30) 1.80		Light brown slightly clayey fine to medium SAND.
		2.00	SPT	N=8 (2,2/2,2,2,2)	30.25	(0.40) 2.20		Orange, brown and grey multicoloured gravelly sandy CLAY. Gravel is fine to coarse, subangular to rounded of mudstone and sandstone.
						(0.80)		Firm low strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
		3.00	SPT	N=16 (3,3/3,4,4,5)	29.45	3.00		Stiff medium strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
		3.50-4.00	U			(1.00)		
		4.00	SPT	N=8 (3,2/2,2,2,2)	28.45	4.00		
					28.25	(0.20) 4.20		Firm low strength greyish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded of mudstone, sandstone and coal.
							NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR NR	No recovery.
		5.00	SPT	N=17 (2,2/3,3,5,6)		(1.25)		
					27.00	5.45		*End of Borehole at 5.45m*

Remarks
1. Complete. 2. Grid reference and ground level obtained from GPR survey. 3. No water strikes recorded. 4. Monitoring well installed. 5. Response zone 0.50-1.50 m bgl. 6. Hand pitted to 1.25 m bgl due to potential services. 7. Dynamic probing between 5.45-7.80 m bgl.

Method, Plant, Stability, Dimensions	Logger
0.00 - 5.45m WS	G. Snape

Dynamic Probe

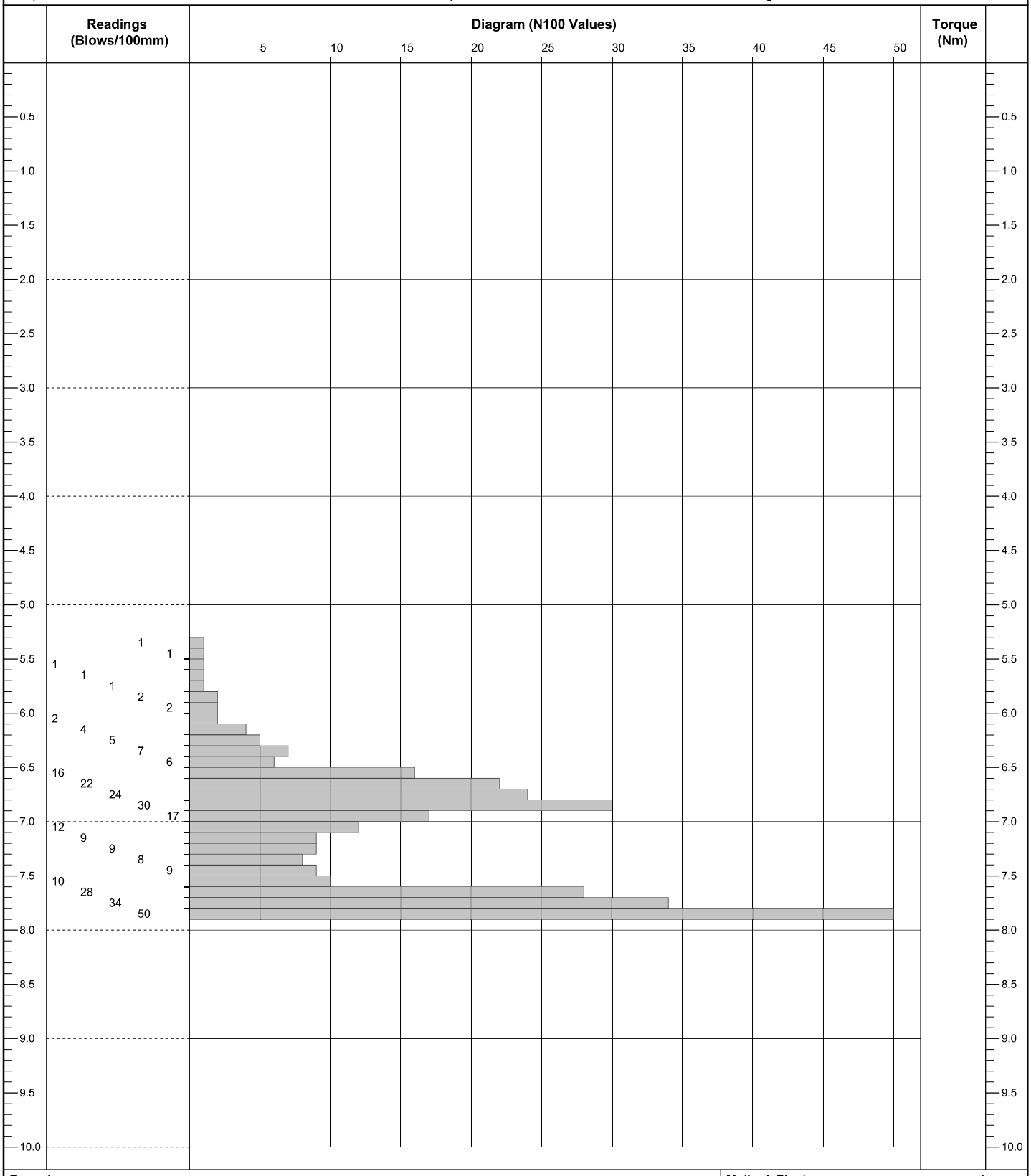
WS106 DP

Sheet 1 of 1

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPSH	383857.00	395725.00		1:50

Project Name	Project No.	Start Date	End Date
Barnhill Street	18-145	2025-06-24	2025-06-24

Client	Consultant	Contractor
Shepherd Gilmour Infrastructure Limited	G. Snape	DP Drilling Limited



Remarks

Method, Plant
5.45 - 7.80m DP

Logger
G. Snape

Hammer Weight (kg)
Hammer Drop (mm)
Cone Diameter (mm)
Cone Angle
Rod Diameter (mm)
Damper

APPENDIX VI
CHEMICAL TESTING RESULTS

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: cs@etuki.eurofins.com

Final Report

Report No.: 25-23715-1

Initial Date of Issue: 05-Aug-2025

Re-Issue Details:

Client *E3P*

Client Address: *Taylor Road*
Trafford Park
Urmston
Manchester
M41 7JQ

Contact(s): [redacted]

Project *18-145 Barnhill St, Moss Side*

Quotation No.: *Q23-31421* **Date Received:** 18-Jul-2025

Order No.: 011753 **Date Instructed:** 18-Jul-2025

No. of Samples: *1*

Turnaround (Wkdays): 5 **Results Due:** 24-Jul-2025

Date Approved: 01-Aug-2025

Approved By:

[redacted]

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Water

Project: 18-145 Barnhill St, Moss Side

Client: E3P				**Chemtest Job No.:**	25-23715	
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	2002922	
				Client Sample ID.:	*RB101*	
				Sample Type:	*WATER*	
				Sample Sub Type:		
				Date Sampled:	*17-Jul-2025*	
				Time Sampled:	*12:00*	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
pH at 20C		U	1010		4.0	8.0
Arsenic (Dissolved)		U	1455	µg/l	0.20	0.32
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Copper (Dissolved)		U	1455	µg/l	0.50	1.9
Manganese (Dissolved)		U	1455	µg/l	0.50	530
Nickel (Dissolved)		U	1455	µg/l	0.50	2.0
Lead (Dissolved)		U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)		U	1455	µg/l	0.50	< 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5	4.4
Mercury Low Level		U	1460	µg/l	0.010	< 0.010
Chromium (Hexavalent)		U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C10-C12	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C12-C16	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C16-C21	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C21-C35	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C35-C44	EH_2D_AL_#1	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	EH_2D_AL_#1	N	1675	µg/l	5.0	< 5.0
Aromatic TPH >C5-C7	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C10-C12	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C12-C16	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C16-C21	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C21-C35	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C35-C44	EH_2D_AR_#1	N	1675	µg/l	0.10	< 0.10
Total Aromatic Hydrocarbons	EH_2D_AR_#1	N	1675	µg/l	5.0	< 5.0
Total Petroleum Hydrocarbons	EH_2D_Total_#1	N	1675	µg/l	10	< 10
Dichlorodifluoromethane		N	1760	µg/l	1.0	< 1.0
Chloromethane		N	1760	µg/l	1.0	< 1.0
Vinyl Chloride		N	1760	µg/l	1.0	< 1.0
Bromomethane		U	1760	µg/l	5	< 5
Chloroethane		U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane		N	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene		U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane		U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene		U	1760	µg/l	1.0	< 1.0
Bromochloromethane		U	1760	µg/l	5	< 5

Results - Water

Project: 18-145 Barnhill St, Moss Side

Client: E3P				**Chemtest Job No.:**	25-23715	
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	2002922	
				Client Sample ID.:	*RB101*	
				Sample Type:	*WATER*	
				Sample Sub Type:		
				Date Sampled:	*17-Jul-2025*	
				Time Sampled:	*12:00*	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Trichloromethane		U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane		U	1760	µg/l	1.0	< 1.0
Tetrachloromethane		U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene		U	1760	µg/l	1.0	< 1.0
Benzene		U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane		U	1760	µg/l	2.0	< 2.0
Trichloroethene		N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane		U	1760	µg/l	1.0	< 1.0
Dibromomethane		U	1760	µg/l	10	< 10
Bromodichloromethane		U	1760	µg/l	5	< 5
cis-1,3-Dichloropropene		N	1760	µg/l	10	< 10
Toluene		U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene		N	1760	µg/l	10	< 10
1,1,2-Trichloroethane		U	1760	µg/l	10	< 10
Tetrachloroethene		U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane		U	1760	µg/l	2.0	< 2.0
Dibromochloromethane		U	1760	µg/l	10	< 10
1,2-Dibromoethane		U	1760	µg/l	5	< 5
Chlorobenzene		N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane		U	1760	µg/l	2.0	< 2.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0
Styrene		U	1760	µg/l	1.0	< 1.0
Tribromomethane		U	1760	µg/l	1.0	< 1.0
Isopropylbenzene		U	1760	µg/l	1.0	< 1.0
Bromobenzene		U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane		N	1760	µg/l	50	< 50
N-Propylbenzene		U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene		U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene		U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene		U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene		N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene		U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0
N-Butylbenzene		U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene		U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane		N	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene		U	1760	µg/l	1.0	< 1.0

Results - Water

Project: 18-145 Barnhill St, Moss Side

Client: E3P				**Chemtest Job No.:**		25-23715
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		2002922
				Client Sample ID.:		*RB101*
				Sample Type:		*WATER*
				Sample Sub Type:		
				Date Sampled:		*17-Jul-2025*
				Time Sampled:		*12:00*
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
Hexachlorobutadiene		U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene		U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether		N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine		N	1790	µg/l	0.50	< 0.50
Phenol		N	1790	µg/l	0.50	< 0.50
2-Chlorophenol		N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether		N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene		N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)		N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether		N	1790	µg/l	0.50	< 0.50
Hexachloroethane		N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine		N	1790	µg/l	0.50	< 0.50
4-Methylphenol		N	1790	µg/l	0.50	< 0.50
Nitrobenzene		N	1790	µg/l	0.50	< 0.50
Isophorone		N	1790	µg/l	0.50	< 0.50
2-Nitrophenol		N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol		N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroethoxy)Methane		N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol		N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene		N	1790	µg/l	0.50	< 0.50
Naphthalene		N	1790	µg/l	0.50	< 0.50
4-Chloroaniline		N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene		N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol		N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene		N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol		N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol		N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene		N	1790	µg/l	0.50	< 0.50
2-Nitroaniline		N	1790	µg/l	0.50	< 0.50
Acenaphthylene		N	1790	µg/l	0.50	< 0.50
Dimethylphthalate		N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene		N	1790	µg/l	0.50	< 0.50
Acenaphthene		N	1790	µg/l	0.50	< 0.50
3-Nitroaniline		N	1790	µg/l	0.50	< 0.50
Dibenzofuran		N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether		N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene		N	1790	µg/l	0.50	< 0.50
Fluorene		N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate		N	1790	µg/l	0.50	< 0.50
4-Nitroaniline		N	1790	µg/l	0.50	< 0.50

