

Ground Investigation Report [intrusive]

Land off Oldham Road, Rochdale



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Report Status

Project Number	20511
Report Number	001
Revision	V01 – Issue for information
Date Issued	10 June 2025 (V01)

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Appendices Drawings > Exploratory Hole Logs > Cross-Section > In-Situ Testing Results > Laboratory Testing Results

The Ground Investigation Report has been written with reference to various sources of information. These are either appended or hyperlinked / referenced throughout this Report

Guidance notes for: i) unexpected material encounters; and, ii) material suitability are included as annexes. These are intended to offer further context and advice on these different aspects of ground investigation and groundworks.

Appointment

Soil and Structures Ltd were instructed by Metalcraft Group Ltd (*the Client*) in January 2025 to prepare a Ground Investigation Report (*this Report*) in support of a planned development of a parcel of land located off Oldham Road, Rochdale (the Site).

Development proposals include for the construction of a single-storey retail unit and associated hard standing (parking and goods yard).

Reliance on the advice presented herein rests solely with the Client.

Ground Investigation Reports

The requirement for this Report has been triggered by the proposed development. In the ground everything is inter-related: from strength to pollution potential; through to, stability and drainage characteristics. Any groundworks completed as part of a development project will therefore influence, and be influenced, by all these inter-related elements and the associated level of risk.

This Report presents: an overview of the Site setting, the anticipated ground conditions and, where structures are present, the anticipated foundations. The Report also offers more specific advice tailored to the Client’s requirements as discussed below.

Scope and Context

This Ground Investigation Report aims to remove as much uncertainty from the ground as possible and how ground conditions on the Site stand to influence, and be influenced by, the proposed development.

The more specific, legal context of the advice given in this Report relates to an assessment of:

- i) Potential ground-related hazards that may affect the development that is governed by health and safety law (various acts and regulations).
- ii) The suitability of the Site for its proposed end use that is rooted within national planning policy guidance (the National Planning Policy Framework) that is governed by planning law (various acts). The assessment of ‘suitability’ relates specifically to ground-related hazards of contamination, pollution and ground gases as set out within both the Environment Protection Act 1990 : Part 2A (2012) and Environment Agency guidance ‘Land Contamination Risk Management’ (LCRM) (2020).

In practice, this necessitates acknowledgement and review of this Report and its findings by the engineering design team as well as acceptance of this Report and its findings by the Local Planning Authority’s contaminated land team; a statutory consultee on the planning application.

Separately, earlier ground-related reporting (referenced below) confirmed the risk associated within coal mining related hazards was acceptably low with no further assessment recommended.

Fieldwork

This Report references intrusive investigation fieldworks that were scoped and supervised by the author of the Report.

Background to this Report

This Report is preceded by ground-related reporting relating to the Site. This includes a ‘Phase 1: Desk Top Study & Coal Mining Risk Assessment’ prepared by ARC Environmental Ltd dated 09 September 2022 ref. 22-562. Readers of this Report are assumed to have access to this earlier reporting and therefore a copy not appended here.

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1.0 The Site and Proposed Development

Location and size: The Site comprises an existing parcel of open land that is approximately 0.14 ha in area located between Oldham Road and Watkin Street, Oldham – Figure 1.

Topography: The surface topography of the Site falls from east to west with levels at the eastern boundary of the Site resting around 139.0 mAOD (Watkin Street at 140.0 mAOD locally to the Site) and levels at the western boundary resting around 138.0 mAOD.

Existing structures: At the point of the fieldworks, no existing structures were present on Site however the eastern boundary is formed of a masonry retaining wall (Watkin Street is higher than the Site).

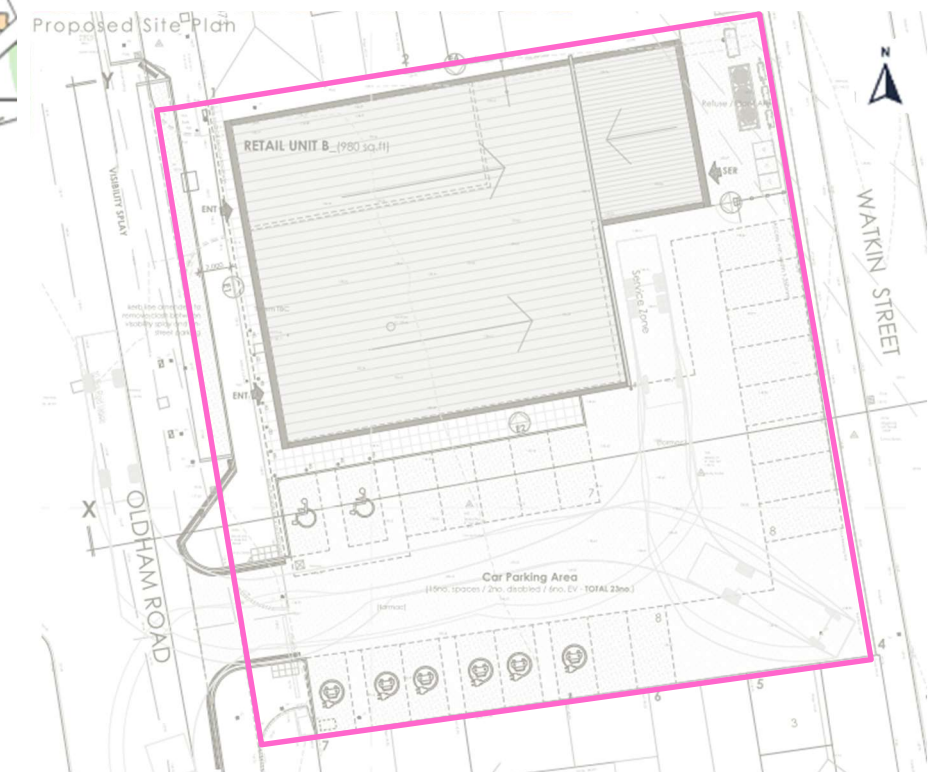
Development proposals: include for the construction of a single-storey retail unit and associated hard standing (parking and goods yard) – Figure 1.

To enable this development, the following groundworks are likely to be required, N.B. listing is outline only.

- The thickness of this 'wedge' will taper/thin towards the eastern boundary of the Site to limit the scale of underpinning works, potentially required along the eastern boundary retaining wall.

- > **Tank Pulls:** Anecdotally, two 'small' underground storage tanks (diesel) remain on Site that, if present, would require controlled removal by a suitably qualified and experienced contractor.

- > **Utility Excavations:** Excavation of new drainage and other utility alignments.
- > **Foundations:** Construction of new sub-structures (foundations) for the retail unit.
- > **Surfacing:** Formation of hardstanding (no soft landscaping planned).



- > *Extract from appended Site Location Plan*
- > *Site approximately centred on NGR 390460, 411760*
- > *Post code: OL16 4TD*
- > **INSERT:** *extract from appended Proposed Site Plan*

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2.0 Site Setting

⑦ **Background information:** The Site setting is described within the 'Phase 1: Desk Top Study & Coal Mining Risk Assessment' prepared by ARC Environmental Ltd dated 09 September 2022 ref. 22-562.

The commentary within this section supplements that presented within the above report. A revised approach to the contaminated land matters is also proposed and described within Section 3.0.

History: Evidence of underground storage tanks (USTs) having been present on the Site is referenced within the ARC Environmental reporting, e.g. vent pipes, despite no evidence of

During the fieldworks, the neighbour and owner of No. 469 to 473 Oldham Road was approached who had lived in the area for over 40 years and was friends with the former mechanic who worked on the Site. The anecdotal evidence obtained during this conversation confirmed the presence of one 'large' UST on Site (petrol) as well as two additional 'smaller' USTs (diesel).

It was reported that the single, large petrol tank had been removed from the ground and disposed of, off-Site by a previous developer and that the two diesel tanks likely remained in the ground (or were visible in the ground when this earlier groundwork was taking place). The area where these USTs were indicated to have been present coincided with an area of rough, uneven ground and dense vegetation consistent with the ground having been disturbed.

No records of this earlier groundwork are held by the Client or on the planning portal.

3.0 Intrusive Investigation and Laboratory Testing

The intrusive investigation (Table 1) was designed in general accordance with guidance for site investigations¹ referencing the Site setting, the anticipated ground conditions, access arrangements and responding to the revealed ground conditions, i.e. completion of additional holes where required.

Comments on the scope of the fieldwork: The primary aim of any ground investigation is to profile the ground conditions across the Site with exploratory holes generally arranged in a grid across the Site.

However, in this scenario, the most recent use of the Site as a petrol filling station directly informed the design and scoping of this general investigation (*ensuring the integrity of any sub-structures associated with the petrol filling station was maintained*) as well as being of specific interest for investigation (*confirming the condition of the sub-structures and the soils around them*).

In this scenario, the reported removal of at least one of the underground storage tanks (USTs) meant the intrusive investigation was taking place after some of the main petrol filling station sub-structures had been removed. Sub-structures that, at the point of the Phase 1: Desk Top Study being issued, were considered likely to be present but their condition and location unknown.

In addition, it was apparent early into the investigation that the Site had not been fully reclaimed (decommission of all petrol filling station infrastructure) with the continued presence of fuel pipelines (TP105) and mainly intact hardstanding. It follows that there will be the requirement for the removal of residual sub-structures associated with the petrol filling station as part of the groundworks, e.g. drainage and pipe runs. Further intrusive investigation works, e.g. additional trial pits, were not completed as part of this ground investigation given the potential for these works to

release residual fuel product into the ground whilst adequate pollution control measures were not available, e.g. fuel pumps or lined wagons ready to transport fuel-impacted soils.

Ground gas monitoring was proposed by ARC Environmental Ltd as what appears to be a generic recommendation 'in order to determine the ground gas (and groundwater regime) below the site'. Ground gas monitoring in areas where fuel range hydrocarbons are suspected to be present typically results in skewed data resulting from the fouling of the gas monitor by hydrocarbon vapours – generally resulting in false-positives for methane.

On this basis, ground gas monitoring was considered as part of the investigation but only as a responsive measure, if and where any evidence of degradable material or 'deep' (>2.5 m) Made Ground deposits were encountered.

The use of a photo ionisation detector (PID) can be a useful tool for screening soils for potential vapour generating material. The PID detects to parts per million that, compared to an un-impaired nose, is a thousand to a million times less sensitive. On this basis, whilst its use is recommended as part of the UST removal validation works, it was not selected for use at this stage, as part of this investigation.

An assessment of the likely consistency of ground conditions is offered however, it should be borne in mind that any ground investigation offers a snapshot of variations between exploratory hole positions cannot be ruled out.

Unexpected or unforeseen ground conditions may be encountered even when extensive investigation is completed. In this scenario, further investigation is not recommended.

Exploratory hole locations are illustrated on the Ground Model in Section 5.0 with descriptions of the materials encountered detailed within the following section, Section 4.0.

The **exploratory hole logs** are appended.

Permits: No permissions were required for access onto the Site or for the intrusive investigation.

Table 1: Scope and Rationale of the Intrusive Investigation Fieldworks

Activity	Ref.	Rationale
Exploratory Holes		
11 machine excavated trial pits	TP101 to TP111	To confirm the shallow ground conditions across the Site (general coverage) as well as targeting specific features as detailed on the appended exploratory hole logs
In-Situ Testing		
Variable (falling) head testing in general accordance with current standards ²	-	To enable rates of infiltration or permeability to be evaluated within the targeted geology. This testing is one line of evidence to support the infiltration potential of a soil being assessed.
Other		
Logging of soil arisings from exploratory holes.	All holes	To characterise: ground conditions; existing foundations; and support classification of materials present in the ground. Material descriptions are detailed in the notes on the Ground Model in Section 5.0, the accompanying exploratory hole logs and strata depths on the plan itself.
Investigation of drainage access covers	-	To confirm their condition and presence/absence of any oil/fuel residue within these channels often represent preferential pathways by which any fuel or oils can be transported across and off the Site

¹ Code of practice for site investigations. BS 5930 (2015)
² BS 5930 (2015); BS 22282:2 (2012)

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Geotechnical samples were obtained for classification testing (Particle Size Distribution {2 samples of natural soils} and BRE Suite analysis {3 samples of Made Ground; 2 samples of natural soils})

Environmental samples were obtained from various locations and depths for the reasons detailed below – Table 2.

Table 2: Environmental sampling (ES) rationale

Sample location and depth	Rationale for Environmental Sampling (ES)
TP101 @ 0.30 to 0.35	Presence of suspected Asbestos Containing Material (ACM) revealed within exploratory hole. ES obtained to screen general quality of the Made Ground soils in this location – suspected workshop area – and to confirm the presence/absence of Asbestos Containing Soils (ACS) to inform the risk management strategy.
TP104 @ 1.50	ES obtained from natural soils locally to former underground storage tanks (USTs) to determine if and where any fuels have leaked and spread to this area – an initial move to validate the chemical quality of soils around the former USTs. No evidence of odours in exploratory hole.
TP106 @ 0.00	ES obtained to confirm presence/absence of coal tar within the bituminous surfacing.
TP107 @ 0.40 to 0.50	ES obtained to screen general quality of the Made Ground soils in this location.
TP109 @ 1.00 to 1.30	ES obtained from fill deposits placed in location of former underground storage tank (UST) to determine if and where these soils contain – an initial move to validate the chemical quality of soils in and around the former UST. No evidence of odours in exploratory hole.
TP109 @ 1.60 to 1.70	ES obtained from natural soils beneath former underground storage tank (UST) to determine if and where any fuels have leaked and spread to this area – an initial move to validate the chemical quality of soils around the former UST. No evidence of odours in exploratory hole.

With respect to the suite of **fuel-range hydrocarbon analysis**, given the absence of odours within the exploratory holes and the samples recovered from these locations (TP104, TP109, TP109), an initial screen for total petroleum hydrocarbons (TPH) was conducted, with further analysis provisionally scheduled, if and where evidence of elevated concentrations of hydrocarbons was detected.

With respect to **asbestos analysis**, given the presence of identifiable Asbestos Containing Material (ACM) within the exploratory hole (TP101), quantification testing was not scheduled, rather a risk management strategy for dealing with ACM and Asbestos Containing Soils (ACS) proposed.

Ground gas monitoring was not undertaken given the absence of potentially degradable material or nearby sources of ground gas and for reasons detailed earlier within this Section.

4.0 Ground Conditions – Anticipated and Revealed

Anticipated ground conditions: Based on the Site setting the presence of three main materials were anticipated across the Site: (1) surface coverings, e.g. bituminous hardstanding and concrete, over; (2) Made Ground deposits associated with the historical use of the Site as a garage and church (including relic sub-structures); over; (3) hummocky glacial deposits (likely sand and gravel).

Revealed ground conditions: The intrusive investigation undertaken on Site broadly confirmed the anticipated conditions with one variation and five key observations

- > **Variation 1:** Not specifically a variation but more confirmation; as noted within Section 2.0, a conversation with the neighbour guided a more targeted investigation of the northern portion of the Site (TP109, TP110, TP111 - requiring tree clearance works to gain access) where the former underground storage tanks (USTs) were indicated to be present.

Within TP109, the presence of ‘recent/reworked’ fill deposits together with a concrete slab at 1.50 m depth was consistent with the position of a former UST, confirming the anecdote that this tank had been removed by a previous developer.

No evidence of the two smaller, diesel USTs was revealed, nor was any evidence of disturbed ground where they may have been present. These tanks were either so small they were not encountered by this intrusive investigation (potentially sat adjacent to the larger, petrol UST) or else they were also removed and again, the disturbed ground where they formerly sat, was not encountered.
- > **Observation 1:** A fuel pipeline running from the location of the former USTs towards the former forecourt area was revealed within TP105.
- > **Observation 2:** Relic drainage infrastructure on the Site was found to be free from odour (slightly stagnant air) and generally limited suggesting that any rainwater and other liquids landing on the hardstanding surface would have historically drained to the metal-grated channels running along the western edge of the Site.
- > **Observation 3:** Dynamic probing locally to TP108 confirmed the natural granular soils are testing upwards of ‘loose to medium dense’ (conservative evaluation) but more generally, upwards of medium dense within 1 m of their surface.
- > **Observation 4:** Apart from the Asbestos Containing Material (ACM) within TP101 and the evidence of fuel odours locally to TP105 (pipe run), no evidence of potentially harmful or polluting material was encountered in the exploratory holes;
- > **Observation 5:** Groundwater was not encountered within 2.70 m depth (deepest exploratory hole) or not above 135.85 mAOD).

The Ground Model for the Site is presented in Section 5.0 and includes further commentary on the ground conditions with photographs from all exploratory holes included within the appended **exploratory hole logs**.

