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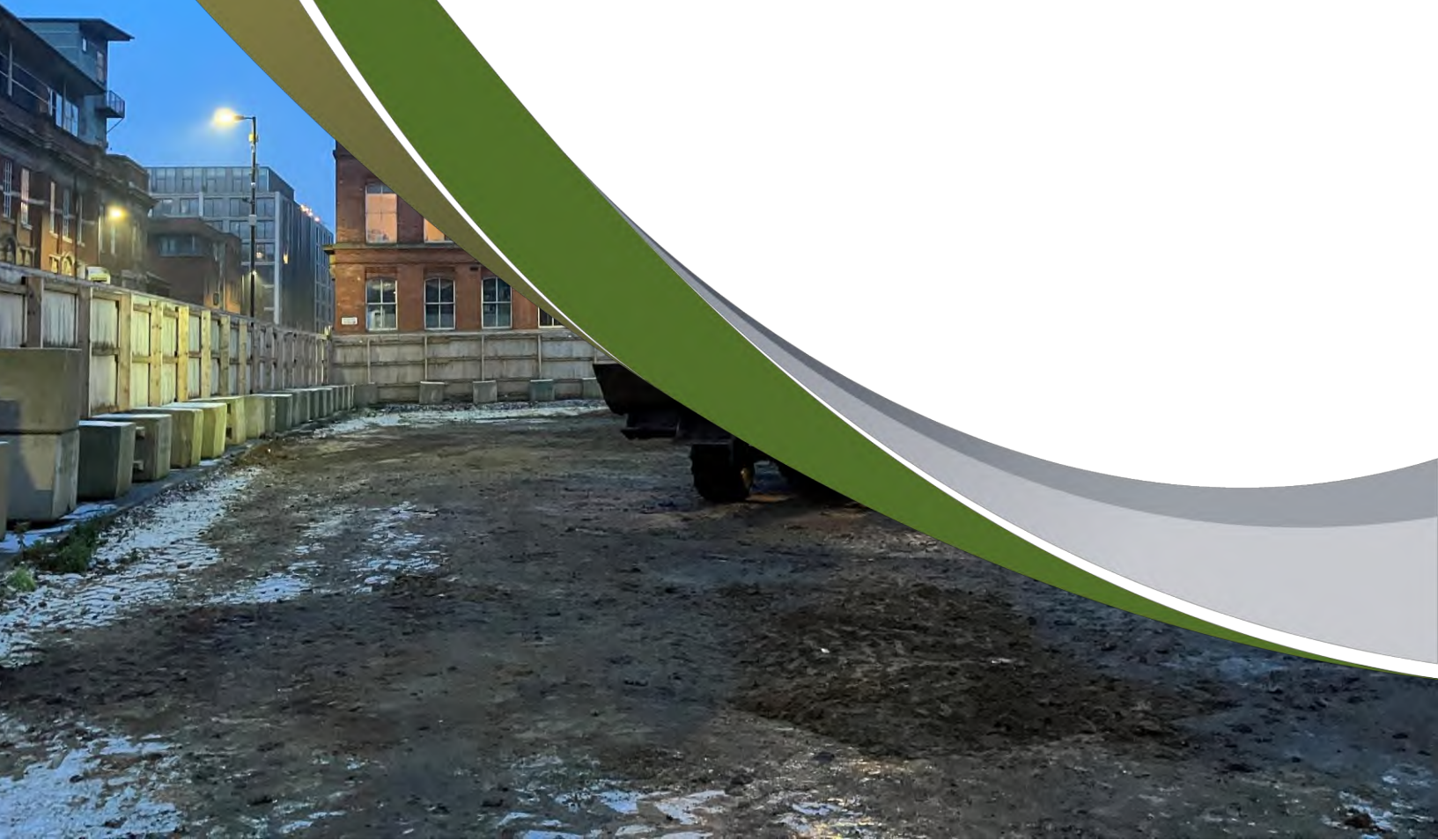
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Ground Investigation Report

Proposed Mixed Use Development

Postal Street, Manchester

March 2025



Project Details

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Issuing office: Soiltechnics Ltd
Unit 9, Clarence Avenue, Westpoint Enterprise Park, Trafford Park, Manchester M17 1QS
Tel: 0161 9470270 E-mail: mail@soiltechnics.net

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Proposed Floor Plan – Ground Floor	Hawkins\Brown	November 2021	POST-HBA-ZZ-00-DR-A-20-0100 Rev P.20

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Non-technical Summary

Topic	Commentary
Site description	The site is currently unoccupied and levelled, with demolition of relict above ground structures recently completed. Surfacing generally comprises of bare earth, with localised areas of hardstanding are present across entire site footprint. Site boundaries are formed by timber hoarding
Development proposals	It is understood that the development proposals include the erection of a new 8 storey residential building comprising 111 units, with supplementary commercial spaces. Basement areas are not currently proposed.
Ground conditions	Made Ground was encountered to depths between 2.1-3.5m bgl during Curtins, 2022 investigations, generally comprising sands and gravels, with cobbles of demolition type material. Below Made Ground, Devensian Till was present, comprising of stiff gravelly clay with bands of sandy clayey gravel and clayey sand to depths of 22.90m to 23.80m bgl. Depsotis fo Chester Fromation bedrock (sandstone) were present below. Relic brick/masonry walls and brick corbelled foundations were present in localised areas of the site between depths of 0.35m to 2.8m bgl, in addition to a localised concrete slab between depths of 0.8m to 1.05m bgl. Localised perched groundwater was recorded between depths of 2.00m and 3.10m bgl within Made Ground deposits and between 2.6m to 3.50m depth in Devensian Till deposits. Deeper groundwater was also encountered at depths of 20.28m to 22.34m bgl within the Devensian Till deposits, and between 22.35m to 23.25m bgl in the Chester Formation.
Development constraints	Deep Made Ground, below ground structures and perched groundwater.
Foundation and slab solution	Due to the presence of deep Made Ground and anticipated very high loadings associated with an 8 storey structure, piled foundations are recommended. Preliminary pile resistances are presented in Section 6.8. In view of the thickness of Made Ground at the site, it is recommended that a suspended ground floor slab is adopted. Concrete class of DS-1 AC-1 for Made Ground and Devensian Till soils on site. Chester Formation unlikely to be conducive to formation of aggressive ground conditions.
Chemical contamination and remedial requirements	Recorded concentrations of lead and arsenic exceeded relevant GACs during Curtins 2022 and Soiltechnics 2025 investigations. In addition, Curtins recorded 5No. positive results for asbestos, two of which were associated with bulk fragments, with 1 No bulk fragment noted during Soiltechnics investigations. Based on updated development proposals the entire site will be covered in the footprint of the proposed building, with no areas of soft landscaping currently proposed. As such, possible pathways between contamination identified in near surface soils, and proposed end users, will be severed. Consequently, remedial measures are not considered necessary to render the site fit for purpose. A residual risk remains for construction operatives associated with asbestos contamination, and mitigation measures will be required onsite (such as use of dust suppression, decontamination facilities and RPE). We recommend completion of an asbestos in soils management plan for the site.
Radon, gas risk and protection measures	Curtins 2022 report indicated no risk.
Waste characterisation	Made Ground soils site wide considered to be hazardous for disposal due to elevated concentrations of metals and presence of ACMs/ and fibres/microscopic fragments of ACMS in soils. Due to the quantities of demolition rubble contained within the Made Ground, screening of the material may produce a viable recyclable aggregate. However, due to presence of asbestos, a suitable management plan to deal with the presence of fibres and microscopic/larger fragments of ACMs in soils will be necessary Clean, uncontaminated, natural materials considered non-hazardous and inert without any testing required.
Recommendation for further works	We recommend the completion of an asbestos in soils management plan to suitably mitigate the risks to human health during construction works within Made Ground at the site, which will be provided under separate cover. This should also include a discovery strategy to deal with any previously unencountered and unexpected contamination should it be encountered.

1 Introduction

1.1 Scheme Outline

- 1.1.1 It is understood that the development proposals include the erection of a new 8-storey residential building comprising 111 units, with supplementary commercial spaces. Basement areas are not currently proposed.
- 1.1.2 The proposed development sits within the majority of the site footprint with the building stepped backed on elevation to accommodate roof terraces and a resident's courtyard. A ground floor development layout is presented in Appendix A and further client drawings are presented within the HTS Stage 2 Appraisal presented in Appendix B.
- 1.1.3 The report is based on the project proposals and information outlined above; should the scheme change then it will be necessary to review the conclusions and recommendations presented in this report.

1.2 Brief

- 1.2.1 This report has been prepared following instructions received from our Client, AtkinsRealis UK Limited. The overall brief of works is to:
- i) Undertake supplementary ground investigation at the site to address data gaps in a previous investigation due to the presence of a commercial building.
 - ii) Assess potential contamination onsite to inform the construction phase/waste classification.
 - iii) Review existing geotechnical data and provide a geotechnical appraisal for the scheme.
- 1.2.2 The objectives of this report are outlined below:
- i) Review and summarise existing information.
 - ii) Summarise the intrusive investigation works undertaken and associated laboratory testing.
 - iii) Present an updated ground model summarising the ground and groundwater conditions at the site.
 - iv) Provide an updated geotechnical appraisal for the project and highlight key geotechnical issues that may impact upon the proposed scheme.
 - v) Update existing Generic Quantitative Risk Assessment (GQRA).
 - vi) Undertake a general assessment of potential contamination risks which may affect the development.
 - vii) Provide a waste characterisation assessment of soils at the site for potential disposal to landfill.

1.3 Definition of Scope

- 1.3.1 The phasing and scope of the ground investigation works is broadly defined by the following documents.

Title	Document Reference	Publisher	Investigation Scope
Code of practice for ground investigations	BS 5930: 2015	British Standards Institution	Phase 2: Preliminary investigation

Title	Document Reference	Publisher	Investigation Scope
Eurocode 7 — Geotechnical design Part 2: Ground investigation and Testing	BS EN 1997-2: 2007	British Standards Institution	Preliminary Investigation
Investigation of potentially contaminated sites – Code of practice	BS 10175: 2011+A2:2017	British Standards Institution	Exploratory Investigation
Land contamination risk management	Online resource, updated April 2021	Environment Agency	Tier 2: Generic quantitative risk assessment

Table 1-A: Definition of investigation scope

1.4 Limitations

- 1.4.1 Soiltechnics disclaims any responsibility to our Client and others in respect of any matters outside the scope of this report. This report has been prepared with reasonable skill, care and diligence in accordance with the terms of our contract, taking account of the resources, investigations and testing devoted to it by agreement with our Client. This report is confidential to our Client and Soiltechnics accepts no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.
- 1.4.2 Additionally, the geo-environmental and geotechnical assessments presented in this report incorporate data from previous ground investigations carried out on site by Curtins, which have been provided to Soiltechnics by our Client, AtkinsRealis UK Limited.
- 1.4.3 At the time of writing this report, legal reliance on the data has not been obtained by AtkinsRealis UK Limited via a Letter of Reliance (LoR). As such, Soiltechnics cannot rely on the 3rd party data and ultimately cannot be held liable for any deficient information derived from it. As part of our own due diligence however, we have inspected the data and it appears, as far as is reasonably ascertainable without repetition of the original works, to be in keeping with what we would expect, and is not clearly and obviously deficient. It is still strongly advised that AtkinsRealis UK Limited obtain reliance on the original data.

2 Site Background

2.1 Site Description

- 2.1.1 The proposed development lies within Manchester, approximately 0.6km northeast of the town centre. The post code for the site is M1 1EE, and the site is accessed from Dean Street which lies adjacent to the site's south-eastern boundary.
- 2.1.2 An aerial image showing the approximate site boundary is presented below, followed by a site layout summary. A site plan is provided within Appendix A.



Figure 2-A: Aerial photograph and approximate site boundary

- 2.1.3 The site is currently unoccupied and levelled, with demolition of relict above ground structures recently completed. Surfacing generally comprises of bare earth, with localised areas of hardstanding are present across entire site footprint. Site boundaries are formed by timber hoarding.
- 2.1.4 A selection of site photographs are presented below:



Figure 2-B: General view of the site, taken adjacent to the site entrance in the southeast facing north

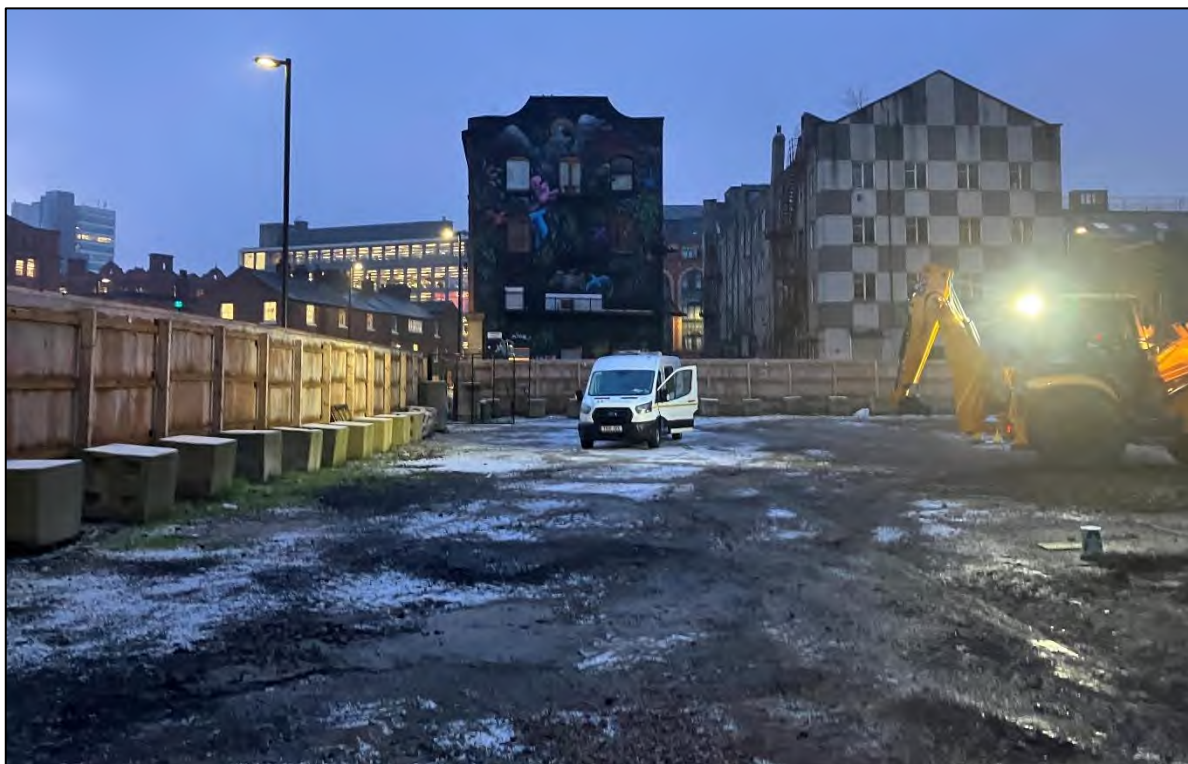


Figure 2-C: General view of the site, taken in the northeast of the site facing southwest

2.2 Previous Reports

2.2.1 The following reports have been provided in relation to the site.

Author	Document Title	Date & Document Reference	Report Context
Curtins	Phase 1 Preliminary Risk Assessment	November 2021	Desk study and preliminary risk assessment (PRA) in relation to contamination and UXO.
		080401-CUR-00-XX-RP-GE-002	
Curtins	Phase 2 Ground Investigation	August 2023	Exploratory investigation in relation to contamination, with general commentary on geotechnical aspects.
		080401-CUR-00-XX-RP-GE-002	

Table 2-A: Summary of previous reports

2.2.2 Reference should be made to the reports listed above for detailed information. A brief summary of pertinent information is provided below.

2.3 Curtins – 2021 Phase 1 Preliminary Risk Assessment

2.3.1 Site reconnaissance undertaken in November 2021 records the site comprising a row of single storey commercial units adjacent to Newton Street in the north-western half of the site, with an associated hardstanding car park to the south-eastern half (since demolished).

2.3.2 Historically, the site has undergone a number of phases of development. Maps dating back to the mid-1800's record the site comprising industrial buildings including a cotton mill and a plate manufacturer. By circa. 1891 these buildings were demolished and replaced with two rows of terraced houses. By 1969, the southern and eastern houses were demolished, followed by the remaining properties in 1975. At some time in the 1980's a single storey commercial building was constructed along the north-western boundary which was subsequently demolished in 2024 (3 years after the Curtins report was completed).

2.3.3 Throughout history, the areas surrounding the site were generally occupied by residential properties and industrial buildings, with most being demolished and reconstructed or redeveloped with commercial buildings and car parking with limited contaminative potential.

2.3.4 There are no landfill sites or quarrying activities recorded within 500m of the site, however, historical maps show the presence of a wharf and basin approximately 49m southeast of the site until 1923.

2.4 Curtins – 2022 Phase 2 Ground Investigation

2.4.1 Following the findings of the Phase 1 Preliminary Risk Assessment, a Phase 2 intrusive investigation was undertaken by Curtins to characterise the geo-environmental conditions on the site.

2.4.2 The investigation took place between 23rd and 26th May 2022. An exploratory hole plan is presented within Appendix A and details relating to each position is presented in the table below.

Method	Qty	Final Depth Range (m bgl)	Comments
Windowless Sampling Boreholes (WS01-WS05)	5	5.00 – 5.45	To inform foundation design and obtain soil samples for soil laboratory analysis.
Rotary Borehole (RC01)	1	35.00	
Cable Percussive Borehole (BH01)	1	23.30	

Table 2-B: Summary of fieldwork undertaken

- 2.4.3 Ground conditions on site generally comprised asphalt or concrete underlain by granular and cohesive Made Ground to depths of 2.10m to 3.50m bgl. The underlying natural Glacial Till comprised firm to stiff gravelly clay with bands of sandy clayey gravel and clayey sand to depths of 22.90m to 23.80m bgl. The Chester Formation was encountered underlying the Glacial Till which comprised extremely weak to moderately strong brown fine to coarse grained sandstone.
- 2.4.4 Copies of exploratory logs and exploratory location plan from the Phase 2 report are presented in Appendix C.
- 2.4.5 Groundwater levels within the bedrock appeared to be consisted throughout the monitoring period between depths of 22.40m to 22.50m bgl. Localised perched groundwater within shallow Made ground deposits was also encountered. There was also groundwater in basal deposits of Glacial Till between depths of 20.28m to 22.34m bgl.
- 2.4.6 In relation to the potential for contamination on site, a 'Residential without plant uptake' land use scenario was used as a precautionary measure. Out of the 9 No. samples submitted for general screening, multiple samples showed exceedances of adopted screening values, including:
- Lead (8no' samples)
 - Arsenic (1no' sample)
 - Asbestos (5no' samples, comprising 2 no' bulk fragments and 3no' soil samples)
- 2.4.7 Asbestos was recorded as amosite and chrysotile cement, amosite board and loose amosite fibres. Further quantification testing indicated a concentration of 0.098% w/w and 4.623% w/w. Bulk asbestos fibre concentrations of 15% were recorded in chrysotile cement in BH01 (0.65m bgl) and RC01 (0.75m bgl).
- 2.4.8 A maximum carbon dioxide concentration of 0.8% and methane below the detection limit was recorded in the boreholes during the monitoring phase of the investigation.
- 2.4.9 A moderate risk was identified to construction and maintenance workers. An asbestos management plan was recommended to be in place during any construction phases and that any construction and maintenance workers should be provided with suitable PPE during all works. All other contamination risks on site were considered low.
- 2.4.10 The Phase 2 Ground investigation report also included geotechnical testing and a brief discussion, which recommended shallow foundations would not be suitable for the development due to the anticipated high loads and deep Made Ground. A piled solution was recommended and a Design Sulphate Class for concrete of DS-1 and ACEC class of AC-1 for the Made Ground and natural soils.
- 2.4.11 In conclusion, the following recommendations relevant to this report were made:
- a) Additional environmental samples were required from below the commercial units on site following the demolition of the building.
 - b) Asbestos management plan during construction works.
 - c) A Remediation Strategy and Verification report to detail remedial measures required and ensure imported soils are suitable for use for soft landscaping.

2.5 Underground Infrastructure

- 2.5.1 Copies of all utility plans obtained are presented as Appendix H. The plans are provided for information only and should not be relied upon to be accurate. In addition, it is worth noting that the public utility plans provided by the asset owners typically exclude private service runs.
- 2.5.2 A review of the plans indicates a BT Cable runs beneath the south-western corner of the site, trending north across the site, as well as 3no' electricity cables which feed into the historical units on site and connects to a mains line running down Newton Street.
- 2.5.3 The asset holders should be consulted at the earliest opportunity to identify any construction constraints that may apply.

2.6 Unexploded Ordnance (UXO) Hazard Screen

- 2.6.1 A preliminary risk review has been undertaken by a UXO specialist to assess the risk of encountering UXO during ground investigation works undertaken by Soiltechnics only and to identify any precautionary measures required. It should be noted that the risk assessment has not been carried out fully in accordance with CIRIA report C785 'Unexploded Ordnance (UXO) A guide for the construction Industry'.
- 2.6.2 The risk review concluded that there was not a credible risk of encountering UXO during the ground investigation. It should be noted that this preliminary risk review does not consider risks to the construction phase.

3 Ground Investigation

3.1 Objectives

- 3.1.1 The initial ground investigation scope was provided by the Client, later updated by Soiltechnics in consultation with the Client.
- 3.1.2 The objectives of the fieldwork were to:
- i) Establish ground and groundwater conditions at the site.
 - ii) Obtain samples for subsequent laboratory testing.
 - iii) Prove extent of localised existing foundation arrangements and/ or relict structures on site.
 - iv) Take a groundwater sample from RC01 (Curtin, 2022) to assess sulphate content within bedrock.

3.2 Fieldwork Summary

- 3.2.1 Fieldwork was undertaken on 9th January 2025.
- 3.2.2 A summary of the works completed is set out in the table below, along with the location of the exploratory logs. The exploratory hole location plan is presented within Appendix A.

Exploratory Hole Logs	Method	Qty	Final Depth Range (m bgl)	Comments
Appendix D	Machine-excavated trial pits	6	2.70 – 3.10	TP01 to TP04, and TP06, TP07 Trial pits terminated at scheduled depth.
		1	1.00	TP05 Trial pit terminated due presence of damaged water pipe.

Table 3-A: Summary of fieldwork undertaken

- 3.2.3 All soils encountered were described in accordance with BS EN ISO 14688 “Identification and Classification of soil”.

3.3 Unexploded Ordnance (UXO)

- 3.3.1 The site was assessed to have a low risk of encountering UXO and were supervised by a site engineer who has had UXO awareness training.
- 3.3.2 No items of suspected UXO were observed.

3.4 Sampling

- 3.4.1 Samples collected for chemical analysis have been taken and handled in accordance with BS ISO 18400-105:2017 “Soil quality — Sampling Part 105: Packaging, transport, storage and preservation of samples”.
- 3.4.2 Various sampling and sub-sampling methodologies have been adopted as appropriate, with the primary aim of obtaining the highest quality sample class practicable.
- 3.4.3 Untested chemical and geotechnical samples will be held for a period of 4 weeks from the date of the first report issue, after which they will be disposed of.

3.5 In-situ Testing

- 3.5.1 The following table summarises the field testing carried out. The results are summarised on individual exploratory hole logs where appropriate and detailed within the Appendices indicated.

Tests	Qty	Applicable standard / guidance	Location of Results
Pocket penetrometer	2	Manufacturer's instructions	Included within logs

Table 3-B: Summary of field testing undertaken

3.6 Groundwater Sampling

- 3.6.1 A summary of the groundwater sampling visits undertaken is outlined in the table below.