Results - Water

Project: 18-145 Barnhill St, Moss Side

Client: E3P				**Chemtest Job No.:**		25-23715
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		2002922
				Client Sample ID.:		*RB101*
				Sample Type:		*WATER*
				Sample Sub Type:		
				Date Sampled:		*17-Jul-2025*
				Time Sampled:		*12:00*
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**	
2-Methyl-4,6-Dinitrophenol		N	1790	µg/l	0.50	< 0.50
Azobenzene		N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether		N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene		N	1790	µg/l	0.50	< 0.50
Phenanthrene		N	1790	µg/l	0.50	< 0.50
Anthracene		N	1790	µg/l	0.50	< 0.50
Carbazole		N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate		N	1790	µg/l	0.50	< 0.50
Fluoranthene		N	1790	µg/l	0.50	< 0.50
Pyrene		N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate		N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene		N	1790	µg/l	0.50	< 0.50
Chrysene		N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate		N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate		N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene		N	1790	µg/l	0.50	< 0.50
Benzo[k]fluoranthene		N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene		N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene		N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene		N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene		N	1790	µg/l	0.50	< 0.50
4-Nitrophenol		N	1790	µg/l	0.50	< 0.50
Total Phenols		U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	RE PW TE TS PL DW GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.	PL GW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	PL GW
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	PL GW
1790	Semi-Volatile Organic Compounds (SVOCs) in Waters by GC-MS	Semi-volatile organic compounds	Solvent extraction / GCMS detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	PL GW

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
Text example	All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.
The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.
Uncertainty of measurement for the determinands tested are available upon request .
None of the results in this report have been recovery corrected.
All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at ≤ 30°C prior to analysis.
All Asbestos testing is performed at the indicated laboratory .
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - The required amount of sample for analysis was not received
H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.
All water samples will be retained for 14 days from the date of receipt.

Report Information

Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

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 - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	25-21289-1
Initial Date of Issue:	10-Jul-2025
Re-Issue Details:	
Client	*E3P*
Client Address:	*Taylor Road* *Trafford Park* *Urmston* *Manchester* *M41 7JQ*
Contact(s):	[redacted]
Project	*Barnhill Street*
Quotation No.:	*Q23-31421*
Order No.:	011551
No. of Samples:	*17*
Turnaround (Wkdays):	5
Date Approved:	10-Jul-2025
Approved By:	[redacted]
Details:	David Smith, Technical Director

Date Received:	27-Jun-2025
Date Instructed:	27-Jun-2025
Results Due:	03-Jul-2025

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Leachate

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**		25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1992301	1992310	1992316
Order No.: 011551				*Client Sample Ref.:*		*TP101*	*WS102*	*WS106*
				Client Sample ID.:		*TP101*	*WS102*	*WS106*
				Client Reference:		*TP101*	*WS102*	*WS106*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.6*	*1.5*	*0.9*
				Date Sampled:		*23-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH at 20C	U	1010	2:1		4.0	7.6	11.5	9.4
Arsenic (Dissolved)	U	1455	2:1	µg/l	0.20	7.6	0.58	0.87
Cadmium (Dissolved)	U	1455	2:1	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	82	0.56
Copper (Dissolved)	U	1455	2:1	µg/l	0.50	1.2	8.9	4.0
Mercury (Dissolved)	U	1455	2:1	µg/l	0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	2:1	µg/l	0.50	0.91	< 0.50	0.74
Lead (Dissolved)	U	1455	2:1	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	2:1	µg/l	0.50	0.83	3.6	1.6
Zinc (Dissolved)	U	1455	2:1	µg/l	2.5	< 2.5	< 2.5	< 2.5
Chromium (Hexavalent)	U	1490	2:1	µg/l	20	< 20	80	< 20
C2 Aliphatic TPH >C5-C6	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C6-C8	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aliphatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	2:1	µg/l	5.0	< 5.0	< 5.0	< 5.0
C2 Aromatic TPH >C5-C7	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C7-C8	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C8-C10	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C10-C12	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C12-C16	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C16-C21	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C21-C35	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Aromatic TPH >C35-C44	N	1675	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
C2 Total Aromatic Hydrocarbons	N	1675	2:1	µg/l	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	2:1	µg/l	10	< 10	< 10	< 10
Benzene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	2:1	µg/l	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	1800	2:1	µg/l	0.10	1.6	0.82	< 0.10

Results - Leachate

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**		25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1992301	1992310	1992316
Order No.: 011551				*Client Sample Ref.:*		*TP101*	*WS102*	*WS106*
				Client Sample ID.:		*TP101*	*WS102*	*WS106*
				Client Reference:		*TP101*	*WS102*	*WS106*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.6*	*1.5*	*0.9*
				Date Sampled:		*23-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
Acenaphthylene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1800	2:1	µg/l	0.10	2.4	< 0.10	< 0.10
Fluorene	U	1800	2:1	µg/l	0.10	0.77	< 0.10	< 0.10
Phenanthrene	U	1800	2:1	µg/l	0.10	2.7	< 0.10	< 0.10
Anthracene	U	1800	2:1	µg/l	0.10	0.83	< 0.10	< 0.10
Fluoranthene	U	1800	2:1	µg/l	0.10	1.8	< 0.10	< 0.10
Pyrene	U	1800	2:1	µg/l	0.10	2.0	< 0.10	< 0.10
Benzo[a]anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1800	2:1	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1800	2:1	µg/l	2.0	12	< 2.0	< 2.0
Total Phenols	U	1920	2:1	mg/l	0.030	< 0.030	< 0.030	< 0.030

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**		25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1992300	1992301	1992302	1992303	1992304	1992305	1992306
Order No.: 011551				*Client Sample Ref.:*		*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Sample ID.:		*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Reference:		*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.1*	*0.6*	*2.2*	*0.2*	*0.5*	*1.6*	*1.2*
				Date Sampled:		*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:		DURHAM	DURHAM		DURHAM	DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type		N	2192		N/A	-	-		-	-		-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
Moisture		N	2030	%	0.020	4.7	11	15	19	21	14	12
Soil Colour		N	2030		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones, Roots and	Stones and	Stones, Roots and	Stones, Roots, and Glass	Stones, Roots and	Stones, Roots and	Roots, Stones, Glass and
Soil Texture		N	2030		N/A	Loam	Sand	Clay	Loam	Loam	Clay	Sand
pH at 20C		M	2010		4.0	8.3	7.9	7.6	7.2	7.2	7.2	7.2
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	< 0.010	0.17	< 0.010	< 0.010	0.020	0.066	1.5
Total Sulphur		U	2175	%	0.010	0.080	0.17	0.020	0.10	0.090	0.010	0.61
Cyanide (Total)		M	2300	mg/kg	0.50	0.60	1.0	< 0.50	9.5	1.3	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	1.8	5.4	2.5	1.7	2.0	3.4	0.63
Sulphate (Total)		U	2430	%	0.010	0.051	0.099	0.022	0.22	0.062	0.016	0.95
Arsenic		M	2455	mg/kg	0.5	7.3	3.8	5.1	5.0	7.3	1.3	2.6
Cadmium		M	2455	mg/kg	0.10	0.18	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium		M	2455	mg/kg	0.5	14	8.5	9.9	18	11	11	7.9
Copper		M	2455	mg/kg	0.50	19	5.6	11	9.3	6.4	5.5	3.2
Mercury		M	2455	mg/kg	0.05	0.19	0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05
Nickel		M	2455	mg/kg	0.50	13	7.6	9.1	21	14	12	6.5
Lead		M	2455	mg/kg	0.50	67	13	29	5.4	6.1	3.1	3.5
Selenium		M	2455	mg/kg	0.25	< 0.25	< 0.25	< 0.25	0.33	< 0.25	< 0.25	< 0.25
Zinc		M	2455	mg/kg	0.50	85	27	46	39	26	22	16
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	6.2	10	2.9	22	7.1	0.41	5.5
Total Organic Carbon		M	2625	%	0.20	3.6	5.8	1.7	13	4.1	0.24	3.2
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	3.8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	1.8	15	< 1.0	3.6	< 1.0	< 1.0	2.5
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	17	100	< 1.0	38	12	< 1.0	10
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	25	98	< 1.0	17	10	< 1.0	9.7
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	300	100	< 1.0	66	37	< 1.0	120
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	65	16	< 1.0	8.2	6.7	< 1.0	45
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	410	340	< 10	130	66	< 10	190

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992300	1992301	1992302	1992303	1992304	1992305	1992306
Order No.: 011551				*Client Sample Ref.:*	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Sample ID.:	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Reference:	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.1*	*0.6*	*2.2*	*0.2*	*0.5*	*1.6*	*1.2*
				Date Sampled:	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM	DURHAM		DURHAM	DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
Dichlorodifluoromethane		N	2760	µg/kg	1.0		< 1.0				
Chloromethane		M	2760	µg/kg	1.0		< 1.0				
Vinyl Chloride		M	2760	µg/kg	1.0		< 1.0				
Bromomethane		M	2760	µg/kg	20		< 20				
Chloroethane		U	2760	µg/kg	2.0		< 2.0				
Trichlorofluoromethane		N	2760	µg/kg	1.0		< 1.0				
1,1-Dichloroethene		M	2760	µg/kg	1.0		< 1.0				
Trans 1,2-Dichloroethene		M	2760	µg/kg	1.0		< 1.0				
1,1-Dichloroethane		M	2760	µg/kg	1.0		< 1.0				
cis 1,2-Dichloroethene		M	2760	µg/kg	1.0		< 1.0				
Bromochloromethane		U	2760	µg/kg	5.0		< 5.0				
Trichloromethane		M	2760	µg/kg	1.0		< 1.0				
1,1,1-Trichloroethane		M	2760	µg/kg	1.0		< 1.0				
Tetrachloromethane		M	2760	µg/kg	1.0		< 1.0				
1,1-Dichloropropene		U	2760	µg/kg	1.0		< 1.0				
Benzene		M	2760	µg/kg	1.0		< 1.0				
1,2-Dichloroethane		M	2760	µg/kg	2.0		< 2.0				
Trichloroethene		N	2760	µg/kg	1.0		< 1.0				
1,2-Dichloropropane		M	2760	µg/kg	1.0		< 1.0				
Dibromomethane		M	2760	µg/kg	1.0		< 1.0				
Bromodichloromethane		M	2760	µg/kg	5.0		< 5.0				
cis-1,3-Dichloropropene		N	2760	µg/kg	10		< 10				
Toluene		M	2760	µg/kg	1.0		< 1.0				
Trans-1,3-Dichloropropene		N	2760	µg/kg	10		< 10				
1,1,2-Trichloroethane		M	2760	µg/kg	10		< 10				
Tetrachloroethene		M	2760	µg/kg	1.0		< 1.0				
1,3-Dichloropropane		U	2760	µg/kg	2.0		< 2.0				
Dibromochloromethane		U	2760	µg/kg	10		< 10				
1,2-Dibromoethane		M	2760	µg/kg	5.0		< 5.0				
Chlorobenzene		M	2760	µg/kg	1.0		< 1.0				
1,1,1,2-Tetrachloroethane		M	2760	µg/kg	2.0		< 2.0				
Ethylbenzene		M	2760	µg/kg	1.0		< 1.0				
m & p-Xylene		M	2760	µg/kg	1.0		< 1.0				
o-Xylene		M	2760	µg/kg	1.0		< 1.0				
Styrene		M	2760	µg/kg	1.0		< 1.0				
Tribromomethane		U	2760	µg/kg	1.0		< 1.0				