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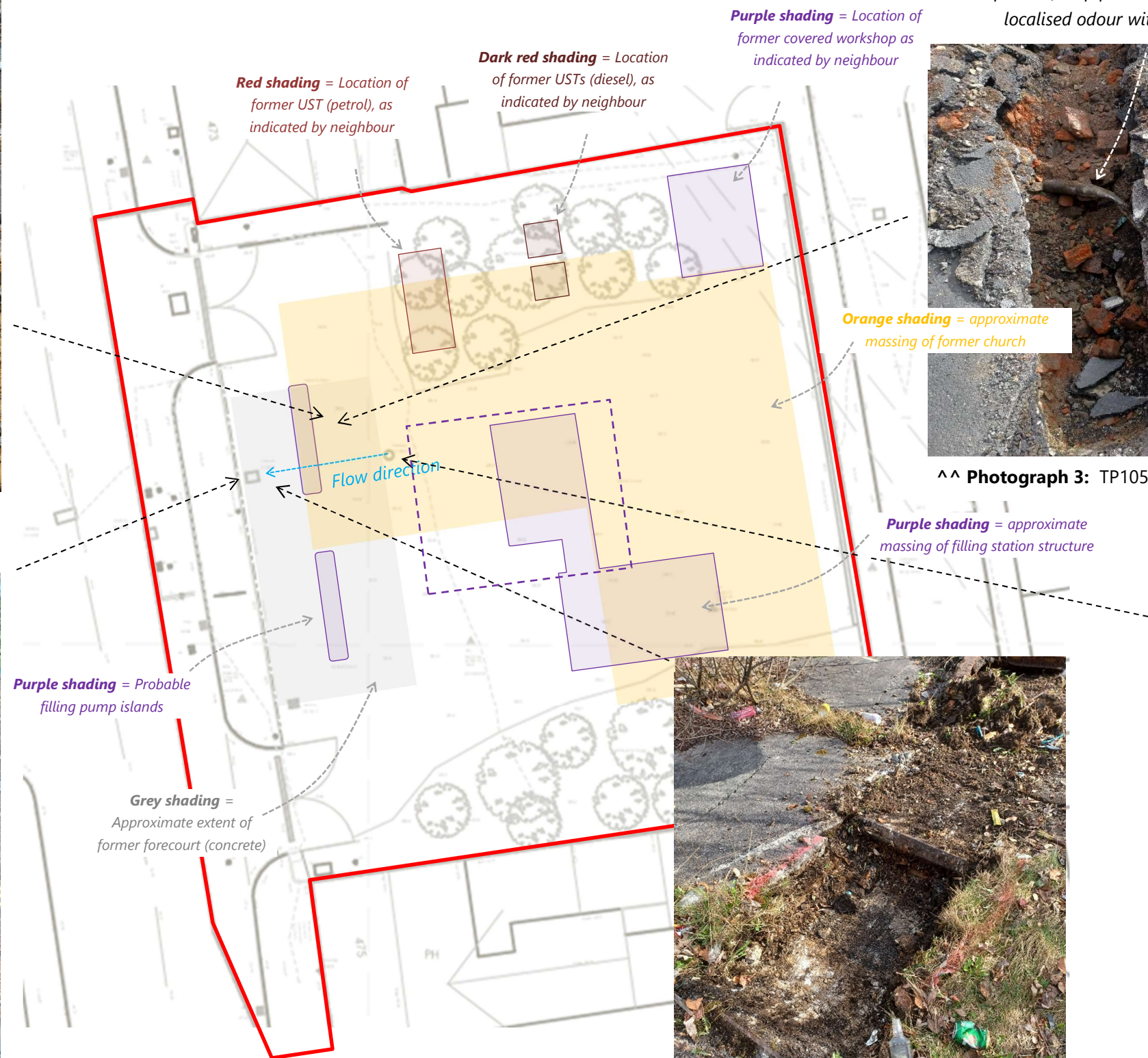
SOIL AND STRUCTURES



^^ Photograph 1: Utility box likely serving as power to the fuel pumps – no trace on CAT4+



^^ Photograph 2: Drain cover with pipe flow towards Oldham Road – invert = 0.97 mbgl. No evidence of fuel odours or staining



>> Photograph 5: Infilled access cover chamber. No evidence of fuel odours or staining.



Suspected fuel pipeline, possibly pinched by excavator bucket leading to localised odour within pit – no evidence of staining within soils

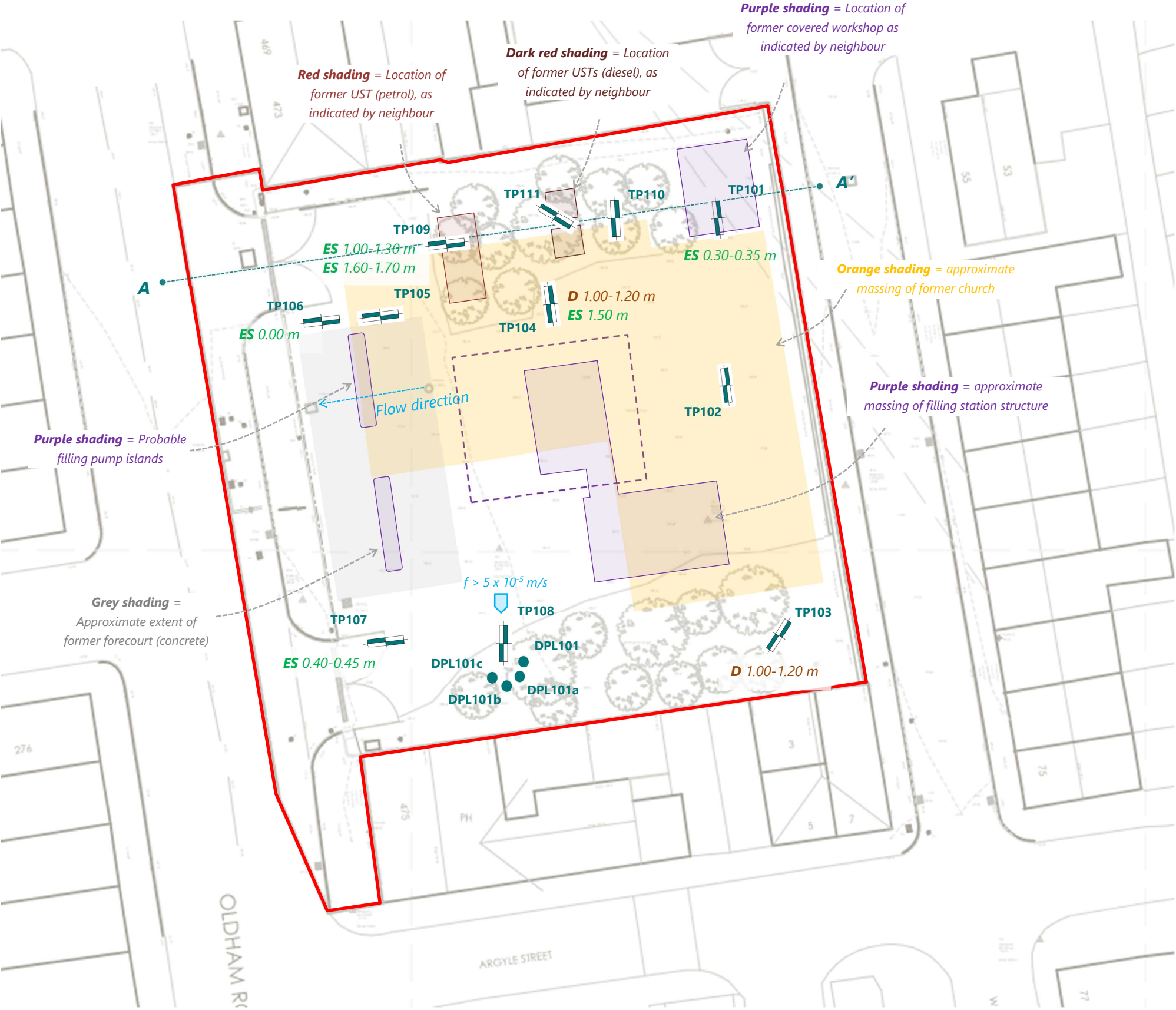


^^ Photograph 3: TP105 and utility box in Photograph 1 – facing eastwards



^^ Photograph 4: Drain cover with inspection chamber (?) – invert = 0.65 mbgl. No evidence of fuel odours or staining

5.0 Ground Model – Plan



Key

Soil and Structures – March 2025 investigation

- Machine excavated trial pit
- Dynamic penetration (light)
- Infiltration test location
- ES Environmental sample
- D Disturbed (geotechnical) sample
- Cross section lines (refer to Ground Model Profile on following page or appendix)

Ground Conditions (refer to profile overleaf)

MADE GROUND DEPOSITS

- Generalised as a single material stream, characterised by 'demolition arisings' associated with previous phases of development on the Site including 'large' sandstone boulders associated with the church's foundations
- Geotechnical characteristics:
 - Variable in nature
 - Low sulphate content (<500 mg/l) – 3 samples
 - Typically neutral pH (pH 6 to 8) with a single sample above pH 9 – 3 samples

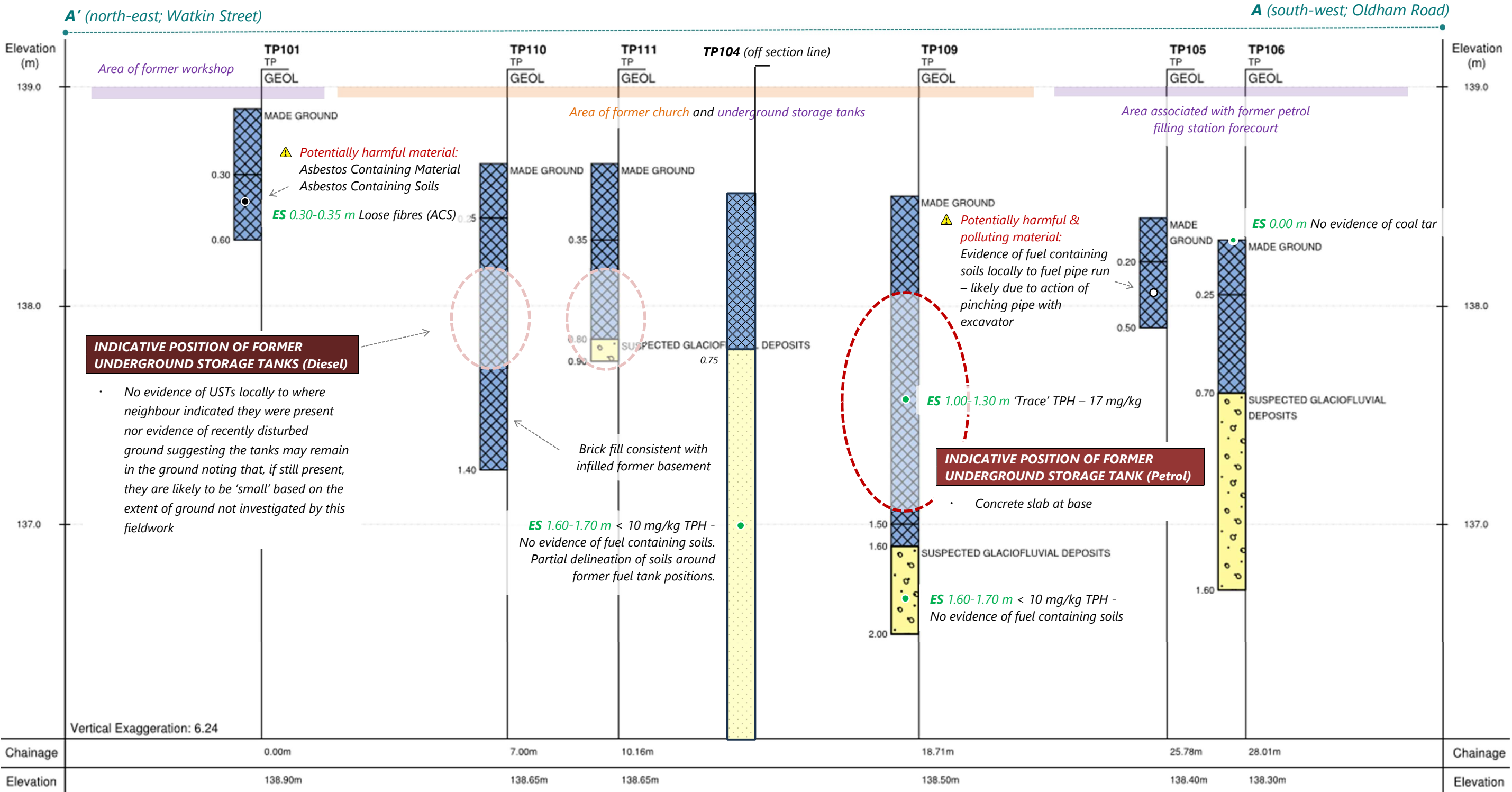
HUMOCKY GLACIAL DEPOSITS

- Encountered across the Site.
- Geotechnical characteristics:
 - Grading as a 'gravelly slightly clayey SAND' or 'very gravelly SAND' – 2 samples – with coarse grained inclusions (cobbles)
 - Indicative 'loose' to 'medium dense' strength characteristics (dynamic probe traces) over shallow depth (holes stable and digging 'slow') becoming 'medium dense' within 1.0 m of this material being encountered
 - Low sulphate content (<500 mg/l) – 2 samples
 - Near neutral pH (pH 6 to 8) – 2 samples
 - Good drainage characteristics (preliminary infiltration rate {f} or $1 \times 10^{-5} \text{ m/s}$; TP108)

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5.0 Ground Model – Profile – A to A'



Illustrative / conceptual only – do not scale from drawing – scaling varied to better illustrate select features

GROUNDWATER

- No evidence of groundwater within 2.70 m depth of the surface (or above 135.85 mAOD; TP104) – locally it appears to be resting at depths of c. 4.5 to 10.0 m below ground level (when accounting for surface elevation differences)

6.0 Ground Engineering – Risk Management and Design Considerations

The main design considerations include, but are not limited to;

- > The requirement for controlled removal of any residual sub-structures associated with the petrol filling station by a suitably qualified and competent contractor;
- > The requirement for a Site-wide reduction in levels to suit the formation level of the new retail unit;
- > Low to moderate imposed loads of the proposed retail unit (steel frame structure likely with masonry walls); and,
- > The presence of medium strength, granular soils at generally shallow depths across the Site (within 1 m of the ground surface).

Ground-related hazards: Throughout the section, various ground-related hazards are highlighted (in red text) against the relevant sections together with advice on how to reduce the risk to lower, more acceptable levels.

In this scenario, the following ground-related hazards have been identified:

- ⚠ **Potentially harmful and/or polluting material** [Historical hazard associated with the petrol filling station sub-structures] – influences **groundworks** and **structural engineering**.
- ⚠ **Slope stability** [Historical hazard associated with eastern boundary wall] – influences **groundworks** and **civil engineering**.
- ⚠ **Sub-structures** [Historical hazard associated with both the former church and petrol filling station] – influences **groundworks** and **structural engineering**.

Key watch-points for all groundworks:

- ① **Below ground utilities:** Utility strikes represent one of the highest background threats of injury, death and programme delays of all ground-related hazards. The investigation of existing utilities is typically work completed by utility specialists with reference within this Report included for completeness.
- ① **Excavation access:** Excavation collapses carry a high background threat of injury and death – even collapses within shallow excavations can pose a risk of harm. Personnel access into any excavations should therefore only be undertaken with adequate support and appropriate risk assessment. Advice on the general stability of excavations is therefore offered on a preliminary basis only within this Report. [Further guidance is available.](#)
- ① **Materials management.** For all scenarios, developing a strategy for management of materials/soils in advance of the works is recommended to maximise recovery/reuse, minimise handling and maintain soil conditioning, e.g. not repeatedly handling or compacting Topsoil. In some scenarios, formalising this [plan](#) will be required.

Preliminary advice on the re-use and recovery of materials is presented within this Report with indicative material classes given in accordance with [Series 0600](#) of the Manual of Contract Documents for Highway Works.

For material re-use as an engineering or load-bearing fill the Engineer’s approval will be required. Additional testing may be required to confirm grading and where necessary, a compaction regime if placed in load bearing situations, e.g. beneath ground bearing floor slabs or behind retaining walls.

- ① **Waste classification of excavation arisings.** The waste classification of soils is something that should be approached in a step-wise manner, in line with [current guidance](#):

Step 1: Confirming whether a soil is Hazardous or Non-Hazardous (through solid soil testing) followed by

Step 2: Waste acceptance criteria (WAC) testing only when and where off-Site disposal is confirmed as the fate for the material.

Groundworks contractors have access to waste brokerage firms and landfills directly where acceptance criteria can vary and, as such, are generally best placed to confirm waste classifications. The waste classification any material surplus to requirements (requiring disposal) will need to be agreed with the groundworks contractor in advance of works commencing. Advice on waste classification is therefore offered on a preliminary basis within this Report.

6.1 Groundworks

Excavations are anticipated to encounter the following materials that, unless otherwise stated, are listed in a generalised, descending order from the surface:

- > **Bituminous surfacing**
 - **Excavation progress:** Likely to be require a breaker or large machine with ripping claw to remove.
 - **Excavation stability:** likely to be stable when excavated through (shallow excavations).
 - **Recovery and on-site re-use:** The hardstanding could be broken up and either; made suitable for re-use under a suitable under suitable [plan](#) and/or [exemption](#) or, disposed of off Site at a suitably licensed facility.
 - **Waste classification:** The presence of coal tar within bituminous hardstanding guides the waste classification. Various lines of evidence can be used to determine whether the material contains coal tar or not with limitations on each approach. In this scenario, the sample of bituminous hardstanding included concentrations of benzo(a)pyrene below 50 mg/kg that is not consistent with coal tar (one line of evidence) with the PAH profile of the material trending away from the coal tar analogues (second line of evidence; PAH profiles appended). On this basis, the bituminous material is considered less likely to contain coal tar and therefore, on a preliminary basis, classified as ‘other bituminous mixtures’ (EWC 17 03 02). Check testing by the contractor is recommended.
- > **Made Ground deposits**
 - **Excavation progress:** Likely to be excavatable using any sized machine.
 - **Excavation stability:** In general, excavations are anticipated to have generally ‘good’ inherent stability given the well-graded, medium-dense consistency of the shallow granular soils. Given the granular nature of the soils, progressive collapse is anticipated when left open (self-support), exposed to inclement weather (wash-out/saturation) or exposed to surface loading (induced collapse).
 - ⚠ **Sub-Structures:** In areas where relic sub-structures, e.g. foundations and drainage alignments, are present, excavations are likely to be prone to large scale collapse and localised spalling.

No evidence of a crypt or basement was revealed, i.e. associated with the former church, however, the present of a former basement cannot be ruled. Excavation and controlled filling of the basement are likely to be recommended if one is encountered however, this would need to be confirmed with the Engineer.