Date	Purpose
09/01/2025	RC01 could not be located due to frozen conditions on site. Snow/ice covered approximately 90% of the site at the time.
11/02/2025	RC01 could not be located during dry conditions. Assumed to have been damaged and well head removed during the demolition of the previous building/hardstanding on site.

Table 3-C: Summary of post fieldwork monitoring

3.7 Investigation Constraints

- 3.7.1 The table below outlines restrictions and constraints to the investigation methods which either limited the design of the original scope of work or resulted in a deviation from the agreed scope.

Detail	Impact
Fieldwork constraints	
Damaged water pipe during the excavation of TP05	Relict structures could not be further investigated in this area.
A water sample from RC01 could not be obtained on any of the groundwater sampling visits.	Data gap when considering the concrete classification of groundwater.

Table 3-D Table of site restrictions

4 Laboratory testing

4.1 Overview

- 4.1.1 Samples obtained from exploratory holes were sent to independent accredited laboratories for geotechnical and chemical testing.

4.2 Chemical Testing

- 4.2.1 A chemical testing schedule was prepared by Soiltechnics targeting areas of the site not previously sampled and tested by Curtins. This is disused further within subsequent report sections.
- 4.2.2 Chemical laboratory test results are presented in Appendix E, and the total number of chemical tests undertaken is summarised below:

Sample Type	Qty	Testing	Suite Name
Made Ground	4	Basic Classification Suite [metals, cyanides, PAHs, phenol, banded TPH & asbestos]	Basic Classification Suite
	3	Full WAC Suite (2-stage leachate)	-
	1	Asbestos screening (soils)	-
	1	Bulk Asbestos ID	-

Table 4-A: Summary of chemical laboratory testing undertaken by Soiltechnics, 2025

4.3 Curtins, 2022 Chemical Testing

- 4.3.1 A chemical testing previously undertaken by Curtins during Phase 2 investigations is summarised below:

Sample Type	Qty	Testing	Suite Name
Made Ground	9	Curtins Suite A [metals, cyanides, PAHs, phenol, TPH-CWG, BTEX & asbestos]	-
	3	SVOCs/VOCs	-
	2	Bulk Asbestos ID	-
	3	Asbestos quantification (soils)	-

Table 4-B: Summary of chemical laboratory testing undertaken by Curtins, 2022

5 Ground Investigation Findings

5.1 Ground Model

- 5.1.1 Ground conditions encountered were relatively consistent across the site and were broadly in line with those encountered during the previous Curtins ground investigation.
- 5.1.2 The tables below present our generalised interpretation of geological and hydrogeological conditions at the site. Unless otherwise stated in subsequent interpretive report sections, this represents the adopted ground model.
- 5.1.3 Further detail about the ground conditions encountered during Soiltechnics and Curtins investigations is provided in the relevant sub-sections below.

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)
Hardstanding	Asphalt and concrete (TP04, TP05 and TP06 only) and Curtins 2022.	G.L	G.L.	0.10 – 0.30
Made Ground	Variable. Generally brown, sandy, fine to coarse gravel/gravelly sand with high cobble content. Gravels comprised brick, concrete, sandstone, slate and clinker with metal and plastic. Localised soft brown sandy gravelly clay.	G.L to 0.30	0.30	2.00 - >3.10
Devensian Till (fine-grained)	Firm orangish brown mottled grey and brown/greyish brown gravelly clay	2.00 – 3.50	3.00	16.90 - 18.55
Devensian Till (coarse-grained)	Clayey sand and gravel	17.50 – 21.00	19.75	1.90 – 6.30
Chester Formation	Very weak to weak reddish brown sandstone	22.90 – 23.80	23.40	ND

Table 5-A: Ground model

5.2 Hardstanding

- 5.2.1 Hardstanding was observed from ground level in the northeast of the site (TP04 to TP06) which comprised asphalt ranging from 100mm to 150mm in thickness. In TP04 only, concrete was observed underlying the asphalt to 0.30m bgl.

5.3 Made Ground

- 5.3.1 Made Ground was observed from ground level or underlying hardstanding where present. The base of the Made Ground was only proven in TP03 at 2.00m bgl in the northern corner of the site during 2025 investigations. All other positions terminated within the Made Ground to a maximum exploratory depth of 3.3m. During Curtins, 2022 investigations, Made Ground was encountered to depths between 2.1-3.5m bgl.
- 5.3.2 Made Ground was variable in composition, however generally comprised brown and black sandy gravel with cobbles of brick and concrete. Frequent metal, timber and plastic was also observed within Made Ground deposits.

- 5.3.3 A photograph of the Made Ground deposits encountered during Soiltechnics 2025 investigations is presented below.



Figure 5-A: Made Ground deposits encountered in TP02

5.4 Devensian Till

- 5.4.1 Devensian Till was encountered underlying Made Ground deposits from 2.00m bgl in TP03 only comprising firm, orangish brown mottled grey gravelly clay.
- 5.4.2 During Curtins 2022 investigations, Till comprised firm to stiff gravelly clay with bands of sandy clayey gravel and clayey sand to depths of 22.90m to 23.80m bgl.
- 5.4.3 A photograph of the cohesive Devensian Till encountered during Soiltechnics 2025 investigations is presented below.



Figure 5-B: Devensian Till encountered at the base of TP03

5.5 Chester Formation

5.5.1 The Chester Formation bedrock was present below deposits of Till. The sandstone recovered in RC01 was recorded as extremely weak to moderately strong, brown, fine to coarse grained sandstone. Fractures were described as generally sub-horizontal or sub-vertical, extremely closely to medium spaced. Parts of the sandstone horizons were recovered as non-intact, noted as being weathered to a gravel of sub-angular coarse sandstone.

5.5.2 Photographic records of the sandstone recovered were not presented in the Curtins 2022 report.

5.6 Groundwater

5.6.1 A summary of the groundwater level data obtained during the fieldworks phase is presented below.

Exploratory hole ID	Strata	Groundwater observation
TP02	Made Ground	Groundwater strike at 3.1m depth, with no significant rise in 20 minutes.
TP03	Till	Groundwater strike at 2.7m depth, with no significant rise in 20 minutes.
TP04	Made Ground	Groundwater strike at 2.6m depth, rising to 2.3m after 20 minutes.

Table 5-B: Summary of groundwater observations during the fieldworks

5.6.2 During Curtins 2022 investigations, groundwater levels within the bedrock appeared to be consisted throughout the 2 month monitoring period between depths of 22.40m to 22.50m bgl. Localised perched groundwater within shallow Made ground deposits was also encountered. There was also groundwater in basal deposits of Glacial Till between depths of 20.28m to 22.34m bgl.

- 5.6.3 Groundwater levels are expected to vary seasonally and in response to recent weather conditions. Long term monitoring will provide a reasonable quantification of such variation.

5.7 Evidence of Possible Contamination

- 5.7.1 The table below summarises the potential contamination noted during the ground investigation works.

Exploratory hole ID / Area	Depth of observation (m bgl)	Stratum	Description
TP01	3.10	Made Ground	Fragment of suspected chrysotile asbestos cement identified.

Table 5-C: Summary of potential contamination noted during the investigation works

- 5.7.2 During the ground investigation works, no other significant visual or olfactory evidence of contamination was noted, except for the presence of anthropogenic materials contained within the Made Ground (ash, brick, concrete, clinker-like material).

5.8 Buried Structures

- 5.8.1 A series of buried structures were present in trial pits TP02, TP03, TP06 and TP07. Relic brick/masonry walls and brick corbelled foundations were present in the sides of trial pits TP02, TP03, TP06, between depths of 0.35m to 2.8m bgl.
- 5.8.2 A 250mm thick concrete slab was encountered in TP07, between depths of 0.8m to 1.05m bgl.

5.9 Obstructions and Instability

- 5.9.1 The progress of the ground investigation works was not generally affected by below ground obstructions or instability, beyond the buried structures being investigated as part of the investigation.

6 Geotechnical Assessment

6.1 Scheme Overview

- 6.1.1 The following assessments are made on the investigatory data presented in the preceding sections of this report and are made with reference to the specific nature of the development. Should scheme proposals change then it is recommended that the validity of the conclusions of this report in relation to the revised scheme are checked.
- 6.1.2 It is understood that the development proposals include the erection of a new 8 storey residential building comprising 111 units, with supplementary commercial spaces. Basement areas are not currently proposed.
- 6.1.3 The proposed development sits within the majority of the site footprint with the building stepped backed on elevation to accommodate roof terraces and a resident's courtyard.
- 6.1.4 In view of the scheme proposals, the geotechnical elements considered in this report are outlined below:
- Building foundations
 - Floor slab

6.2 Geotechnical Category

- 6.2.1 In accordance with BS EN1997-1:2004 + A1:2013 (Eurocode 7), the project is designated as Geotechnical Category 2. This category includes projects with *conventional types of structures and foundations with no exceptional risk, or difficult ground or loading conditions*. Furthermore, *routine design procedures* are appropriate.
- 6.2.2 It should be noted that this Report does not constitute a Geotechnical Design Report (GDR) as defined in Eurocode 7. Accordingly, a GDR should be prepared by the designer during the detailed design phase.

6.3 Key Geotechnical Issues

- 6.3.1 In view of the ground conditions, the following list summarises the key geotechnical issues that may impact the scheme and will therefore need to be appropriately managed during the lifecycle of the project:
- Made Ground
 - Below Ground Structures
 - Groundwater

6.4 Made Ground

- 6.4.1 Made Ground soils were observed to depths between 1.8m to 3.5m bgl in both Soiltechnics 2025 and Curtins 2022 ground investigations. Such deposits are not considered suitable for supporting concentrated foundation loads due to their variable composition and the anticipated very high loadings associated with an 8 storey structure. Shallow spread foundations or raft foundations are not expected to be feasible on the site.

6.5 Groundwater

- 6.5.1 Localised perched groundwater was recorded during Soiltechnics 2025 and Curtins 2022 fieldworks between depths of 2.00m and 3.10m bgl within Made Ground deposits and between 2.6m to 3.50m depth in Devensian Till deposits which indicates a precedent for discrete shallow trapped groundwater lenses. On this basis, it is anticipated that groundwater may be encountered in shallow excavations.
- 6.5.2 Two deep boreholes were undertaken by Curtins during 2022 investigations in which groundwater was encountered at depths of 20.28m to 22.34m bgl within the Devensian Till deposits, and between 22.35m to 23.25m bgl in the Chester Formation during subsequent monitoring. These water bodies are likely to be in hydraulic connectivity.

6.6 Below Ground Structures

- 6.6.1 Relic brick/masonry walls and brick corbelled foundations were present in localised areas of the site between depths of 0.35m to 2.8m bgl, in addition to a localised concrete slab between depths of 0.8m to 1.05m bgl. Such structures are likely to relate to historic residential development (with former cellars) and commercial premises.

6.7 Geotechnical Parameters

- 6.7.1 Characteristic values of geotechnical parameters have been derived, in accordance with Eurocode 7. The following tables present the recommended characteristic values for the strata encountered, based on findings presented in the Curtins 2022 Phase 2 report:

Variable	Characteristic value	Derivation
Weight density above water table, γ_b (kN/m ³)	16	BS8004:2015 Figure 1
Weight density below water table, γ_{sat} (kN/m ³)	16	BS8004:2015 Figure 2

Table 6-A: Summary of characteristic geotechnical parameters – Made Ground

Variable	Characteristic value	Derivation
Weight density above water table, γ_b (kN/m ³)	18	BS8004:2015 Figure 1
Weight density below water table, γ_{sat} (kN/m ³)	20	BS8004:2015 Figure 2
Critical state angle of shearing resistance, ϕ_{cv} (°)	24	BS8004:2015 Equation 8 (based on worst case PI of 28%)
Undrained shear strength, c_u (kN/m ²)	75 (3m) 125 (19.75m)	In situ testing Laboratory testing
Undrained deformation modulus, E_u (MN/m ²)	33.75 (3m) 56.25 (19.75m)	$E_u/c_u = 450$ from Jamiolkowski et al (1979)

Table 6-B: Summary of characteristic geotechnical parameters – Devensian Till (fine-grained)

Variable	Characteristic value	Derivation
Weight density above water table, γ_b (kN/m ³)	20	BS8004:2015 Figure 1
Weight density below water table, γ_{sat} (kN/m ³)	20	BS8004:2015 Figure 2
Critical state angle of shearing resistance, ϕ_{cv} (°)	36	BS8004:2015 Equation 4
Drained deformation modulus, E' (MN/m ²)	25	$E' = N \times 1000$

Table 6-C: Summary of characteristic geotechnical parameters – Devensian Till (coarse-grained)

Variable	Characteristic value	Derivation
Weight density below water table, γ_{sat} (kN/m ³)	22	BS8004:2015 Figure 1/2
SPT N Value	>50	In situ testing
Uniaxial compressive strength, UCS (MPa)	3 (23.4m) 5 (30m)	Laboratory testing

Table 6-D: Summary of characteristic geotechnical parameters – Chester Formation

6.8 Pile Resistance

- 6.8.1 A preliminary assessment of single pile capacity has been undertaken to assist the foundation designer in establishing a foundation layout who will also retain design responsibility. The assessment has been undertaken in accordance with BS EN1997-1:2004 + A1:2013 and BS 8004:2015. It is recommended that the design and installation of the piles are determined by a specialist piling contractor who has experience in pile installation in these or similar ground conditions.
- 6.8.2 It is assumed that the piles will be installed using replacement piling techniques; i.e. bored/CFA piles.
- 6.8.3 The calculations have been undertaken with the aid of PILE, a specialist geotechnical software programme developed by OASYS. The analyses have been undertaken without explicit verification of serviceability limit state. Accordingly, set R4 partial factors have been adopted for Combination 2. However, as a general guide, the settlement of a single pile at working loads (factor of safety > 2) is typically of the order of 1% of the pile diameter.
- 6.8.4 A model factor of 1.4 has been adopted in the analyses. The value may be reduced to 1.2 if the resistance is verified by a maintained load test taken to the required, unfactored ultimate resistance.
- 6.8.5 Shaft resistance within any Made Ground is assumed to be zero. It is further assumed that the Made Ground will not cause downdrag on the pile.

- 6.8.6 Unit base and shaft resistances within cohesive strata have been derived using a total stress approach, adopting the variables detailed in Table 6-E. When deriving unit base resistance, a bearing pressure coefficient has been adopted based on the relationship suggested by Berezantsev (1961).

Stratum	Variable	Value	Derivation
Devensian Till	Adhesion factor, α	0.6 (firm clay) 0.45 (stiff clay)	BS 8004:2015 – Eqn 41
	Bearing pressure coefficient, N_c	9	BS 8004:2015 – Eqn 44

Table 6-E: Variables used for determining pile resistance - cohesive strata

- 6.8.7 Unit base and shaft resistance within the granular strata have been derived using an effective stress approach, adopting the variables detailed in Table 6-F. When deriving unit base resistance, a bearing pressure coefficient has been adopted based on the relationship suggested by Berezantsev (1961).

Stratum	Variable	Value	Derivation
Devensian Till	Earth pressure coefficient, K_s	0.7	BS 8004:2015 – Table 8
	Angle of interface friction, δ (°)	36	BS 8004:2015 – Eqn 36

Table 6-F: Variables used for determining pile resistance - granular strata

- 6.8.8 Unit shaft resistance within the Chester Formation has been derived based on the compressive strength of the material and the formulae presented in Table 54.8 of the ICE Manual of Geotechnical Engineering; an average value has been adopted. It is assumed that ‘good’ construction practices will occur when the piles are installed, and as a result full bonding between the concrete and the Chester Formation has been assumed. On this basis a unit shaft resistance of 535kN/m² increasing to 695kN/m² has been adopted.
- 6.8.9 Unit base resistance within the Chester Formation has been derived based on the compressive strength of the material and the guidance given in Section 54.3.7.2 of the ICE Manual of Geotechnical Engineering. On this basis a conservative unit base resistance starting at 3000kN/m² has been adopted, increasing to 5000kN/m².
- 6.8.10 We have also considered groundwater at 15.5m bgl as a worst case within the Devensian Till/Chester Formation aquifer (assumed in connectivity).
- 6.8.11 The variation of single pile resistance in relation to pile toe level is presented below for three different pile diameters. It should be noted that the resistance of a single pile is reduced in the vicinity of other piles. Accordingly, detailed design of the piled foundation arrangement should take into account spacing between piles and pile group effects.

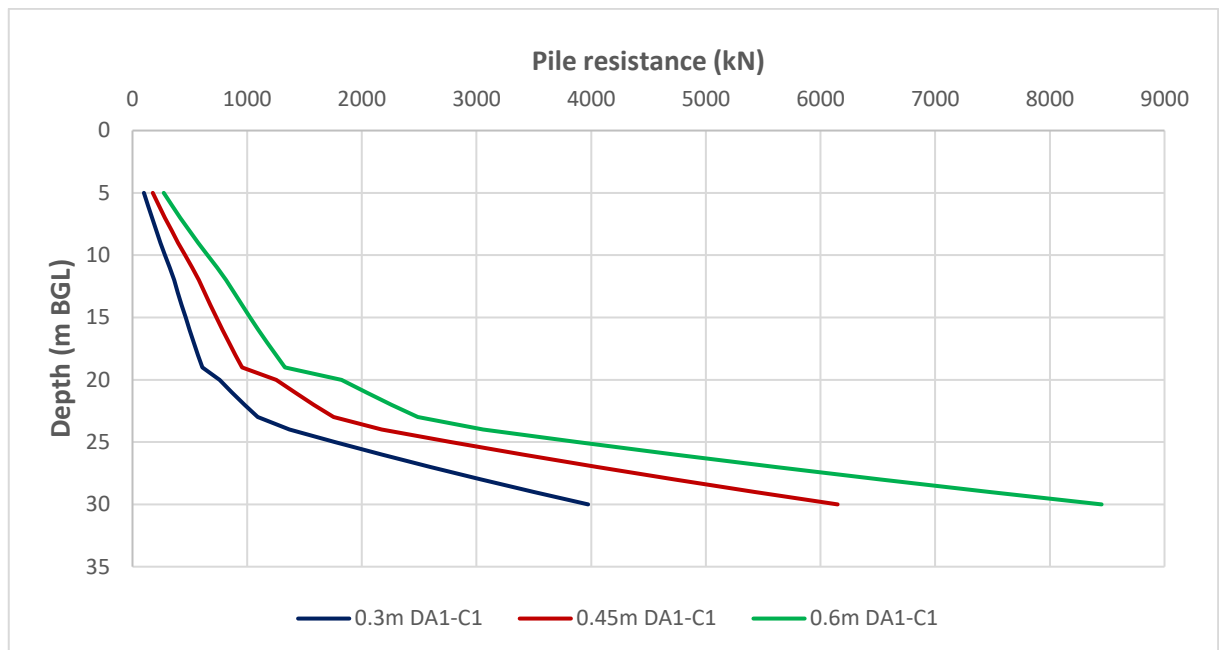


Figure 6-A: Pile resistance of a single pile versus pile depth – Combination 1

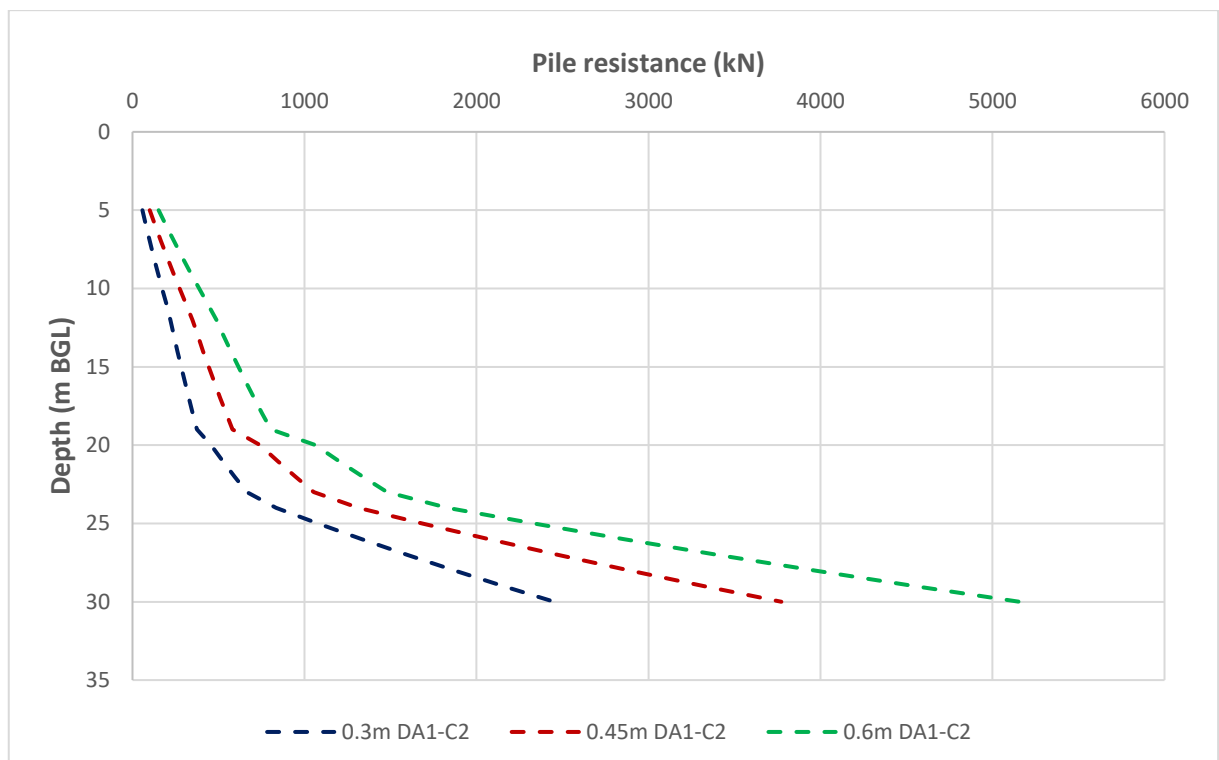


Figure 6-B: Pile resistance of a single pile versus pile depth – Combination 2

6.8.12 Made Ground soils at the site are classified as hazardous waste by virtue of asbestos and metal concentrations. Consideration of the use of driven piles, or ground improvement solutions, may allow reduction in soils requiring disposal offsite.

6.9 Ground Floor Construction

6.9.1 In view of the thickness of Made Ground at the site, it is recommended that a suspended ground floor slab is adopted.

6.10 Aggressiveness of the Ground to Buried Concrete

- 6.10.1 The aggressiveness of the ground with respect to buried concrete has been assessed in accordance with Building Research Establishment Special Digest 1: Concrete in Aggressive Ground Third Edition (2005).
- 6.10.2 The site is interpreted to be a brownfield site where pyrite is unlikely to be present.
- 6.10.3 Laboratory testing has been undertaken by Curtins during 2022 investigations on soil samples obtained from the investigation works.
- 6.10.4 Laboratory test results indicate a DS-1 AC-1 classification for the Made Ground and Devensian Till soils on site.
- 6.10.5 No BRE SD-1 testing was undertaken in the Chester Formation during the Curtins 2022 investigation. During the Soiltechnics investigation we attempted to locate the deep monitoring well extending into the Chester Formation to obtain a groundwater sample for sulphate analysis, however, it could not be located and it is suspected that the well head was destroyed during the demolition of the site.
- 6.10.6 In our experience the Chester Formation is not typically pyritic and therefore aggressive ground conditions are not expected within such deposits, however, this cannot be definitively proven in the absence of laboratory analysis.