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992300	1992301	1992302	1992303	1992304	1992305	1992306
Order No.: 011551				*Client Sample Ref.:*	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Sample ID.:	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Reference:	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.1*	*0.6*	*2.2*	*0.2*	*0.5*	*1.6*	*1.2*
				Date Sampled:	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM	DURHAM		DURHAM	DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
Isopropylbenzene		M	2760	µg/kg	1.0		< 1.0				
Bromobenzene		M	2760	µg/kg	1.0		< 1.0				
1,2,3-Trichloropropane		N	2760	µg/kg	50		< 50				
N-Propylbenzene		U	2760	µg/kg	1.0		< 1.0				
2-Chlorotoluene		M	2760	µg/kg	1.0		< 1.0				
1,3,5-Trimethylbenzene		M	2760	µg/kg	1.0		< 1.0				
4-Chlorotoluene		U	2760	µg/kg	1.0		< 1.0				
Tert-Butylbenzene		U	2760	µg/kg	1.0		< 1.0				
1,2,4-Trimethylbenzene		M	2760	µg/kg	1.0		< 1.0				
Sec-Butylbenzene		U	2760	µg/kg	1.0		< 1.0				
1,3-Dichlorobenzene		M	2760	µg/kg	1.0		< 1.0				
4-Isopropyltoluene		U	2760	µg/kg	1.0		< 1.0				
1,4-Dichlorobenzene		M	2760	µg/kg	1.0		< 1.0				
N-Butylbenzene		U	2760	µg/kg	1.0		< 1.0				
1,2-Dichlorobenzene		M	2760	µg/kg	1.0		< 1.0				
1,2-Dibromo-3-Chloropropane		N	2760	µg/kg	50		< 50				
1,2,4-Trichlorobenzene		M	2760	µg/kg	1.0		< 1.0				
Hexachlorobutadiene		N	2760	µg/kg	1.0		< 1.0				
1,2,3-Trichlorobenzene		U	2760	µg/kg	2.0		< 2.0				
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0		< 1.0				
N-Nitrosodimethylamine		M	2790	mg/kg	0.50		< 0.50				
Phenol		M	2790	mg/kg	0.50		< 0.50				
2-Chlorophenol		N	2790	mg/kg	0.50		< 0.50				
Bis-(2-Chloroethyl)Ether		M	2790	mg/kg	0.50		< 0.50				
1,3-Dichlorobenzene		M	2790	mg/kg	0.50		< 0.50				
1,4-Dichlorobenzene		N	2790	mg/kg	0.50		< 0.50				
1,2-Dichlorobenzene		M	2790	mg/kg	0.50		< 0.50				
2-Methylphenol		M	2790	mg/kg	0.50		< 0.50				
Bis(2-Chloroisopropyl)Ether		N	2790	mg/kg	0.50		< 0.50				
Hexachloroethane		N	2790	mg/kg	0.50		< 0.50				
N-Nitrosodi-n-propylamine		M	2790	mg/kg	0.50		< 0.50				
4-Methylphenol		M	2790	mg/kg	0.50		< 0.50				
Nitrobenzene		N	2790	mg/kg	0.50		< 0.50				
Isophorone		M	2790	mg/kg	0.50		< 0.50				
2-Nitrophenol		N	2790	mg/kg	0.50		< 0.50				
2,4-Dimethylphenol		N	2790	mg/kg	0.50		< 0.50				

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992300	1992301	1992302	1992303	1992304	1992305	1992306
Order No.: 011551				*Client Sample Ref.:*	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Sample ID.:	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Reference:	*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.1*	*0.6*	*2.2*	*0.2*	*0.5*	*1.6*	*1.2*
				Date Sampled:	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM	DURHAM		DURHAM	DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**						
Bis(2-Chloroethoxy)Methane		M	2790	mg/kg	0.50		< 0.50				
2,4-Dichlorophenol		N	2790	mg/kg	0.50		< 0.50				
1,2,4-Trichlorobenzene		M	2790	mg/kg	0.50		< 0.50				
Naphthalene		M	2790	mg/kg	0.50		< 0.50				
4-Chloroaniline		N	2790	mg/kg	0.50		< 0.50				
Hexachlorobutadiene		M	2790	mg/kg	0.50		< 0.50				
4-Chloro-3-Methylphenol		N	2790	mg/kg	0.50		< 0.50				
2-Methylnaphthalene		M	2790	mg/kg	0.50		< 0.50				
4-Nitrophenol		N	2790	mg/kg	0.50		< 0.50				
2,4,6-Trichlorophenol		N	2790	mg/kg	0.50		< 0.50				
2,4,5-Trichlorophenol		N	2790	mg/kg	0.50		< 0.50				
2-Chloronaphthalene		M	2790	mg/kg	0.50		< 0.50				
2-Nitroaniline		N	2790	mg/kg	0.50		< 0.50				
Acenaphthylene		M	2790	mg/kg	0.50		< 0.50				
Dimethylphthalate		M	2790	mg/kg	0.50		< 0.50				
2,6-Dinitrotoluene		N	2790	mg/kg	0.50		< 0.50				
Acenaphthene		M	2790	mg/kg	0.50		0.72				
3-Nitroaniline		N	2790	mg/kg	0.50		< 0.50				
Dibenzofuran		M	2790	mg/kg	0.50		< 0.50				
4-Chlorophenylphenylether		M	2790	mg/kg	0.50		< 0.50				
2,4-Dinitrotoluene		N	2790	mg/kg	0.50		< 0.50				
Fluorene		M	2790	mg/kg	0.50		0.58				
Diethyl Phthalate		M	2790	mg/kg	0.50		< 0.50				
4-Nitroaniline		N	2790	mg/kg	0.50		< 0.50				
Azobenzene		M	2790	mg/kg	0.50		< 0.50				
4-Bromophenylphenyl Ether		M	2790	mg/kg	0.50		< 0.50				
Hexachlorobenzene		M	2790	mg/kg	0.50		< 0.50				
Phenanthrene		M	2790	mg/kg	0.50		5.6				
Anthracene		M	2790	mg/kg	0.50		1.5				
Carbazole		M	2790	mg/kg	0.50		< 0.50				
Di-N-Butyl Phthalate		N	2790	mg/kg	0.50		< 0.50				
Fluoranthene		M	2790	mg/kg	0.50		7.1				
Pyrene		M	2790	mg/kg	0.50		6.6				
Butylbenzyl Phthalate		N	2790	mg/kg	0.50		< 0.50				
Benzo[a]anthracene		M	2790	mg/kg	0.50		3.6				
Chrysene		M	2790	mg/kg	0.50		3.7				

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**		25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1992300	1992301	1992302	1992303	1992304	1992305	1992306
Order No.: 011551				*Client Sample Ref.:*		*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Sample ID.:		*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Client Reference:		*TP101*	*TP101*	*TP102*	*TP103*	*TP103*	*TP106*	*TP108*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.1*	*0.6*	*2.2*	*0.2*	*0.5*	*1.6*	*1.2*
				Date Sampled:		*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*	*23-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:		DURHAM	DURHAM		DURHAM	DURHAM		DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Bis(2-Ethylhexyl)Phthalate		N	2790	mg/kg	0.50		< 0.50					
Di-N-Octyl Phthalate		N	2790	mg/kg	0.50		< 0.50					
Benzo[b]fluoranthene		M	2790	mg/kg	0.50		4.5					
Benzo[k]fluoranthene		M	2790	mg/kg	0.50		1.6					
Benzo[a]pyrene		M	2790	mg/kg	0.50		4.1					
Indeno(1,2,3-c,d)Pyrene		N	2790	mg/kg	0.50		2.1					
Dibenz(a,h)Anthracene		N	2790	mg/kg	0.50		0.73					
Benzo[g,h,i]perylene		M	2790	mg/kg	0.50		2.6					
Naphthalene		M	2800	mg/kg	0.10	0.29		0.33	0.43	0.57	< 0.10	0.26
Acenaphthylene		N	2800	mg/kg	0.10	0.19		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	0.46		0.89	0.66	0.96	< 0.10	0.44
Fluorene		M	2800	mg/kg	0.10	0.32		0.66	0.39	0.52	< 0.10	0.30
Phenanthrene		M	2800	mg/kg	0.10	4.0		7.9	4.2	5.2	< 0.10	2.7
Anthracene		M	2800	mg/kg	0.10	1.1		1.4	0.83	0.94	< 0.10	0.73
Fluoranthene		M	2800	mg/kg	0.10	8.7		12	6.7	6.9	< 0.10	4.6
Pyrene		M	2800	mg/kg	0.10	7.8		12	6.2	6.4	< 0.10	4.1
Benzo[a]anthracene		M	2800	mg/kg	0.10	4.1		4.3	3.2	2.9	< 0.10	1.8
Chrysene		M	2800	mg/kg	0.10	4.3		5.2	3.5	3.2	< 0.10	2.0
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	6.0		5.3	4.2	3.6	< 0.10	2.6
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	1.9		1.7	1.2	1.3	< 0.10	0.94
Benzo[a]pyrene		M	2800	mg/kg	0.10	4.7		4.4	3.4	2.9	< 0.10	2.0
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	2.9		2.5	2.3	2.0	< 0.10	1.4
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	0.52		0.64	0.46	0.37	< 0.10	0.34
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	3.3		2.8	2.2	2.2	< 0.10	1.6
Total Of 16 PAH's		N	2800	mg/kg	2.0	51		62	40	40	< 2.0	26
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	0.32	< 0.10	0.12	< 0.10	< 0.10

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**		25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1992307	1992308	1992309	1992310	1992311	1992312	1992313
Order No.: 011551				*Client Sample Ref.:*		*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Sample ID.:		*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Reference:		*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.15*	*4.5*	*2.8*	*1.5*	*0.1*	*0.1*	*3.6*
				Date Sampled:		*24-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:		DURHAM			DURHAM	DURHAM	DURHAM	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
ACM Type		N	2192		N/A	-			-	-	-	
Asbestos Identification		U	2192		N/A	No Asbestos Detected			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
Moisture		N	2030	%	0.020	12	10	11	8.5	18	16	15
Soil Colour		N	2030		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones, Roots and	Stones and Roots	None	Stones, Roots and brick	Stones and Roots	Stones, Roots and brick	None
Soil Texture		N	2030		N/A	Loam	Clay	Clay	Sand	Loam	Loam	Clay
pH at 20C		M	2010		4.0	8.0	8.9	8.5	11.6	8.1	7.9	8.3
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.020	< 0.010	0.051	0.20	0.011	0.018	0.013
Total Sulphur		U	2175	%	0.010	0.070	0.11	0.020	0.12	0.070	0.11	0.030
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	1.0	9.6	0.70	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	2.0	1.4	1.4	3.8	1.5	1.5	2.4
Sulphate (Total)		U	2430	%	0.010	0.078	0.18	0.036	0.19	0.046	0.036	0.035
Arsenic		M	2455	mg/kg	0.5	1.7	7.1	6.8	6.1	3.3	3.0	12
Cadmium		M	2455	mg/kg	0.10	< 0.10	< 0.10	0.82	0.27	0.32	< 0.10	< 0.10
Chromium		M	2455	mg/kg	0.5	7.4	14	22	11	30	6.3	22
Copper		M	2455	mg/kg	0.50	5.2	6.9	17	28	27	14	17
Mercury		M	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05	0.14	0.27	0.12	< 0.05
Nickel		M	2455	mg/kg	0.50	5.5	16	27	7.1	5.7	4.3	29
Lead		M	2455	mg/kg	0.50	4.8	6.0	10	140	130	63	9.7
Selenium		M	2455	mg/kg	0.25	< 0.25	< 0.25	1.0	0.37	< 0.25	< 0.25	0.33
Zinc		M	2455	mg/kg	0.50	19	32	48	180	57	51	44
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	4.8	4.3	1.1	6.6	10	12	1.0
Total Organic Carbon		M	2625	%	0.20	2.8	2.5	0.65	3.8	5.8	6.7	0.58
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.0	< 1.0	< 1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	5.6	< 1.0	< 1.0	< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	1.5	< 1.0	< 1.0	19	1.6	3.2	< 1.0
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	40	< 1.0	< 1.0	110	15	41	< 1.0
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	11	< 1.0	< 1.0	160	10	14	< 1.0
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	79	< 1.0	< 1.0	220	51	73	< 1.0
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	29	< 1.0	< 1.0	20	5.1	11	< 1.0
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	160	< 10	< 10	540	82	140	< 10