 **Potentially harmful and polluting material (fuel-range hydrocarbons):** Only limited evidence of fuel was revealed in the Made Ground deposits as part of the fieldworks (slight petrol odour within TP105 around fuel pipeline and positive detection of petroleum range hydrocarbons {low levels} within TP109 within Made Ground placed as part of the earlier tank-pull exercise). However, the presence of fuel impacted soils within excavations cannot be ruled out and should be anticipated as part of the groundworks activities given the historical use of the Site as a petrol filling station.

Anecdotally, two, 'small' diesel underground storage tanks (USTs) remain in the ground that would require controlled excavation and removal by a suitably qualified and experienced contractor as part of the groundworks operations.

Whilst no evidence of these tanks was revealed as part of the ground investigation fieldworks it is recommended that the groundworks progress on the basis that their removal will be required. It is also noted that excavation into the former alignment of the petrol UST will be required to remove the concrete footing and confirm the extent of any fuel spillage, if any.

At this stage: i) this is considered a localised risk to where the fuel infrastructure was located; ii) in the planned removal of any fuel impacted soils, the risk to Controlled Waters is provisionally assessed to be acceptably low noting that further testing of the soils locally to, and beneath, any fuel infrastructure will be required to confirm this that may include the need for deep investigation and responsive remedial works and, related to this, the risk to human health is provisionally assessed to be acceptably low also noting the same advice above as well as the additional risk management recommendation set out within Section 6.2 of this report.

The management of groundworks around the suspected USTs and areas of relic fuel infrastructure, e.g. pipelines, is a key control to pollution prevention – limiting the potential for residual fuel to enter the soils. Further detail on this is presented within Soil and Structure's Remediation Strategy ref. 20511-R-002-V01.

 **Potentially harmful material (asbestos containing soils):** Evidence of asbestos containing material (ACM) in TP101 and asbestos containing soils (ACS) in TP101 and TP107 was revealed as part of the intrusive investigation.

At this stage, this is considered a Site-wide risk wherever Made Ground is present however, with evidence of ACM locally to TP101, this appears to be an area where its presence is more likely.

As well as potentially increasing the waste classification of the material (>0.1 % asbestos by volume = hazardous waste¹³), the asbestos presents a risk to operatives as well as neighbouring properties through the release of airborne fibres.

The presence of visible ACM within the soil matrix (TP101) suggests that efforts undertaken to reduce the overall proportion of asbestos within this material (the ash fill) are expected to be of value, where completed by suitably qualified and protected personnel. Reducing the volume of ACM will reduce the total volume of asbestos that will reduce the risk of fibre release and reduce the likelihood of this material being classified as hazardous waste for off-Site disposal.

Based on the development proposals including for the construction of a commercial unit with no areas of soft landscaping any residual asbestos containing soils will present a low risk to end users of the Site (physical barrier will be in place). It is noted that, where possible, reducing the overall proportion of asbestos within the soils is recommended as part of a general 'betterment' of soil quality.

It is recommended that a strategy is developed by the main contractor to manage the risk presented by asbestos fibre release during the groundworks activities. It is recommended that the advice of an asbestos specialist is sought in this regard. The following advice is offered only as a minimum requirement;

1. *Notifiable or not:* It will be necessary to establish whether the work is notifiable or not³. Again, if in doubt the advice of a licensed asbestos contractor should be sought;
2. *Training:* all operatives should have asbestos awareness training to allow any suspected ACM to be identified;
3. *Control of dust:* the Site should be treated as a dust-free zone with full-suppression of dust throughout the construction programme. Misting and other controls may be needed; and,
4. *Material movements:* if and where hand-picking ACM is pursued to reduce the overall proportion of asbestos within the Made Ground deposits, the removal of any Made Ground deposits from Site should only be undertaken in secure and fully covered wagons to reduce the likelihood of wind-blown dust and other releases.

In addition to asbestos, elevated concentrations of toxic metals and hydrocarbons was detected within the Made Ground soils.

Whilst the asbestos is considered to present a greater threat to workers, the appointed contractor should satisfy themselves of having in place suitable measures to protect workers against the compounds detected within the Made Ground soils (ash fill). At the concentrations recorded, general Personal Protective Equipment (e.g. hard wearing fully dipped nitrile or PVC gloves, eye protection) and basic controls (e.g. dust suppression) are likely to be suitable controls however the contractor should satisfy themselves of this.

- *Recovery and re-use:* unlikely to be recovered for re-use.
- *Waste classification:* anticipated to have varied classifications typically 'soil and stones' (EWC 17 05 04 – Non-hazardous) based on the nature of the material (bricks, sandstone, reworked natural soils) with areas that, based on the presence of Asbestos Containing Material, in their current condition would likely be classed as 'soil and stones' (EWC 17 05 03 – Hazardous).

> **Granular, natural (hummocky glacial) deposits**

- *Excavation progress:* Likely to be excavatable using any sized machine.
- *Excavation stability:* Likely to be stable when excavated through (typically medium dense) but prone to progressive instability where left open, exacerbated by inclement weather and surface loading near excavations.

³ [Non-licensed work with asbestos \(hse.gov.uk\)](https://www.hse.gov.uk/non-licensed-work-with-asbestos/)

 **Potentially harmful and polluting material (fuel-range hydrocarbons):** No evidence of fuel was revealed in the natural ground revealed as part of the fieldworks however presence of other areas of fuel impacted soils cannot be ruled out.

- Further assessment of the chemical quality of the natural soils is recommended as part of the Remediation Strategy for the Site (presented under separate cover). *Recovery and re-use*: unlikely to be recovered for re-use due to net 'cut' (removal) of soils from Site.
- [Waste classification](#): anticipated to be 'soil and stones' (EWC 17 05 04 – Non-hazardous) based on the natural composition however, if and where fuel impacted soils are present, they are anticipated to result in 'higher' waste-classifications or require a specific management plan, e.g. transport to a 'soil hospital'.

> **Groundwater**

Excavations are not expected to accumulate water (rainwater or groundwater) given the 'good' drainage characteristics of the natural soils (infiltration rate of 5×10^{-5} m/s recorded within TP108 at invert/test depth of 1.40 m below ground level).

No evidence of groundwater (or capillary fringe) was encountered within 2.7 m depth of the ground surface (or above 135.85 mAOD; TP104) in March 2025 when groundwater levels are anticipated to be close to their highest point.

Earthworks (cut and fill) A net removal (cut) of soils will be required to suit formation levels for the proposed retail development with the arisings requiring removal and disposal off-Site, to a suitably licensed facility.

 **Slope stability:** The sequencing of the earthworks will require advanced planning an along the eastern boundary of the Site where an existing retaining wall supporting Watkin Street is present.

At this stage, it is understood that formation levels are planned to be kept as close to existing as possible with shallow reductions in level, c. 300 mm below existing levels planned to accommodate hardstanding construction.

On this basis, the stability of the retaining wall is expected to be maintained throughout the groundworks however, any excavations taken below this depth (300 mm or deeper below existing) and any taken below the base of the wall's foundation stand to result in loss of support to the wall and varying degrees of failure depending on the extent of support removed. As a precaution, it is recommended that any excavations taken to the edge of the wall are kept open for as short a duration as possible and that linear runs of no greater than 10 m are excavated as the shallow depth of soil planned for removal (300 mm) will be contributing some basal support to the wall.

At this stage, beyond limits on the depth of the excavation and the extent of excavations adjacent to the wall, the requirement for temporary works is unlikely but needs to be kept under continual review during the groundworks.

Underground storage tank removal (and associated pipework) Whilst the main petrol underground storage tank has been confirmed as having been removed, residual, below ground infrastructure associated with the petrol filling station is present in the ground – confirmed fuel pipeline within TP105.

 **Potentially harmful and polluting material (fuel-range hydrocarbons):** At this stage and as a precautionary measure, it is recommended that the two 'small' diesel tanks are assumed to remain in the ground and hence requiring removal.

Where not removed or where residual fuel remains in the ground, the risk presented to end users (vapour ingress) and Controlled Waters (aquifer beneath the Site) is unlikely to be acceptably low (as discussed previously).

The removal of USTs is covered under various guidance documents with the [Environment Agency guidance](#) offering high-level advice on the various stages of decommissioning.

The management of groundworks around the suspected USTs and areas of relic fuel infrastructure, e.g. pipelines, is a key control to pollution prevention – limiting the potential for residual fuel to enter the soils. Further detail on this is presented within Soil and Structure's Remediation Strategy ref. 20511-R-002-V01.

6.2 Structural Engineering

- Proposed foundations** in these ground conditions, foundation options are open but will be guided by:
- > The presence of medium strength granular soils at generally shallow depths, i.e. within 1 m depth of the finished floor level (FFL) of around 138.0 mAOD;
 - > The presence of locally deeper, unconsolidated (very loose) fill deposits across the footprint of the proposed structure, that are associated with the position of a former underground storage tank;
 - > The former church appearing to have been founded on shallow spread foundations (large flagstones) formed at depths of around 0.75 m below ground level; and,
 - > The historical use of the Site as a petrol filling station with any deep foundation solution more likely to serve as pathways for any residual fuels within the soils.

These conditions guide the use of shallow spread footings to support the proposed retail unit.

As an indicative solution, for centrally loaded square (pad) footings 1 m wide that are formed within the natural sand deposits at a minimum depth of 0.50 m below ground level (frost heave), an allowable bearing capacity of 150 kN/m² could be adopted as part of the foundation design (BS EN 1997-1 methodology based on a conservative estimate of the strength characteristics of the granular, Hummocky Glacial deposits).

Foundations will need to be taken down, through any fill deposits and formed within the natural Hummocky Glacial Deposits that will likely

- Proposed ground floor slab** in these ground conditions, floor slab options are open but will be guided by:
- > The presence of medium strength granular soils at generally shallow depths, i.e. within 1 m depth of the finished floor level (FFL) of around 138.0 mAOD;
 - > The presence of locally deeper, unconsolidated (very loose) fill deposits across the footprint of the proposed structure, that are associated with the position of a former underground storage tank.

These conditions guide the use of either a ground bearing floor slab or suspended floor slab.

If and where a ground bearing floor slab is selected, then all fill deposits will need to be removed from beneath the slab and replaced with a suitable granular fill the in-situ density of which matches that of the surrounding natural soils.

Ground Investigation Report [intrusive]

Land off Oldham Road, Rochdale

In this scenario, these soils are characterised by ‘medium dense’ gravelly SAND that would provisionally correspond with a CBR value of 5 % within any fill deposits (throughout their placed depth).

In addition to the above geotechnical characteristics, the floor slab design will be guided by:

Potentially harmful material (fuel-range hydrocarbons): The proposed retail unit is located over the position of the former underground storage tanks associated with the petrol filling station.

As detailed previously, the groundworks activities on Site will need to include for the planned removal of all below ground infrastructure associated with the petrol filling station with associated check-testing on the chemical quality of the soils surrounding these excavations.

Ultimately, the soils beneath and locally to the proposed retail unit will want to be confirmed as being ‘free from fuel’ and, in doing so, would mean the ‘source’ of any vapour generating material had been removed (the main pathway by which this material stands to present harm).

Notwithstanding this, even where conclusively proven to be ‘free from fuel’ it is recommended that the provision of a continuously sealed hydrocarbon resistant membrane (potentially doubling as the damp-proof membrane) is provided to the entire floor plate of the retail unit.

This recommendation responds to the [inherent complexity and uncertainty associated with vapour intrusion](#) and would serve to further limit the likelihood of any residual concentrations of fuel-range hydrocarbon material volatilising and entering the retail unit as vapours. Even very low concentrations of residual fuel can generate vapours (often due to increased likelihood of partitioning) that stand to present harm and, even at very low concentrations, a nuisance (that signifies harm is likely arising). The Author of the Report has experience of this as part of due-diligence investigations where otherwise ‘remediated’ ground presented a residual risk of vapour generation even when free phase fuel was apparently absent.

These conditions guide the use of shallow spread footings to support the proposed retail unit.

Retaining walls. Based on the current development proposals, a limited section of retaining wall may be required to the northern corner of the Site where the proposed external plant area is planned to be constructed. The retained height will be less than 1.5 m and therefore the walls are likely to be of masonry construction with the foundation advice given previously transferrable to the retaining wall.

The active earth pressure exerted on the wall will be a function of the material it is supporting that, at this stage, cannot be confirmed and may include imported granular fill, the geotechnical characteristics of which can be defined by the Engineer.

The advice of the Author of this Report can be sought during detailed design.

Buried concrete placed in all soils encountered as part of this investigation is recommended to be designed to suit DS-1 AC-1 [classifications](#) based on the pH and soluble sulphate concentrations recorded {5 samples}.

For buried concrete design purposes, groundwater should be regarded as ‘flowing’ (good drainage conditions existing within the natural soils).

6.3 Civil Engineering

Hard-standing sub-grades will be guided by the reduced level excavation that, across the north-eastern half of the Site will result in levels being reduce around 1 m from existing with sloped car parking provision across this portion of the Site.

Based on the revealed ground conditions and likely formation levels (reduced levels), the sub-grade is expected to comprise a mix of Made Ground deposits either associated with the petrol filling station (sub-base beneath hardstanding) or unregulated, ‘brick fill’ associated with the former church.

In their current condition this formation appears to be offering generally ‘reasonable’ support to existing surfacing with the level reduction generally reducing the potential for the sub-grade being unsuitable.

At this stage, a preliminary CBR is not offered given the likely variability of this formation. Rather, specific attention is given to:

Sub-Structures: In areas where relic sub-structures, e.g. foundations and drainage alignments, are present, it is recommended these are excavated through and replaced with a suitable granular fill given the potential for these features to remain as ‘hard-spot’ within the formation.

Similarly, locally to any relic sub-structures, ‘soft-spots’ are likely to be present that similarly stand to give rise to differential ground movement across the hardstanding surface where not removed and replaced with a suitable granular fill compacted to a similar relative density as the surrounding soils.

Drainage of the existing Site is expected to be controlled by run-off towards the east and seemingly, the grated drainage gully present along the western edge of the Site.

The existing piped network likely received drainage from the forecourt canopy and the garage retail unit but otherwise, no evidence of forecourt drainage was apparent, e.g. fuel interceptors. Petrol filling stations of a certain scale and age didn’t require dedicated drainage systems in the same way modern filling stations do and therefore, the lack of substantive drainage infrastructure may well reflect this. The grated drains along the western boundary of the Site were fully silted on inspection.

Based on the revealed ground and groundwater conditions (dry to 2.70 m depth in early spring), drainage to ground is considered technically viable as part of the proposed development but will be guided by:

- > A preliminary infiltration rate (f) in the natural gravelly SAND as 1×10^{-5} m/s.
 - > Any drainage to ground feature needs to be located south of the former garage infrastructure - essentially, around TP108 (why I tested this location) or TP103
- Potentially polluting material:** Based on the findings of this investigation, as a precautionary measure, it is recommended that any drainage-to-ground, e.g. soakaway, is located within the southern portion of the Site away from the former petrol filling station forecourt and infrastructure.

6.4 Landscaping

Soft landscaping: No new soft landscaping is planned as part of the proposed development with the proposed development resulting in a physical barrier between end users of the Site and the underlying soils.

Ground Investigation Report [intrusive]

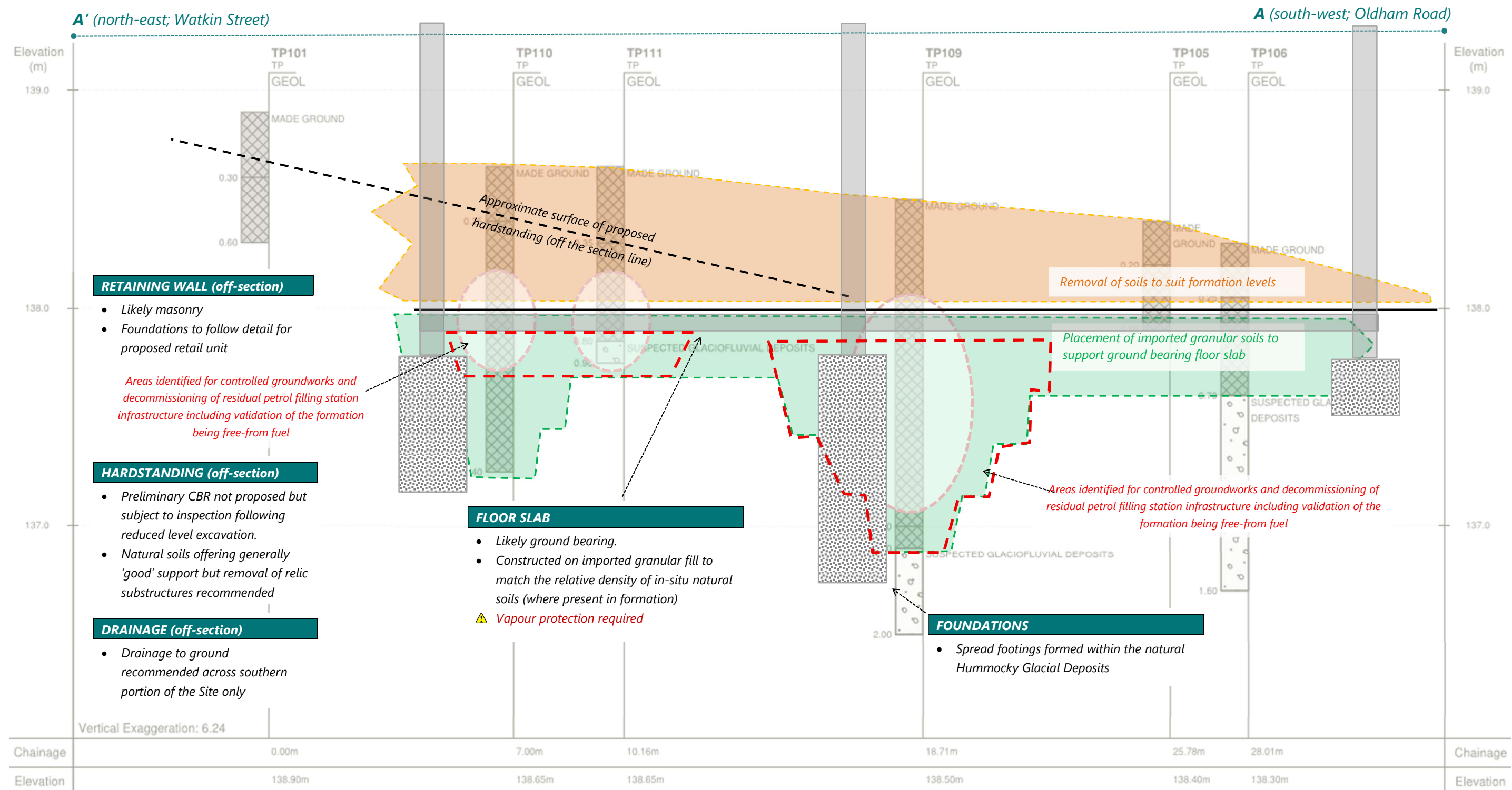
Land off Oldham Road, Rochdale

SOIL AND STRUCTURES

Conceptualisation of Post-Development Condition of the Site (adapted from Ground Model - Plan in Section 5.0)



Conceptualisation of Post-Development Condition of the Site (adapted from Ground Model - Profile in Section 5.0)



Illustrative / conceptual only – do not scale from drawing – scaling varied to better illustrate select features

7.0 Ground Risk Register

Historical Hazards				Geological Hazards				Mining Hazards			
Hazard	Background threat	Risk Status	Risk Management	Hazard	Background threat	Risk Status	Risk Management	Hazard	Background threat	Risk Status	Risk Management
Potentially harmful material	Low	Not acceptably low	Yes		Low	Not acceptably low	Yes	Surface instability	Low		
Potentially polluting material								Mine gas			

8.0 Conclusions and Recommendations

Based on available information and the scope of this Report the ground conditions and associated, ground-related hazards on Site are considered generally well characterised.