7 Updated Contamination Risk Assessment

7.1 Previous Generic Quantitative Risk Assessment (Curtins, 2022)

- 7.1.1 The previous GQRA for the site identified a residual unacceptable risk to future users from potential contamination present beneath the footprints of the previous buildings in the north-western half of the site, which could not be investigated during the Curtins 2022 investigation.
- 7.1.2 In addition, due to exceedances of screening values adopted for the site in relation to arsenic and lead, and due to the presence of asbestos fibres detected in 3 of 9 samples of Made Ground, and 2no' fragments of asbestos containing material (ACM) in soils, a moderate risk of harm to health of construction workers was determined.
- 7.1.3 A low risk was determined for proposed end users, providing any soft landscaped areas were remediated, associated with a proposed ground floor courtyard garden at the time.
- 7.1.4 Former buildings have since been demolished and Soiltechnics have undertaken a series of trial pits across the former building footprint to investigate previously inaccessible areas.

7.2 Fieldwork Observations

- 7.2.1 A suspected fragment of ACM (bound cement) was observed within Made Ground soils from TP01 at a depth of 3.1m bgl (see Figure 7-A below).



Figure 7-A: Suspected ACM observed within Made Ground deposits from TP01

- 7.2.2 As asbestos was already highlighted as a pollutant linkage within the previous Curtins report, no amendments to the previous conceptual site model (CSM) are required.
- 7.2.3 Other than the above, fieldwork observations on the potential for contamination and the underlying ground conditions did not identify any new contaminant sources or significant pathway alterations to the anticipated ground model. Therefore, no potential contaminant linkages (PCL) additions or amendments are required to be made to the CSM at this stage.

7.3 Laboratory Testing Rationale

- 7.3.1 Laboratory testing has been scheduled by targeting potential contaminant linkages identified within the previous CSM and observations made during fieldworks. The sampling and testing strategy is based on a judgemental approach.
- 7.3.2 The testing of the general Made Ground deposits was undertaken across various locations to gain spatial coverage over the footprint of the previous building on site and to characterise the strata encountered. Testing included a broad suite of analysis due to the potential for unknown contamination to be present.

7.4 Generic Assessment Criteria

- 7.4.1 Assessment of laboratory test data has been carried out using published generic assessment criteria (GACs). The GACs act as screening values to provide a 'trigger' to an assessor that soil concentrations above these limits might present an unacceptable risk.
- 7.4.2 Various GAC sources are used within this report. Key assumptions are made in the derivation of screening values in regard to their use and application, and exposure modelling is based on precautionary national scenarios. This generic approach can result in an overly conservative assessment; therefore, the assessor is required to review the outcome of the GQRA screening in the context of the site specific CSM and identified potential contaminant linkages.
- 7.4.3 Asbestos does not currently have published GACs which can be used for generic assessment purposes, at this stage a present / absent trigger limit has been adopted.
- 7.4.4 Specific details regarding the published GAC sources chosen and any parameter refinements made are summarised within Appendix F, along with the order of preference where multiple GAC sources are available. The exposure models adopted are discussed in the relevant sections below.

7.5 Proposed Development

- 7.5.1 Development proposals presented in the 2022 Curtins Phase 2 report (ref Rev P.13) indicated the presence of a ground floor resident's courtyard. Since production of the Curtins report, the development has changed, with the building footprint now covering the entire site, with no areas ground floor landscaping proposed (refer to Appendix A), now referenced as Rev P.20. This has been factored into the following assessment.

7.6 Updated Human Health GQRA (Soils and Vapour)

- 7.6.1 The results of the human health screening assessment for the additional 2025 samples are detailed in Appendix F. The following table outlines the exposure models adopted, along with summarising the outcome of each screening assessment.

Receptor	Exposure Model	Outcome
All human health receptors	Presence of asbestos	Single bulk fragment of chrysotile cement (ACM) observed during fieldworks in Made Ground. No fibres detected through laboratory analysis, including soils in which ACM identified.
Proposed users	Residential without plant uptake	Exceedances of lead observed in 3 of the 4 locations within the footprint of the previous building on site, likely

Receptor	Exposure Model	Outcome
		associated with frequent metal fragments observed within Made Ground deposits.
Construction operatives	Acute occupational exposure (assumed no PPE worn)	No exceedances.
Adjacent site users and the public	Acute off-site public exposure during construction phase	No exceedances.

Table 7-A: Human health GQRA models and outcomes

7.6.2 The table below summarises the instances where contaminants have exceeded the generic screening criteria.

Receptor	Strata	Contaminant	Locations & Depths	Test Result / Range (mg/kg)	GAC (mg/kg)
Proposed users	Made Ground	Lead	TP01 at 0.60m	390	310
			TP03 at 0.80m	14000	
			TP07 at 0.70m	380	

Table 7-B: Human health GQRA exceedances

7.7 Proposed Site Users Updated Risk Assessment (Soils and Vapour)

- 7.7.1 Recorded concentrations of lead exceeded the generic assessment criteria (GAC) of 310 mg/kg in 3 of the 4 samples of Made Ground tested. The highest concentration was recorded at TP03 at 0.80m depth (14,000 mg/kg), with additional exceedances at TP01 at 0.6m depth (390 mg/kg) and TP07 at 0.70m depth (380 mg/kg). 8No. further exceedances of lead were recorded during the previous Curtins investigation ranging from 361mg/kg to 3,380mg/kg, and 1No. arsenic exceedance.
- 7.7.2 As the site has a history of industrial use, and given the city centre/urban location, it is likely that the elevated lead concentrations are associated with past industrial activities, such as the use of lead-based paints, fuels, or metal processing residues, and general lead based airborne pollution in the local area.
- 7.7.3 Previous investigation recorded 5No. positive results for asbestos were recorded, two of which were associated with bulk fragments, however no additional positive identifications were recorded in soils, with the exception of a bulk fragment of chrysotile cement identified in TP03 (refer to Figure 7-A).
- 7.7.4 Based on updated development proposals and as discussed in Section 7.5, the entire site will be covered in the footprint of the proposed building, with no areas of soft landscaping currently proposed.
- 7.7.5 Based on such, possible pathways between contamination identified in near surface soils, and proposed end users, will be severed. No evidence of gross contamination has been identified during Curtins 2022 and Soiltechnics 2025 investigations, and the potential for vapours to cause harm to human health is considered to be low. Consequently, remedial measures are not considered necessary to render the site fit for purpose.

7.8 Construction Workers Risk Assessment

- 7.8.1 Analysis indicates that general contaminant levels in soils do not pose an acute risk to construction workers.

- 7.8.2 The previous investigation recorded 5No. positive results for asbestos (3 no' with fibres/ACM fragments in soils, and 2 no' bulk fragments of ACM) in soils, however no additional positive identifications were recorded in soils within the Soiltechnics 2025 investigations, with the exception of a bulk fragment of chrysotile cement in TP03.
- 7.8.3 A risk assessment has been undertaken using the JIWG Decision Support Tool (see Appendix F) and at these concentrations, there is not considered to be a significant risk to construction workers at the site. It is recommended that localised mechanical dust suppression is utilised whilst excavating in such soils, and enhanced decontamination facilities are available onsite. Providing dust suppression is utilised during handling of such soils, RPE is unlikely to be necessary. However, it would be recommended in the event where soils are not wet and there is the potential for generation of dusts.
- 7.8.4 As with any brownfield site, there is the potential to encounter further asbestos containing materials, and a discovery strategy should be in place as standard.
- 7.8.5 We recommend completion of an asbestos in soils management plan for the site, which will be provided under separate cover.

7.9 Risk Assessment Conclusions

- 7.9.1 The additional investigation and assessment has identified similar contaminant linkages which require further mitigation. These are discussed in further detail below.

Contaminant Source	Receptor	Recommended Action	Discussion
Asbestos in Made Ground and elevated lead, arsenic.	Proposed end users	N/A	Providing development proceeds as currently planned, remediation is not required.
Asbestos in Made Ground	Construction workers	Mitigation	An asbestos in soils management plan should be in place during construction works, which should outline the protection measures required during handling of Made Ground soils.

Table 7-C: GQRA risk assessment conclusions

7.10 Unexpected and Previously Unencountered Contamination

- 7.10.1 With the development of any site, there is a residual risk of contamination being found that is unexpected or has not been encountered during investigation or other siteworks.
- 7.10.2 Should any previously unencountered and unexpected contamination be encountered, works should be temporarily halted and Soiltechnics informed. The Consultant should then assess the situation to determine what remedial action is required and inform the Local Authority at the earliest opportunity.
- 7.10.3 It is often a requirement of Local Authority planning conditions that the building/demolition contractor has a contamination discovery/contingency strategy in place for dealing with unexpected contamination. Such a strategy should be incorporated into the Asbestos Management Plan for soils at the site.

8 Soil and Waste Management

8.1 Sustainability

- 8.1.1 Where possible, disposal of soils to landfill should be avoided in preference for more sustainable alternatives. Such alternatives are set out below and rely on appropriate planning and design.
- 8.1.2 Soiltechnics can provide additional support and guidance to assist in overall material management and soil waste minimisation upon request.

8.2 Waste Hierarchy

- 8.2.1 Under the Waste Regulations, there is a requirement to apply (where reasonable) the waste management hierarchy, which is summarised below. Within the hierarchy, soil disposal to landfill should be limited to the necessary minimum.

Stage (in order of preference)	Example application
Prevention / Reduce	Design, planning, Site Waste Management Plans (SWMP).
Reuse	Reuse of soils under exemption, permit or Materials Management Plan (MMP), sorting at the point of excavation, screening of excavated material.
Recycling	Recycling aggregate, waste segregation, screening and sorting.
Recovery	Remediation works, transfer to a Soil Treatment Facility
Pre-treatment	Non-hazardous and hazardous soils do not need to be treated, where such treatment would not reduce the volume of waste.
Disposal	If the waste hierarchy steps outline above are followed, the remaining waste can be disposed of to a landfill without any further treatment.

Table 8-A: Waste management hierarchy

8.3 Liability of Waste Management

- 8.3.1 Part III of the Finance Act was amended in 2018 to extend the scope of landfill tax to cover any site (not exclusively landfills) operating without an appropriate environmental permit, exemption, or MMP.
- 8.3.2 These changes have given HMRC the powers to work with the Environment Agency to identify non-compliant sites and pursue and penalise the person(s) illegally disposing of waste, and anyone who knowingly facilitates the disposal. This includes sites filling site-won soils which are surplus to requirement.

8.4 Materials Management

- 8.4.1 In terms of the development, where reasonably practicable, landfill disposal should be minimised through the reuse of site-won materials on site, or off-site transfer of surplus soils to other development schemes or Soil Treatment Facilities. Early consideration of the site's overall material balance at the design stage is also critical in reducing the need for off-site disposal, limiting costs, and increasing the overall sustainability of the development.
- 8.4.2 Where Made Ground soils are to be reused onsite or materials transferred between sites, a Materials Management Plan (MMP) or Waste Exemption is recommended.

- 8.4.3 The process of an MMP allows soils that are suitable for reuse and have a certainty of use to not be considered a waste, and therefore not fall under the waste regulations. This scheme is self-regulated within the industry and is supported in principle by the Environment Agency.

8.5 Waste Characterisation Governance

- 8.5.1 The classification of soils for disposal to landfill is undertaken in accordance with WM3 (v1.2GB), and a Waste Acceptance Criteria assessment (WAC) undertaken in accordance with the limits in Annex II of the Landfill Directive (Directive 1999/31/EC).

8.6 Waste Populations

- 8.6.1 Based on the site observations, development proposals and laboratory results, the following potential waste populations have been identified for preliminary assessment purposes:

Potential Waste Population	Description
Made Ground	Brown, sandy, fine to coarse gravel/gravelly sand with high cobble content. Gravels comprised brick, concrete, sandstone, slate and clinker with metal and plastic. Localised soft brown sandy gravelly clay at depth.
Clean naturally occurring soils	Natural, uncontaminated clays and sands.

Table 8-B: Potential waste populations

- 8.6.2 Each of the potential waste populations can be readily identified and segregated at the point of excavation, based upon visual and olfactory observations.
- 8.6.3 Made Ground was determined to be impacted by bulk fragments of ACM and fibres in soils site wide during the 2022 Curtins investigation. A single fragment of ACM was also identified during Soiltechnics 2025 investigations in Made Ground soils.
- 8.6.4 In addition, where asbestos fibres have been identified in soils, or smaller fragments of ACM which are unlikely to be distinguishable by eye, have been measured at concentrations of 0.098%, 0.339% and 4.623%. Such concentrations would also render the Made Ground hazardous waste, exceeding the threshold of 0.1%. This is with the exception of the concentration measured at 0.098% in Made Ground from WS04 0.6m depth, however, it is marginal.
- 8.6.5 Based on works to date, the Made Ground is very homogenous, and it is not possible to zone such areas of the site where asbestos has been identified.

8.7 Sampling and Testing

- 8.7.1 The hazardous waste classification assessment has been undertaken by adopting the maximum recorded concentration of each compound from all the samples tested within the identified waste population, as outlined in WM3, Approach D.
- 8.7.2 In addition, sample-specific assessments have been completed for reference.
- 8.7.3 For the Waste Acceptance Criteria (WAC) assessment, 3 No. composite samples of Made Ground were collected from the site.
- 8.7.4 The rate of testing has been chosen to provide a preliminary waste categorisation only.

8.8 Waste Characterisation

- 8.8.1 Where testing has been carried out, the waste classification assessment sheets are enclosed within Appendix G, and a summary of the findings is presented in the table below.
- 8.8.2 Observations from the fieldwork indicate that the underlying natural soils are not impacted by contamination, and therefore are considered suitable for disposal as non-hazardous waste in an inert landfill site without the requirement for further testing.

Potential Waste Population	Hazardous Classification (LoW code)	Landfill Classification	Comments
Made Ground impacted by asbestos	Hazardous waste: 17-06-05* and 17-05-03*	Asbestos waste cell	Hazardous due to concentrations of metals and presence of ACMs and asbestos fibres/microscopic fragments of ACMs in soils. In addition, Total Organic Carbon (TOC) exceeds the hazardous waste WAC threshold in 1 of 3 samples of Made Ground tested. However, concentrations of dissolved organic carbon (DOC) could be considered, at the landfill operators discretion.
Clean, uncontaminated, natural materials	Non-hazardous (17-05-04)	Inert	Considered non-hazardous and inert without any testing required.

Table 8-C: Waste characterisation summary

- 8.8.3 Any hazardous waste that must be landfilled and cannot meet the WAC limits, even after treatment, is a 'problematic waste'. If you need to dispose of problematic waste to landfill you must complete a problematic waste stream request proforma, by contacting the Environment Agency.
- 8.8.4 Due to the quantities of demolition rubble contained within the Made Ground, if site is to be reduced in level to facilitate development, screening of the material may produce a viable recyclable aggregate and reduce the overall volume of waste material requiring disposal. However, due to presence of asbestos, a suitable management plan to deal with the presence of fibres and microscopic/larger fragments of ACMs in soils will be necessary.

8.9 Application of Advice

- 8.9.1 Where assessments have been carried out of soils currently in-situ at the time of investigation and not of stockpiled waste soils, they should be treated as provisional only.
- 8.9.2 Additional investigation works and testing may help to identify and segregate different waste populations on site, including inert materials, and therefore reduce costs.
- 8.9.3 There is no obligation on any waste operator to accept our waste characterisation assessments. Landfill operators may consider your waste to fall under a different classification and/or may require additional testing of waste soils prior to acceptance.
- 8.9.4 It is therefore recommended that this report along with the chemical results is provided to the preferred facility to confirm (or otherwise) it can accept the waste.

- 8.9.5 It should be noted that there remains the potential for unexpected or previously unencountered contamination to be encountered. Any such materials intended for waste disposal should be segregated and tested to determine the appropriate classification and disposal route.

8.10 Minimising Hazardous Waste

- 8.10.1 Due to the high costs associated with disposal of hazardous wastes / asbestos containing wastes, Soiltechnics recommend that the development is designed with a view to limiting as far as possible the removal of these materials. Often, there is the potential to reuse such materials in low-risk areas of the development, such as below hardstanding.
- 8.10.2 The development is proposed to be supported by piled foundations which may require a reduction in ground level to facilitate construction of associated pile caps and ground beams. A bored/CFA piled solution would also generate arisings which would require disposal. Use of driven piles, or ground improvement solutions, may allow reduction in soils requiring disposal offsite.

8.11 Further Recommendations

- 8.11.1 As the waste classifications provided are preliminary only and based on limited sampling of soils in-situ, it is recommended to undertake additional sampling and testing during the construction works to fully characterise the waste soils intended for disposal. The overall frequency of testing should be dependent upon the composition, volume and variability of the material excavated.

9 Recommendations for Further Works

- 9.1.1 We recommend completion of an asbestos in soils management plan to suitably mitigate the risks to human health during construction works within Made Ground at the site, which will be provided under separate cover. This should also include a discovery strategy to deal with any previously unencountered and unexpected contamination should it be encountered.

Appendix A Drawings



- Key:
-  Site Boundary
 -  Machine Excavated Trial Pit
 -  RC01 (Previous investigation borehole location)
 -  Installation

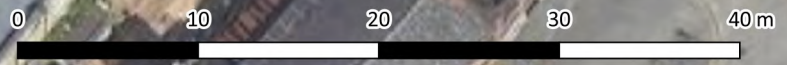
- Notes**
- 1) Base image provided by Google.
 - 2) All drawn features are approximate.

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A	Feb 2025	First issue
REV	DATE	COMMENT ON VARIATION

soiltechnics
environmental • geotechnical • building fabric

PROJECT
Postal Street, Manchester
TITLE
Exploratory Hole Location Plan
DRAWING No.
STW6854-D01-A



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No implied licence exists. This drawing should not be used to calculate areas for the purposes of valuation. Do not scale this drawing. All dimensions to be checked on the site by the contractor and such dimensions to be their responsibility. All work must comply with relevant British Standards and Building Regulations requirements. Drawing errors and omissions to be reported to the architect. To be read in conjunction with Architect's specification and other consultant information.

Rev	Description	Date
P.1	Issued for Information	22.11.21
P.2	Issued for Information	08.12.21
P.3	Issued for Information	26.01.22
P.4	Issued for Information	27.01.22
P.5	Issued for Coordination	01.02.22
P.6	Issued for Information	09.02.22
P.7	Issued for Information	22.03.22
P.8	Issued for Information	25.03.22
P.9	Issued for Information	08.04.22
P.10	Stage 2 Issue	22.04.22
P.11	Stage 2 Revised Layout	24.06.22
P.12	Issued for Information	04.08.22
P.13	Issued for Information	19.08.22
P.14	Issued for Information	26.08.22
P.15	Issued for Stage 2 Addendum	02.09.22
P.16	Issued for Information	26.09.24
P.17	Issued for Information	14.10.24
P.18	Issued for Information	21.10.24
P.19	Issued for Information	08.11.24
P.20	Issued for Coordination	22.01.25

Note:
Facade setting out subject to ongoing pre-application process, this may affect the positioning of windows and columns

26-28 Hilton Street
Manchester M1 2EH

mail@hawkinsbrown.com
hawkinsbrown.com

Hawkins\Brown

Project
Postal Street
Manchester
M1 2EH

Drawing
Proposed Floor Plan - Ground Floor

Scale @ 1 : 100	Date 22/11/21
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Drawn By TM	Checked By EC
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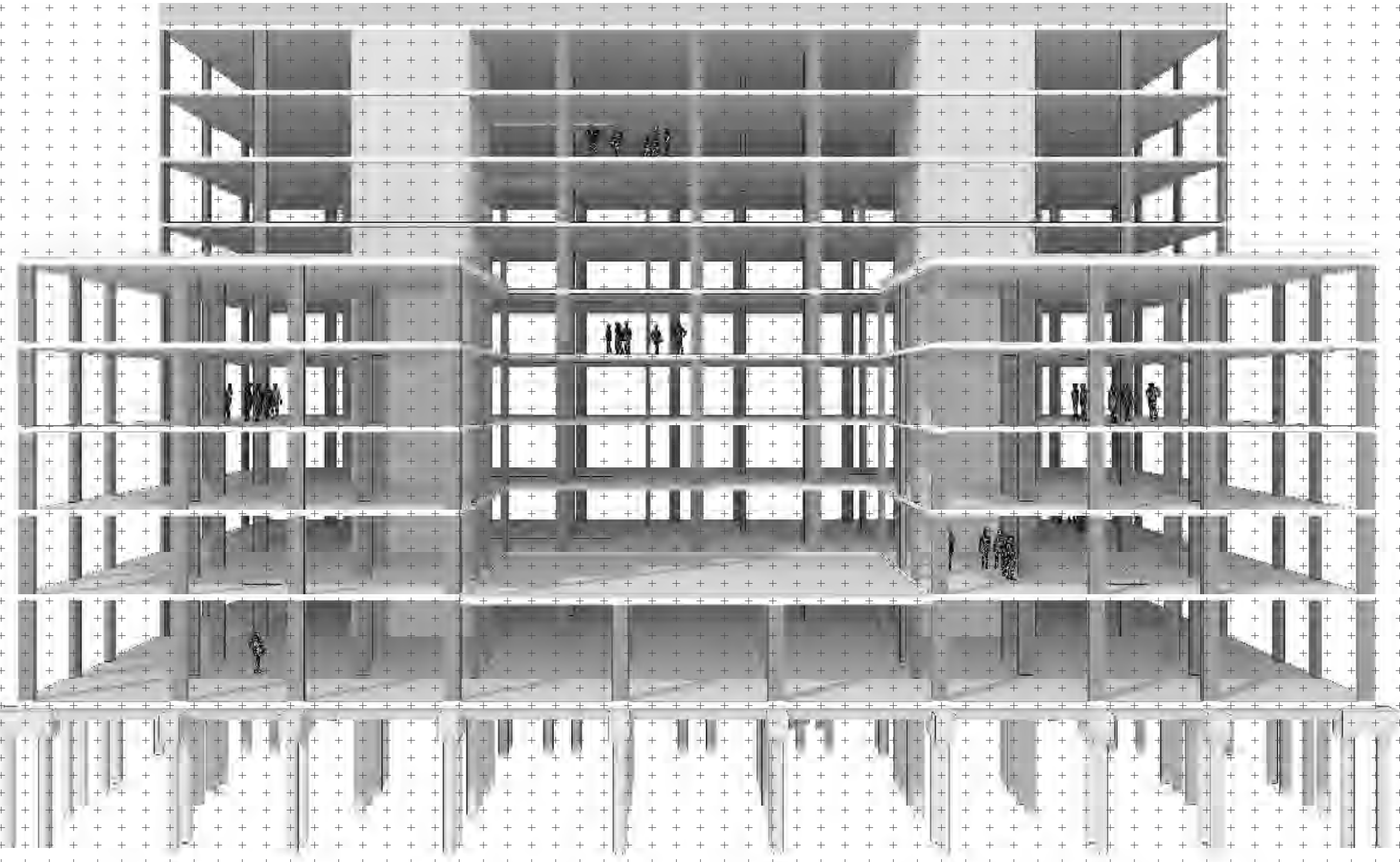
Job Number 210258	Status S1	Purpose of Issue For Coordination
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Drawing No. POST-HBA-ZZ-00-DR-A-20-0100	Rev P.20
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Appendix B HTS Stage 2 Appraisal, 2024

3315 Postal Street - Stage 2 Appraisal



Contents

1. Introduction
2. The Site
3. Structural Appraisal
4. Existing Drainage
5. Planning Policy Context
6. Previously Development Drainage Strategy
7. Risks and Opportunities
8. Proposed Surface Water Strategy
9. Proposed Foul Water Strategy

Appendices

- A Structural Layouts

1.0 Introduction

1.1 Scope

Heyne Tillett Steel (HTS) have been appointed by Atkins Realis as consulting civil and structural engineers for the Postal Street development. HTS's current scope for RIBA Stage 3 relates to the Postal Street site only.