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992307	1992308	1992309	1992310	1992311	1992312	1992313
Order No.: 011551				*Client Sample Ref.:*	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Sample ID.:	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Reference:	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.15*	*4.5*	*2.8*	*1.5*	*0.1*	*0.1*	*3.6*
				Date Sampled:	*24-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM			DURHAM	DURHAM	DURHAM	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Dichlorodifluoromethane		N	2760	µg/kg	1.0							
Chloromethane		M	2760	µg/kg	1.0							
Vinyl Chloride		M	2760	µg/kg	1.0							
Bromomethane		M	2760	µg/kg	20							
Chloroethane		U	2760	µg/kg	2.0							
Trichlorofluoromethane		N	2760	µg/kg	1.0							
1,1-Dichloroethene		M	2760	µg/kg	1.0							
Trans 1,2-Dichloroethene		M	2760	µg/kg	1.0							
1,1-Dichloroethane		M	2760	µg/kg	1.0							
cis 1,2-Dichloroethene		M	2760	µg/kg	1.0							
Bromochloromethane		U	2760	µg/kg	5.0							
Trichloromethane		M	2760	µg/kg	1.0							
1,1,1-Trichloroethane		M	2760	µg/kg	1.0							
Tetrachloromethane		M	2760	µg/kg	1.0							
1,1-Dichloropropene		U	2760	µg/kg	1.0							
Benzene		M	2760	µg/kg	1.0							
1,2-Dichloroethane		M	2760	µg/kg	2.0							
Trichloroethene		N	2760	µg/kg	1.0							
1,2-Dichloropropane		M	2760	µg/kg	1.0							
Dibromomethane		M	2760	µg/kg	1.0							
Bromodichloromethane		M	2760	µg/kg	5.0							
cis-1,3-Dichloropropene		N	2760	µg/kg	10							
Toluene		M	2760	µg/kg	1.0							
Trans-1,3-Dichloropropene		N	2760	µg/kg	10							
1,1,2-Trichloroethane		M	2760	µg/kg	10							
Tetrachloroethene		M	2760	µg/kg	1.0							
1,3-Dichloropropane		U	2760	µg/kg	2.0							
Dibromochloromethane		U	2760	µg/kg	10							
1,2-Dibromoethane		M	2760	µg/kg	5.0							
Chlorobenzene		M	2760	µg/kg	1.0							
1,1,1,2-Tetrachloroethane		M	2760	µg/kg	2.0							
Ethylbenzene		M	2760	µg/kg	1.0							
m & p-Xylene		M	2760	µg/kg	1.0							
o-Xylene		M	2760	µg/kg	1.0							
Styrene		M	2760	µg/kg	1.0							
Tribromomethane		U	2760	µg/kg	1.0							

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992307	1992308	1992309	1992310	1992311	1992312	1992313
Order No.: 011551				*Client Sample Ref.:*	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Sample ID.:	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Reference:	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.15*	*4.5*	*2.8*	*1.5*	*0.1*	*0.1*	*3.6*
				Date Sampled:	*24-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM			DURHAM	DURHAM	DURHAM	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Isopropylbenzene		M	2760	µg/kg	1.0							
Bromobenzene		M	2760	µg/kg	1.0							
1,2,3-Trichloropropane		N	2760	µg/kg	50							
N-Propylbenzene		U	2760	µg/kg	1.0							
2-Chlorotoluene		M	2760	µg/kg	1.0							
1,3,5-Trimethylbenzene		M	2760	µg/kg	1.0							
4-Chlorotoluene		U	2760	µg/kg	1.0							
Tert-Butylbenzene		U	2760	µg/kg	1.0							
1,2,4-Trimethylbenzene		M	2760	µg/kg	1.0							
Sec-Butylbenzene		U	2760	µg/kg	1.0							
1,3-Dichlorobenzene		M	2760	µg/kg	1.0							
4-Isopropyltoluene		U	2760	µg/kg	1.0							
1,4-Dichlorobenzene		M	2760	µg/kg	1.0							
N-Butylbenzene		U	2760	µg/kg	1.0							
1,2-Dichlorobenzene		M	2760	µg/kg	1.0							
1,2-Dibromo-3-Chloropropane		N	2760	µg/kg	50							
1,2,4-Trichlorobenzene		M	2760	µg/kg	1.0							
Hexachlorobutadiene		N	2760	µg/kg	1.0							
1,2,3-Trichlorobenzene		U	2760	µg/kg	2.0							
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0							
N-Nitrosodimethylamine		M	2790	mg/kg	0.50							
Phenol		M	2790	mg/kg	0.50							
2-Chlorophenol		N	2790	mg/kg	0.50							
Bis-(2-Chloroethyl)Ether		M	2790	mg/kg	0.50							
1,3-Dichlorobenzene		M	2790	mg/kg	0.50							
1,4-Dichlorobenzene		N	2790	mg/kg	0.50							
1,2-Dichlorobenzene		M	2790	mg/kg	0.50							
2-Methylphenol		M	2790	mg/kg	0.50							
Bis(2-Chloroisopropyl)Ether		N	2790	mg/kg	0.50							
Hexachloroethane		N	2790	mg/kg	0.50							
N-Nitrosodi-n-propylamine		M	2790	mg/kg	0.50							
4-Methylphenol		M	2790	mg/kg	0.50							
Nitrobenzene		N	2790	mg/kg	0.50							
Isophorone		M	2790	mg/kg	0.50							
2-Nitrophenol		N	2790	mg/kg	0.50							
2,4-Dimethylphenol		N	2790	mg/kg	0.50							

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992307	1992308	1992309	1992310	1992311	1992312	1992313
Order No.: 011551				*Client Sample Ref.:*	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Sample ID.:	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Reference:	*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.15*	*4.5*	*2.8*	*1.5*	*0.1*	*0.1*	*3.6*
				Date Sampled:	*24-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM			DURHAM	DURHAM	DURHAM	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Bis(2-Chloroethoxy)Methane		M	2790	mg/kg	0.50							
2,4-Dichlorophenol		N	2790	mg/kg	0.50							
1,2,4-Trichlorobenzene		M	2790	mg/kg	0.50							
Naphthalene		M	2790	mg/kg	0.50							
4-Chloroaniline		N	2790	mg/kg	0.50							
Hexachlorobutadiene		M	2790	mg/kg	0.50							
4-Chloro-3-Methylphenol		N	2790	mg/kg	0.50							
2-Methylnaphthalene		M	2790	mg/kg	0.50							
4-Nitrophenol		N	2790	mg/kg	0.50							
2,4,6-Trichlorophenol		N	2790	mg/kg	0.50							
2,4,5-Trichlorophenol		N	2790	mg/kg	0.50							
2-Chloronaphthalene		M	2790	mg/kg	0.50							
2-Nitroaniline		N	2790	mg/kg	0.50							
Acenaphthylene		M	2790	mg/kg	0.50							
Dimethylphthalate		M	2790	mg/kg	0.50							
2,6-Dinitrotoluene		N	2790	mg/kg	0.50							
Acenaphthene		M	2790	mg/kg	0.50							
3-Nitroaniline		N	2790	mg/kg	0.50							
Dibenzofuran		M	2790	mg/kg	0.50							
4-Chlorophenylphenylether		M	2790	mg/kg	0.50							
2,4-Dinitrotoluene		N	2790	mg/kg	0.50							
Fluorene		M	2790	mg/kg	0.50							
Diethyl Phthalate		M	2790	mg/kg	0.50							
4-Nitroaniline		N	2790	mg/kg	0.50							
Azobenzene		M	2790	mg/kg	0.50							
4-Bromophenylphenyl Ether		M	2790	mg/kg	0.50							
Hexachlorobenzene		M	2790	mg/kg	0.50							
Phenanthrene		M	2790	mg/kg	0.50							
Anthracene		M	2790	mg/kg	0.50							
Carbazole		M	2790	mg/kg	0.50							
Di-N-Butyl Phthalate		N	2790	mg/kg	0.50							
Fluoranthene		M	2790	mg/kg	0.50							
Pyrene		M	2790	mg/kg	0.50							
Butylbenzyl Phthalate		N	2790	mg/kg	0.50							
Benzo[a]anthracene		M	2790	mg/kg	0.50							
Chrysene		M	2790	mg/kg	0.50							

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**		25-21289	25-21289	25-21289	25-21289	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1992307	1992308	1992309	1992310	1992311	1992312	1992313
Order No.: 011551				*Client Sample Ref.:*		*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Sample ID.:		*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Client Reference:		*WS101*	*WS101*	*WS102*	*WS102*	*WS103*	*WS104*	*WS104*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.15*	*4.5*	*2.8*	*1.5*	*0.1*	*0.1*	*3.6*
				Date Sampled:		*24-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*	*12:00*
				Asbestos Lab:		DURHAM			DURHAM	DURHAM	DURHAM	
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**							
Bis(2-Ethylhexyl)Phthalate		N	2790	mg/kg	0.50							
Di-N-Octyl Phthalate		N	2790	mg/kg	0.50							
Benzo[b]fluoranthene		M	2790	mg/kg	0.50							
Benzo[k]fluoranthene		M	2790	mg/kg	0.50							
Benzo[a]pyrene		M	2790	mg/kg	0.50							
Indeno(1,2,3-c,d)Pyrene		N	2790	mg/kg	0.50							
Dibenz(a,h)Anthracene		N	2790	mg/kg	0.50							
Benzo[g,h,i]perylene		M	2790	mg/kg	0.50							
Naphthalene		M	2800	mg/kg	0.10	0.30	0.14	0.11	3.3	0.25	0.28	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10	0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	0.31	< 0.10	< 0.10	3.3	0.26	0.35	< 0.10
Fluorene		M	2800	mg/kg	0.10	0.24	< 0.10	< 0.10	2.6	0.18	0.24	< 0.10
Phenanthrene		M	2800	mg/kg	0.10	2.5	0.45	0.19	16	1.5	2.4	0.14
Anthracene		M	2800	mg/kg	0.10	0.61	0.16	< 0.10	4.0	0.40	0.58	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	4.5	0.43	< 0.10	21	2.7	4.1	< 0.10
Pyrene		M	2800	mg/kg	0.10	4.1	0.36	< 0.10	18	2.6	3.8	< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10	2.0	< 0.10	< 0.10	10	1.2	1.9	< 0.10
Chrysene		M	2800	mg/kg	0.10	2.2	< 0.10	< 0.10	11	1.5	2.1	< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	2.7	< 0.10	< 0.10	11	1.9	2.6	< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	0.88	< 0.10	< 0.10	4.5	0.68	0.98	< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10	2.1	< 0.10	< 0.10	9.7	1.5	2.1	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	1.5	< 0.10	< 0.10	5.3	1.1	1.3	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	0.33	< 0.10	< 0.10	1.6	0.21	0.33	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	1.5	< 0.10	< 0.10	5.3	1.1	1.5	< 0.10
Total Of 16 PAH's		N	2800	mg/kg	2.0	26	< 2.0	< 2.0	130	17	25	< 2.0
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.95	4.6	< 0.10	< 0.10