8.1 Conclusions

- > **Further assessment** is not recommended to address residual uncertainty, support the engineering design or to confirm the extent of ground-related risk management.

However, it is noted that as part of the groundworks locally to the former petrol filling station, additional check testing of soils will be required to confirm the soils are ‘free from fuels’ or, if present, the risk to Controlled Waters and end users of the Site is acceptably low.

- > **Risk management** is recommended to reduce the level of risk presented by various hazards to acceptably low levels details of which are presented throughout Section 6.0 of this Report alongside the ground engineering advice.

Specific advice on the elements of the design required to reduce the risk from ‘contaminated land’ related hazards to acceptably low levels is provided within the Soil and Structures Remediation Strategy, ref. 20511-R-002-V01.

8.2 Recommendations

Recommended follow-on work includes:

1. [Review of this Ground Investigation Report \(intrusive\)](#) and the advice contained herein;
2. [Submission of the Ground Investigation Report \(intrusive\)](#) to the project design team and other stakeholders, e.g. Local Planning Authority and building control.
3. [Production of Remediation Strategy](#) offering specific advice on the elements of the design required to reduce the risk from ‘contaminated land’ related hazards to acceptably low levels.
4. [Submission of the Remediation Strategy](#) to the project design team and other stakeholders, e.g. Local Planning Authority and building control.

① **Photographic diary of the groundworks:** *It is recommended that a photographic record of the groundworks is maintained to document the physical condition and nature of the ground conditions across the Site. This will serve as a valuable record for the project as well as any future groundworks on the Site.*

OLDHAM ROAD, ROCHDALE

Site Location Information

NOTES
ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE BUILDING REGULATIONS AND THE REQUIREMENTS OF THE LOCAL AUTHORITY.



SITE PLAN - SCALE 1:1250



A	Boundary amended further to comment.	IR	08/08/22
REV	DESCRIPTION	BY	CHKD DATE

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PROJECT
OLDHAM ROAD
ROCHDALE

TITLE
PLANNING INFORMATION
General Arrangement
SITE LOCATION INFORMATION

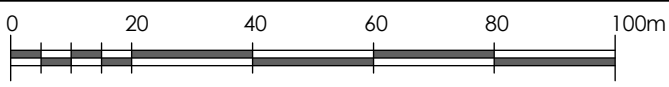
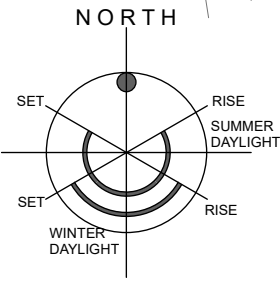
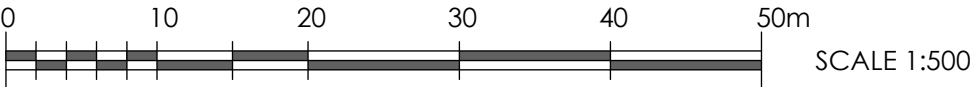
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SCALE 1:500/1250 @ A3 DATE MAY 2022

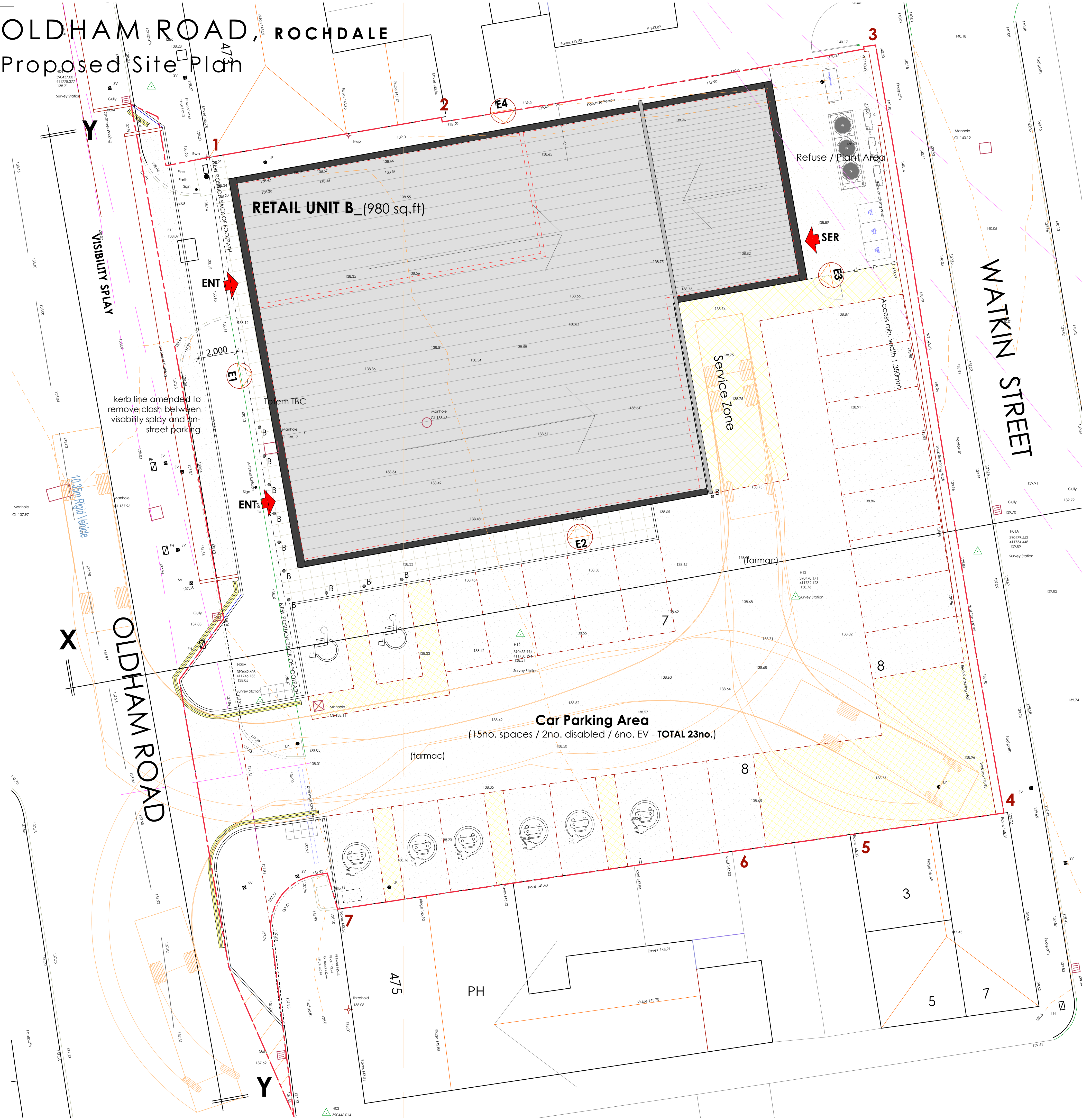
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- PURPOSE OF ISSUE
- | | | |
|--------------------------------|-------------------------------------|------------------------------------|
| ☐ PLANNING | ☐ BUILDING REGS | ☐ TENDER |
| ☐ COMMENT | ☐ INFORMATION | ☐ CONSTRUCTION |

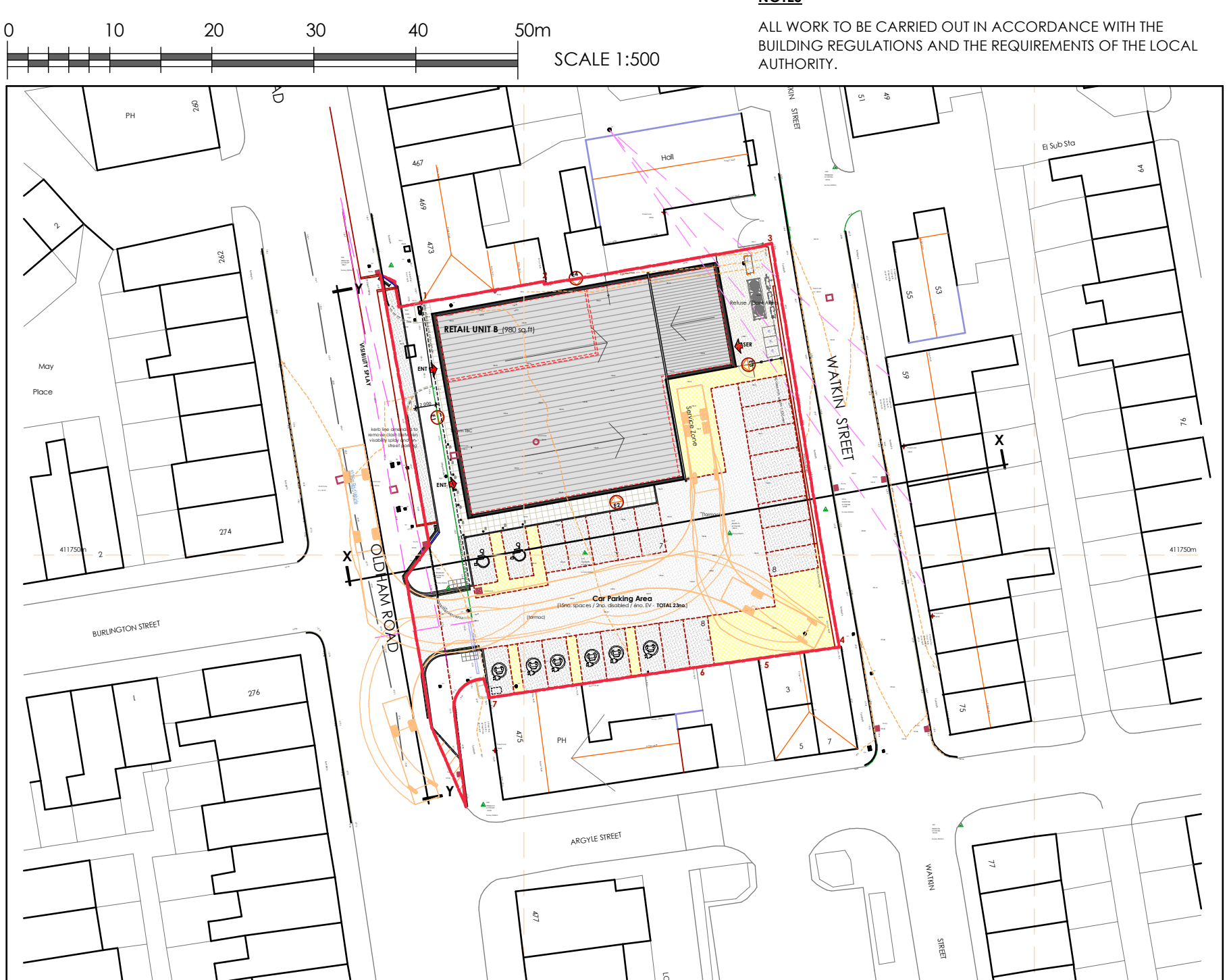
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OLDHAM ROAD, ROCHDALE
Proposed Site Plan



CONTEXT SITE PLAN - SCALE 1:500



NOTES
ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE BUILDING REGULATIONS AND THE REQUIREMENTS OF THE LOCAL AUTHORITY.

- BOUNDARY TREATMENT KEY**
- 1-2 Existing brick elevation of adjoining building
 - 2-3 Existing palisade fence retained
 - 3-4 Existing wall and palisade fence retained, barbed wire removed from top of fence
 - 4-5 Existing brick elevation of adjoining building
 - 5-6 Existing brick wall retained
 - 6-7 Existing brick elevation of adjoining building
 - 7-1 No boundary treatment

Survey Control Co-ordinates				
Reference	East	North	Elevation	Description
H01	390492.796	411723.544	139.32	Survey Station
H01A	390479.552	411754.448	139.89	Survey Station
H02	390480.504	411787.992	140.26	Survey Station
H03	390446.014	411725.539	137.90	Survey Station
H03A	390442.603	411746.733	138.05	Survey Station
H04	390437.001	411778.377	138.21	Survey Station
H12	390455.994	411750.194	138.51	Survey Station
H13	390470.171	411752.123	138.76	Survey Station

REV	DESCRIPTION	BY	CHKD	DATE
Q	Scheme updated further to comments	IR		20/07/23
P	4no. EV spaces indicated.	IR		28/02/23
O	Minor alteration to service door	IR		06/02/23
N	Minor alterations further to highway consultants comments	IR		03/02/23
M	Minor alterations, tracking added.	IR		01/02/23
L	Site entrance altered to suit Highway Consultants comments and design.	IR		25/01/23
K	Parking amended.	IR		09/12/22
J	Site entrance position amended further to highway consultant comments.	IR		09/12/22
H	Visibility splay amended and on-street parking position amended to suit highway consultant comments.	IR		08/12/22
G	External works altered to suit highway consultant comments.	IR		06/12/22
F	Scheme layout amended to suit discussions, car parking, service access, building position offered.	IR		05/12/22
E	Boundary notes and site section positions added.	IR		08/08/22
D	Minor alteration in building positions, notes added.	IR		21/06/22
C	Minor amendment to parking layout	IR		01/06/22
B	External works amended to suit transport consultants information.	IR		31/05/22
A	Minor modification to Unit B	IR		18/05/22

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PROJECT
OLDHAM ROAD
ROCHDALE

TITLE
PLANNING INFORMATION
General Arrangement
PROPOSED SITE PLAN

DRAWING NO.	1430_101(P)	REVISION	Q
SCALE	1:100/500 @ A1	DATE	MAY 2022
DRAWN BY	IR	CHECKED BY	

- PURPOSE OF ISSUE
- ☐ PLANNING
 - ☐ BUILDING REGS
 - ☐ TENDER
 - ☐ COMMENT
 - ☐ INFORMATION
 - ☐ CONSTRUCTION

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Key to exploratory hole symbols and abbreviations

SAMPLE TYPES

ACM - Asbestos sample	AMAL - Amalgamated sample	B - Bulk disturbed sample
BLK - Block sample	C - Core sample	CBR - CBR test sample
D - Disturbed sample	ES - Environmental sample	EW - Environmental water sample
G - Gas sample	J - Jar sample	L - Liner sample
TW - Pushed thin wall sample	U - Undisturbed sample	UT - Undisturbed thin wall sample
W - Water sample		

IN-SITU TESTS

HV - Hand shear vane	HV(r) - Hand shear vane residual	PID - Photo ionisation detector
PP - Hand penetrometer	SPT - Standard penetration test	SPT(C) - SPT using cone

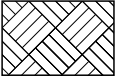
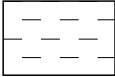
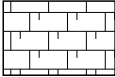
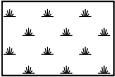
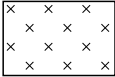
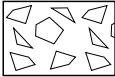
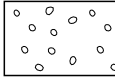
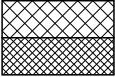
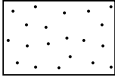
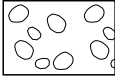
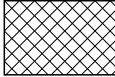
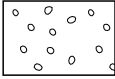
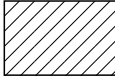
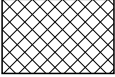
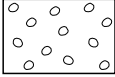
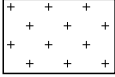
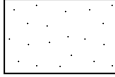
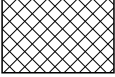
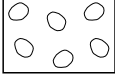
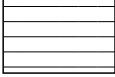
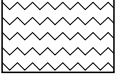
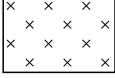
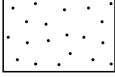
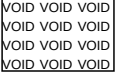
GROUNDWATER