This report covers an initial appraisal of the RIBA Stage 2 proposals and provides an initial thoughts as a follow up to the civil and structural proposals previously undertaken by curtains.

This report has been prepared for exclusive use by the client and should not be relied on by third parties without specific consent.

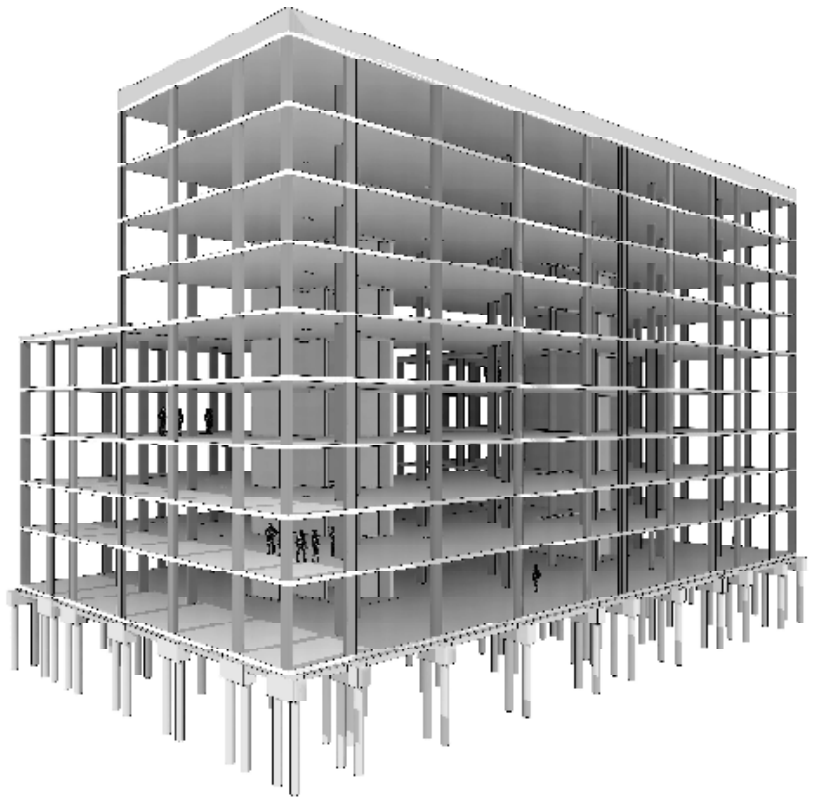
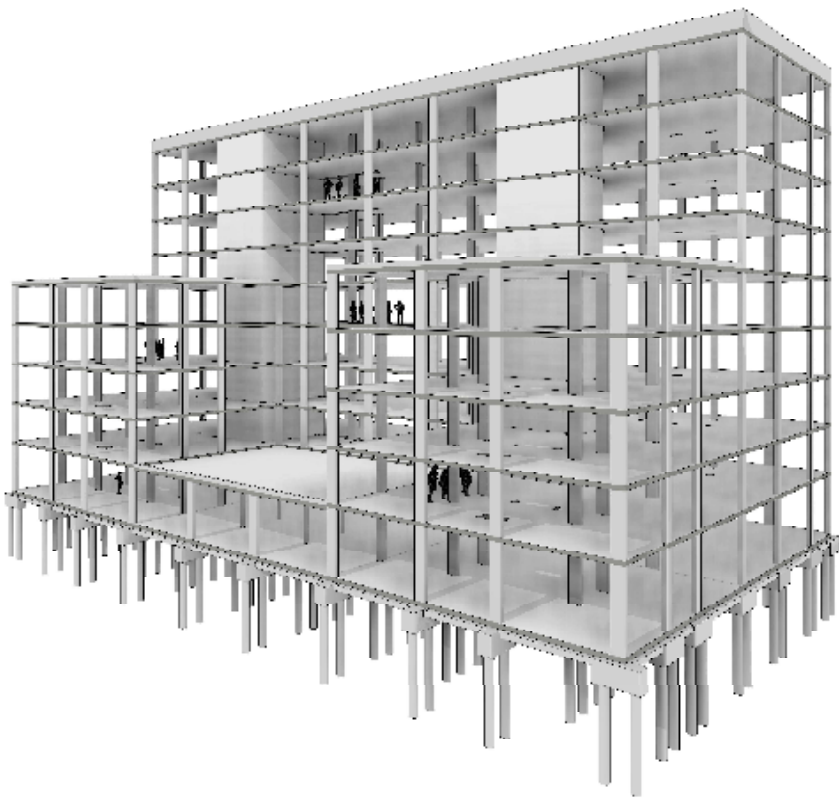


Dean Street View [Hawkins Brown Architects]

1.2 Project Brief

The proposed Postal Street scope of works includes the demolition of existing buildings to enable the construction of an 8-storey residential building comprising 111 units with supplementary commercial spaces.

The development sits within the majority of the site footprint with the building stepped back on elevation to accommodate roof terraces and resident's courtyard.



Structural Frame Isometrics

2.0 The Site

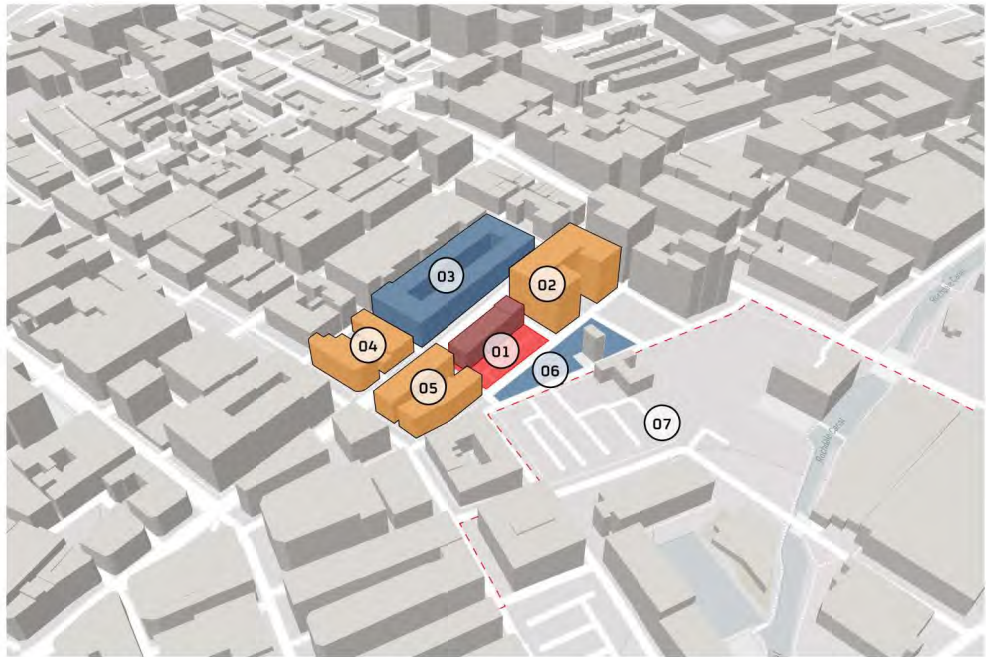
2.1 Site Description

The development is located within Manchester city centre, bound by Dean Street to the south-east, Faraday Street to the south-west, Newton Street to the north-west and Postal Street to the north-east.

The site is approximately 0.16Ha and is currently occupied by an existing commercial unit with the surrounding area predominantly surfaced with hardstanding.

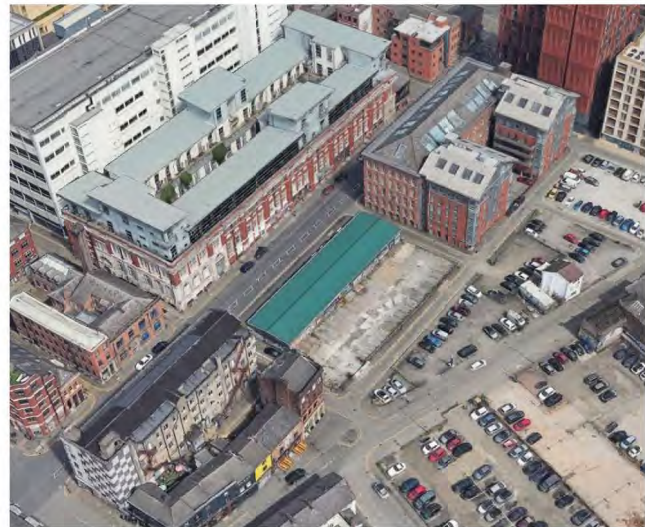
The surrounding mixed use developments consist of 'The Sorting House' [residential] to the north, with three Grade II listed buildings; 'Former Netwon Street Police Station', '72-76 Newton Street' [Offices] and 'Marlsbro House' [bars & restaurants].

There are more car parks to the south of the site with potential scope for future developments as part of Piccadilly Basin Regeneration Framework.



Site Isometric

- 01 The Site - Existing commercial unit + car park
- 02 '72-76 Newton Street' - Grade II listed offices
- 03 'The Sorting House' - Residential building
- 04 'Former Newton Street Police Station - Grade II listed
- 05 'Malsbro House' - Grade II listed
- 06 Existing open surface car park
- 07 Piccadilly Basin Regeneration Framework Zone



Google Aerial Images - South View



Google Aerial Images - West View



Google Aerial Images - North View

2.0 The Site

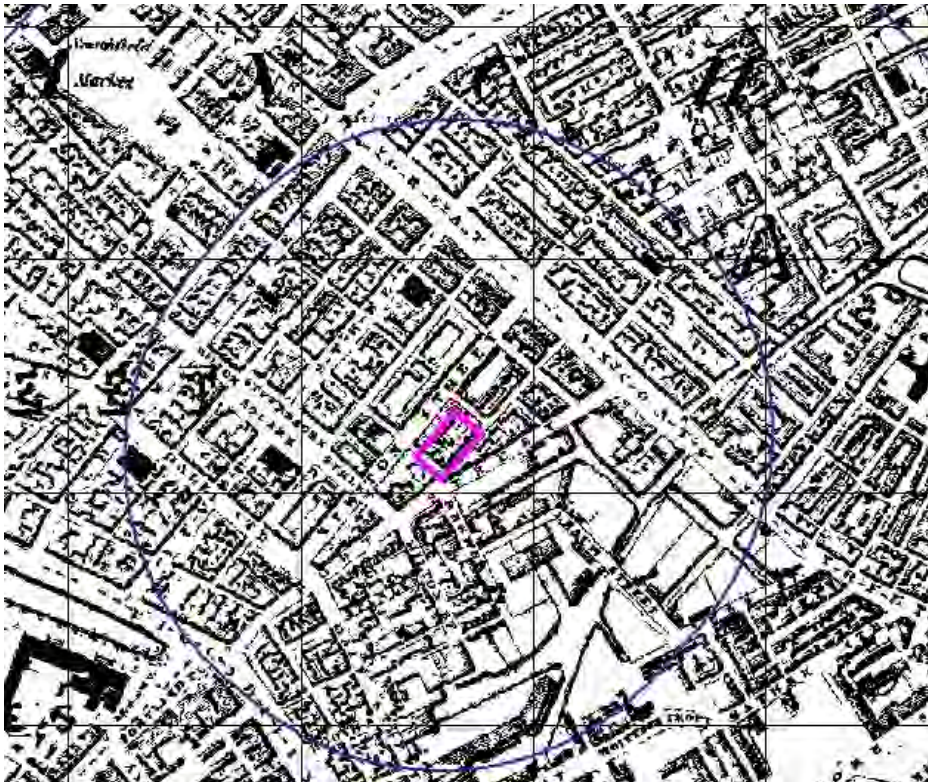
2.2 Site History

Earliest mapping (1848-1851) records the site with industrial buildings (cotton mill and plate manufacturer). These were demolished in 1891 and replaced with terraced housing.

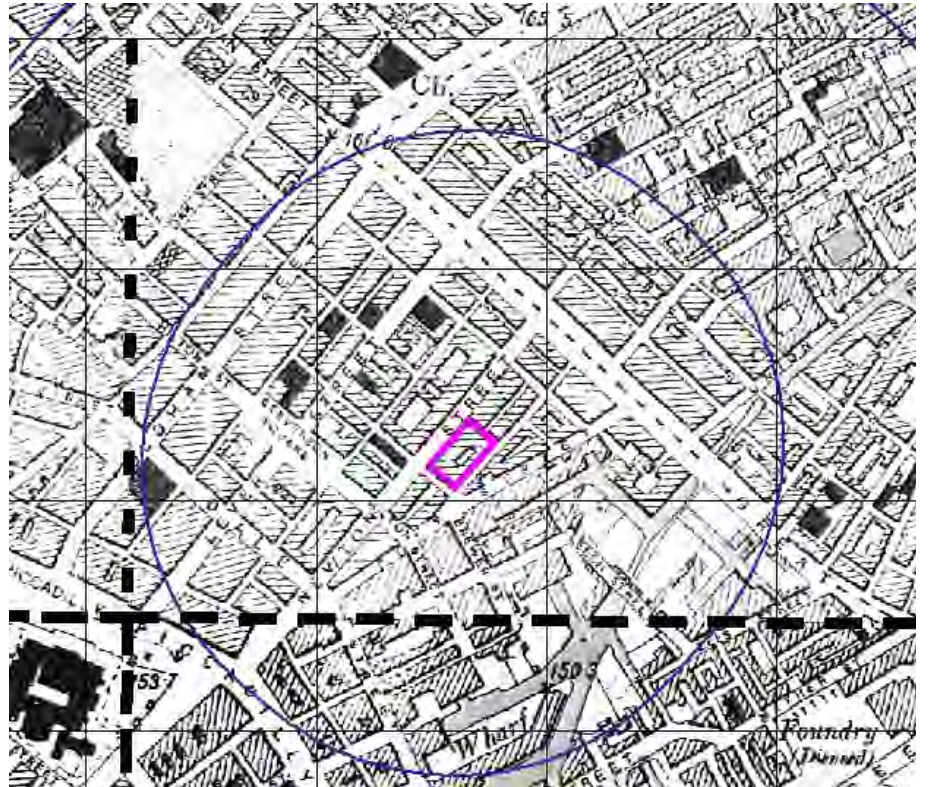
Terraced houses within the eastern and southern sections are shown to have been demolished by 1969. The remaining houses are then demolished by 1985.

The existing warehouse is shown on the site from 1985 till present.

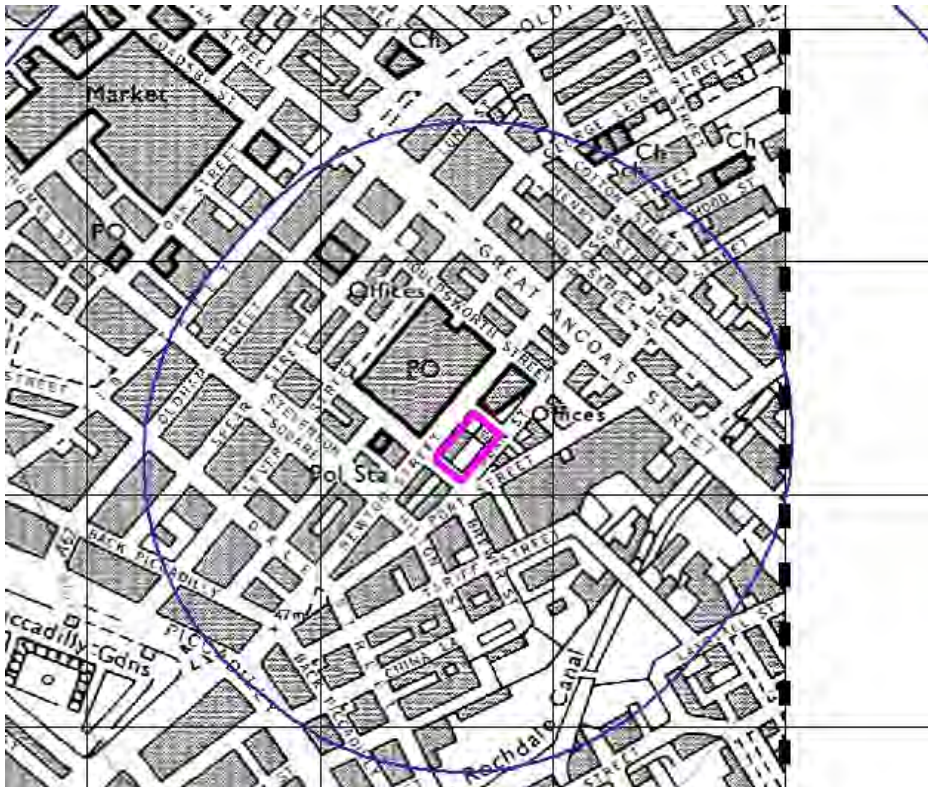
The surrounding developments have generally been residential and industrial buildings, most of which have been demolished or redeveloped over time.



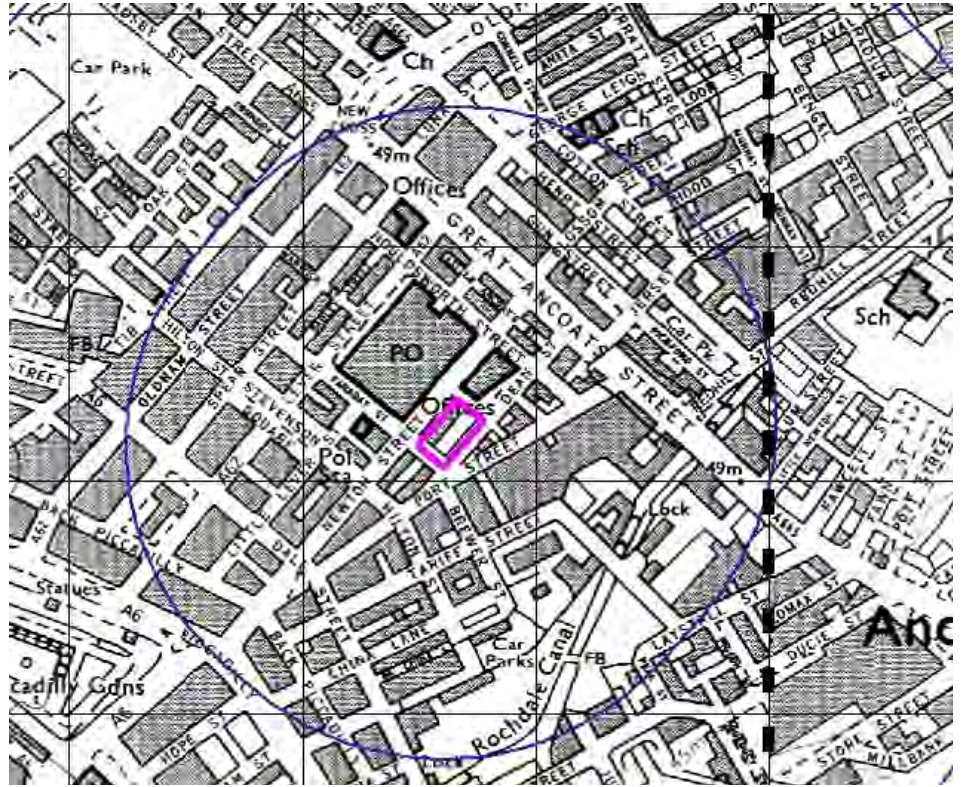
1848 Maps



1894 - 1896 Maps



1972 Map



1985 - 1987 Map

2.0 The Site

2.3 Site Geology

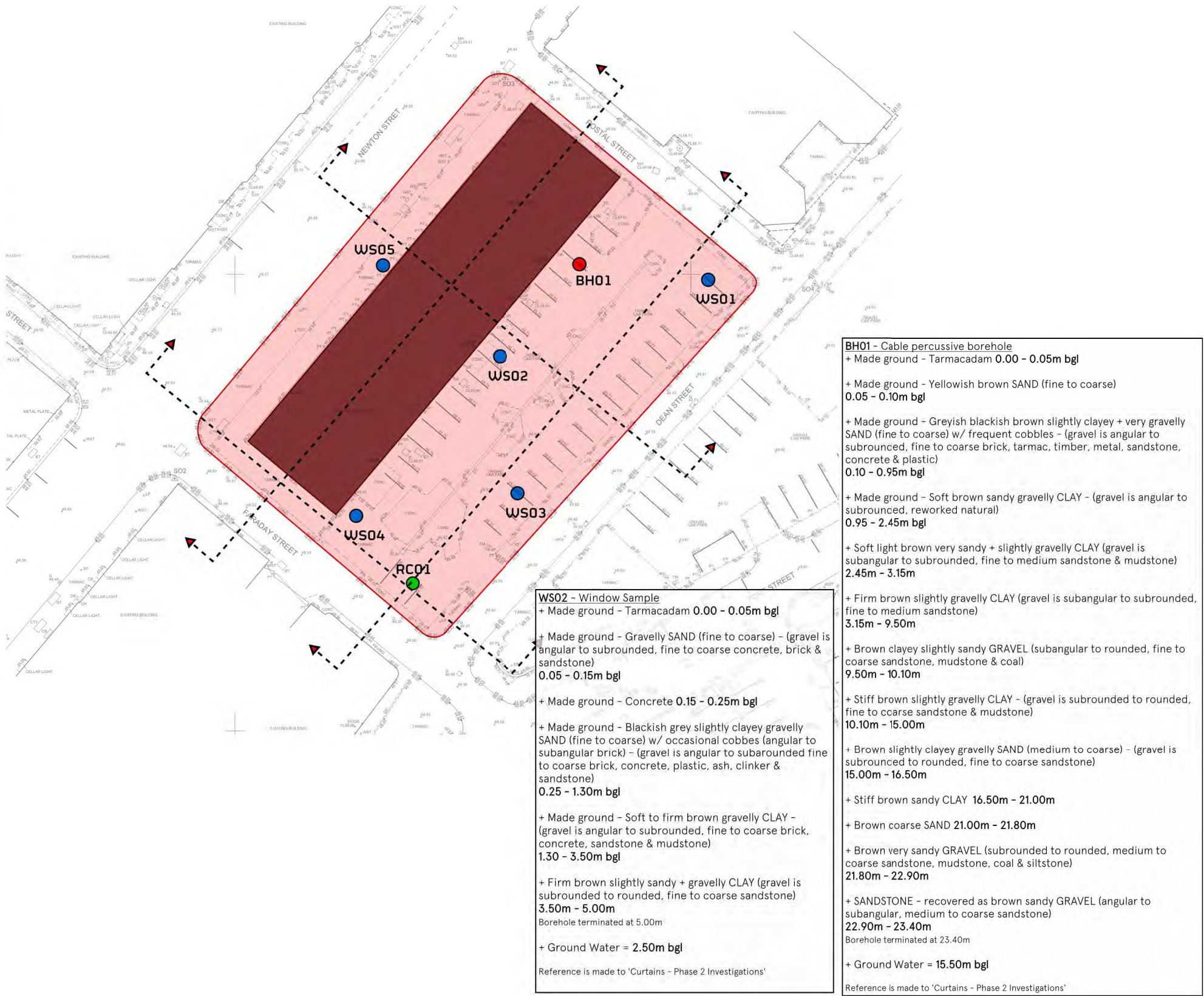
From BGS mapping, the site is shown to be underlain by Glacial Till superficial deposits and Chester Formation bedrock. The BGS records three boreholes within 50m of the site to depths of 5.00 – 6.50m bgl. Made ground was noted between 1.20 – 2.90m bgl. No bedrock is encountered within these boreholes.

The site is located in a low probability radon area.

Phase 2 geotechnical investigations have been carried out by Curtains. The ground conditions encountered on site generally comprise tarmac/concrete underlain by made ground to 2.10m – 3.50m bgl.