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**		25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1992314	1992315	1992316
Order No.: 011551				*Client Sample Ref.:*		*WS105*	*WS106*	*WS106*
				Client Sample ID.:		*WS105*	*WS106*	*WS106*
				Client Reference:		*WS105*	*WS106*	*WS106*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.6*	*0.15*	*0.9*
				Date Sampled:		*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*
				Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type		N	2192		N/A	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	13	21	16
Soil Colour		N	2030		N/A	Brown	Brown	Brown
Other Material		N	2030		N/A	Stones, Roots, Glass and brick	Stones, Roots, Glass and brick	Stones, Roots and brick
Soil Texture		N	2030		N/A	Loam	Loam	Clay
pH at 20C		M	2010		4.0	9.0	8.2	8.3
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.35	0.029	0.51
Total Sulphur		U	2175	%	0.010	0.17	0.12	0.13
Cyanide (Total)		M	2300	mg/kg	0.50	1.0	< 0.50	1.6
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	1.3	1.3	2.2
Sulphate (Total)		U	2430	%	0.010	0.17	0.086	0.26
Arsenic		M	2455	mg/kg	0.5	8.5	3.8	9.4
Cadmium		M	2455	mg/kg	0.10	0.29	< 0.10	< 0.10
Chromium		M	2455	mg/kg	0.5	9.5	7.1	20
Copper		M	2455	mg/kg	0.50	96	19	30
Mercury		M	2455	mg/kg	0.05	0.20	0.23	0.38
Nickel		M	2455	mg/kg	0.50	13	6.0	14
Lead		M	2455	mg/kg	0.50	260	170	79
Selenium		M	2455	mg/kg	0.25	< 0.25	< 0.25	0.45
Zinc		M	2455	mg/kg	0.50	210	110	75
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	8.5	12	0.43
Total Organic Carbon		M	2625	%	0.20	4.9	6.9	0.25
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	9.4	< 1.0	< 1.0
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	37	10	7.9
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	11	6.9	8.6
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	70	46	34
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	7.7	8.8	2.6
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	140	73	53

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992314	1992315	1992316
Order No.: 011551				*Client Sample Ref.:*	*WS105*	*WS106*	*WS106*
				Client Sample ID.:	*WS105*	*WS106*	*WS106*
				Client Reference:	*WS105*	*WS106*	*WS106*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.6*	*0.15*	*0.9*
				Date Sampled:	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**		
Dichlorodifluoromethane		N	2760	µg/kg	1.0		
Chloromethane		M	2760	µg/kg	1.0		
Vinyl Chloride		M	2760	µg/kg	1.0		
Bromomethane		M	2760	µg/kg	20		
Chloroethane		U	2760	µg/kg	2.0		
Trichlorofluoromethane		N	2760	µg/kg	1.0		
1,1-Dichloroethene		M	2760	µg/kg	1.0		
Trans 1,2-Dichloroethene		M	2760	µg/kg	1.0		
1,1-Dichloroethane		M	2760	µg/kg	1.0		
cis 1,2-Dichloroethene		M	2760	µg/kg	1.0		
Bromochloromethane		U	2760	µg/kg	5.0		
Trichloromethane		M	2760	µg/kg	1.0		
1,1,1-Trichloroethane		M	2760	µg/kg	1.0		
Tetrachloromethane		M	2760	µg/kg	1.0		
1,1-Dichloropropene		U	2760	µg/kg	1.0		
Benzene		M	2760	µg/kg	1.0		
1,2-Dichloroethane		M	2760	µg/kg	2.0		
Trichloroethene		N	2760	µg/kg	1.0		
1,2-Dichloropropane		M	2760	µg/kg	1.0		
Dibromomethane		M	2760	µg/kg	1.0		
Bromodichloromethane		M	2760	µg/kg	5.0		
cis-1,3-Dichloropropene		N	2760	µg/kg	10		
Toluene		M	2760	µg/kg	1.0		
Trans-1,3-Dichloropropene		N	2760	µg/kg	10		
1,1,2-Trichloroethane		M	2760	µg/kg	10		
Tetrachloroethene		M	2760	µg/kg	1.0		
1,3-Dichloropropane		U	2760	µg/kg	2.0		
Dibromochloromethane		U	2760	µg/kg	10		
1,2-Dibromoethane		M	2760	µg/kg	5.0		
Chlorobenzene		M	2760	µg/kg	1.0		
1,1,1,2-Tetrachloroethane		M	2760	µg/kg	2.0		
Ethylbenzene		M	2760	µg/kg	1.0		
m & p-Xylene		M	2760	µg/kg	1.0		
o-Xylene		M	2760	µg/kg	1.0		
Styrene		M	2760	µg/kg	1.0		
Tribromomethane		U	2760	µg/kg	1.0		

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992314	1992315	1992316
Order No.: 011551				*Client Sample Ref.:*	*WS105*	*WS106*	*WS106*
				Client Sample ID.:	*WS105*	*WS106*	*WS106*
				Client Reference:	*WS105*	*WS106*	*WS106*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.6*	*0.15*	*0.9*
				Date Sampled:	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**		
Isopropylbenzene		M	2760	µg/kg	1.0		
Bromobenzene		M	2760	µg/kg	1.0		
1,2,3-Trichloropropane		N	2760	µg/kg	50		
N-Propylbenzene		U	2760	µg/kg	1.0		
2-Chlorotoluene		M	2760	µg/kg	1.0		
1,3,5-Trimethylbenzene		M	2760	µg/kg	1.0		
4-Chlorotoluene		U	2760	µg/kg	1.0		
Tert-Butylbenzene		U	2760	µg/kg	1.0		
1,2,4-Trimethylbenzene		M	2760	µg/kg	1.0		
Sec-Butylbenzene		U	2760	µg/kg	1.0		
1,3-Dichlorobenzene		M	2760	µg/kg	1.0		
4-Isopropyltoluene		U	2760	µg/kg	1.0		
1,4-Dichlorobenzene		M	2760	µg/kg	1.0		
N-Butylbenzene		U	2760	µg/kg	1.0		
1,2-Dichlorobenzene		M	2760	µg/kg	1.0		
1,2-Dibromo-3-Chloropropane		N	2760	µg/kg	50		
1,2,4-Trichlorobenzene		M	2760	µg/kg	1.0		
Hexachlorobutadiene		N	2760	µg/kg	1.0		
1,2,3-Trichlorobenzene		U	2760	µg/kg	2.0		
Methyl Tert-Butyl Ether		M	2760	µg/kg	1.0		
N-Nitrosodimethylamine		M	2790	mg/kg	0.50		
Phenol		M	2790	mg/kg	0.50		
2-Chlorophenol		N	2790	mg/kg	0.50		
Bis-(2-Chloroethyl)Ether		M	2790	mg/kg	0.50		
1,3-Dichlorobenzene		M	2790	mg/kg	0.50		
1,4-Dichlorobenzene		N	2790	mg/kg	0.50		
1,2-Dichlorobenzene		M	2790	mg/kg	0.50		
2-Methylphenol		M	2790	mg/kg	0.50		
Bis(2-Chloroisopropyl)Ether		N	2790	mg/kg	0.50		
Hexachloroethane		N	2790	mg/kg	0.50		
N-Nitrosodi-n-propylamine		M	2790	mg/kg	0.50		
4-Methylphenol		M	2790	mg/kg	0.50		
Nitrobenzene		N	2790	mg/kg	0.50		
Isophorone		M	2790	mg/kg	0.50		
2-Nitrophenol		N	2790	mg/kg	0.50		
2,4-Dimethylphenol		N	2790	mg/kg	0.50		

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**	25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**	1992314	1992315	1992316
Order No.: 011551				*Client Sample Ref.:*	*WS105*	*WS106*	*WS106*
				Client Sample ID.:	*WS105*	*WS106*	*WS106*
				Client Reference:	*WS105*	*WS106*	*WS106*
				Sample Type:	*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):	*0.6*	*0.15*	*0.9*
				Date Sampled:	*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:	*12:00*	*12:00*	*12:00*
				Asbestos Lab:	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**		
Bis(2-Chloroethoxy)Methane		M	2790	mg/kg	0.50		
2,4-Dichlorophenol		N	2790	mg/kg	0.50		
1,2,4-Trichlorobenzene		M	2790	mg/kg	0.50		
Naphthalene		M	2790	mg/kg	0.50		
4-Chloroaniline		N	2790	mg/kg	0.50		
Hexachlorobutadiene		M	2790	mg/kg	0.50		
4-Chloro-3-Methylphenol		N	2790	mg/kg	0.50		
2-Methylnaphthalene		M	2790	mg/kg	0.50		
4-Nitrophenol		N	2790	mg/kg	0.50		
2,4,6-Trichlorophenol		N	2790	mg/kg	0.50		
2,4,5-Trichlorophenol		N	2790	mg/kg	0.50		
2-Chloronaphthalene		M	2790	mg/kg	0.50		
2-Nitroaniline		N	2790	mg/kg	0.50		
Acenaphthylene		M	2790	mg/kg	0.50		
Dimethylphthalate		M	2790	mg/kg	0.50		
2,6-Dinitrotoluene		N	2790	mg/kg	0.50		
Acenaphthene		M	2790	mg/kg	0.50		
3-Nitroaniline		N	2790	mg/kg	0.50		
Dibenzofuran		M	2790	mg/kg	0.50		
4-Chlorophenylphenylether		M	2790	mg/kg	0.50		
2,4-Dinitrotoluene		N	2790	mg/kg	0.50		
Fluorene		M	2790	mg/kg	0.50		
Diethyl Phthalate		M	2790	mg/kg	0.50		
4-Nitroaniline		N	2790	mg/kg	0.50		
Azobenzene		M	2790	mg/kg	0.50		
4-Bromophenylphenyl Ether		M	2790	mg/kg	0.50		
Hexachlorobenzene		M	2790	mg/kg	0.50		
Phenanthrene		M	2790	mg/kg	0.50		
Anthracene		M	2790	mg/kg	0.50		
Carbazole		M	2790	mg/kg	0.50		
Di-N-Butyl Phthalate		N	2790	mg/kg	0.50		
Fluoranthene		M	2790	mg/kg	0.50		
Pyrene		M	2790	mg/kg	0.50		
Butylbenzyl Phthalate		N	2790	mg/kg	0.50		
Benzo[a]anthracene		M	2790	mg/kg	0.50		
Chrysene		M	2790	mg/kg	0.50		