 Groundwater strike	 Groundwater rest level
--	--

ROTARY CORE DETAILS

TCR - Total core recovery (%)	SCR - Solid core recovery (%)	RQD - Rock quality designation (%)
FI - Fracture index	NI - Non-intact core	AZCL - Assumed zone of core loss

LEGEND

	Topsoil		Clay		Chalk		Sand backfill
	Peat		Silt		Breccia		Gravel backfill
	Made ground [cohesive]		Sand		Conglomerate		Arisings
	Concrete		Gravel		Metamorphic		Bentonite
	Wood		Cobbles		Igneous		Concrete
	Brick		Boulders				Grout
	Bituminous material		Mudstone				Plain pipe
	Gypsum		Siltstone				
	Coal		Sandstone				Slotted pipe
	Void		Limestone				

 SOIL AND STRUCTURES				Trial Pit					TP101		
						Sheet 1 of 1					
				Hole Type TP		Easting 390471.00		Northing 411776.00		Ground Level (m) 138.90	
Project Name Land off Oldham Road, Rochdale				Project No. 20511		Start Date 2025-03-27		End Date 2025-03-27			
Client Metalcraft Group				Consultant Soil and Structures Ltd				Contractor Metalcraft Group			
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata				
		Depth (m)	Type/ Ref	Results			Legend	Description			
		0.30-0.35	ES 1		138.60	(0.30)		Black bituminous hardstanding (bound gravel; 75 mm thick) over sandy, coarse, angular, gravel sandstone sub-base. [MADE GROUND, Hardstanding and sub-base]		0.5	
						(0.30)		Multicoloured typically dark brown very gravelly SAND with high cobble content. Gravel is angular to surrounded brick, mixed natural lithologies and occasional suspected asbestos containing material. Cobbles are half bricks and whole bricks and rare concrete up to 400 mm. [MADE GROUND, Brick fill]			
					138.30	0.60		End of Trial Pit at 0.60m			
										1.0	
										1.5	
										2.0	
										2.5	
										3.0	
										3.5	
										4.0	
										4.5	
										5.0	
Remarks PURPOSE: General coverage of the Site. TERMINATION: Frequent, suspected asbestos containing material (ACM) encountered. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material other than ACM.								Method, Plant, Stability, Dimensions 0.00 - 0.60m TP - Trial Pit tonne tracked Stable L = 1.20m W = 0.60m		Logger RB	
								Checked By: RB Approved By: RB Status: FINAL			



SOIL AND
STRUCTURES

Trial Pit

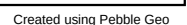
TP101
PHOTO PAGE

Hole Type TP	Easting 390471.00	Northing 411776.00	Ground Level (m) 138.90	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511	Start Date 2025-03-27	End Date 2025-03-27	

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: General coverage of the Site. TERMINATION: Frequent, suspected asbestos containing material (ACM) encountered. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material other than ACM.	Method, Plant, Stability, Dimensions 0.00 - 0.60m TP - Trial Pit tonne tracked Stable L = 1.20m W = 0.60m	Logger RB
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 SOIL AND STRUCTURES				Trial Pit					TP102	
									Sheet 1 of 1	
				Hole Type TP		Easting 390473.00	Northing 411764.00	Ground Level (m) 138.90	Scale 1:25	
Project Name Land off Oldham Road, Rochdale		Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27					
Client Metalcraft Group				Consultant Soil and Structures Ltd			Contractor Metalcraft Group			
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata			
		Depth (m)	Type/ Ref	Results			Legend	Description		
					138.60	(0.30) 0.30		Black bituminous hardstanding (bound gravel; 75 mm thick) over light yellowish brown sandy, medium to coarse, angular GRAVEL of sandstone over concrete slab. [MADE GROUND, Hardstanding and sub-base]		
End of Trial Pit at 0.30m										
									0.5	
									1.0	
									1.5	
									2.0	
									2.5	
									3.0	
									3.5	
									4.0	
									4.5	
									5.0	
Remarks PURPOSE: General coverage of the Site. TERMINATION: Practical refusal of excavator on concrete slab. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.							Method, Plant, Stability, Dimensions 0.00 - 0.30m TP - Trial Pit tonne tracked Stable L = 1.50m W = 0.60m		Logger RB	
Checked By: RB Approved By: RB Status: FINAL										



**SOIL AND
STRUCTURES**

Trial Pit

TP102
PHOTO PAGE

Hole Type TP	Easting 390473.00	Northing 411764.00	Ground Level (m) 138.90	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511	Start Date 2025-03-27	End Date 2025-03-27	

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: General coverage of the Site. TERMINATION: Practical refusal of excavator on concrete slab. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 0.30m TP - Trial Pit tonne tracked Stable L = 1.50m W = 0.60m	Logger RB
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Checked By: RB Approved By: RB Status: FINAL



TP103

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	390475.00	411754.00	138.75	1:25

Project Name	Project No.	Start Date	End Date
Land off Oldham Road, Rochdale	20511	2025-03-27	2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: General coverage of the Site. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Side wall collapse adjacent to relic wall to depth of 1 m below ground level. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 1.90m TP - Trial Pit tonne tracked Unstable  L = 2.00m W = 0.60m	Logge R
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Created using Pebble Geo



SOIL AND
STRUCTURES

Trial Pit

TP103
PHOTO PAGE

Hole Type TP	Easting 390475.00	Northing 411754.00	Ground Level (m) 138.75	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks	Method, Plant, Stability, Dimensions	Logger
PURPOSE: General coverage of the Site. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Side wall collapse adjacent to relic wall to depth of 1 m below ground level. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	0.00 - 1.90m Unstable L = 2.00m W = 0.60m	TP - Trial Pit tonne tracked RB



SOIL AND
STRUCTURES

Trial Pit

TP103
PHOTO PAGE

Hole Type TP	Easting 390475.00	Northing 411754.00	Ground Level (m) 138.75	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks	Method, Plant, Stability, Dimensions	Logger
PURPOSE: General coverage of the Site. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Side wall collapse adjacent to relic wall to depth of 1 m below ground level. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	0.00 - 1.90m Unstable L = 2.00m W = 0.60m	TP - Trial Pit tonne tracked RB

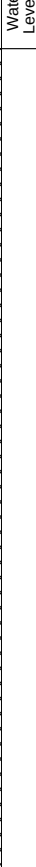
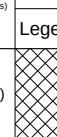
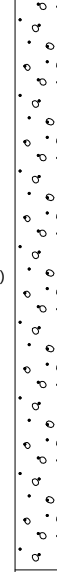
Checked By: RB Approved By: RB Status: FINAL



TP104

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	390461.00	411770.00	138.55	1:25
Project Name	Project No.		Start Date	End Date
Land off Oldham Road, Rochdale	20511		2025-03-27	2025-03-27

Inst/ er els	Samples and Tests	Level	Depth	Strata
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Backfill	Water Level	Depth (m)	Type/Ref	Results	(m)	(m) (thickness)	Legend	Description
		1.00-1.20	B 1		138.25	0.30 (0.30)		Black bituminous hardstanding (bound gravel; 75 mm thick) over light yellowish brown sandy, fine to coarse, angular GRAVEL of sandstone. [MADE GROUND, Hardstanding and sub-base]
					137.80	0.75 (0.45)		Light brownish orange SAND and GRAVEL with high cobble content and low boulder content. Sand is fine to coarse. Gravel is fine to coarse, rounded, mixed natural lithologies. Cobbles are small to large rounded mixed natural lithologies and frequent red bricks and sandstone. Boulders are sandstone flagstones and blocks up to 700 mm. [MADE GROUND, Relic foundations (likely associated with the former church)]
					135.85	2.70 (1.95)		Light brownish yellow SAND and GRAVEL with low to medium cobble content becoming more gravelly with depth. Sand is fine to coarse. Gravel is fine to coarse rounded mixed natural lithologies. Cobbles are small rounded mixed natural lithologies. [SUSPECTED GLACIOFLUVIAL DEPOSITS, Mapped as Hummocky Glacial Deposits]
		1.50	ES 1					
								End of Trial Pit at 2.70m

Method, Plant, Stability, Dimensions **Logge**

0.00 - 2.70m TP - Trial Piñ tonne tracked R

Unstable

$L = 2.20m$

$W = 0.60m$

Created using Pebble Geo



SOIL AND
STRUCTURES

Trial Pit

TP104
PHOTO PAGE

Hole Type TP	Easting 390461.00	Northing 411770.00	Ground Level (m) 138.55	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: General coverage of the Site. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Localised collapse adjacent to relic foundations to depths of 0.75 m below ground level. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 2.70m TP - Trial Pit tonne tracked Unstable L = 2.20m W = 0.60m	Logger RB
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SOIL AND
STRUCTURES

Trial Pit

TP104
PHOTO PAGE

Hole Type TP	Easting 390461.00	Northing 411770.00	Ground Level (m) 138.55	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: General coverage of the Site. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Localised collapse adjacent to relic foundations to depths of 0.75 m below ground level. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 2.70m TP - Trial Pit tonne tracked Unstable L = 2.20m W = 0.60m	Logger RB
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 SOIL AND STRUCTURES					Trial Pit TP105 Sheet 1 of 1						
Hole Type TP		Easting 390448.00		Northing 411769.00		Ground Level (m) 138.40		Scale 1:25			
Project Name Land off Oldham Road, Rochdale				Project No. 20511		Start Date 2025-03-27		End Date 2025-03-27			
Client Metalcraft Group				Consultant Soil and Structures Ltd				Contractor Metalcraft Group			
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata				
		Depth (m)	Type/ Ref	Results			Legend	Description			
					138.20	(0.20)		Black bituminous hardstanding (bound gravel; 75 mm thick) over light yellowish brown sandy, fine to coarse, angular GRAVEL of sandstone. [MADE GROUND, Hardstanding and sub-base]	0.5		
						0.20					
					137.90	(0.30)		Multicoloured typically dark brown very gravelly SAND with high cobble content and concrete encased 70 mm diameter metal pipe at 0.4 m depth running in a north to south alignment and faint petrol odour. Gravel is angular to sub-rounded brick and mixed natural lithologies. Cobbles are half bricks and whole bricks. [MADE GROUND, Brick fill and forecourt infrastructure]	0.5		
						0.50					
								End of Trial Pit at 0.50m	1.0		
									1.5		
									2.0		
									2.5		
									3.0		
									3.5		
									4.0		
									4.5		
									5.0		
Remarks PURPOSE: Targeting are immediately north of former forecourt. TERMINATION: Evidence of concrete encased, suspected fuel pipelines encountered. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: Faint, slight odour of petrol locally to pipeline within Made Ground.								Method, Plant, Stability, Dimensions 0.00 - 0.50m TP - Trial Pit tonne tracked Stable L = 2.00m W = 0.60m		Logger RB	
Checked By: RB Approved By: RB Status: FINAL											



SOIL AND
STRUCTURES

Trial Pit

TP105
PHOTO PAGE

Hole Type TP	Easting 390448.00	Northing 411769.00	Ground Level (m) 138.40	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: Targeting are immediately north of former forecourt. TERMINATION: Evidence of concrete encased, suspected fuel pipelines encountered. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: Faint, slight odour of petrol locally to pipeline within Made Ground.	Method, Plant, Stability, Dimensions 0.00 - 0.50m TP - Trial Pit Stable L = 2.00m W = 0.60m	Logger RB
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 SOIL AND STRUCTURES	Trial Pit				TP105 PHOTO PAGE
	Hole Type TP	Easting 390448.00	Northing 411769.00	Ground Level (m) 138.40	Scale 1:25
	Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27
Client Metalcraft Group		Consultant Soil and Structures Ltd		Contractor Metalcraft Group	
					
Remarks PURPOSE: Targeting are immediately north of former forecourt. TERMINATION: Evidence of concrete encased, suspected fuel pipelines encountered. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: Faint, slight odour of petrol locally to pipeline within Made Ground.				Method, Plant, Stability, Dimensions 0.00 - 0.50m TP - Trial Pit tonne tracked Stable L = 2.00m W = 0.60m	
Checked By: RB Approved By: RB Status: FINAL				Logger RB	

 SOIL AND STRUCTURES				Trial Pit TP106 Sheet 1 of 1					
				Hole Type TP	Easting 390446.00	Northing 411768.00	Ground Level (m) 138.30	Scale 1:25	
				Project Name Land off Oldham Road, Rochdale	Project No. 20511	Start Date 2025-03-27	End Date 2025-03-27		
Client Metalcraft Group				Consultant Soil and Structures Ltd		Contractor Metalcraft Group			
Inst/Backfill	Water Levels	Samples and Tests Depth (m) Type/Ref Results		Level (m)	Depth (thickness) (m)	Legend	Strata Description		
		0.00	ES 1		138.05	(0.25)		Black bituminous hardstanding (bound gravel; 75 mm thick) over light yellowish brown sandy, fine to coarse, angular GRAVEL of sandstone.. [MADE GROUND, Hardstanding and sub-base]	
					0.25		null [MADE GROUND, Brick fill]		
					(0.45)				
					137.60	0.70		Orangish brown slightly gravelly fine to coarse SAND. Gravel is fine to coarse rounded mixed natural lithologies. [SUSPECTED GLACIOFLUVIAL DEPOSITS, Mapped as Hummocky Glacial Deposits]	
					136.70	1.60		End of Trial Pit at 1.60m	
Remarks PURPOSE: Targeting are immediately north of former forecourt. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.								Method, Plant, Stability, Dimensions 0.00 - 1.60m Stable L = 2.20m W = 0.60m	Logger RB
Checked By: RB Approved By: RB Status: FINAL									



SOIL AND
STRUCTURES

Trial Pit

TP106
PHOTO PAGE

Hole Type TP	Easting 390446.00	Northing 411768.00	Ground Level (m) 138.30	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: Targeting are immediately north of former forecourt. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 1.60m TP - Trial Pit tonne tracked Stable L = 2.20m W = 0.60m	Logger RB
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SOIL AND
STRUCTURES

Trial Pit

TP106
PHOTO PAGE

Hole Type TP	Easting 390446.00	Northing 411768.00	Ground Level (m) 138.30	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: Targeting are immediately north of former forecourt. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 1.60m TP - Trial Pit tonne tracked Stable L = 2.20m W = 0.60m	Logger RB
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SOIL AND
STRUCTURES

Trial Pit

TP106
PHOTO PAGE

Hole Type TP	Easting 390446.00	Northing 411768.00	Ground Level (m) 138.30	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: Targeting are immediately north of former forecourt. TERMINATION: Engineer decision, target depth achieved. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 1.60m TP - Trial Pit tonne tracked Stable L = 2.20m W = 0.60m	Logger RB
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TP107

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	390451.00	411746.00	138.10	1:25

Project Name	Project No.	Start Date	End Date
Land off Oldham Road, Rochdale	20511	2025-03-27	2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: Targeting are immediately south of former forecourt. TERMINATION: Refusal on concrete slab. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 0.40m TP - Trial Pit tonne tracked Stable L = 2.60m	Logge R
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Method, Plant, Stability, Dimensions	Loggers
0.00 - 0.40m TP - Trial Pi7 tonne tracked	R

Created using Pebble Geo



SOIL AND
STRUCTURES

Trial Pit

TP107
PHOTO PAGE

Hole Type TP	Easting 390451.00	Northing 411746.00	Ground Level (m) 138.10	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks	Method, Plant, Stability, Dimensions	Logger
PURPOSE: Targeting are immediately south of former forecourt. TERMINATION: Refusal on concrete slab.	0.00 - 0.40m TP - Trial Pit tonne tracked	RB
LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable.	Stable	
GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	L = 2.60m W = 0.60m	

Checked By: RB Approved By: RB Status: FINAL



SOIL AND
STRUCTURES

Trial Pit

TP107
PHOTO PAGE

Hole Type TP	Easting 390451.00	Northing 411746.00	Ground Level (m) 138.10	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks	Method, Plant, Stability, Dimensions	Logger
PURPOSE: Targeting are immediately south of former forecourt. TERMINATION: Refusal on concrete slab.	0.00 - 0.40m TP - Trial Pit tonne tracked	RB
LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable.	Stable	
GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	L = 2.60m	
	W = 0.60m	

Checked By: RB Approved By: RB Status: FINAL

 SOIL AND STRUCTURES					Trial Pit TP108 Sheet 1 of 1																																																																																																																				
Hole Type TP		Easting 390460.00		Northing 411748.00		Ground Level (m) 138.35		Scale 1:25																																																																																																																	
Project Name Land off Oldham Road, Rochdale				Project No. 20511		Start Date 2025-03-27		End Date 2025-03-27																																																																																																																	
Client Metalcraft Group				Consultant Soil and Structures Ltd				Contractor Metalcraft Group																																																																																																																	
<table><tr><td rowspan="2">Inst/ Backfill</td><td rowspan="2">Water Levels</td><td colspan="3">Samples and Tests</td><td rowspan="2">Level (m)</td><td rowspan="2">Depth (m)</td><td colspan="2">Strata</td><td rowspan="2"></td></tr><tr><td>Depth (m)</td><td>Type/ Ref</td><td>Results</td><td>Legend</td><td>Description</td></tr><tr><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">138.15</td><td>0.20</td><td></td><td colspan="2">Light yellowish brown sandy, fine to coarse, angular GRAVEL of sandstone. [MADE GROUND, Sub-base]</td><td rowspan="2">0.5</td></tr><tr><td>0.20</td><td></td><td colspan="2">Light brownish yellow SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse rounded mixed natural lithologies. [SUSPECTED GLACIOFLUVIAL DEPOSITS, Mapped as Hummocky Glacial Deposits]</td></tr><tr><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">136.95</td><td>1.40</td><td></td><td colspan="2">End of Trial Pit at 1.40m</td><td>1.5</td></tr><tr><td></td><td></td><td colspan="2"></td><td>2.0</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2"></td><td>2.5</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2"></td><td>3.0</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2"></td><td>3.5</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2"></td><td>4.0</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2"></td><td>4.5</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td colspan="2"></td><td>5.0</td></tr></table>										Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata			Depth (m)	Type/ Ref	Results	Legend	Description						138.15	0.20		Light yellowish brown sandy, fine to coarse, angular GRAVEL of sandstone. [MADE GROUND, Sub-base]		0.5	0.20		Light brownish yellow SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse rounded mixed natural lithologies. [SUSPECTED GLACIOFLUVIAL DEPOSITS, Mapped as Hummocky Glacial Deposits]							136.95	1.40		End of Trial Pit at 1.40m		1.5					2.0											2.5											3.0											3.5											4.0											4.5											5.0
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata																																																																																																																		
		Depth (m)	Type/ Ref	Results			Legend	Description																																																																																																																	
					138.15	0.20		Light yellowish brown sandy, fine to coarse, angular GRAVEL of sandstone. [MADE GROUND, Sub-base]		0.5																																																																																																															
						0.20		Light brownish yellow SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse rounded mixed natural lithologies. [SUSPECTED GLACIOFLUVIAL DEPOSITS, Mapped as Hummocky Glacial Deposits]																																																																																																																	
					136.95	1.40		End of Trial Pit at 1.40m		1.5																																																																																																															
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Remarks PURPOSE: GEneral coverage of the Site and to permit in-situ testing. TERMINATION: Engineer decision, target depth achieved to permit infiltration testing. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.								Method, Plant, Stability, Dimensions 0.00 - 1.40m TP - Trial Pit tonne tracked Stable		Logger RB																																																																																																															
Checked By: RB Approved By: RB Status: FINAL																																																																																																																									