Underlying glacial till soils comprise firm/stiff silty sandy gravelly clay with bands of sandy clayey gravel and clayey sand to 22.90m to 23.80, bgl. The underlying bedrock formation comprises extremely weak to moderately strong brown fine to coarse grained sandstone.

Groundwater levels within bedrock formation appear to be consistent with head levels at circa 22.40 to 22.50m bgl. Localise perched water is encountered in shallow made ground soils.



3.0 Structural Appraisal

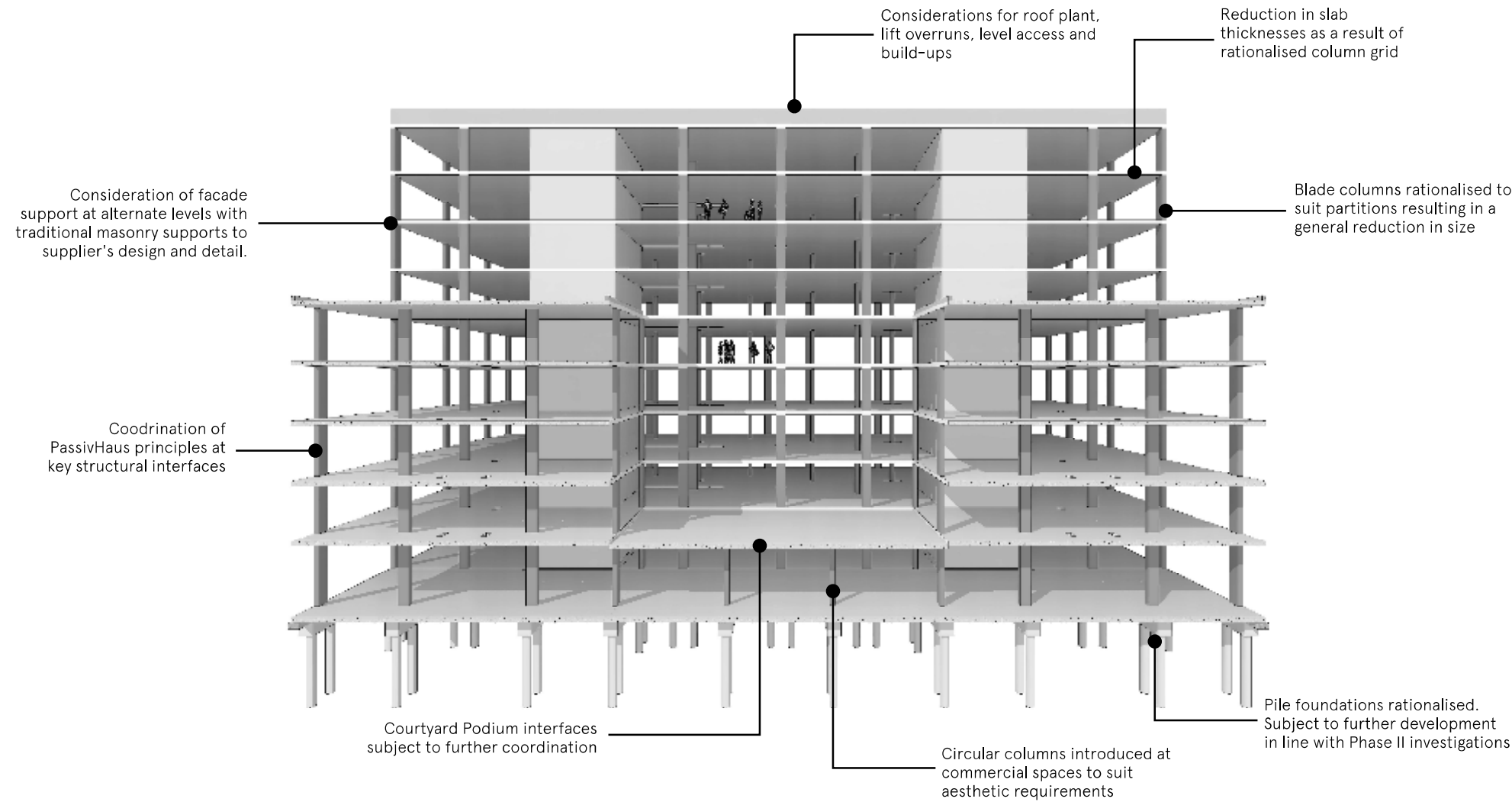
3.1 Scope

The purpose of this evaluation is to assess the design's adherence to architectural intent, structural philosophy and overall feasibility as the project progresses toward the next stage of development.

3.2 Key Opportunities

Items addressed include the following:

- + Rationalising column grids
- + Reducing slab thickness
- + Reducing column sizes
- + Rationalising foundations & piles (subject to further review)
- + Review of compliance with PassivHaus principles



Proposed Postal Street Structural Frame

3.0 Appraisal

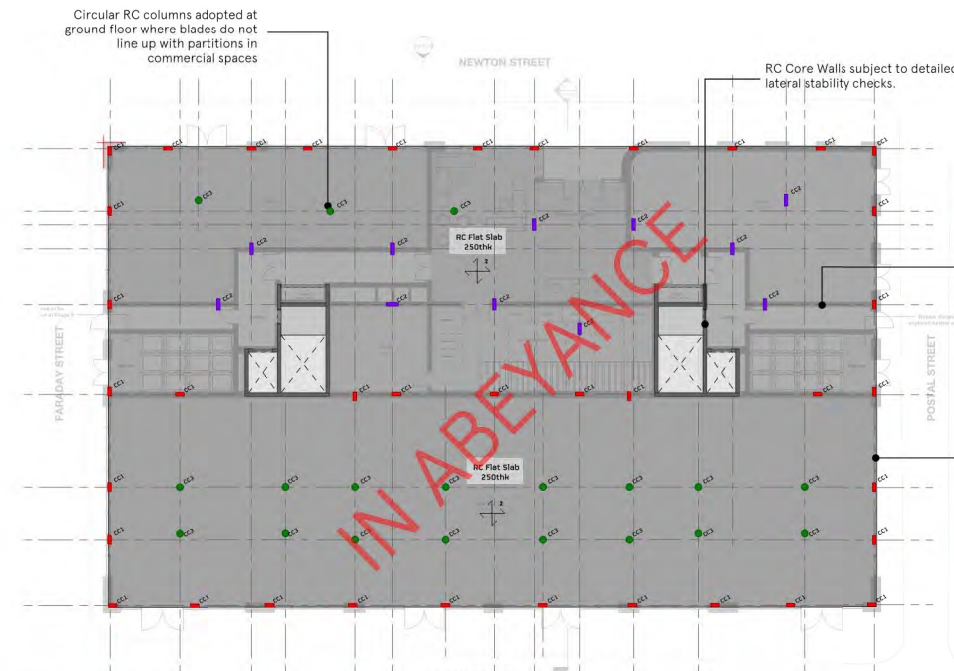
3.3 Structural Layout



FOUNDATION PLAN
1:200

Ground beams support low level masonry facade & restrain pile caps. Allow for additional internal ground beams subject to confirmation of slab steps

Allow for moment heads/additional ground beams for internal pile cap restraints



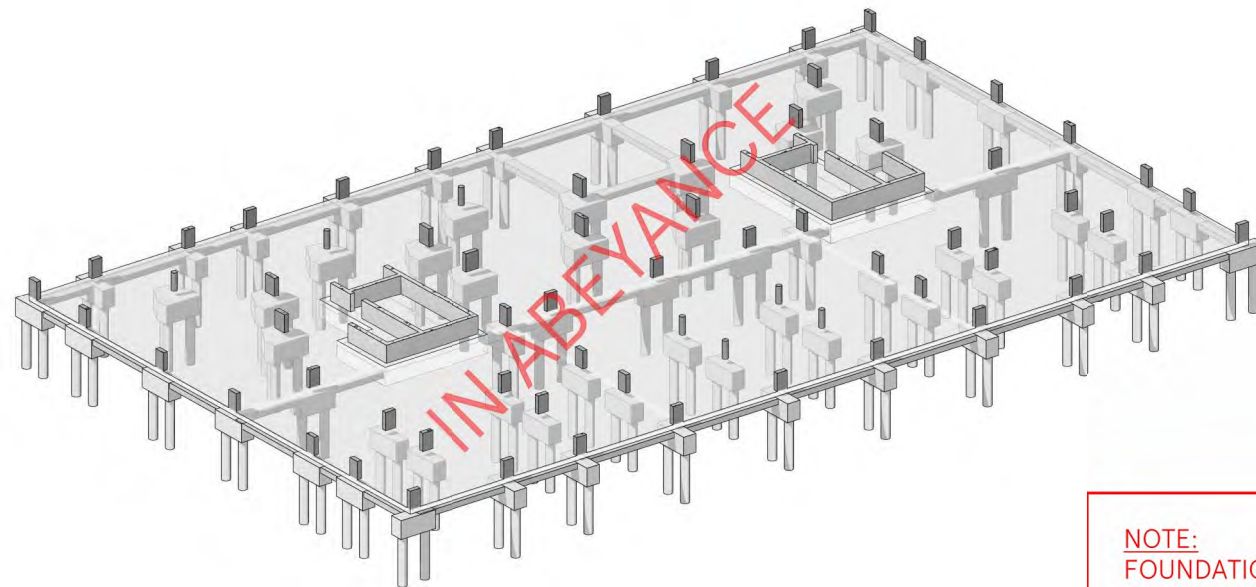
GROUND FLOOR PLAN
1:200

Circular RC columns adopted at ground floor where blades do not line up with partitions in commercial spaces

RC Core Walls subject to detailed lateral stability checks.

Allow for additional ground beams to suit slab steps subject to final depths

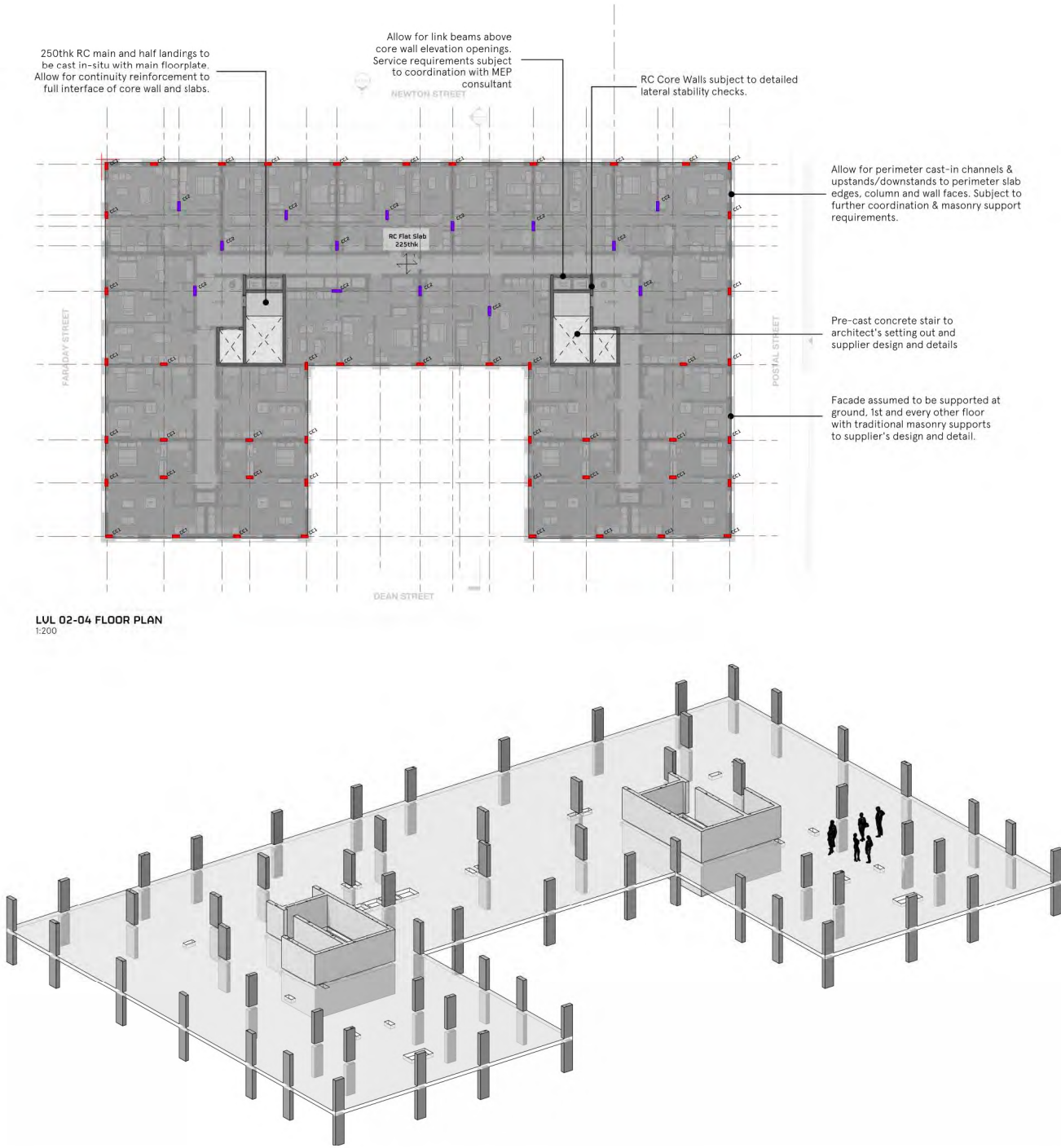
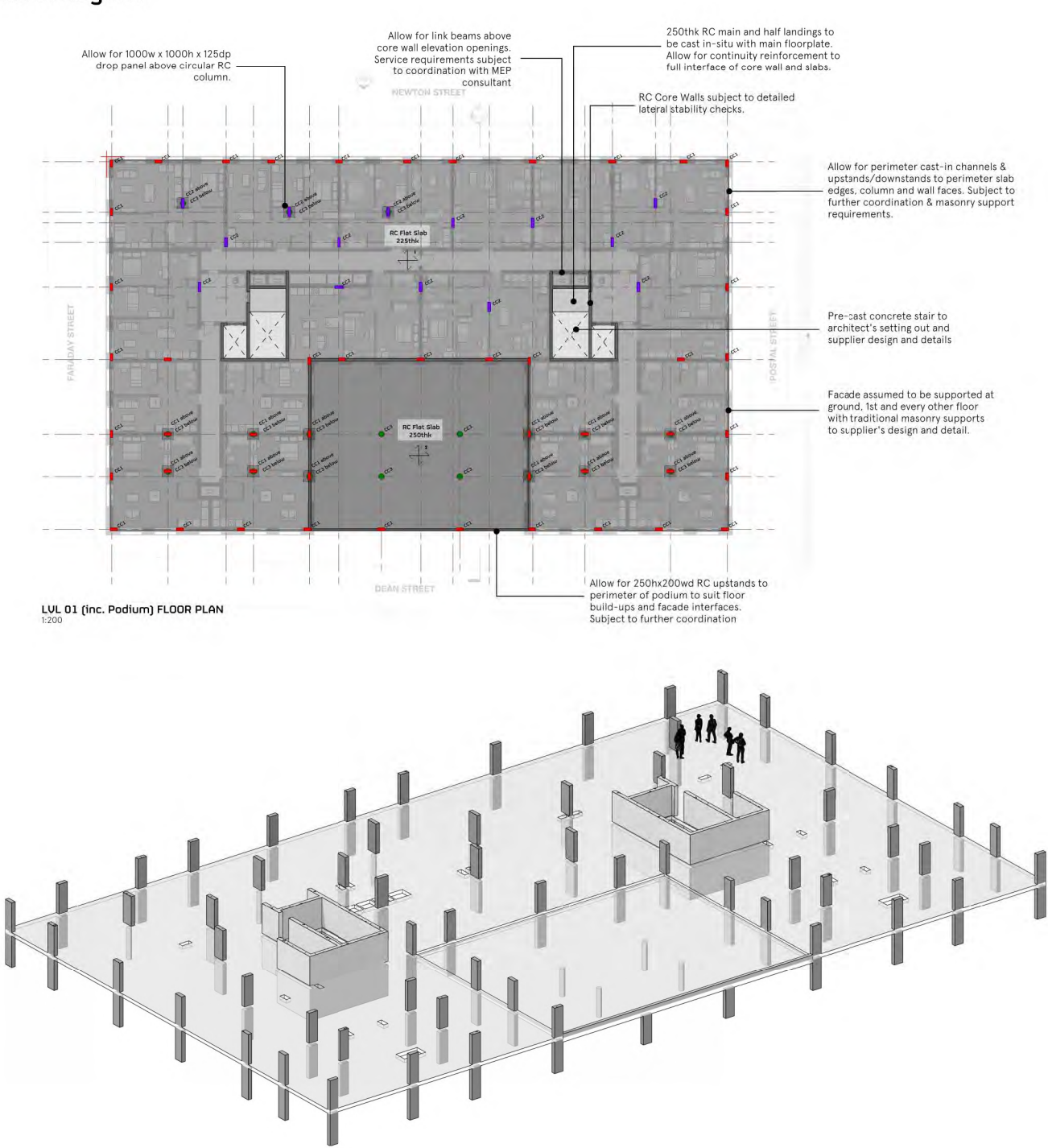
Facade assumed to be supported at ground, 1st and every other floor with traditional masonry supports to supplier's design and detail.



NOTE:
FOUNDATION & PILE LAYOUTS ARE INDICATIVE AND SUBJECT TO COORDINATION WITH PHASE II SITE INVESTIGATION RESULTS IN THE NEXT RIBA DESIGN STAGE

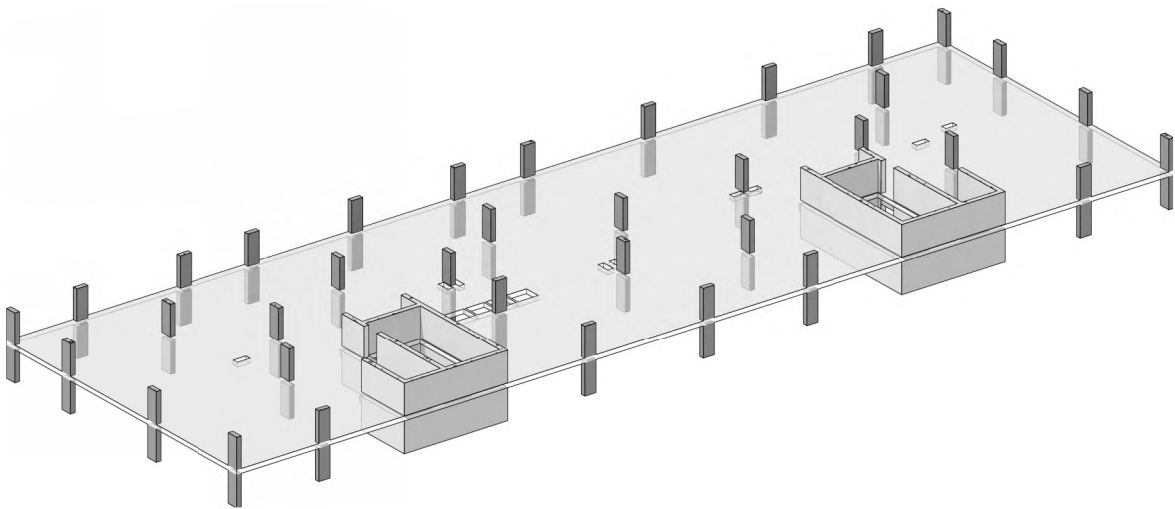
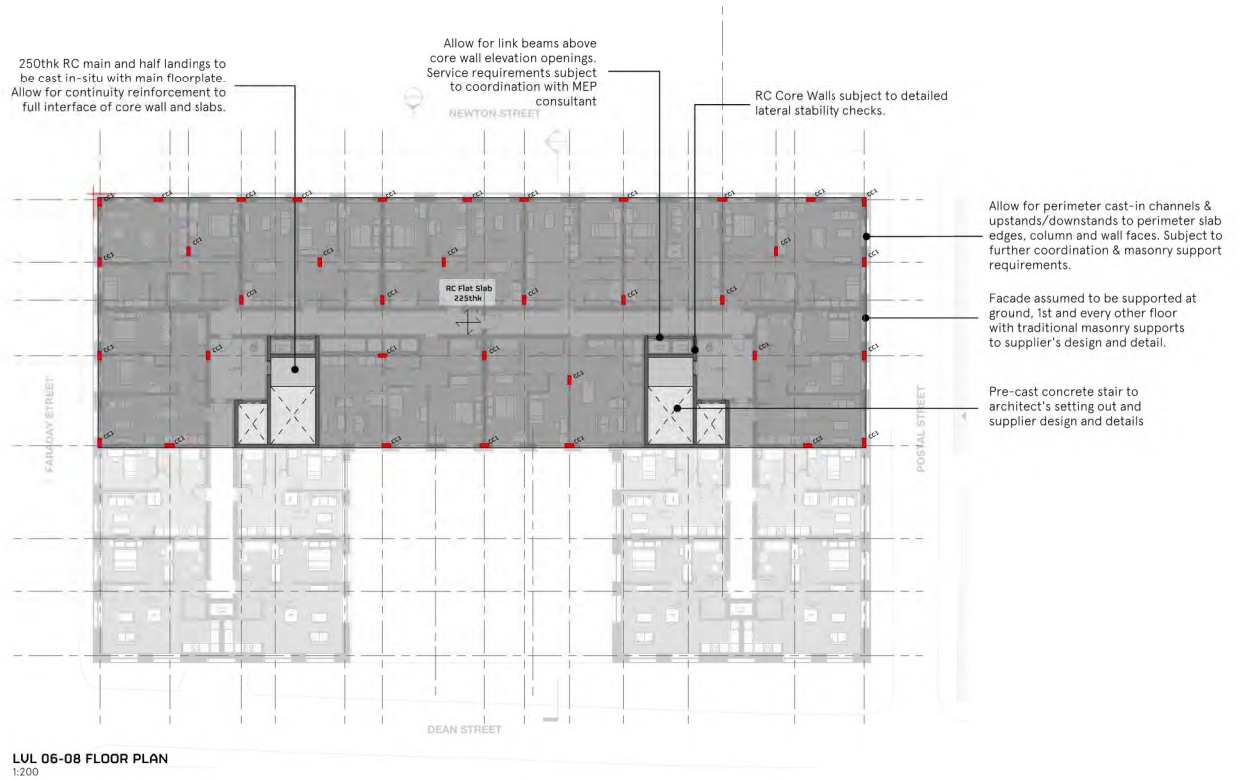
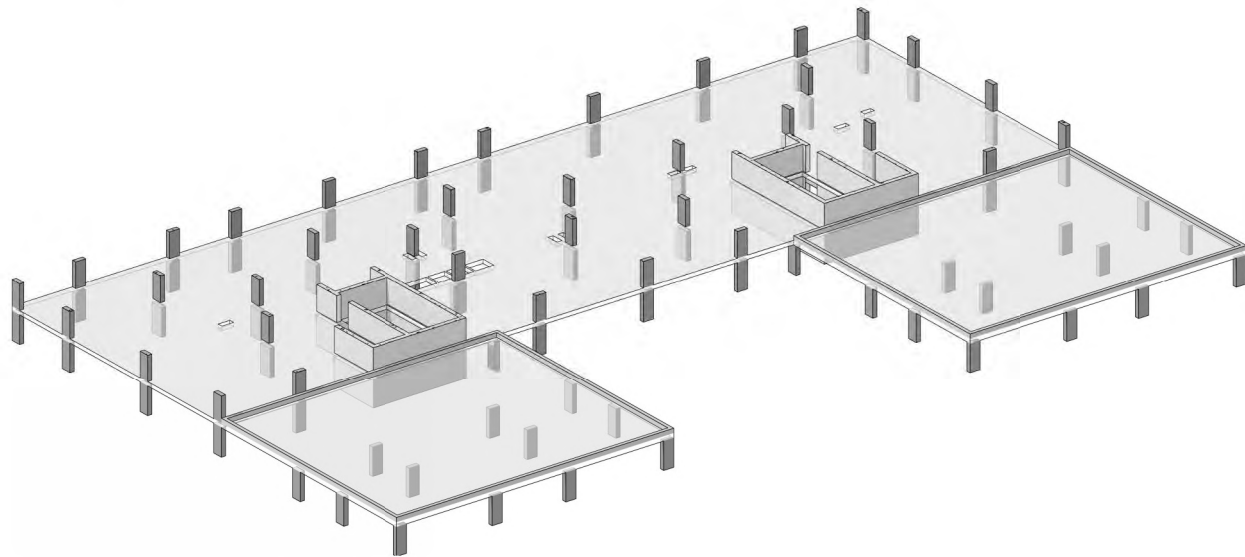
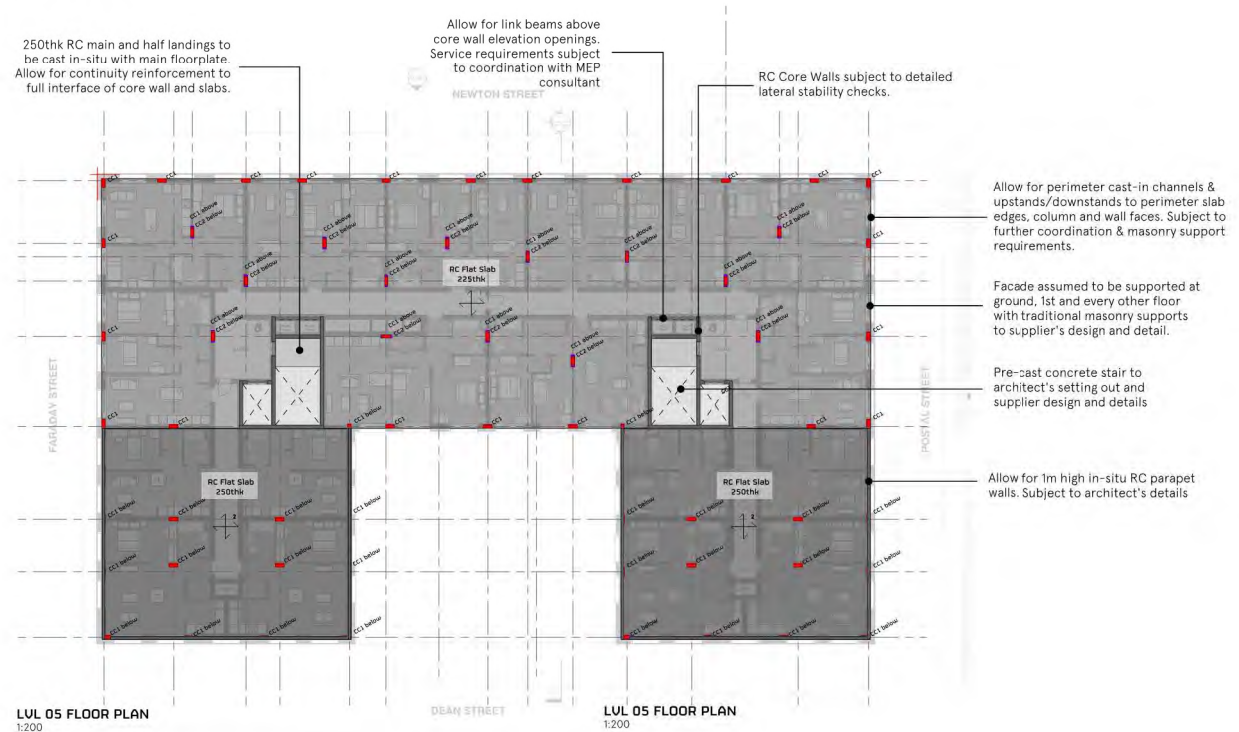
3.0 Appraisal