Results - Soil

Project: Barnhill Street

Client: E3P				**Chemtest Job No.:**		25-21289	25-21289	25-21289
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1992314	1992315	1992316
Order No.: 011551				*Client Sample Ref.:*		*WS105*	*WS106*	*WS106*
				Client Sample ID.:		*WS105*	*WS106*	*WS106*
				Client Reference:		*WS105*	*WS106*	*WS106*
				Sample Type:		*SOIL*	*SOIL*	*SOIL*
				Top Depth (m):		*0.6*	*0.15*	*0.9*
				Date Sampled:		*24-Jun-2025*	*25-Jun-2025*	*25-Jun-2025*
				Time Sampled:		*12:00*	*12:00*	*12:00*
				Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**			
Bis(2-Ethylhexyl)Phthalate		N	2790	mg/kg	0.50			
Di-N-Octyl Phthalate		N	2790	mg/kg	0.50			
Benzo[b]fluoranthene		M	2790	mg/kg	0.50			
Benzo[k]fluoranthene		M	2790	mg/kg	0.50			
Benzo[a]pyrene		M	2790	mg/kg	0.50			
Indeno(1,2,3-c,d)Pyrene		N	2790	mg/kg	0.50			
Dibenz(a,h)Anthracene		N	2790	mg/kg	0.50			
Benzo[g,h,i]perylene		M	2790	mg/kg	0.50			
Naphthalene		M	2800	mg/kg	0.10	1.1	0.20	1.3
Acenaphthylene		N	2800	mg/kg	0.10	0.11	0.11	0.30
Acenaphthene		M	2800	mg/kg	0.10	1.6	0.28	< 0.10
Fluorene		M	2800	mg/kg	0.10	1.0	0.24	0.37
Phenanthrene		M	2800	mg/kg	0.10	8.0	2.4	2.1
Anthracene		M	2800	mg/kg	0.10	1.4	0.60	0.52
Fluoranthene		M	2800	mg/kg	0.10	8.6	4.7	2.7
Pyrene		M	2800	mg/kg	0.10	7.7	4.3	2.3
Benzo[a]anthracene		M	2800	mg/kg	0.10	3.7	2.2	0.92
Chrysene		M	2800	mg/kg	0.10	3.9	2.3	1.1
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	4.5	3.3	1.6
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	1.7	1.1	0.49
Benzo[a]pyrene		M	2800	mg/kg	0.10	3.7	2.6	1.2
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	2.1	1.7	0.85
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	0.68	0.30	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	2.3	1.8	0.91
Total Of 16 PAH's		N	2800	mg/kg	2.0	52	28	17
Total Phenols		M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection	
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching C2,C8,C10,WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection
Text example	All items indicated in italic font represent customer-supplied information that may not be independently verified by the laboratory

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at ≤ 30°C prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

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 - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

APPENDIX VII
ORIGIN OF TIER I GENERIC ASSESSMENT CRITERIA

CONSTITUENT	ORIGIN OF RISK ASSESSMENT VALUE
Arsenic	2014 LQM/CIEH S4ULs
Cadmium	2014 LQM/CIEH S4ULs
Chromium	2014 LQM/CIEH S4ULs
Lead	PROVISIONAL C4SL
Mercury	2014 LQM/CIEH S4ULs – methylmercury
Nickel	2014 LQM/CIEH S4ULs
Selenium	2014 LQM/CIEH S4ULs
Copper	2014 LQM/CIEH S4ULs
Zinc	2014 LQM/CIEH S4ULs
Cyanide – Total	2014 LQM/CIEH S4ULs
Phenols – Total	2014 LQM/CIEH S4ULs
Naphthalene	General assessment criteria (GAC) developed by CIEH/LQM Suitable 4 Use Levels with supporting data from SR3, SR7 and existing Tox report where applicable. 1% SOM.
Acenaphthylene	
Acenaphthene	
Fluorene	
Phenanthrene	
Anthracene	
Fluoranthene	
Pyrene	
Benzo(a)Anthracene	
Chrysene	
Benzo(b/k)Fluoranthene (iii)	
Benzo(a)Pyrene	
Indeno(123-cd)Pyrene	
Dibenzo(a,h)Anthracene	
Benzo(ghi)Perylene	
TPH C_5-C_6 (aliphatic)	
TPH C_6-C_8 (aliphatic)	
TPH C_8-C_{10} (aliphatic)	
TPH C_{10}-C_{12} (aliphatic)	
TPH C_{12}-C_{16} (aromatic)	
TPH C_{16}-C_{21} (aromatic)	
TPH C_{21}-C_{35} (aromatic)	

APPENDIX VIII GEOTECHNICAL ANALYSIS RESULTS

MURRAY RIX
CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract 18-145 -
Barnhill Street

Job Number MRN 25005/153
Date of Issue 18 July 2025
Page 1 of 8

Approved Signatories

S J Hutchings, O P Davies

Notes

1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.

2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.

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

4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.

5 The results included within the report are representative of the samples submitted for analysis.

6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

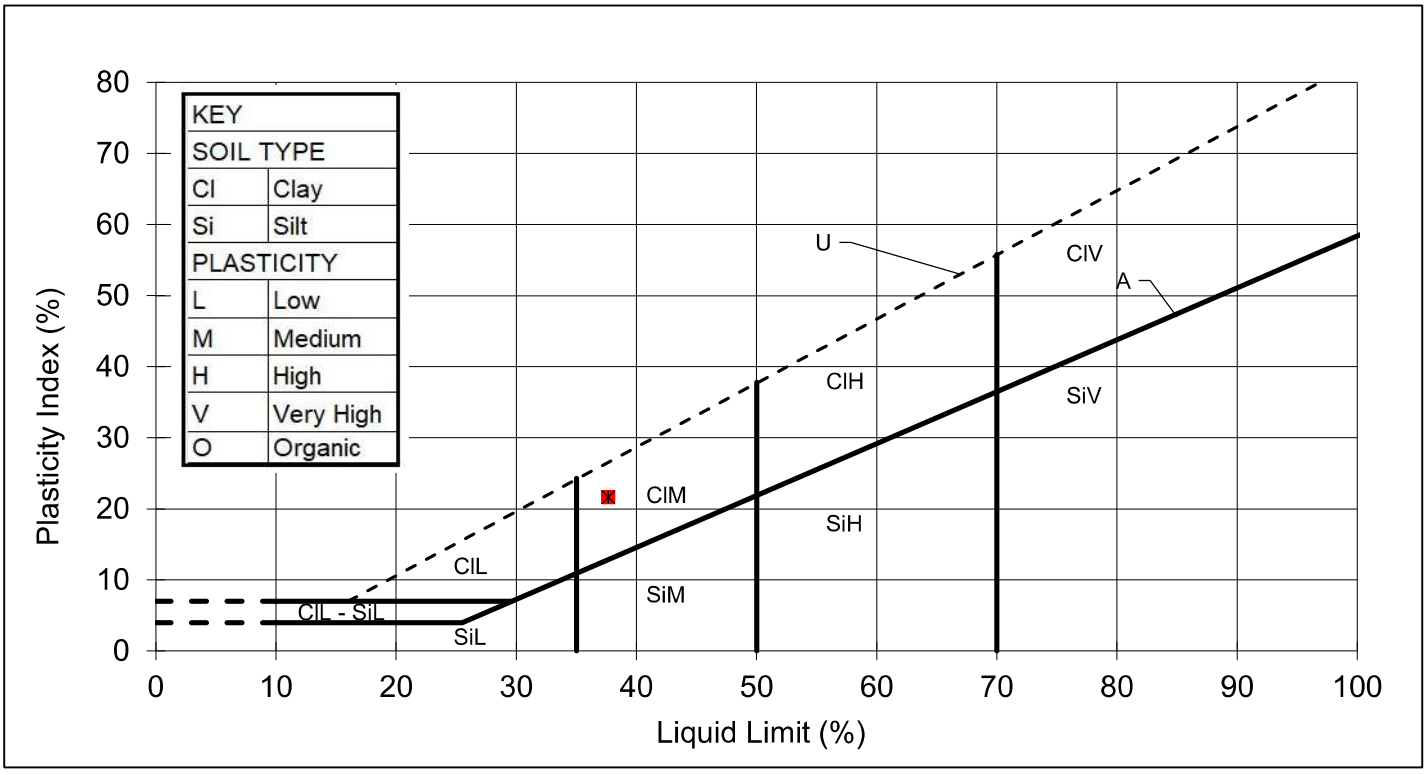
CLIENT	e3p
SITE	18-145 - Barnhill Street
JOB NUMBER	MRN 25005/153

SAMPLE LABEL	TP107 2.2m D	DATE SAMPLED	23-Jun-25
SAMPLE No.	5124701	DATE RECEIVED	09-Jul-25
DATE TESTED	11-Jul-25	SAMPLED BY	Client

MATERIAL	Orange grey brown silty slightly sandy CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	19.8	37.5	1.006	
Determination 2 (avg)	19.6	37.4		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
22.3	38	16	22	90



REMARKS

SIGNED [redacted]

NAME

DATE 18-Jul-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

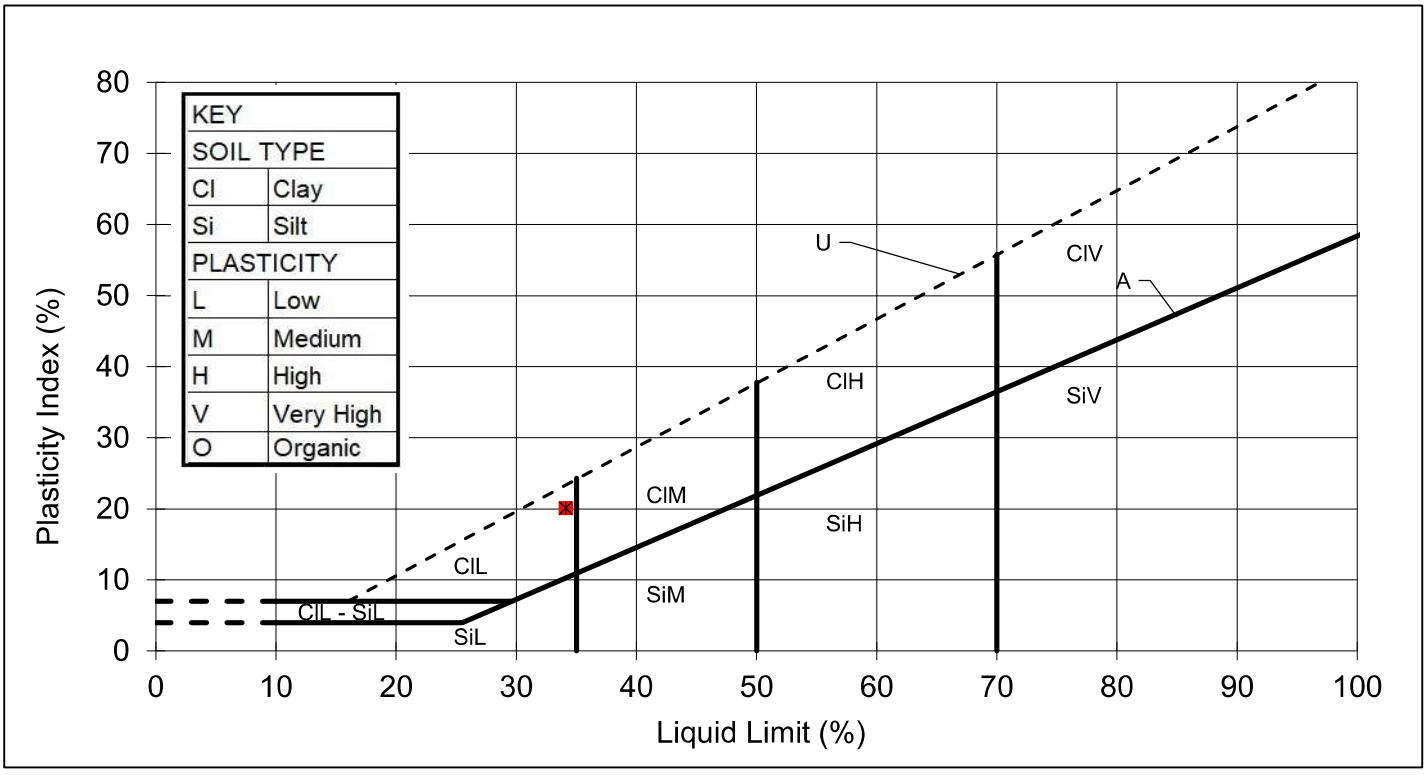
CLIENT	e3p
SITE	18-145 - Barnhill Street
JOB NUMBER	MRN 25005/153