 SOIL AND STRUCTURES	Trial Pit				TP108
					PHOTO PAGE
	Hole Type TP	Easting 390460.00	Northing 411748.00	Ground Level (m) 138.35	Scale 1:25
Project Name Land off Oldham Road, Rochdale		Project No. 20511	Start Date 2025-03-27	End Date 2025-03-27	
Client Metalcraft Group		Consultant Soil and Structures Ltd	Contractor Metalcraft Group		
					
Remarks PURPOSE: GEneral coverage of the Site and to permit in-situ testing. TERMINATION: Engineer decision, target depth achieved to permit infiltration testing. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.			Method, Plant, Stability, Dimensions 0.00 - 1.40m TP - Trial Pit Stable		
Checked By: RB Approved By: RB Status: FINAL			Logger RB		

 SOIL AND STRUCTURES	Trial Pit				TP108
					PHOTO PAGE
	Hole Type TP	Easting 390460.00	Northing 411748.00	Ground Level (m) 138.35	Scale 1:25
Project Name Land off Oldham Road, Rochdale		Project No. 20511	Start Date 2025-03-27	End Date 2025-03-27	
Client Metalcraft Group		Consultant Soil and Structures Ltd	Contractor Metalcraft Group		
					
Remarks PURPOSE: GEneral coverage of the Site and to permit in-situ testing. TERMINATION: Engineer decision, target depth achieved to permit infiltration testing. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.			Method, Plant, Stability, Dimensions 0.00 - 1.40m TP - Trial Pit tonne tracked Stable		
Checked By: RB Approved By: RB Status: FINAL			Logger RB		



SOIL AND
STRUCTURES

Trial Pit

TP108
PHOTO PAGE

Hole Type TP	Easting 390460.00	Northing 411748.00	Ground Level (m) 138.35	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: GEneral coverage of the Site and to permit in-situ testing. TERMINATION: Engineer decision, target depth achieved to permit infiltration testing. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 1.40m TP - Trial Pit 7 tonne tracked Stable	Logger RB
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Checked By: RB Approved By: RB Status: FINAL



SOIL AND
STRUCTURES

Trial Pit

TP108
PHOTO PAGE

Hole Type TP	Easting 390460.00	Northing 411748.00	Ground Level (m) 138.35	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: GEneral coverage of the Site and to permit in-situ testing. TERMINATION: Engineer decision, target depth achieved to permit infiltration testing. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 1.40m TP - Trial Pit 7 tonne tracked Stable	Logger RB
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 SOIL AND STRUCTURES				Trial Pit				TP109			
								Sheet 1 of 1			
				Hole Type TP		Easting 390453.00		Northing 411774.00		Ground Level (m) 138.50	
Project Name Land off Oldham Road, Rochdale				Project No. 20511		Start Date 2025-03-27		End Date 2025-03-27			
Client Metalcraft Group				Consultant Soil and Structures Ltd				Contractor Metalcraft Group			
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata				
		Depth (m)	Type/ Ref	Results			Legend	Description			
		1.00-1.30	ES 1			(1.50)		Light brown, light orangish brown and brown mixed very gravelly fine to coarse SAND with medium cobble content, low boulder content, occasional metal and plastic fragments and rare fabric. Gravel is fine to coarse rounded to angular mixed natural lithologies and infrequent concrete and bound bituminous material. Cobbles are small to medium angular birck, half brick, sandstone and concrete. Boulders are angular concrete and rare brick sets up to 600 mm. [MADE GROUND, Unregulated fill to former UST position]		0.5	
										1.0	
		1.60-1.70	ES 2			137.00	1.50 (0.10)		Concrete. [MADE GROUND, Concrete base to UST]		1.5
						136.90	1.60		Light brownish orange SAND and GRAVEL with low cobble content. Sand is fine to coarse. Gravel is fine to coarse rounded mixed natural lithologies. Cobbles are small rounded mixed natural lithologies. [SUSPECTED GLACIOFLUVIAL DEPOSITS, Mapped as Hummocky Glacial Deposits]		
						136.50	2.00		End of Trial Pit at 2.00m	2.0	
										2.5	
										3.0	
										3.5	
										4.0	
										4.5	
										5.0	
Remarks PURPOSE: Targeting former location of underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - relic concrete footing (base of former UST) encountered and dug through. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.								Method, Plant, Stability, Dimensions 0.00 - 2.00m TP - Trial Pit tonne tracked Unstable		Logger RB	
								Checked By: RB Approved By: RB Status: FINAL			



SOIL AND
STRUCTURES

Trial Pit

TP109
PHOTO PAGE

Hole Type TP	Easting 390453.00	Northing 411774.00	Ground Level (m) 138.50	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
----------------------------	---------------------------------------	--------------------------------



Remarks	Method, Plant, Stability, Dimensions	Logger
PURPOSE: Targeting former location of underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - relic concrete footing (base of former UST) encountered and dug through. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	0.00 - 2.00m TP - Trial Pit tonne tracked Unstable	RB

Checked By: RB Approved By: RB Status: FINAL

 SOIL AND STRUCTURES	Trial Pit				TP109
					PHOTO PAGE
	Hole Type TP	Easting 390453.00	Northing 411774.00	Ground Level (m) 138.50	Scale 1:25
Project Name Land off Oldham Road, Rochdale		Project No. 20511	Start Date 2025-03-27	End Date 2025-03-27	
Client Metalcraft Group		Consultant Soil and Structures Ltd	Contractor Metalcraft Group		
					
Remarks PURPOSE: Targeting former location of underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - relic concrete footing (base of former UST) encountered and dug through. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.			Method, Plant, Stability, Dimensions 0.00 - 2.00m TP - Trial Pit tonne tracked Unstable		
Checked By: RB Approved By: RB Status: FINAL			Logger RB		



SOIL AND
STRUCTURES

Trial Pit

TP109
PHOTO PAGE

Hole Type TP	Easting 390453.00	Northing 411774.00	Ground Level (m) 138.50	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks	Method, Plant, Stability, Dimensions	Logger
PURPOSE: Targeting former location of underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - relic concrete footing (base of former UST) encountered and dug through. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Continual collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	0.00 - 2.00m TP - Trial Pit tonne tracked Unstable	RB

Checked By: RB Approved By: RB Status: FINAL

 SOIL AND STRUCTURES					Trial Pit TP110 Sheet 1 of 1					
Hole Type TP		Easting 390464.00		Northing 411776.00		Ground Level (m) 138.65		Scale 1:25		
Project Name Land off Oldham Road, Rochdale				Project No. 20511		Start Date 2025-03-27		End Date 2025-03-27		
Client Metalcraft Group				Consultant Soil and Structures Ltd				Contractor Metalcraft Group		
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata			
		Depth (m)	Type/ Ref	Results			Legend	Description		
					138.40	(0.25)		Light yellowish brown sandy, fine to coarse, angular GRAVEL of sandstone. [MADE GROUND, Sub-base]	0.5	
						0.25		Light reddish brown very sandy slightly gravelly small to large angular to sub-angular COBBLES of half brick and brick. Sand is fine to coarse. Gravel is fine to coarse angular to sub-angular mortar, brick and rare concrete. [MADE GROUND, Brick fill]		
						(1.15)			1.0	
					137.25	1.40		End of Trial Pit at 1.40m	1.5	
									2.0	
									2.5	
									3.0	
									3.5	
									4.0	
									4.5	
									5.0	
Remarks PURPOSE: Targeting location of remaining underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - no evidence of relic USTs. LOCATION: Surveyed using freeware on Site. GL: Estimated off satellite imagery. STABILITY: Localised collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.								Method, Plant, Stability, Dimensions 0.00 - 1.40m TP - Trial Pit tonne tracked Unstable		Logger RB
Checked By: RB Approved By: RB Status: FINAL										



SOIL AND
STRUCTURES

Trial Pit

TP110
PHOTO PAGE

Hole Type TP	Easting 390464.00	Northing 411776.00	Ground Level (m) 138.65	Scale 1:25
Project Name Land off Oldham Road, Rochdale	Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27

Client Metalcraft Group	Consultant Soil and Structures Ltd	Contractor Metalcraft Group
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Remarks PURPOSE: Targeting location of remaining underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - no evidence of relic USTs. LOCATION: Surveyed using freeware on Site. GL: Estimated off statellite imagery. STABILITY: Localised collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.	Method, Plant, Stability, Dimensions 0.00 - 1.40m TP - Trial Pit tonne tracked Unstable	Logger RB
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 SOIL AND STRUCTURES	Trial Pit				TP110
					PHOTO PAGE
	Hole Type TP	Easting 390464.00	Northing 411776.00	Ground Level (m) 138.65	Scale 1:25
Project Name Land off Oldham Road, Rochdale		Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27
Client Metalcraft Group		Consultant Soil and Structures Ltd		Contractor Metalcraft Group	
					
Remarks PURPOSE: Targeting location of remaining underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - no evidence of relic USTs. LOCATION: Surveyed using freeware on Site. GL: Estimated off satellite imagery. STABILITY: Localised collapse within Made Ground deposits. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.				Method, Plant, Stability, Dimensions 0.00 - 1.40m TP - Trial Pit tonne tracked Unstable	
Checked By: RB Approved By: RB Status: FINAL				Logger RB	

 SOIL AND STRUCTURES				Trial Pit				TP111	
						Sheet 1 of 1			
				Hole Type TP	Easting 390461.00	Northing 411777.00	Ground Level (m) 138.65	Scale 1:25	
Project Name Land off Oldham Road, Rochdale		Project No. 20511		Start Date 2025-03-27	End Date 2025-03-27				
Client Metalcraft Group				Consultant Soil and Structures Ltd		Contractor Metalcraft Group			
Inst/ Backfill	Water Levels	Samples and Tests			Level	Depth	Strata		
		Depth (m)	Type/ Ref	Results	(m)	(m)	Legend	Description	
					138.30	(0.35)		Light yellowish brown sandy, fine to coarse, angular GRAVEL of sandstone. [MADE GROUND, Sub-base]	
						0.35		Brown and light reddish brown very silty sandy slightly gravelly small to large angular to sub-angular COBBLES of half brick and brick. Sand is fine to coarse. Gravel is fine to coarse angular to sub-angular mortar and brick. [MADE GROUND, Relic foundations (likely associated with the former church)]	
					137.75	0.90		End of Trial Pit at 0.90m	
								0.5	
								1.0	
								1.5	
								2.0	
								2.5	
								3.0	
								3.5	
								4.0	
								4.5	
								5.0	
Remarks PURPOSE: Targeting location of remaining underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - no evidence of disturbed ground or evidence of relic USTs. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.							Method, Plant, Stability, Dimensions 0.00 - 0.90m TP - Trial Pit tonne tracked Stable	Logger RB	
Checked By: RB Approved By: RB Status: FINAL									

 SOIL AND STRUCTURES	Trial Pit				TP111
					PHOTO PAGE
	Hole Type TP	Easting 390461.00	Northing 411777.00	Ground Level (m) 138.65	Scale 1:25
Project Name Land off Oldham Road, Rochdale		Project No. 20511	Start Date 2025-03-27	End Date 2025-03-27	
Client Metalcraft Group		Consultant Soil and Structures Ltd	Contractor Metalcraft Group		
					
Remarks PURPOSE: Targeting location of remaining underground storage tank (UST) as indicated by neighbour. TERMINATION: Engineer decision, target depth achieved - no evidence of disturbed ground or evidence of relic USTs. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey. STABILITY: Stable. GROUNDWATER: None encountered. OTHER: No evidence of potentially harmful or polluting material.			Method, Plant, Stability, Dimensions 0.00 - 0.90m TP - Trial Pit tonne tracked Stable		
Checked By: RB Approved By: RB Status: FINAL			Logger RB		



DPL101

Probe Type	Easting	Northing	Ground Level (m)	Scale
DPL	390459.00	411748.00	138.35	1:50
Project Name	Project No.		Start Date	End Date
Land off Oldham Road, Rochdale	20511		2025-03-27	2025-03-27

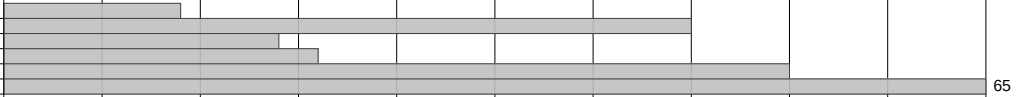
[illegible]

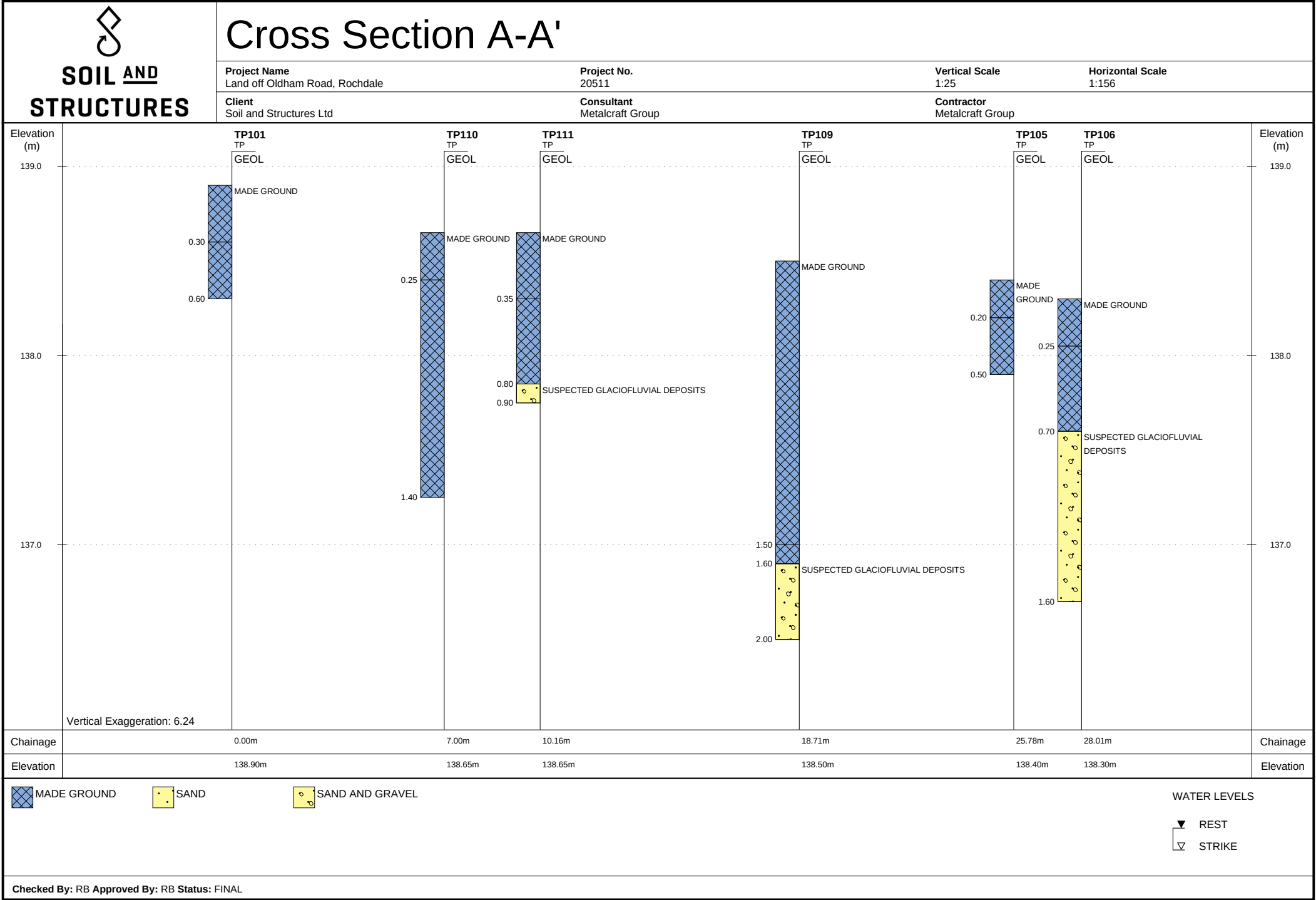
Hammer Weight (kg)	10.0
Hammer Drop (mm)	500
Cone Diameter (mm)	35
Cone Angle	60
Rod Diameter (mm)	22
Damper	None