3.3 Structural Layout

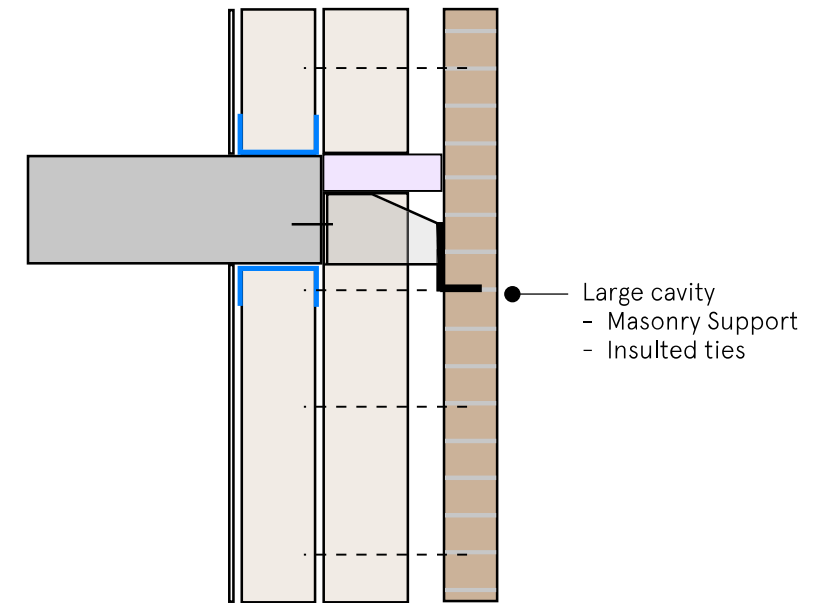
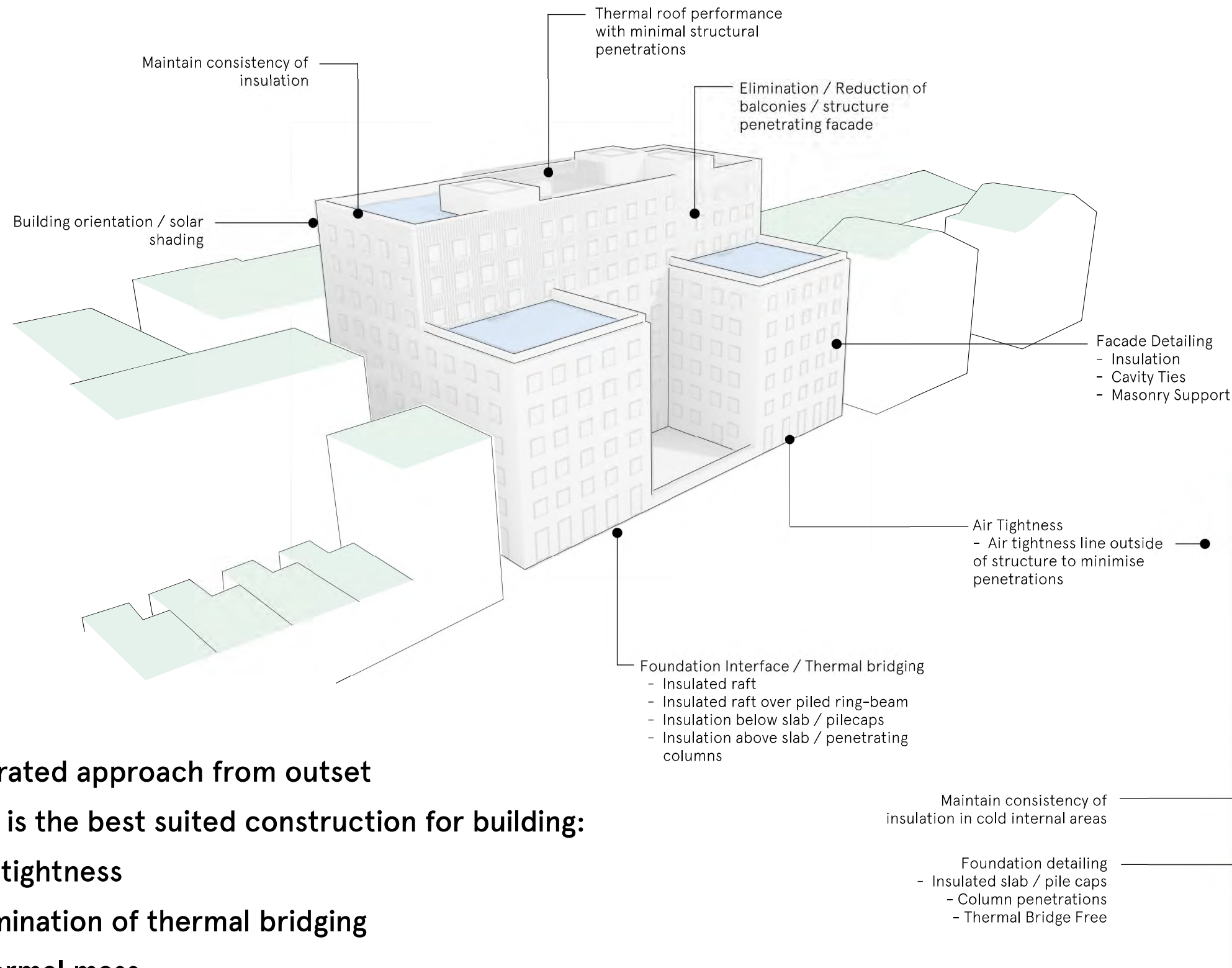


3.0 Appraisal

3.3 Structural Layout



PassivHaus Principles Design



- + Integrated approach from outset
- + What is the best suited construction for building:
 - + Air tightness
 - + Elimination of thermal bridging
 - + Thermal mass
- + Procurement route

4.0 Existing Drainage

4.1 Public

The site is served by a combined water sewer system operated by United Utilities. Sewers are located under the four roads which bound the site.

This provides some flexibility for the proposed design as to where the sites private drainage system can ultimately drain to. If found to be feasible existing sewer outfalls to the sewer system will be maintained, but allowance should be made for new connection(s) at this stage.

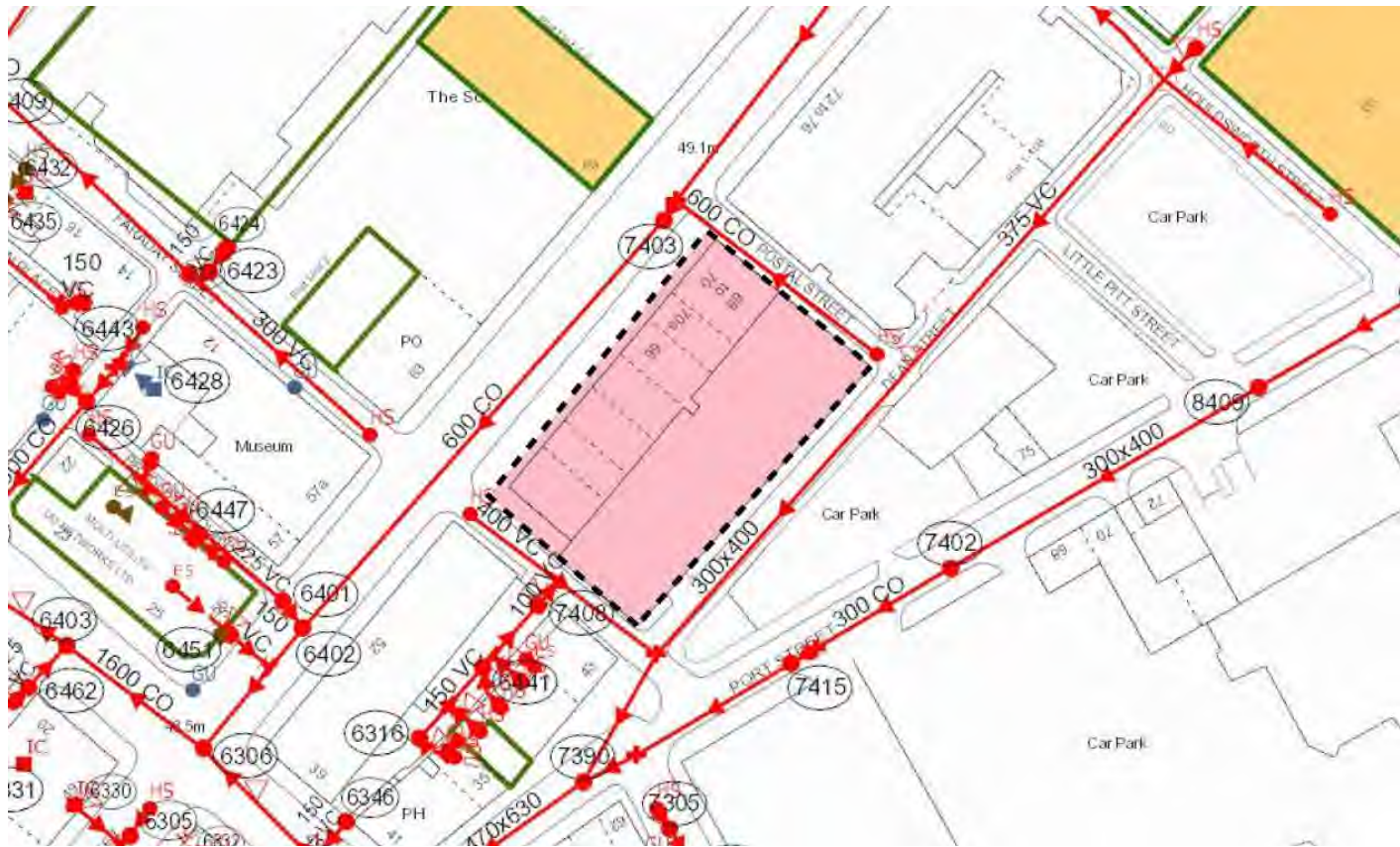
The public sewer system was partially surveyed by Faithful Gould in March of 2022. This confirmed the extents of the public sewers shown on the asset map and no further public sewers were identified within or around the site. Based on this there is no understood requirements for diversion or abandonment works to UU drainage assets.

4.2 Private

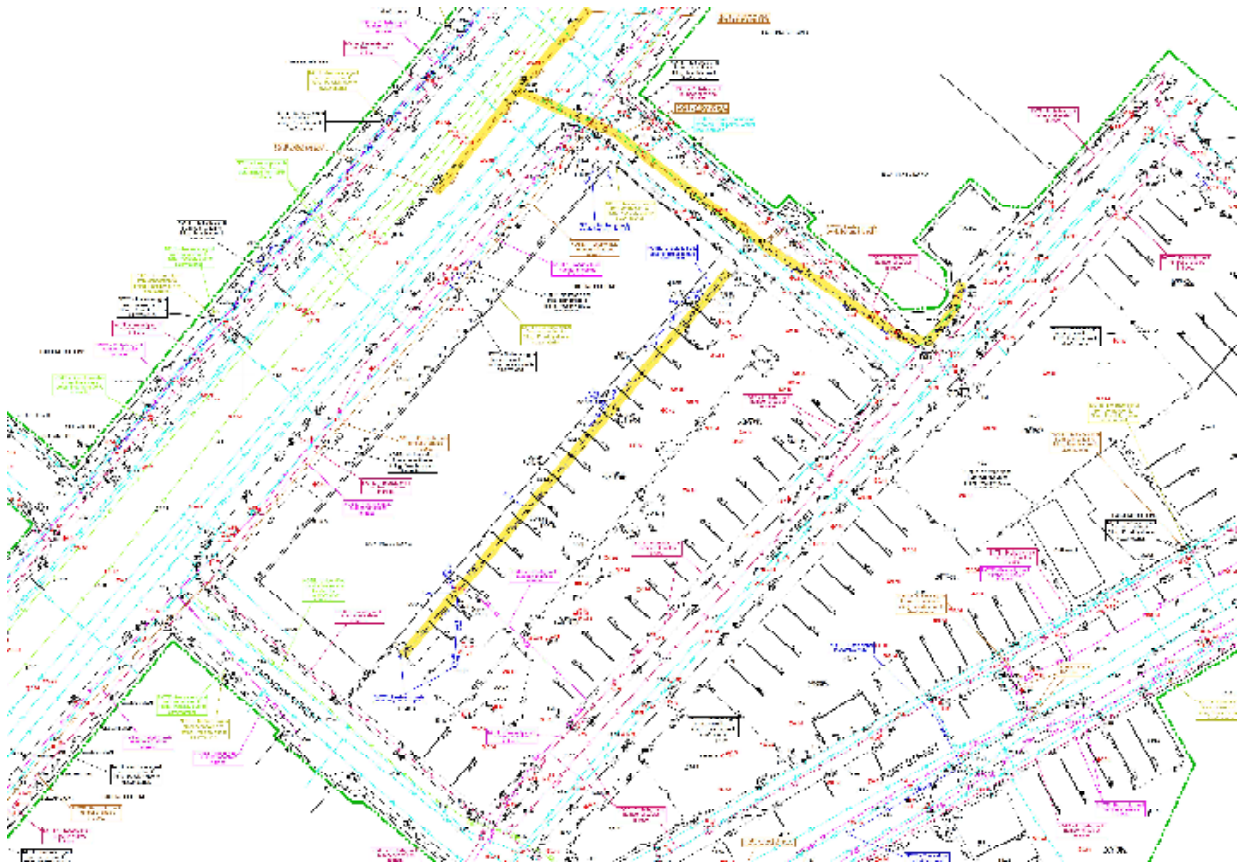
As mentioned in the previous section a CCTV survey was undertaken for the site.

From review of the Curtins Consulting Stage 2 report we can see that the site is served by a private drainage system which outfalls to the UU combined water sewer under Newton Street. A drainage layout was not included in the survey information we have received. However, we do have GPR survey information that shows some of the drainage assets within and around the site.

It is unlikely that any of the existing system will be retained. However, the existing outfall should be re-used if deemed to be in a suitable location and level in relation to the proposed development.



United Utilities Asset Map Extract



GPR Survey Extract Highlighting Private Drainage

5.0 Planning Policy Context

5.1 National Planning Policy Requirements

The National Planning Policy Framework (NPPF) States that priority should be given to sustainable drainage and discusses the impact of new development on flood risk. The NPPF maintains strong policy on avoiding and managing flood risk, based on local planning authorities preparing local plans and deciding planning applications and granting planning permissions.

5.2 Regional / Local Planning Policy Requirements

The Manchester Core Strategy lays out the flood risk and sustainable drainage planning policy requirements for our site.
The Core Strategy contains recent amendments via the 'Places for Everyone Joint Development Plan Document' adopted on the 21st of March 2024.

This includes a change to the previously named policy EN14 Flood Risk, which is now replaced by PfE policy JP-S4.

Below is a summary of relevant SuDS related sections of Policy JP-S4: Flood Risk and the Water Environment:

Expecting developments to manage surface water run-off through sustainable drainage systems and as close to source as possible. Development should achieve greenfield run-off rates unless it is demonstrated to be impracticable.

Ensuring that sustainable drainage systems:

- i. Are designed to provide multifunctional benefits wherever possible, including for water quality, nature conservation and recreation;
- ii. Avoid adverse impacts on water quality and any possibility of discharging hazardous substances to ground;
- iii. Are delivered in a holistic and integrated manner, including on larger sites split into different phases; and
- iv. Are managed and maintained appropriately to ensure their proper functioning over the lifetime of the development.

3. As a minimum, residential development should meet the mandatory water efficiency standard of 125 litres/person/day as set out in Building Regulations. District local plans may and should consider setting a tighter water efficiency standard of 110 litres/person/day where there is a clear local need with reference to national guidance on housing optional technical standards.

6.0 Previously Development Drainage Strategy

6.1 Targeted discharge rate

UU were consulted and confirmed that 5 l/s would be the maximum discharge rate.

The Lead Local Flood Authority (LLFA), Manchester City Council, were also consulted and they confirmed that the proposed rates should be determined once the modelling of the existing network has been undertaken. We assume this is due to the LLFA wanting a comparison to be drawn between the existing rates and any proposed betterment.

The LLFA also said that the rates should be in accordance with the UU requirements (5 l/s based on conversations held to date).

6.2 Surface Water Discharge Hierarchy

Discharge Method	Feasibility	Comments
Infiltration	No	Initial review of geology and spatial constraints has determined this is unlikely feasible
Watercourse / Waterbody	No	No watercourses within proximity of site.
Surface Water Sewer	No	No surface water sewers near site.
Combined Water Sewer	Yes	Yes, combined water sewer network surrounds the site under the public highways.

6.3 Proposed Surface Water Strategy

As stated earlier in this section, the site was proposed to be restricted to 5 l/s. This is a minimum requirement imposed by UU and supported by the LLFA. However, consideration needs to be given to the existing rates.

The following SuDS features were considered:

6.3.1 Blue / green roofs

An initial design was put forward through consultation with Bauder who supply blue roof systems. They confirmed that the following design would achieve the targeted 5 l/s discharge rate:

Roof Level	Restricted flow rate (l/s)	Attenuation layer depth (mm)
1	0.69	67
4	0.69	67
7a	0.69	67
7b	0.66	59
10	2.07	67

The following statement was also provided within the Curtains report:

"It is noted that where blue roof is considered with only hard surfaces, this is the equivalent to a below ground attenuation tank and as such has no significant sustainability benefits."

HTS disagree with this analysis. There are many ways in which a blue roof system can offer sustainability and cost benefits over a below ground tank. This is expanded on in more detail in 'Section 8' of this report.

6.3.2 Below Ground Attenuation Tank

Within Appendix B of the Curtins Report, there is a drawing showing an indicative location and extent of below ground attenuation tank.

A volume of up to 94 m3 has been allowed for. This assumes no blue roof extent and is based on the preliminary attenuation calculation carried out based on a rate of 5l/s.

7.0 Risks and Opportunities

Item	Description	Next steps
Surface Water Drainage		
Discharge rate	Based on correspondence to date, 5 l/s is the current targeted rate to satisfy UU and the LLFA. However, since Curtins have written their Stage 2 strategy, the council policy regarding SuDS has changed and a lower rate of greenfield may be requested. This is in response to PfE Policy JP-S4. We understand that we need to balance the clients commercial requirements with the planning policy requirements of the LPA and capacity concerns with UU. We are to make the best case possible for a higher discharge rate.	HTS are to consult with the LLFA and UU through pre-app process to confirm the surface water discharge rate. Although it is likely that 5 l/s will need to be provided, we will develop some technical justification against for a higher rate, we can present this to UU and the LLFA for approval.
Below ground attenuation	Below ground attenuation is not a preferred method for attenuation in the eyes of the LLFA if other methods are feasible. In our view there are multiple benefits for looking at other SuDS features such as blue roofs over just below ground attenuation tanks.	HTS are to review the SuDS techniques detailed in the following section of this report with the design team in order to determine what is the most feasible and beneficial strategy for the development. We will provide details of the blue roof system in terms of the design standards, warranties and details of previously constructed systems.

8.0 Proposed Surface Water Strategy

8.1 Blue Roofs

Blue roofs are an excellent way to attenuate surface water runoff from structures that have flat roofs. They are rated highest in several of the LLFA's drainage hierarchies. This is as they provide multifunctional benefits and provide surface water attenuation at source. The Sections below will detail some of the key considerations and benefits of using a blue roof system.

Although Manchester City Council do not directly reference the use of blue roofs, as they are a multifunctional SuDS feature and deal with surface water attenuation 'at source' there will be a preference towards their inclusion. In instances where the targeted runoff rates of the development are still achieved using below ground storage tanks or other less desirable features (sometimes referred to as 'grey' features), there is a risk that there is an objection to the strategy.

8.1.1 Design Scope

HTS's role as the project civil engineer is to look at the development of the SuDS strategy for the development. Ultimately this is required to obtain planning consent. For many projects blue roofs can form the basis of a SuDS strategy especially where roof areas occupy a significant portion of the sites surface water catchment area. Therefore, our role is to propose blue roofs as a SuDS feature for the scheme and coordinate the design between different design disciplines and external blue roof providers.