SAMPLE LABEL	WS106 3.0m D	DATE SAMPLED	24-Jun-25
SAMPLE No.	5124702	DATE RECEIVED	09-Jul-25
DATE TESTED	11-Jul-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	34.2	1.001	
Determination 2 (avg)	19.9	34.0		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
15.7	34	14	20	85



REMARKS

SIGNED [redacted]

NAME

DATE 18-Jul-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

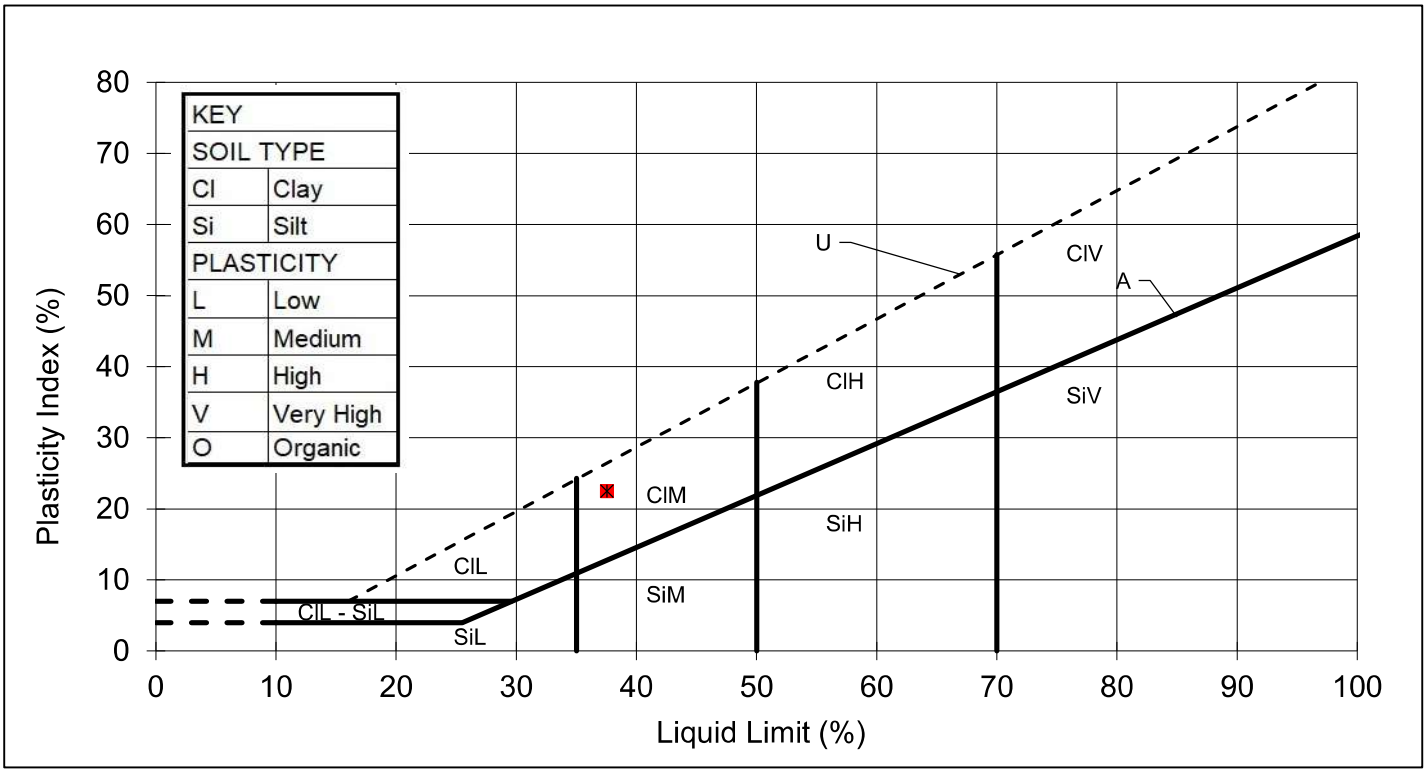
CLIENT	e3p
SITE	18-145 - Barnhill Street
JOB NUMBER	MRN 25005/153

SAMPLE LABEL	TP103 1.4m D	DATE SAMPLED	23-Jun-25
SAMPLE No.	5124703	DATE RECEIVED	09-Jul-25
DATE TESTED	11-Jul-25	SAMPLED BY	Client

MATERIAL	Orange grey brown silty slightly sandy CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	19.0	36.9	1.017	
Determination 2 (avg)	19.3	36.9		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18.0	38	15	23	68



REMARKS

SIGNED [redacted]

NAME DATE 18-Jul-25

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

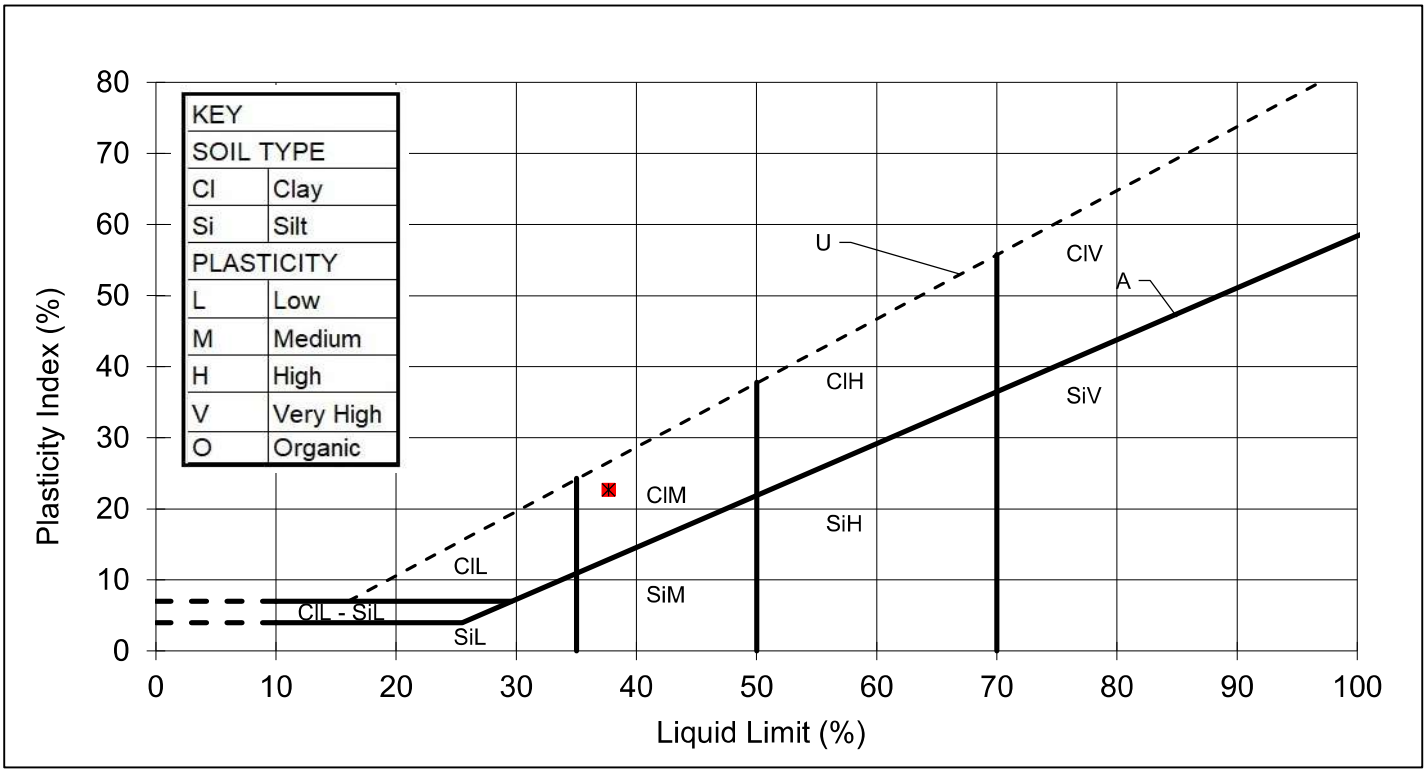
CLIENT	e3p
SITE	18-145 - Barnhill Street
JOB NUMBER	MRN 25005/153

SAMPLE LABEL	WS104 2.0m D	DATE SAMPLED	25-Jun-25
SAMPLE No.	5124704	DATE RECEIVED	09-Jul-25
DATE TESTED	11-Jul-25	SAMPLED BY	Client

MATERIAL	Grey brown silty slightly sandy CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	21.2	38.2	0.980	
Determination 2 (avg)	21.4	38.7		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
24.9	38	15	23	88



REMARKS

SIGNED [redacted]

NAME DATE 18-Jul-25

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

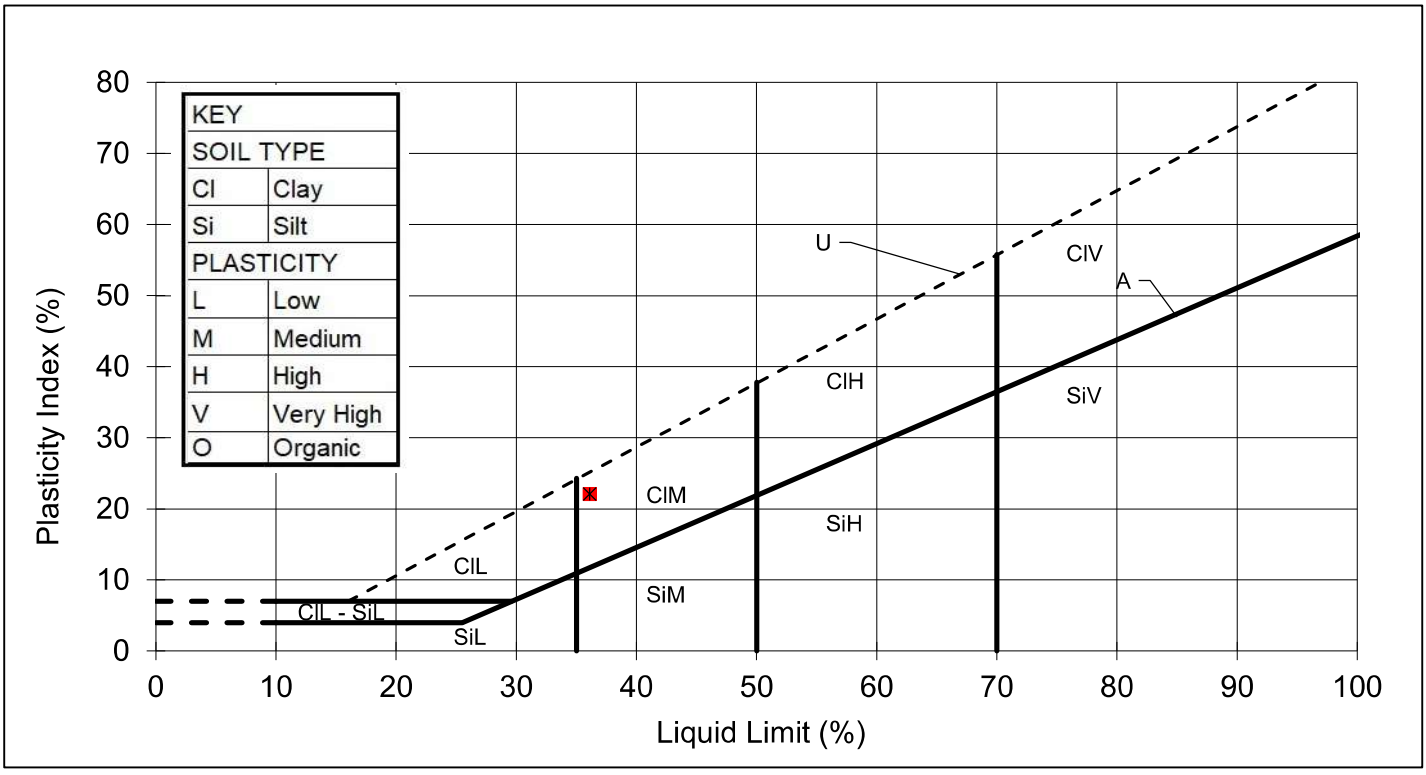
CLIENT	e3p
SITE	18-145 - Barnhill Street
JOB NUMBER	MRN 25005/153