Created using Pebble Geo

 SOIL AND STRUCTURES		Dynamic Probe DPL101a Sheet 1 of 1										
		Probe Type DPL	Easting 390459.00	Northing 411748.00	Ground Level (m) 138.35	Scale 1:50						
		Project Name Land off Oldham Road, Rochdale		Project No. 20511	Start Date 2025-03-27	End Date 2025-03-27						
Client Metalcraft Group		Consultant Soil and Structures Ltd		Contractor Metalcraft Group								
Readings (Blows/100mm)		Diagram (N100 Values)								Torque (Nm)		
6 17 22 35 61		5	10	15	20	25	30	35	40	45	50	
0.5										61	0.5	
1.0											1.0	
1.5											1.5	
2.0											2.0	
2.5											2.5	
3.0											3.0	
3.5											3.5	
4.0											4.0	
4.5											4.5	
5.0											5.0	
5.5											5.5	
6.0											6.0	
6.5											6.5	
7.0											7.0	
7.5											7.5	
8.0											8.0	
8.5											8.5	
9.0											9.0	
9.5											9.5	
10.0											10.0	
Remarks PURPOSE: Stiffness profiling of natural soils locally to TP108. TERMINATION: Refusal. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey.						Method, Plant 0.00 - 0.50m DP - Dynamic Probe						Logger RB
Checked By: RB Approved By: RB Status: FINAL						Hammer Weight (kg) 10.0 Hammer Drop (mm) 500 Cone Diameter (mm) 35 Cone Angle 60 Rod Diameter (mm) 22 Damper None						

 SOIL AND STRUCTURES		Dynamic Probe				DPL101b						
		Sheet 1 of 1										
		Probe Type DPL		Easting 390459.00	Northing 411748.00	Ground Level (m) 138.35	Scale 1:50					
Project Name Land off Oldham Road, Rochdale		Project No. 20511		Start Date 2025-03-27		End Date 2025-03-27						
Client Metalcraft Group		Consultant Soil and Structures Ltd		Contractor Metalcraft Group								
Readings (Blows/100mm)		Diagram (N100 Values)										Torque (Nm)
		5101520253035404550										
26 20 68												68
-0.5												-0.5
-1.0												-1.0
-1.5												-1.5
-2.0												-2.0
-2.5												-2.5
-3.0												-3.0
-3.5												-3.5
-4.0												-4.0
-4.5												-4.5
-5.0												-5.0
-5.5												-5.5
-6.0												-6.0
-6.5												-6.5
-7.0												-7.0
-7.5												-7.5
-8.0												-8.0
-8.5												-8.5
-9.0												-9.0
-9.5												-9.5
-10.0												-10.0
Remarks		Method, Plant								Logger		
PURPOSE: Stiffness profiling of natural soils locally to TP108. TERMINATION: Refusal. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey.		0.00 - 0.40m DP - Dynamic Probe								RB		
		Hammer Weight (kg) 10.0										
		Hammer Drop (mm) 500										
		Cone Diameter (mm) 35										
		Cone Angle 60										
		Rod Diameter (mm) 22										
		Damper None										
Checked By: RB Approved By: RB Status: FINAL												

 SOIL AND STRUCTURES		Dynamic Probe				DPL101c							
		Sheet 1 of 1											
		Probe Type DPL	Easting 390459.00	Northing 411748.00	Ground Level (m) 138.35	Scale 1:50							
Project Name Land off Oldham Road, Rochdale		Project No. 20511		Start Date 2025-03-27		End Date 2025-03-27							
Client Metalcraft Group		Consultant Soil and Structures Ltd		Contractor Metalcraft Group									
Readings (Blows/100mm)		Diagram (N100 Values)								Torque (Nm)			
		5	10	15	20	25	30	35	40	45	50		
9 35 14 16 40 65												0.5	
-0.5												-0.5	
-1.0												-1.0	
-1.5												-1.5	
-2.0												-2.0	
-2.5												-2.5	
-3.0												-3.0	
-3.5												-3.5	
-4.0												-4.0	
-4.5												-4.5	
-5.0												-5.0	
-5.5												-5.5	
-6.0												-6.0	
-6.5												-6.5	
-7.0												-7.0	
-7.5												-7.5	
-8.0												-8.0	
-8.5												-8.5	
-9.0												-9.0	
-9.5												-9.5	
-10.0												-10.0	
Remarks		Method, Plant						Logger					
PURPOSE: Stiffness profiling of natural soils locally to TP108. TERMINATION: Refusal. LOCATION: Surveyed using freeware on Site. GL: Estimated off topographical survey.		0.00 - 0.70m DP - Dynamic Probe						RB					
		Hammer Weight (kg) 10.0											
		Hammer Drop (mm) 500											
		Cone Diameter (mm) 35											
		Cone Angle 60											
		Rod Diameter (mm) 22											
		Damper None											
Checked By: RB Approved By: RB Status: FINAL													



Calculation Sheet
Soil Infiltration Rate

**SOIL AND
STRUCTURES**

Project Details

Name	Land off Oldham Road, Rochdale
Reference	20511

Test Dates

Start	27/03/2025
End	27/03/2025

Test Method

Method	Soil infiltration test
Guidance	BS6297:2005 (+A1:2008) or Building Regulations (Part H, 2015)

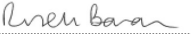
Weather

Preceding 24 hrs	Overcast, 10 to 15 degrees celcius
During test	Overcast, 10 to 15 degrees celcius

Test Comments

TP108	3 tests completed. ~25l of water introduced. <i>Drain-down time recorded:</i> Directly
--------------	--

Author	Russell Bowman <i>BSc (Hons) MSc CEng CWEM MCIWEM</i>
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Signed	
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Calculation Sheet

Soil Infiltration Rate

SOIL AND STRUCTURES

Test Pit Reference

Test pit reference TP101

Test Pit Dimesions

Width 0.30 m
Length 0.30 m
Depth 1.40 m
Area of base 0.09 m²

Test Pit Geology

Base geology Light brownish yellow SAND and GRAVEL.

Test 1

Test conditions First test - percolating
Drainage medium porosity 1 Open pit 100% void
Water level at start (above base of pit) 0.30 m
Water level at end (above base of pit) 0.15 m
Effective storage depth 0.30 m
Effective storage depth (75% full) 0.38 m
Effective storage depth (25% full) 0.53 m
Effective storage volume (V_{75-25}) 0.0135 m³
Internal surface area (50% effective depth) (a_{50}) 0.27 m²
Time for head to fall from 75% to 25% effective depth (t_{75-25}) 720 s 12 mins

Soil infiltration rate (f) - BRE 365 m/s
Soil percolation rate (Vp) - Part H Building Regulations 4.8 s/mm
Soil infiltration rate (f) - Part H Building Regulations 6.94E-05 m/s

Test 2

Test conditions Re-test - infiltrating
Drainage medium porosity 1 Open pit 100% void
Water level at start (above base of pit) 0.30 m
Water level at end (above base of pit) 0.15 m
Effective storage depth 0.30 m
Effective storage depth (75% full) 0.38 m
Effective storage depth (25% full) 0.53 m
Effective storage volume (V_{75-25}) 0.014 m³
Internal surface area (50% effective depth) (a_{50}) 0.27 m²
Time for head to fall from 75% to 25% effective depth (t_{75-25}) 660 s 11 mins

Soil infiltration rate (f) - BRE 365 m/s
Soil percolation rate (Vp) - Part H Building Regulations 4.4 s/mm
Soil infiltration rate (f) - Part H Building Regulations 7.58E-05 m/s

Test 3

Test conditions Re-test - infiltrating
Drainage medium porosity 1 Open pit 100% void
Water level at start (above base of pit) 0.30 m
Water level at end (above base of pit) 0.15 m
Effective storage depth 0.30 m
Effective storage depth (75% full) 0.38 m
Effective storage depth (25% full) 0.53 m
Effective storage volume (V_{75-25}) 0.0135 m³
Internal surface area (50% effective depth) (a_{50}) 0.27 m²
Time for head to fall from 75% to 25% effective depth (t_{75-25}) 720 s 12 mins

Soil infiltration rate (f) - BRE 365 m/s
Soil percolation rate (Vp) - Part H Building Regulations 4.8 s/mm
Soil infiltration rate (f) - Part H Building Regulations 6.94E-05 m/s

Testing Average (arithmetic mean)

Soil infiltration rate (f) - BRE 365 m/s
Soil percolation rate (Vp) - Part H Building Regulations 4.7 s/mm
Soil infiltration rate (f) - Part H Building Regulations 7.15E-05 m/s



TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Soil and Structures Limited
Client Address: 89 Moorhead Lane, Shipley,
BD18 4JW

Contact: Russell Bowman
Site Address: Watkin Street Rochdale

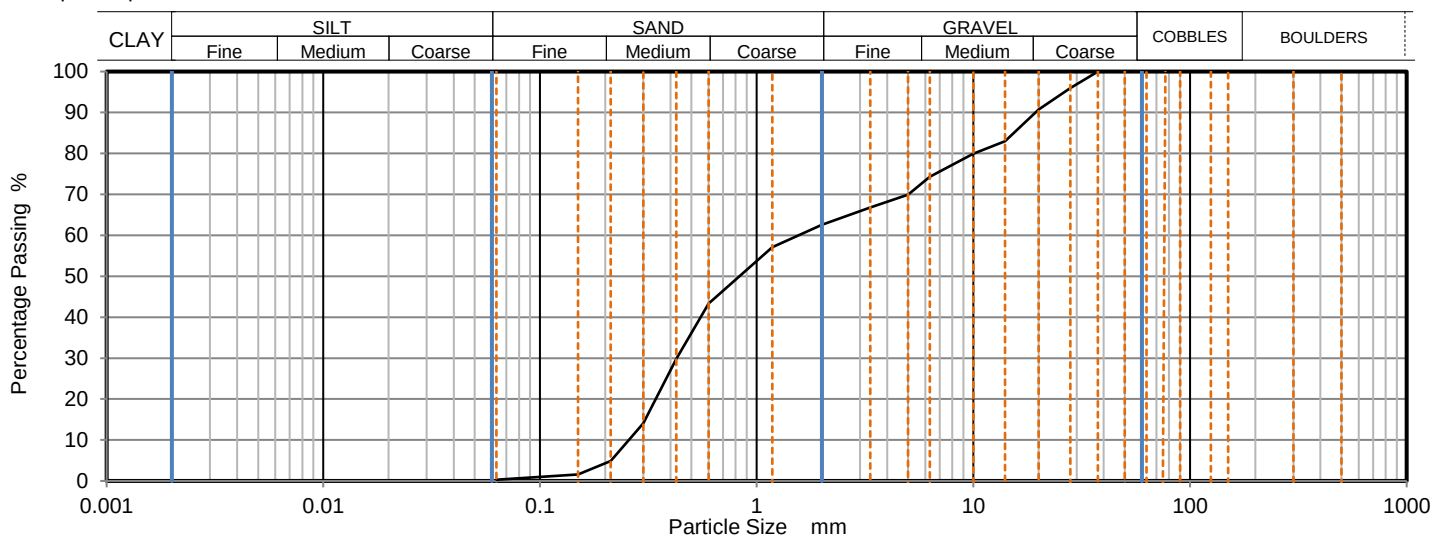
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Client Reference: 20511
Job Number: 25-016451-1
Date Sampled: 27/03/2025
Date Received: 02/04/2025
Date Tested: 09/04/2025
Sampled By: Not Given

Test Results:

Laboratory Reference: 500866
Hole No.: TP103
Sample Reference: Not Given
Sample Description: Yellowish brown very gravelly SAND
Sample Preparation: Sample was whole tested, oven dried at 108.7 °C and broken down by hand.

Depth Top [m]: 1.00
Depth Base [m]: 1.20
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	91		
14	83		
10	80		
6.3	74		
5	70		
3.35	67		
2	63		
1.18	57		
0.6	43		
0.425	30		
0.3	14		
0.212	5		
0.15	2		
0.063	0		

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	63
Fines <0.063 mm	0

Grading Analysis	
D100	mm 37.5
D60	mm 1.56
D30	mm 0.427
D10	mm 0.257
Uniformity Coefficient	6.1
Curvature Coefficient	0.46

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on pre-dried or dry sample

Remarks:

Signed:

Katarzyna Koziel

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



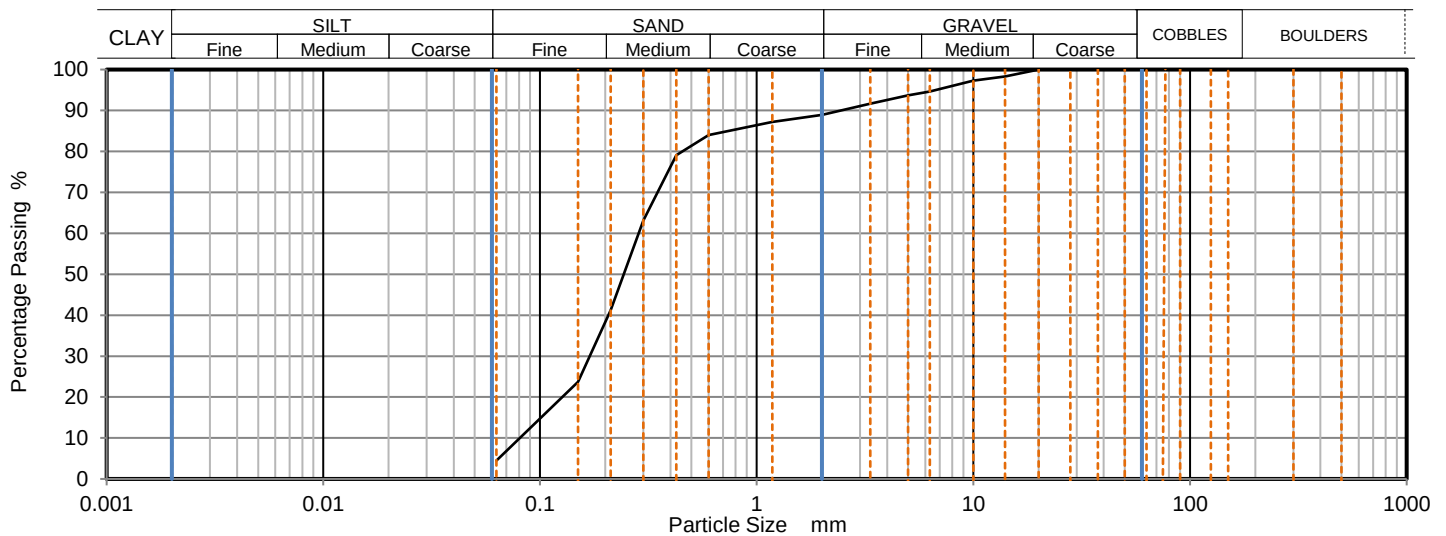
4041

**TEST CERTIFICATE****DETERMINATION OF PARTICLE
SIZE DISTRIBUTION**Tested in Accordance with: BS EN ISO 17892-4:2016,
BS 1377-2:2022 cl. 10i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

Client: Soil and Structures Limited
Client Address: 89 Moorhead Lane, Shipley,
BD18 4JWContact: Russell Bowman
Site Address: Watkin Street RochdaleClient Reference: 20511
Job Number: 25-016451-1
Date Sampled: 27/03/2025
Date Received: 02/04/2025
Date Tested: 09/04/2025
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:Laboratory Reference: 500867
Hole No.: TP104
Sample Reference: Not Given
Sample Description: Yellowish brown gravelly slightly clayey SAND
Sample Preparation: Sample was quartered, oven dried at 106.5 °C and broken down by hand.Depth Top [m]: 1.00
Depth Base [m]: 1.20
Sample Type: B

Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	97		
6.3	95		
5	94		
3.35	92		
2	89		
1.18	87		
0.6	84		
0.425	79		
0.3	63		
0.212	41		
0.15	24		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	84
Fines <0.063 mm	5

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Uniformity and Curvature Coefficient calculated in accordance
with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on pre-dried or dry sample

Remarks:

Signed:

*Katarzyna Koziel*Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

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Soil and Structures Limited
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WD18 8YS

e: russell@soilandstructures.co.uk

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 25-016452

Project / Site name:	Watkin Street Rochdale	Samples received on:	02/04/2025
Your job number:	20511	Samples instructed on/ Analysis started on:	02/04/2025
Your order number:		Analysis completed by:	08/04/2025
Report Issue Number:	1	Report issued on:	14/04/2025
Samples Analysed:	2 soil samples		



Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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

Analytical Report Number: 25-016452

Project / Site name: Watkin Street Rochdale

Lab Sample Number				500868	500869
Sample Reference				TP103	TP104
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				1.00-1.20	1.00-1.20
Date Sampled				27/03/2025	27/03/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	36.1	< 0.1
Moisture Content	%	0.01	NONE	5.1	9.3
Total mass of sample received	kg	0.1	NONE	0.5	0.5

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.9	7.6
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	28	41
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.9	20.4

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-016452

Project / Site name: Watkin Street Rochdale

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
500868	TP103	None Supplied	1.00-1.20	Brown sand with gravel and stones
500869	TP104	None Supplied	1.00-1.20	Brown sand with gravel

Analytical Report Number : 25-016452
Project / Site name: Watkin Street Rochdale

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

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e: reception@i2analytical.com

Analytical Report Number : 25-016664

Project / Site name:	Watkin Street, Rochdale	Samples received on:	02/04/2025
Your job number:	20511	Samples instructed on/ Analysis started on:	02/04/2025
Your order number:		Analysis completed by:	15/04/2025
Report Issue Number:	1	Report issued on:	10/05/2025
Samples Analysed:	6 soil samples - 1 bulk sample		