8.1.2 Design standards / considerations

Blue roofs currently do not have a stand-alone design standard. This is something that is being progressed by CIRIA and HTS are on the steering group for this.

In lieu of this guidance the industry is generally following and adapting existing design guidance. That being:

- BS 12056 Gravity drainage systems inside buildings
- BS 6229:2018 Flat roofs with continuously supported flexible waterproof coverings - Code of practice

Warranty providers such as NHBC and Premier Guarantee should also have design guidance out there for blue roofs.

Using these standards, we have the ability to design the roof as warm or inverted.

Good practice encourages a fall of 1:80 towards outlets of the flat roof drainage system. If this can be accommodated / provided within the total roof construction, it should be considered. However, this often leads to a comparatively large increase in the overall roof construction. Compliant designs can be developed based on a true 0% falls system and a single point of warranty for such a system can be provided by many blue roof suppliers.

8.2 Design Approach

The depth, extent, contributing catchment area and restricted flow rates are all linked together. We need to define these parameters in order to understand the potential of the blue roof design.

We recommend by starting to define the maximum extend and depth of the blue roof, along with the catchment area it can serve. From this we can derive the lowest restricted rate possible with support from a blue roof supplier. The aim is generally to get the flow rate restricted as low as possible at source before it drains into the below ground drainage network. This will minimise the volume required in the wider network.

Once roof layouts are available, we can work with the Architect to define the blue roof extent, contributing catchment areas and liaise with a blue roof supplier to get initial hydraulic calculations.

These calculations Will include information such as the CAT 1 overflow rate defined by BS 12056, this can be provided to the M&E Engineer / whoever is responsible for the design of the above ground drainage system.

Blue roofs can be designed to 'cascade' into each other. This is something that can be advised on by the blue roof supplier through consultation with the design team.

From the initial analysis carried out by Curtins, an average blue roof depth of 67mm will be able to accommodate the volume required to restrict the developments surface water rate to 5 l/s.

8.2.1 Multifunctional benefits

Blue roofs have a high potential to offer multinational benefits through integration with green roofs and rainwater harvesting systems.

8.2.1.1 Rainwater harvesting

If rainwater harvesting is proposed for the scheme, blue roofs can be designed in a way to minimise / completely remove the requirement for a standalone rainwater harvesting tank.

Normally storage structures for rainwater harvesting tanks and storm water attenuation need to be kept separate. This is as in the event the rainwater harvesting storage is at or near capacity, the storm water will only have limited volume to attenuate.

A possible design solution for this is to use a smart outlet at blue roof level. This works by linking to a rainfall forecasting algorithm. This allows the tanks to be drained down at the restricted discharge rate prior to any significant storm events. This will free up volume within the blue roof attenuation layer for the incoming storm event.

If rainwater harvesting is already being considered for the scheme, this will provide a potential 'easy win' in terms of minimising additional rainwater harvesting tank volumes on site.

We need confirmation from the design team on if there is a planning policy requirement or aspiration to have rainwater harvesting on the scheme.

8.2.1.1 Rainwater harvesting

Where there are areas of green roof, we can specify products that use capillary action to provide the green roof substrate above with a supply of water when needed.

An additional reservoir layer is required in the overall blue roof construction to hold a volume of water that can be used to provide a water supply for the green roof above.

Although this can tick the box required for planning in terms of being considered RWH, it does not provide the most meaningful contribution for using collected rainwater as a resource.

8.0 Proposed Surface Water Strategy

8.3 Above ground storage

If there is sufficient external space within the development, above ground storage can be utilised to safely store water in the maximum design storm (1 in 100 year). Integrating this storage within the landscaping design can be a cost-effective way of reducing sizes of tanks and over storage features.

However, from review of the latest draft Stage 3 Plans we have from Hawkins Brown, this does not look to be an option for the development as there is no private external space. The building footprint occupies the entire site boundary.

8.4 Below ground attenuation tank

If above ground storage such as blue roofs are not feasible below ground attenuation will be required to restrict the developments surface water flows to the targeted rate.

We need to consider the following when it comes to the design of a below ground attenuation tank.

8.4.1 Location

There is no external private space in the development, therefore the tank will need to be located under the building.

The tank will need to be coordinated with below ground service routes and the proposed substructure. The tanks are modular in nature so can be designed to fit most constraints in the ground. However, the more complex the more costly this will become.

Consideration also needs to be given to accessibility of the tank for maintenance. Generally, manholes are provided up stream and downstream of the tank and these are used to access the central channel through the tank., These will need to be located in floor space that is suitable for this. Generally, BOH areas will be preferred.

8.4.2 Type of construction

There are two main options for the construction / specification of the attenuation tanks under buildings, tanks can be geocellular or cast in-situ concrete.

Geocellular tanks are plastic and are modular in nature and can be designed to suit a wide range of dimensions. These are wrapped in an impermeable geotextile in order to make them watertight. Although modular, the dimensions of the induvial units come in specific increments depending on the tank supplier.

Cast in-situ tanks can be designed to be integral to the structural design of the building and can be designed to the exact dimensions required.

The method of construction of the below ground tank is to be explored in detail once we better understand the design constraints.

9.0 Proposed Foul Water Strategy

Fundamentally the foul water drainage design will not deviate from what has already been provided by Curtins.

A separate private foul water network should be provided. (until the final outfall manhole where it will be combined with surface water).

The foul system will be gravity in nature and designed in accordance with Building Regulations Part H and BS EN 752.

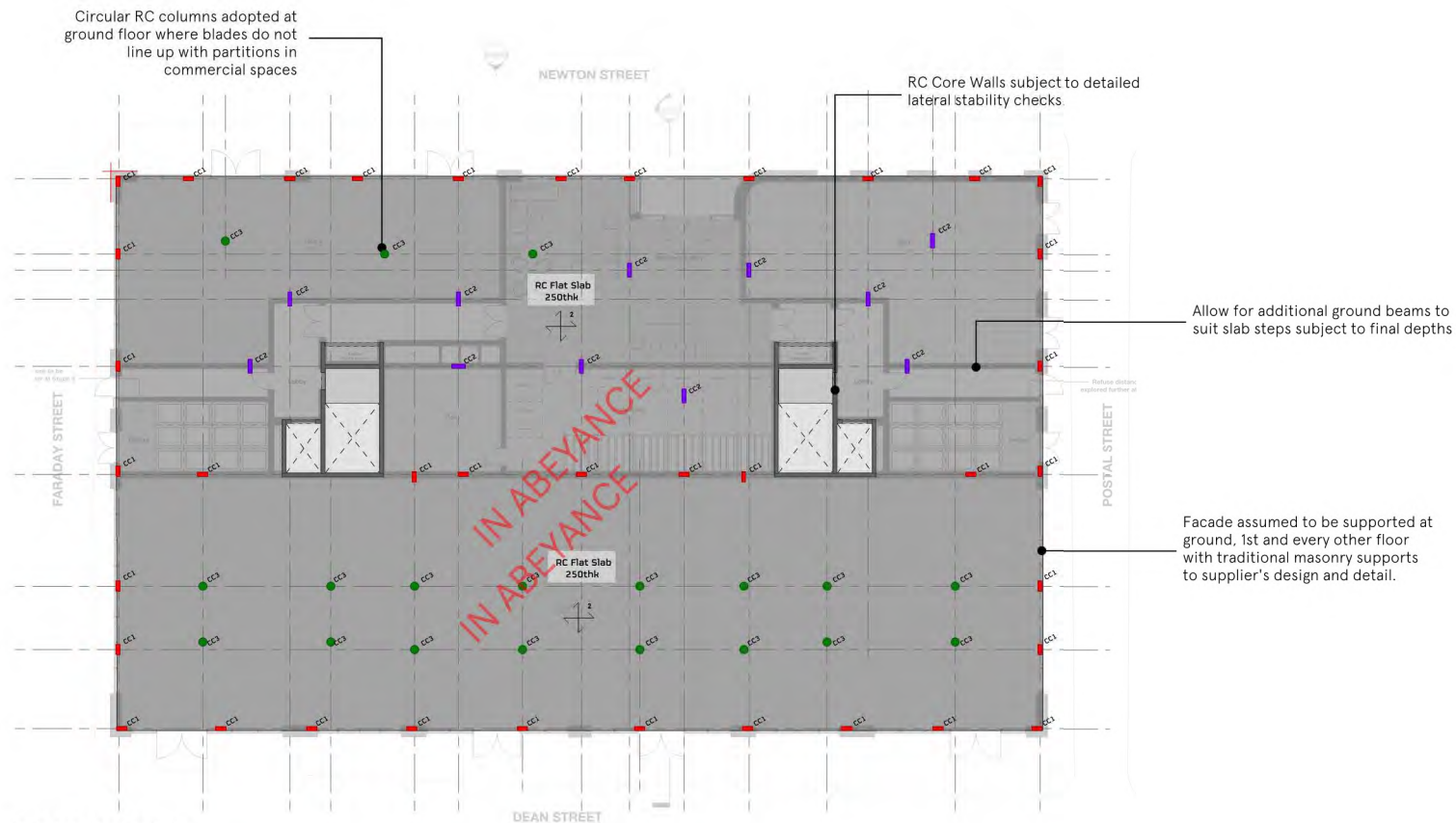
The location and number of sewer outfalls is to be assessed once we review the design of the above ground drainage system. However, it is very likely at least one new sewer connection will be required to the UU combined water sewer network.

New connections are subject to agreements with United Utilities. Initially a pre-development enquiry is to be submitted to confirm capacity of their sewer network. We expect this to be a formality given the surface water flows are reducing are reducing to 5 l/s.

A new sewer connection application will be required prior to construction. We recommend this is undertaken at RIBA Stage 4 once the design is finalised.

Appendix A

Structural Layouts



GROUND FLOOR PLAN
1:200

NOTE:
FOUNDATION & PILE LAYOUTS ARE INDICATIVE AND SUBJECT
TO COORDINATION WITH PHASE II SITE INVESTIGATION
RESULTS IN THE NEXT RIBA DESIGN STAGE



FOUNDATION PLAN
1:200

Proposed Columns		
Ref	Size / Dia (mm)	Type
CC1	300x600	Blade column (RC 40/50)
CC2	300x800	Blade column (RC 40/50)
CC3	500 dia	Circular column (RC 40/50)

Proposed Walls		
Ref	Thickness (mm)	Type
W1	250	RC Core Wall (RC 40/50)

Proposed Floors		
Ref	Thickness (mm)	Type
1	225	Suspended Flat Slab (RC 32/40)
2	250	Suspended Flat Slab (RC 32/40)

Proposed Foundations - Pile Caps		
Ref	Size (mm)	Type
PC1	750w x 750h x 1000dp	Pile Cap (RC 32/40)
PC2	750w x 2100h x 1000dp	Pile Cap (RC 32/40)
PC3	1920w x 2100h x 1000dp	Pile Cap (RC 32/40)
PG1	1000dp	Pile Group (RC 32/40)
PG2	1000dp	Pile Group (RC 32/40)

Proposed Foundations - Ground Beams		
Ref	Size / Dia (mm)	Type
GB1	600x300	Ground Beam (RC 32/40)

Allow for masonry supports to full perimeter of the building. Cladding principles are subject to receipt of elevation and section details from the architect

All service openings above 200x200mm square are to be sized and set out by the MEP consultant. All SVP & RWP are to be set out by the architect and MEP consultant. The contractor is to allow for casting-in fire collars to all SVP & RWP penetrations and all other service openings where feasible.

All current structural proposals are subject to detailed design checks in the next RIBA stage. High level checks have been carried out with a limited level of coordination information.

- 1 This drawing is to be read in conjunction with all relevant Architects, Engineers and specialists drawings and specifications.
- 2 Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to the intended scale the above bar should be 100mm long @ A1 or 50mm long @ A3

Rev	Date	By	Eng	Amendments
P01	04.10.24	WB	WB	For Information

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Job Name

Postal Street

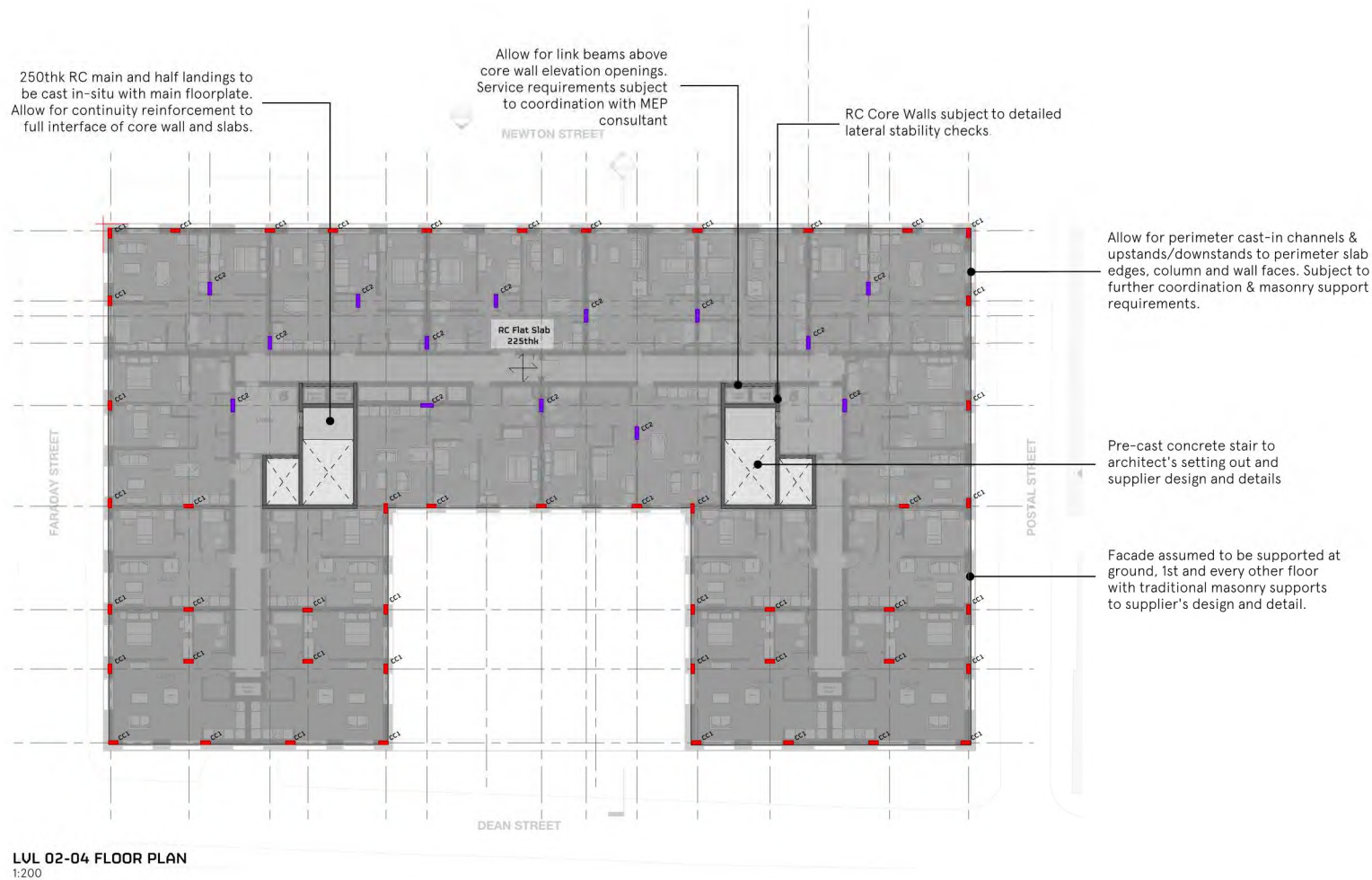
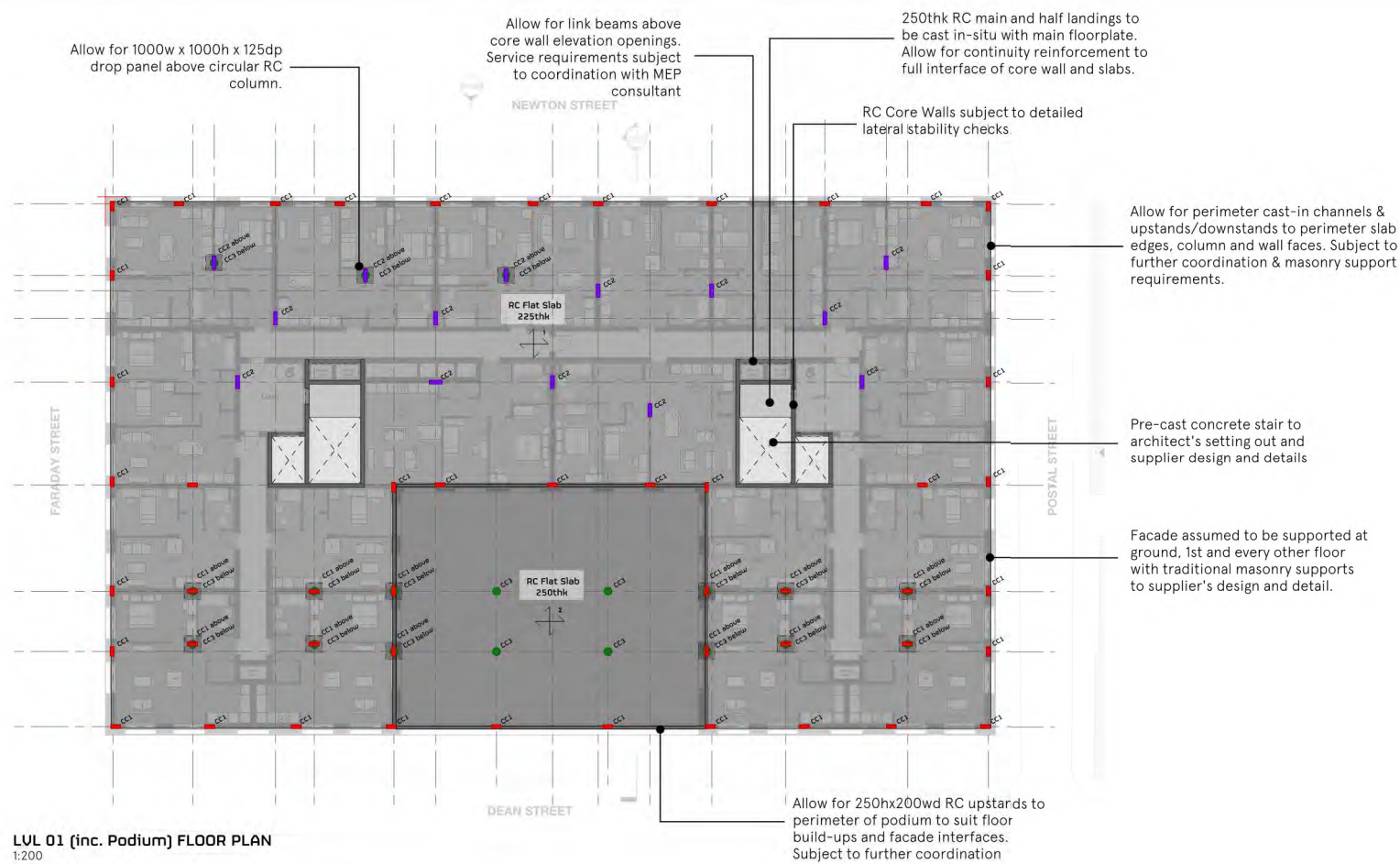
Drawing Title

Structural Plans

Purpose of Issue For Information Scale at A1 1:200

Drawing No. / Rev. P01

3315 - SK - 241004 - 01



Proposed Columns		
Ref	Size / Dia (mm)	Type
CC1	300x600	Blade column (RC 40/50)
CC2	300x800	Blade column (RC 40/50)
CC3	500 dia	Circular column (RC 40/50)

Proposed Walls		
Ref	Thickness (mm)	Type
W1	250	RC Core Wall (RC 40/50)

Proposed Floors		
Ref	Thickness (mm)	Type
1	225	Suspended Flat Slab (RC 32/40)
2	250	Suspended Flat Slab (RC 32/40)

Proposed Foundations - Pile Caps		
Ref	Size (mm)	Type
PC1	750w x 750h x 1000dp	Pile Cap (RC 32/40)
PC2	750w x 2100h x 1000dp	Pile Cap (RC 32/40)
PG1	1920w x 2100h x 1000dp	Pile Cap (RC 32/40)
PG2	1000dp	Pile Group (RC 32/40)
PG3	1000dp	Pile Group (RC 32/40)

Proposed Foundations - Ground Beams		
Ref	Size / Dia (mm)	Type
GB1	600x300	Ground Beam (RC 32/40)

- 1 This drawing is to be read in conjunction with all relevant Architects, Engineers and specialists drawings and specifications.
- 2 Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to the intended scale the above bar should be 100mm long @ A1 or 50mm long @ A3

Allow for masonry supports to full perimeter of the building. Cladding principles are subject to receipt of elevation and section details from the architect

All service openings above 200x200mm square are to be sized and set out by the MEP consultant. All SVP & RWP are to be set out by the architect and MEP consultant. The contractor is to allow for casting-in fire collars to all SVP & RWP penetrations and all other service openings where feasible.

All current structural proposals are subject to detailed design checks in the next RIBA stage. High level checks have been carried out with a limited level of coordination information.