SAMPLE LABEL	TP101 2.3m D	DATE SAMPLED	23-Jun-25
SAMPLE No.	5124705	DATE RECEIVED	09-Jul-25
DATE TESTED	11-Jul-25	SAMPLED BY	Client

MATERIAL	Orange grey brown silty slightly sandy CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.5	36.4	0.990	
Determination 2 (avg)	20.7	36.5		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
27.3	36	14	22	97



REMARKS

SIGNED [redacted]

NAME

DATE 18-Jul-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF POINT LOAD STRENGTH INDEX OF ROCK
METHOD IN ACCORDANCE WITH ASTM STANDARD D 5731

CLIENT	e3p
SITE	18-145 - Barnhill Street
JOB NUMBER	MRN 25005/153

DATE RECEIVED	09-Jul-25	DATE SAMPLED	09-Jul-25
DATE TESTED	15-Jul-25	SAMPLED BY	Client

MATERIAL	Rock Core
ADVISED SOURCE	Site Investigation Sample

Sample Number	B/H No.	Depth (m)	Test Type*	D (mm)	W** (mm)	Load (P) (kN)	D_e^2 (mm^2)	D_e (mm)	Is (MPa)	F	$I_{s(50)}$ (MPa)
5124706	RB101	29.18-29.27	D	69.4		0.6	4816.36	69.40	0.12	1.16	0.14
5124707	RB102	24.45-24.50	A	59.6	69.4	2.8	5266.42	72.57	0.53	1.18	0.63
5124708	RB104	21-21.14	D	69.4		0.4	4816.36	69.40	0.08	1.16	0.10
5124709	RB105	13.26-13.39	D	69.4		0.4	4816.36	69.40	0.08	1.16	0.10
5124710	RB103	13.06-13.13	D	69.6		1.1	4844.16	69.60	0.23	1.16	0.26

Test Type *			
A	Axial Test	D	Diametral Test
B	Block Test	I	Irregular Lump Test

**W Entry required if test type is not Diametral

REMARKS

SIGNED [redacted]

NAME

DATE 18-Jul-25

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS

ASTM D7012 - 14 Method C

CLIENT	e3p
SITE	18-145 - Barnhill Street
JOB NUMBER	MRN 25005/153

DATE RECEIVED	09-Jul-25	DATE SAMPLED	23, 24, 25-Jun-25
DATE TESTED	11-Jul-25	SAMPLED BY	Client
MATERIAL TESTED	Rock Core		

Sample Number	B/H No.	Sample Depth	Tested By	Diameter (mm)	Length* (mm)	L/D Ratio	Method of Preparation	Load at Failure (kN)	Compressive Strength (N/mm^2)	Description after Test
5124711	RB106	12.37-12.52	M.R.	70	140	2.00	Saw / Grinding	59.0	**15.3**	Split vertically top to bottom with no visible end defects
5124712	RB106	18-18.29	M.R.	71	142	2.00	Saw / Grinding	28.4	**7.2**	Split vertically top to bottom with no visible end defects
5124713	RB101	16.31-16.43	M.R.	71	142	2.00	Saw / Grinding	44.4	**11.2**	Split vertically top to bottom with no visible end defects
5124714	RB101	23.58-23.75	M.R.	71	142	2.00	Saw / Grinding	60.2	**15.2**	Split vertically top to bottom with no visible end defects
5124715	RB101	34.43-34.7	M.R.	70	140	2.00	Saw / Grinding	11.3	**2.9**	Split vertically top to bottom with no visible end defects
5124716	RB102	19-19.25	M.R.	70	140	2.00	Saw / Grinding	58.1	**15.1**	Split vertically top to bottom with no visible end defects
5124717	RB104	12-12.17	M.R.	70	140	2.00	Saw / Grinding	52.4	**13.6**	Split vertically top to bottom with no visible end defects
5124718	RB105	16-16.18	M.R.	71	142	2.00	Saw / Grinding	27.6	**7.0**	Split vertically top to bottom with no visible end defects
5124719	RB105	24.23-24.37	M.R.	71	142	2.00	Saw / Grinding	34.8	**8.8**	Split vertically top to bottom with no visible end defects
5124720	RB103	19.39-19/5	M.R.	70	140	2.00	Saw / Grinding	39.1	**10.2**	Split vertically top to bottom with no visible end defects

Comments / Deviation from standard method / Abnormalities noted during visual inspection.
*Length after sample preparation

NAME O.P. Davies BA (Hons)
(Director / Head of Laboratory)

SIGNED [redacted]

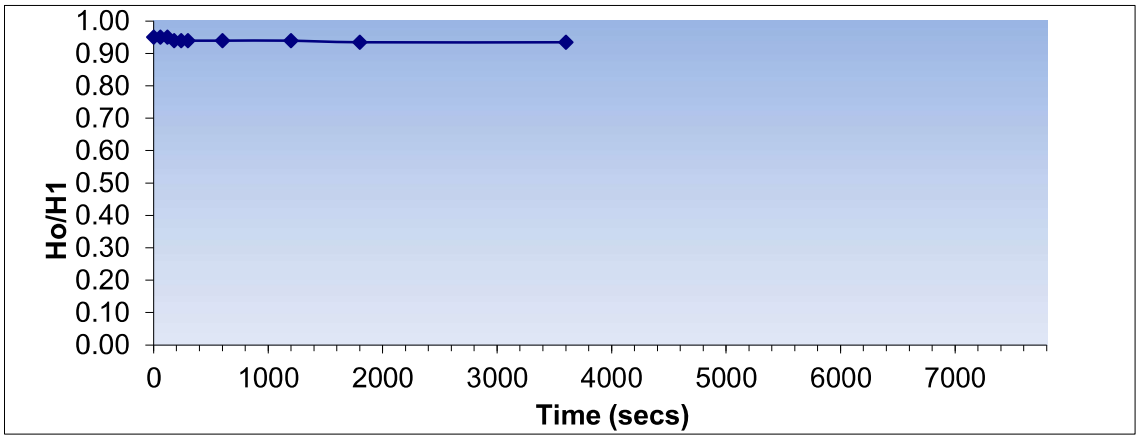
DATE 18-Jul-25

APPENDIX IX
FALLING HEAD TESTS RESULTS

Falling Head Test Borehole: WS101 Test No: 1

Contract No:	18-145	Casing Diameter: (m)	0.05
Contract Title:	Barnhill Street, Moss Side	Height of Casing:	0
Date of Test:	16.07.2025	Depth of Borehole: (m)	2.00

Recorded Time			Total Time			H/Ho
Hours	Minutes	Seconds	(secs)	Depth (m)		
0	0	0	0	0.1	0	0.9500
0	1	0	60	0.1	60	0.9500
0	2	0	120	0.1	120	0.9500
0	3	0	180	0.12	180	0.9400
0	4	0	240	0.12	240	0.9400
0	5	0	300	0.12	300	0.9400
0	10	0	600	0.12	600	0.9400
0	20	0	1200	0.12	1200	0.9400
0	30	0	1800	0.13	1800	0.9350
0	60	0	3600	0.13	3600	0.9350



General Approach

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2}$$

k = permeability of soil

F = Intake Factor (figures 6 &7, BS5930:1999)

H_1 = variable head measured at time t_1 after commencement of test

H_2 = variable head measured at time t_2 after commencement of test

A = Cross sectional area of borehole casing or standpipe as appropiate.

H_1 =	0.95	t_1 =	60
H_2 =	0.935	t_2 =	1800
		F=	1.05

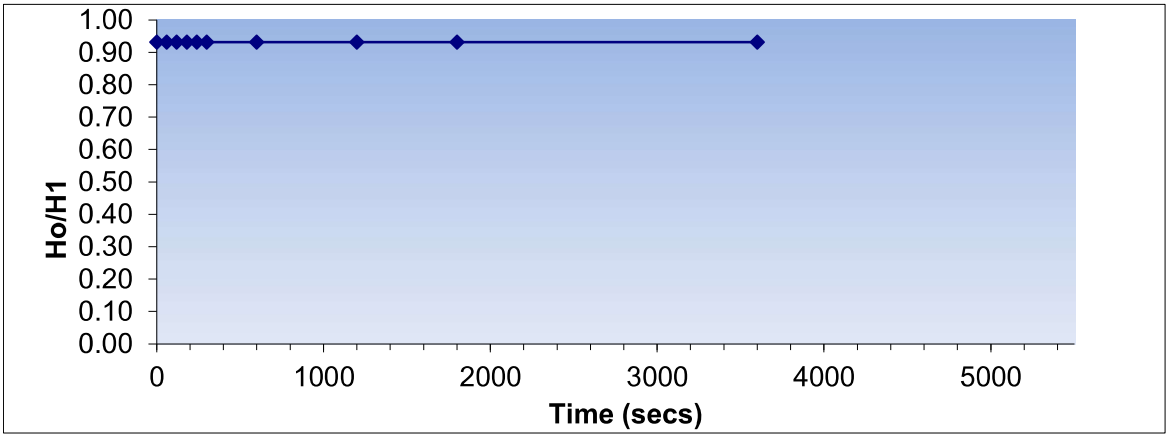
A = 0.00196349 m^2

Coefficient of Permeability, k = **2.97E-06** m/s

Falling Head Test Borehole: WS103 Test No: 1

Contract No:	18-145	Casing Diameter: (m)	0.05
Contract Title:	Barnhill Street, Moss Side	Height of Casing:	0
Date of Test:	16.07.2025	Depth of Borehole: (m)	4.40

Recorded Time			Total Time			H/Ho
Hours	Minutes	Seconds	(secs)	Depth (m)		
0	0	0	0	0.3	0	0.9318
0	1	0	60	0.3	60	0.9318
0	2	0	120	0.3	120	0.9318
0	3	0	180	0.3	180	0.9318
0	4	0	240	0.3	240	0.9318
0	5	0	300	0.3	300	0.9318
0	10	0	600	0.3	600	0.9318
0	20	0	1200	0.3	1200	0.9318
0	30	0	1800	0.3	1800	0.9318
0	60	0	3600	0.3	3600	0.9318



General Approach

$$k = \frac{A}{F(t_2 - t_1)} \log_e \frac{H_1}{H_2}$$

k = permeability of soil

F = Intake Factor (figures 6 &7, BS5930:1999)

H_1 = variable head measured at time t_1 after commencement of test

H_2 = variable head measured at time t_2 after commencement of test

A = Cross sectional area of borehole casing or standpipe as appropiate.

H_1 =	0.9318	t_1 =	60
H_2 =	0.9318	t_2 =	1800
		F=	2.3

A = 0.00196349 m^2

Coefficient of Permeability, k = **1.33E-06** m/s