Signed:

Rachel Chappell
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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

Analytical Report Number: 25-016664
Project / Site name: Watkin Street, Rochdale

Lab Sample Number	501918	501920	501921	501922	501923
Sample Reference	TP106	TP104	TP107	TP109	TP109
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.00	1.50	0.40-0.50	1.00-1.30	1.60-1.70
Date Sampled	27/03/2025	27/03/2025	27/03/2025	27/03/2025	27/03/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	30.6	< 0.1
Moisture Content	%	0.01	NONE	0.34	4.8	9.2	7.8	4.6
Total mass of sample received	kg	0.1	NONE	0.5	0.5	0.5	0.5	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	Detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	-	-	JSW	JSW	-
Analysis completed	N/A	N/A	N/A	-	-	11/04/2025	11/04/2025	-
Actinolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	Detected	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-

Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	Loose Fibres	-	-
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	-	-	9.8	7.9	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	300	64	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	151	32.2	-
Organic Matter (automated)	%	0.1	MCERTS	-	-	1.2	0.9	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.99	-	0.11	0.21	-
Acenaphthylene	mg/kg	0.05	MCERTS	1.3	-	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	24	-	0.15	0.05	-
Fluorene	mg/kg	0.05	MCERTS	22	-	0.11	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	170	-	1.2	0.25	-
Anthracene	mg/kg	0.05	MCERTS	48	-	0.32	0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	160	-	1.7	0.42	-
Pyrene	mg/kg	0.05	MCERTS	120	-	1.4	0.37	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	43	-	0.73	0.22	-
Chrysene	mg/kg	0.05	MCERTS	44	-	0.69	0.23	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	38	-	0.83	0.33	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	16	-	0.29	0.09	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	35	-	0.66	0.25	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	12	-	0.3	0.15	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	2.3	-	0.08	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	11	-	0.35	0.14	-
Coronene	mg/kg	0.05	NONE	< 0.05	-	-	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	748	-	8.91	2.77	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	13	4.2	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	0.9	0.9	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	-

Analytical Report Number: 25-016664
Project / Site name: Watkin Street, Rochdale

Lab Sample Number				501918	501920	501921	501922	501923
Sample Reference				TP106	TP104	TP107	TP109	TP109
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.00	1.50	0.40-0.50	1.00-1.30	1.60-1.70
Date Sampled				27/03/2025	27/03/2025	27/03/2025	27/03/2025	27/03/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	-	-	< 1.2	< 1.2	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	12	9.2	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	33	15	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	22	63	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	< 0.3	0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	15	8.4	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	46	79	-

Petroleum Hydrocarbons

TPH (EC10 - EC40) EH, CU, 1D, TOTAL	mg/kg	10	MCERTS	-	< 10	-	17	< 10
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	< 5.0
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-016664
Project / Site name: Watkin Street, Rochdale

Lab Sample Number				505362
Sample Reference				TP101
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.30-0.35
Date Sampled				27/03/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	63.9
Moisture Content	%	0.01	NONE	7.2
Total mass of sample received	kg	0.1	NONE	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected
Asbestos Analyst ID	N/A	N/A	N/A	JSW
Analysis completed	N/A	N/A	N/A	11/04/2025
Actinolite detected	Type	N/A	ISO 17025	Not-detected
Amosite detected	Type	N/A	ISO 17025	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected

Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.8
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	67
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	33.6
Organic Matter (automated)	%	0.1	MCERTS	0.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.12
Acenaphthene	mg/kg	0.05	MCERTS	0.11
Fluorene	mg/kg	0.05	MCERTS	0.08
Phenanthrene	mg/kg	0.05	MCERTS	1.1
Anthracene	mg/kg	0.05	MCERTS	0.25
Fluoranthene	mg/kg	0.05	MCERTS	2.6
Pyrene	mg/kg	0.05	MCERTS	2.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.3
Chrysene	mg/kg	0.05	MCERTS	1.2
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.5
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.49
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.13
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.58
Coronene	mg/kg	0.05	NONE	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	13.7
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.6
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2

Analytical Report Number: 25-016664
Project / Site name: Watkin Street, Rochdale

Lab Sample Number				505362
Sample Reference				TP101
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.30-0.35
Date Sampled				27/03/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	8
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	210
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	32

Petroleum Hydrocarbons

TPH (EC10 - EC40) EH, CU, ID, TOTAL	mg/kg	10	MCERTS	-
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	-
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-016664
Project / Site name: Watkin Street, Rochdale

Lab Sample Number				501919
Sample Reference				TP101
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.30-0.35
Date Sampled				27/03/2025
Time Taken				None Supplied
Analytical Parameter (Bulk Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Asbestos

Asbestos in bulks	Type	N/A	ISO 17025	Detected
Asbestos Analyst ID	N/A	N/A	N/A	PDO
Analysis completed	N/A	N/A	N/A	11/04/2025
Actinolite detected	Type	N/A	ISO 17025	Not-detected
Amosite detected	Type	N/A	ISO 17025	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected

Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Asbestos Cement
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 25-016664

Project / Site name: Watkin Street, Rochdale

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
501918	TP106	None Supplied	0	Non Soil. ⁹
501920	TP104	None Supplied	1.5	Brown sand with gravel
501921	TP107	None Supplied	0.40-0.50	Brown loam with gravel
501922	TP109	None Supplied	1.00-1.30	Brown loam and sand with gravel and stones
501923	TP109	None Supplied	1.60-1.70	Brown sand with gravel
505362	TP101	None Supplied	0.30-0.35	Brown loam and sand with stones and vegetation

Analytical Report Number : 25-016664
Project / Site name: Watkin Street, Rochdale

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
Asbestos identification in Bunks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	W	ISO 17025
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	MCERTS
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Analytical Report Number : 25-016664
Project / Site name: Watkin Street, Rochdale

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

*g - Unaccredited sample matrix.

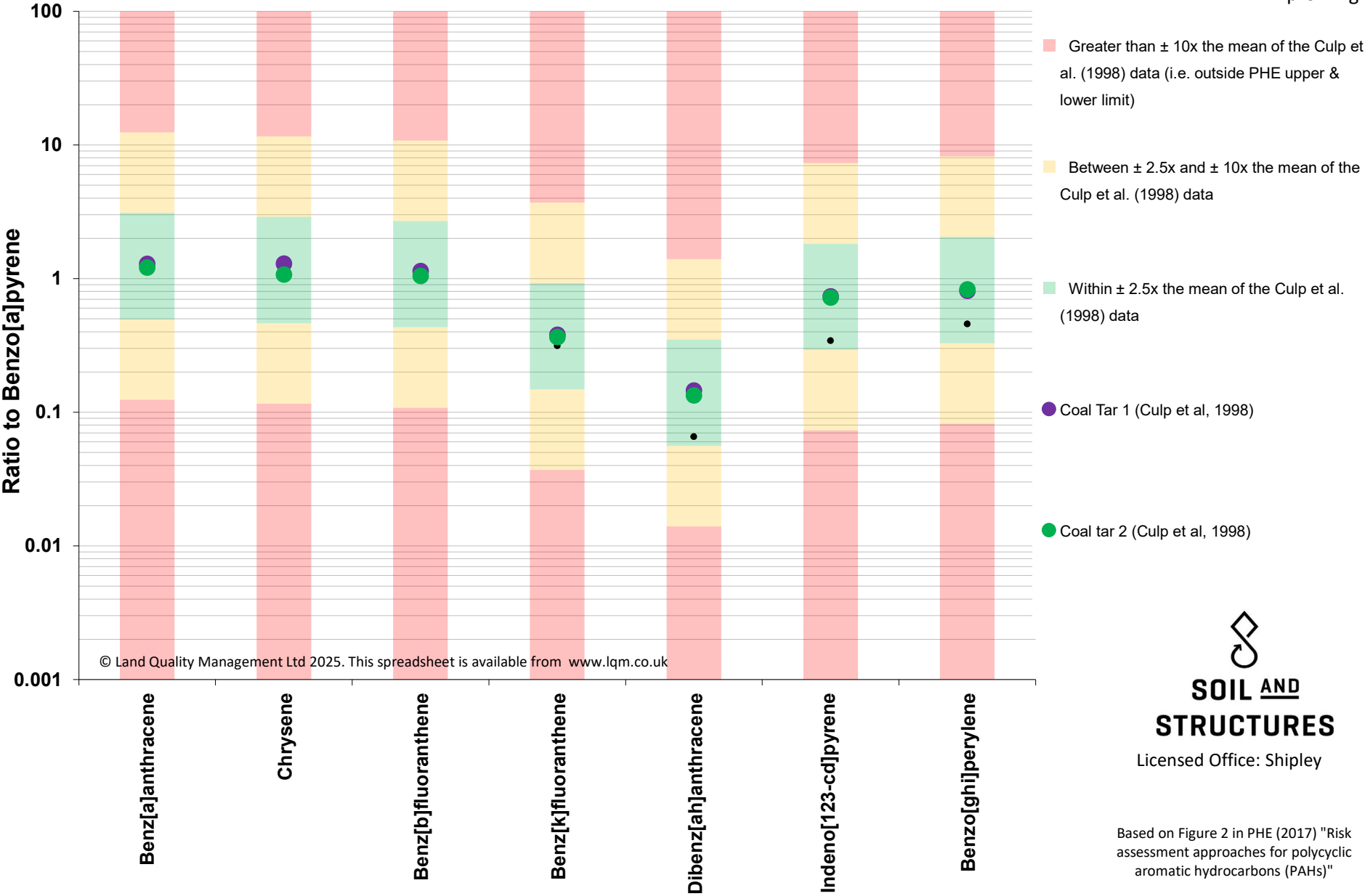
Analytical Report Number : 25-016664

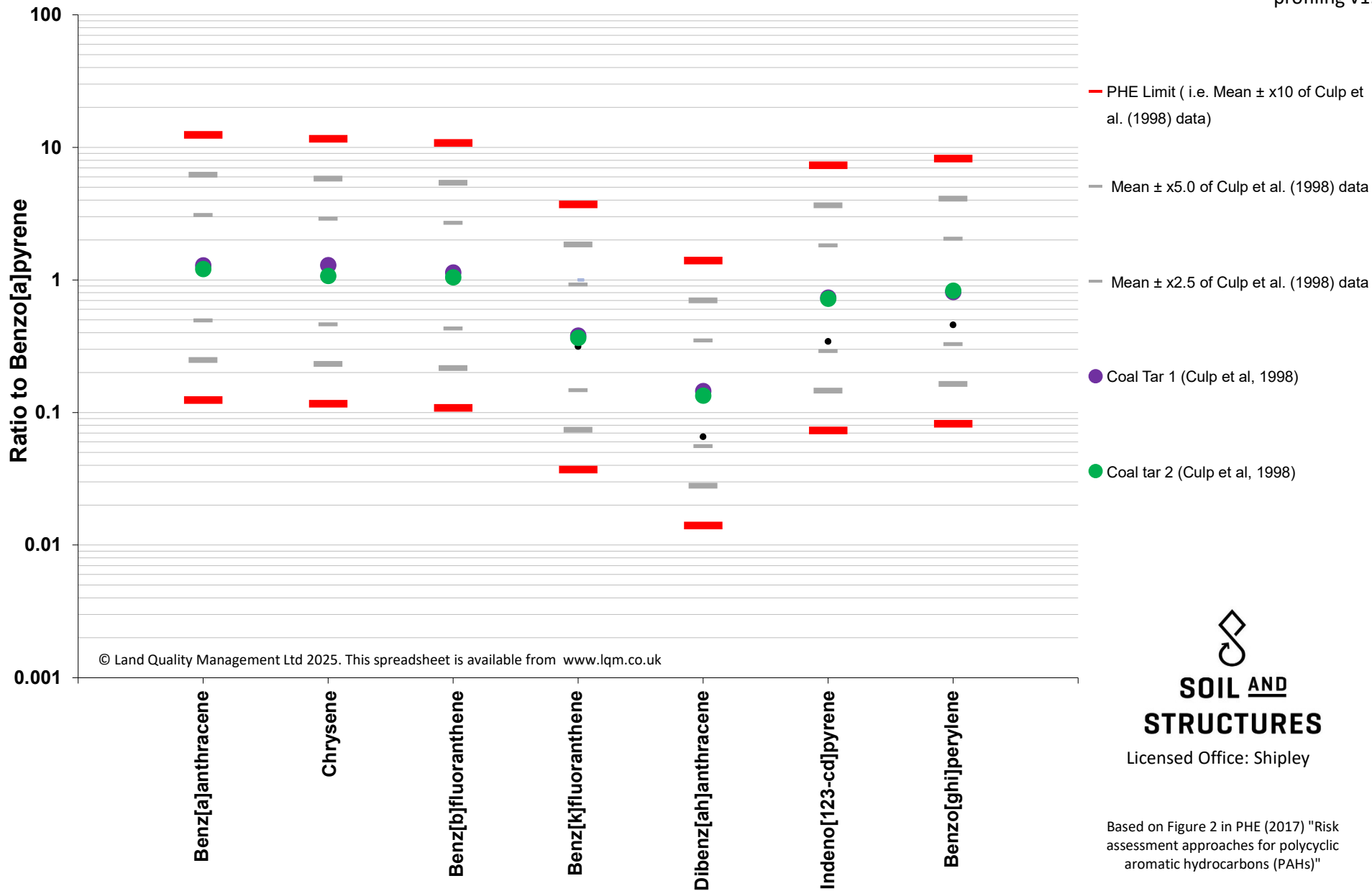
Project / Site name: Watkin Street, Rochdale

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP101	N/A	S	505362	b	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	b
TP104	N/A	S	501920	b	BTEX and/or Volatile organic compounds in soil	L073B	b
TP104	N/A	S	501920	b	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	b
TP106	N/A	S	501918	b	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	b
TP107	N/A	S	501921	b	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	b
TP109	N/A	S	501922	b	BTEX and/or Volatile organic compounds in soil	L073B	b
TP109	N/A	S	501922	b	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	b
TP109	N/A	S	501922	b	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	b
TP109	N/A	S	501923	b	BTEX and/or Volatile organic compounds in soil	L073B	b
TP109	N/A	S	501923	b	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	b





General Guidance on Material Suitability

Suitability (in general): A *soil* becomes a *material* once excavated. This Guidance Note advice with respect to the suitability of soils to remain on Site and the suitability of materials recovered from Site.

The materials are given preliminary classifications based on those set out within the Manual of Contract Documents for Highways Works¹.

Geotechnical suitability: If and where earthworks (cut and fill) are planned as part of the works then strength and compaction testing is typically recommended to inform the earthworks specification. Subject to the earthwork design details being finalised, it is common for additional geotechnical testing, e.g. compaction testing, to be recommended to confirm suitability.

Chemical suitability: Chemical suitability is assessed in the context of the historical and geological setting of the Site as well as against the proposed end use of the Site. This assessment forms a core part of the current planning framework as laid out within the Environment Agency's Land Contamination Risk Assessment guidance².

General Guidance on Materials Management

Materials management: In general, once material is excavated from the ground it could be deemed a 'waste' unless it has a specified use. This also applies to materials intended for re-use on Site.

For natural materials, re-use on Site is generally not regulated apart from in specific scenarios.

For non-natural deposits (Made Ground) additional protocols need to be followed (CL:AIRE Code of Practice³) to demonstrate that the material is suitable for re-use and therefore, not a waste.

¹ Manual of Contract Documents for Highways Works, Volume 1 Specification for Highway Works – Series 600 Earthworks (2016)

² [Land contamination risk management \(LCRM\)](https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm) - GOV.UK (www.gov.uk)

³ CL:AIRE The Definition of Waste: Development Industry Code of Practice Version 2 (2011)

Some unforeseen material has been encountered in the ground. This material is suspected as being potentially harmful or polluting. What should you do?

Seek the advice of the project Engineer (*the Engineer may need to seek advice from a ground investigation consultant*).

What will the Engineer do?

The Engineer (or someone on the project team) will contact the local planning authority's contaminated land team to notify them of the encounter. The purpose of this contact is to agree a strategy for responding to and dealing with the unforeseen material. This strategy should be agreed in advance of any work on or around the unforeseen material recommencing.

What will the response strategy involve?

The responsive strategy will depend on the nature of the material encountered but may be as simple as confirming that the material will be excavated and disposed of off-site at a suitably licensed facility.

Do regulators have to be notified?

Advance notification is always recommended to avoid any response strategy being deemed inappropriate. There may or may not be a legal requirement for notification depending on the nature of the material encountered. In any case, the local planning authority's pollution control or contaminated land team should be able to assist finding the most cost-effective means of dealing with the material.

Purpose of this Guidance Note

- > Support developers working on small development sites; and,
- > Support decision making in scenarios where the likelihood of potentially harmful or polluting material being present in the ground has been assessed as low or unlikely (i.e. no remediation strategy has been put in place) but cannot be discounted.

General Commentary

A core aim of 'contaminated land'¹ planning condition(s) is to ensure that, once completed, the development can be deemed 'suitable for use'. Or, in other words, to ensure that end users (residents and visitors) will not be exposed to unacceptable levels of risk.

On any site where development works have previously taken place there is always the potential for potentially harmful or polluting material to have been introduced into the ground. Common examples of this include; fragments of asbestos containing material from old out-buildings, ash deposits from where coal ash was formerly tipped in a garden or localised fuel spillages.

Whilst ground investigation aims to remove as much uncertainty as possible from the ground, it is rarely cost-beneficial to investigate 100 % of any given development site. For this reason, unforeseen or unexpected material may be encountered during development works.

¹ 'Contaminated land' is strictly a legal definition of land that has been determined as such under Part 2A of the Environmental Protection Act. The term 'contamination' is often used as short-hand for material that may be chemically unsuitable (potentially harmful or polluting).