P01	04.10.24	WB	WB	For Information
Rev	Date	By	Eng	Amendments

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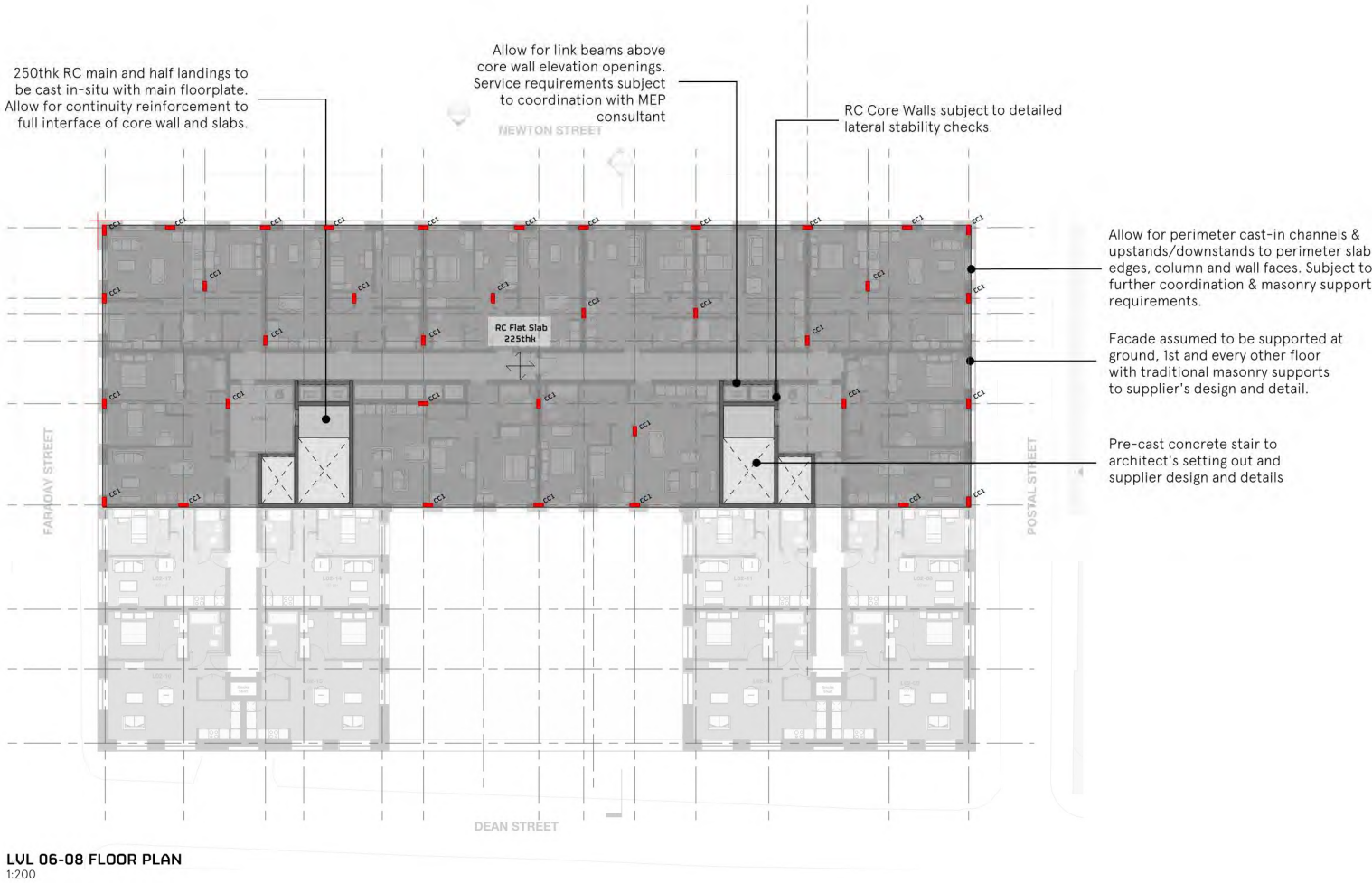
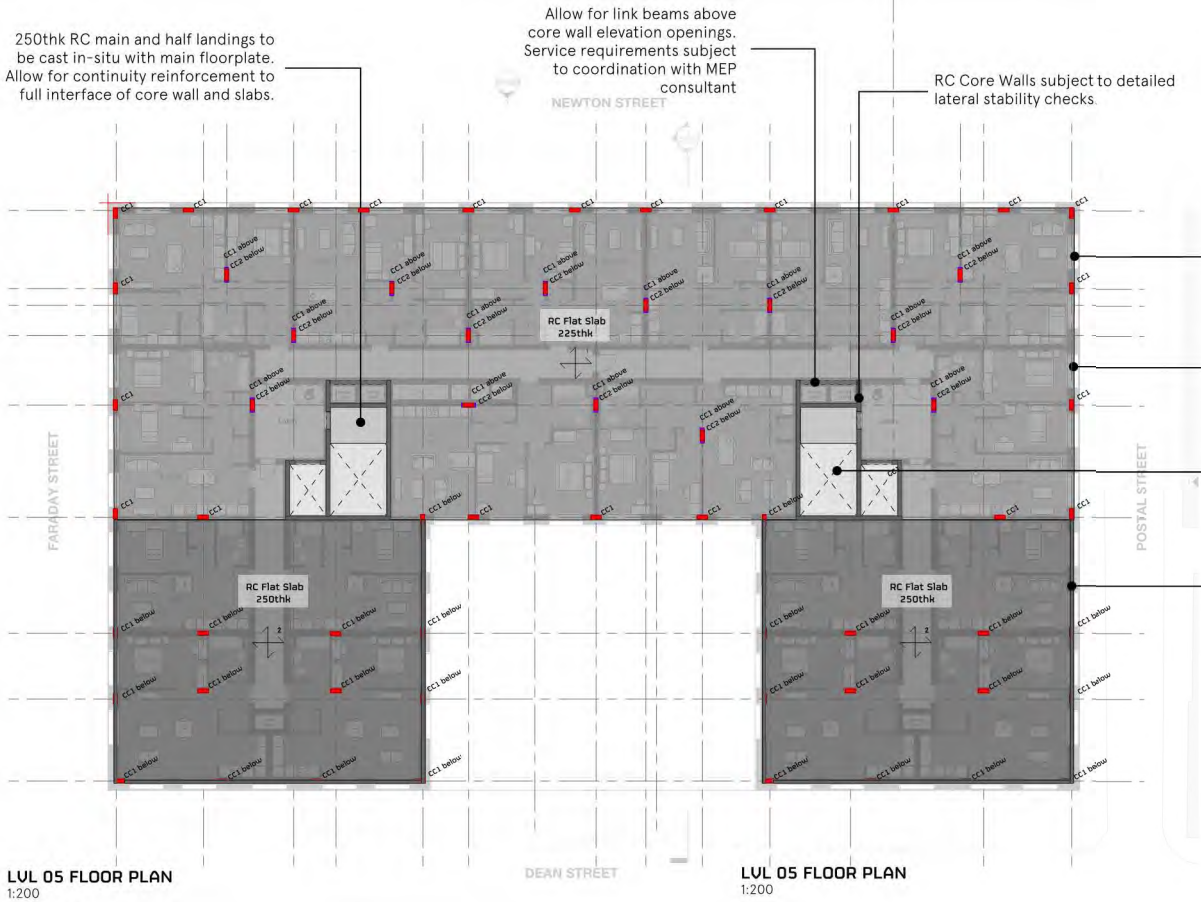
Drawing Title

Structural Plans

Purpose of Issue For Information Scale at A1 1:200

Drawing No. / Rev. P01

3315 - SK - 241004 - 02



Proposed Columns		
Ref	Size / Dia (mm)	Type
CC1	300x600	Blade column (RC 40/50)
CC2	300x800	Blade column (RC 40/50)
CC3	500 dia	Circular column (RC 40/50)

Proposed Walls		
Ref	Thickness (mm)	Type
W1	250	RC Core Wall (RC 40/50)

Proposed Floors		
Ref	Thickness (mm)	Type
1	225	Suspended Flat Slab (RC 32/40)
2	250	Suspended Flat Slab (RC 32/40)

Proposed Foundations - Pile Caps		
Ref	Size (mm)	Type
PC1	750w x 750h x 1000dp	Pile Cap (RC 32/40)
PC2	750w x 2100h x 1000dp	Pile Cap (RC 32/40)
PC3	1920w x 2100h x 1000dp	Pile Cap (RC 32/40)
PG1	1000dp	Pile Group (RC 32/40)
PG2	1000dp	Pile Group (RC 32/40)

Proposed Foundations - Ground Beams		
Ref	Size / Dia (mm)	Type
GB1	600x300	Ground Beam (RC 32/40)

- 1 This drawing is to be read in conjunction with all relevant Architects, Engineers and specialists drawings and specifications.
- 2 Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to the intended scale the above bar should be 100mm long @ A1 or 50mm long @ A3

Allow for masonry supports to full perimeter of the building. Cladding principles are subject to receipt of elevation and section details from the architect

All service openings above 200x200mm square are to be sized and set out by the MEP consultant. All SVP & RWPs are to be set out by the architect and MEP consultant. The contractor is to allow for casting-in fire collars to all SVP & RWP penetrations and all other service openings where feasible.

All current structural proposals are subject to detailed design checks in the next RIBA stage. High level checks have been carried out with a limited level of coordination information.

P01	04.10.24	WB	WB	For Information
Rev	Date	By	Eng	Amendments

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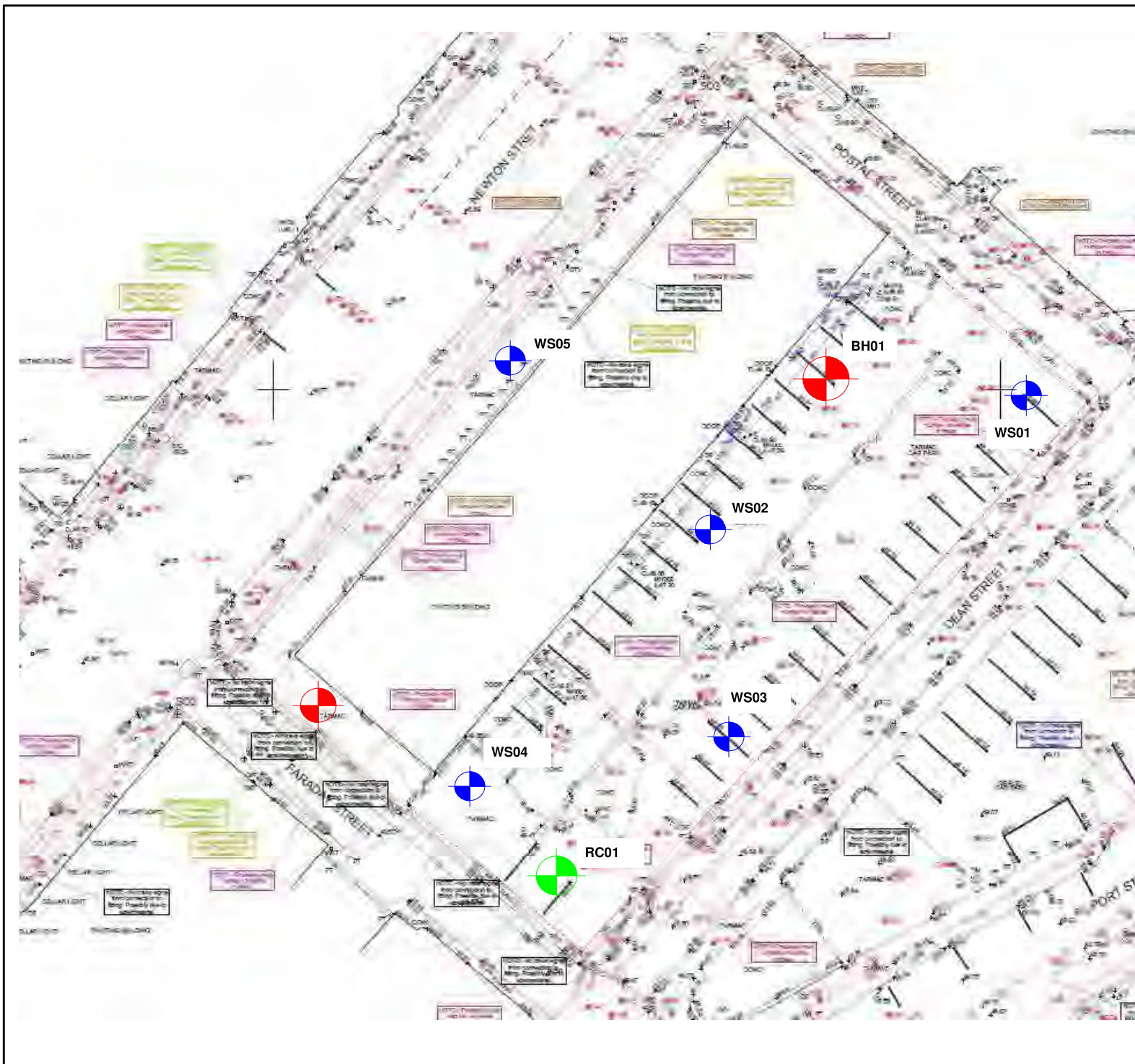
Job Name
Postal Street

Drawing Title
Structural Plans

Purpose of Issue For Information Scale at A1 1:200

Drawing No. / Rev. **P01**

Appendix C Curtins, 2022 – Exploratory Hole Logs & Site Plan



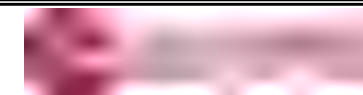
PRE-DEMOLITION INVESTIGATION

-  CABLE PERCUSSIVE BOREHOLE
-  WINDOW SAMPLE BOREHOLE
-  ROTARY CORED BOREHOLE

POST-DEMOLITION INVESTIGATION

-  CABLE PERCUSSIVE BOREHOLE
-  MACHINE EXCAVATED TRIAL PITS

Rev:	Description:	Date:	By:	Chkd:
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Curtins Consulting Ltd,
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
t: 0161 236 2394
e: manchester@curtins.com
www.curtins.com

Structures - Civils - Environmental - Infrastructure - Transport Planning - Sustainability - Expert Advisory Services
Birmingham - Bristol - Cardiff - Douglas - Edinburgh - Kendal - Leeds - Liverpool - London - Manchester - Nottingham

Status:

INFORMATION

Project:

POSTAL STREET

Drg Title:

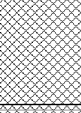
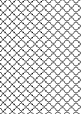
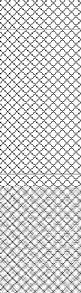
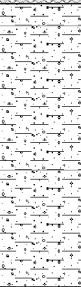
EXPLORATORY HOLE LOCATION PLAN

Scale:	Size:	First Issue:	Drawn:	Checked:
NTS	A3	12/05/2022	JL	RA

Drg No:	Rev:
080401-CUR-00-XX-DR-GE-80004	P02

					Borehole Log		Borehole No. WS01 Sheet 1 of 1		
Project Name: Postal Street				Project No. 080401		Co-ords: 384751.64 - 398449.70		Hole Type WS	
Location: Northern Quarter, Manchester				Level: 48.86		Scale 1:40			
Client: Faithful & Gould				Dates: 24/05/2022 - 24/05/2022		Logged By JL			
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.05			0.05	48.81		MADE GROUND: Tarmacadam	1
		0.30	ES						
		0.75	ES						Firm brown slightly gravelly CLAY. Gravel is subangular to rounded, fine to medium of sandstone and mudstone.
		1.20		N=1 (1,0/0,0,1,0)					
		2.00		N=17 (1,0/3,5,5,4)	2.15	46.71			Firm brown slightly gravelly CLAY. Gravel is subangular to rounded, fine to medium of sandstone and mudstone.
		2.50	D						
		3.00		N=11 (3,4/6,1,0,4)					Firm brown slightly gravelly CLAY. Gravel is subangular to rounded, fine to medium of sandstone and mudstone.
		3.60	D		3.50	45.36			
		4.00		N=17 (3,3/4,4,4,5)	4.05	44.81			Firm brown slightly gravelly CLAY. Gravel is subangular to rounded, fine to medium of sandstone and mudstone.
		5.00		N=15 (2,3/4,3,4,4)					
		5.45			43.41	End of borehole at 5.45 m			6
									7
									8

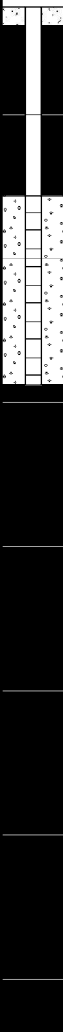
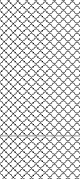
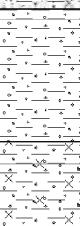
Remarks
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. No groundwater encountered. Borehole installed with ground gas/water monitoring installation to 2.50m bgl in Made Ground.

				Borehole Log			Borehole No. WS02 Sheet 1 of 1			
Project Name: Postal Street				Project No. 080401		Co-ords: 374729.50 - 398440.40		Hole Type WS		
Location: Northern Quarter, Manchester				Level: 48.77		Scale 1:40				
Client: Faithful & Gould				Dates: 24/05/2022 - 24/05/2022		Logged By JL				
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.05 0.15 0.25			0.05 0.15 0.25	48.72 48.62 48.52		MADE GROUND: Tarmacadam		
		0.40	ES						MADE GROUND: Yellowish grey gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of concrete, brick and sandstone.	
									MADE GROUND: Concrete	
		1.50	ES		1.30	47.47		MADE GROUND: Blackish grey slightly clayey gravelly SAND, with occasional cobbles. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of brick, concrete, plastic, ash, clinker, and sandstone. Cobbles are angular to subangular of brick.	1	
		2.00 2.00	D	N=6 (1,0/1,0,2,3)				MADE GROUND: Soft to firm brown gravelly CLAY. Gravel is angular to subrounded, fine to coarse of brick, concrete, sandstone and mudstone (reworked natural)	2	
		3.00		N=4 (1,0/2,1,0,1)	3.50	45.27		Firm brown slightly sandy slightly gravelly CLAY. Gravel is subrounded to rounded, fine to coarse of sandstone.	3	
		4.00 4.00	D	N=14 (2,1/3,3,3,5)					4	
					5.00	43.77	End of borehole at 5.00 m		5	
									6	
									7	
									8	

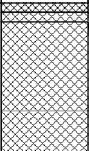
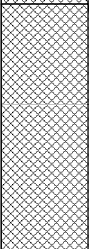
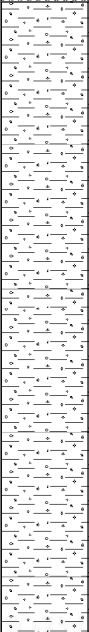
Remarks

Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater encountered at 2.50m bgl. Borehole backfilled with arisings.



				Borehole Log				Borehole No. WS03 Sheet 1 of 1		
Project Name: Postal Street				Project No. 080401		Co-ords: 384731.17 - 398426.14		Hole Type WS		
Location: Northern Quarter, Manchester				Level: 48.58		Scale 1:40		Logged By TW		
Client: Faithful & Gould				Dates: 23/05/2022 - 23/05/2022						
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.05	48.53		MADE GROUND: Tarmacadam	1	
					0.15	48.43		MADE GROUND: Yellowish brown sandy GRAVEL. Sand is fine to medium. Gravel is subangular to subrounded, fine to coarse of brick, sandstone, mudstone and quartz.		
					0.17	48.41		MADE GROUND: Tarmacadam		
		1.20		N=20 (1,0/3,8,6,3)				MADE GROUND: Brown slightly clayey sandy GRAVEL, with occasional cobbles. Sand is fine to medium. Gravel is subangular to subrounded, fine to coarse of brick, concrete, ash, sandstone, and quartz. Cobbles are angular of brick.		
		1.70	ES		1.60	46.98			MADE GROUND: Brown clayey gravelly SAND. Sand is fine to medium. Gravel is subangular to subrounded, fine to coarse of brick, concrete, ash, ceramic, siltstone and quartz.	2
		2.00		N=10 (4,4/3,2,2,3)	2.10	46.48			Soft greyish brown silty slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded, fine to medium of sandstone, mudstone and quartz.	
		2.20 - 2.65	D		2.80	45.78		Firm brown slightly silty gravelly CLAY. Gravel is subangular to subrounded, fine to medium of sandstone, mudstone and quartz. <i>Sand bands within clay from 3.00m to 3.20m bgl.</i>	3	
		3.00		N=22 (3,3/5,5,6,6)	3.50	45.08		Firm to stiff greyish brown thinly laminated very silty slightly gravelly CLAY. Gravel is subangular to subrounded, fine to medium of siltstone and sandstone.		
		4.00		N=14 (2,3/3,3,4,4)	4.00	44.58		Firm orangish brown slightly clayey slightly sandy SILT.	4	
		4.00 - 4.45	D		4.90	43.68		Firm brown slightly silty gravelly CLAY. Gravel is subangular to subrounded, fine to medium of sandstone, mudstone and quartz.	5	
		5.00		N=14 (2,3/3,3,3,5)	5.45	43.13	End of borehole at 5.45 m		6	
									7	
									8	
Remarks Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater encountered at 3.50m bgl. Borehole installed with ground gas/water monitoring installation to 2.00m bgl in Made Ground.										



					Borehole Log			Borehole No. WS04 Sheet 1 of 1		
Project Name: Postal Street				Project No. 080401		Co-ords: 384713.65 - 398422.16		Hole Type WS		
Location: Northern Quarter, Manchester						Level: 48.54		Scale 1:40		
Client: Faithful & Gould						Dates: 24/05/2022 - 24/05/2022		Logged By JL		
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.05	48.49		MADE GROUND: Tarmacadam		
					0.10	48.44		MADE GROUND: Orangish brown clayey gravelly SAND. Sand is fine to medium. Gravel is subangular to subrounded, fine to coarse of brick, concrete and sandstone.		
					0.80	47.74		MADE GROUND: Brown gravelly SAND, with occasional cobbles. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of brick, concrete, ash, sandstone and quartz. Cobbles are angular of brick.	1	
	1.00	ES						MADE GROUND: Brown slightly clayey gravelly SAND, with frequent cobbles. Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of brick, concrete, ash, sandstone and quartz. Cobbles are angular of brick.		
	1.20		N=29 (2,3/5,10,7,7)							
					2.00	46.44		Firm brown slightly gravelly CLAY. Gravel is subrounded to rounded, fine to coarse of mudstone and sandstone.	2	
			N=28 (5,10/13,7,3,5)					Becoming stiff from 2.50m bgl.		
	2.50	D								
	3.00		N=24 (3,4/5,6,6,7)							3
					3.80					
4.00	D	N=20 (2,4/4,5,5,6)							4	
				5.00					5	
		N=18 (3,3/4,4,5,5)								
				5.45	43.09	End of borehole at 5.45 m			6	
										7
										8
Remarks Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. No groundwater encountered. Borehole backfilled with arisings.										

					Borehole Log		Borehole No. WS05 Sheet 1 of 1			
Project Name: Postal Street				Project No. 080401		Co-ords: 384717.74 - 398453.56		Hole Type WS		
Location: Northern Quarter, Manchester				Level: 48.94		Scale 1:40				
Client: Faithful & Gould				Dates: 25/05/2022 - 25/05/2022		Logged By TW				
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.02	48.92		MADE GROUND: Tarmacadam		
					0.10	48.84				MADE GROUND: Grey gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of concrete, sandstone and mudstone.
					0.40	48.54				
		0.60	ES							
		1.20		N=27 (1,1/3,3,7,14)						
		2.00		N=2 (0,0/1,0,0,1)	1.80	47.14				
		2.40	ES							
		3.00		N=8 (1,0/2,3,2,1)	3.20	45.74				
		4.00		N=14 (2,2/2,3,4,5)	3.80	45.14				
		4.00 - 4.45	D							
5.00		N=9 (1,2/1,2,3,3)	5.45	43.49						
							End of borehole at 5.45 m			

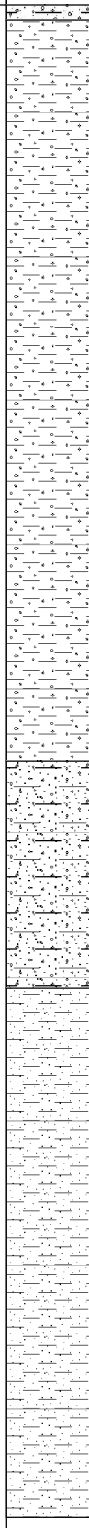
Remarks
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater encountered at 2.00m bgl. Borehole installed with ground gas/water monitoring installation to 2.30m bgl in Made Ground.

					Borehole Log		Borehole No. BH01 Sheet 1 of 3		
Project Name: Postal Street				Project No. 080401		Co-ords: 384738.14 - 398450.85		Hole Type CP	
Location: Northern Quarter, Manchester				Level: 48.81		Scale 1:50			
Client: Faithful & Gould				Dates: 23/05/2022 - 24/05/2022		Logged By JL			
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.25	ES		0.05 0.10	48.76 48.71		MADE GROUND: Tarmacadam	
								MADE GROUND: Yellowish brown fine to coarse SAND.	
		0.65 0.75	ES ES					MADE GROUND: Greyish blackish brown slightly clayey very gravelly SAND, with frequent cobbles. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of brick, tarmac, timber, metal, sandstone, concrete and plastic. Cobbles are angular to subangular of brick.	
		1.20 1.20	B	N=15 (2,2/7,4,2,2)	0.95	47.86		MADE GROUND: Soft brown sandy gravelly CLAY. Gravel is angular to subrounded, fine to coarse of brick and sandstone (reworked natural)	
		2.00 2.00	D	N=7 (1,1/2,1,2,2)	2.45	46.36		Soft light brown very sandy slightly gravelly CLAY. Gravel is subangular to rounded, fine to medium of sandstone and mudstone	
		3.00 3.00 3.00	B D	N=9 (1,0/1,2,3,3)	3.15	45.66		Firm brown slightly gravelly CLAY. Gravel is subangular to subrounded, fine to medium of sandstone.	
		4.00 - 4.45	U	Ublow=68					
		4.50	D					Becoming a stiff clay from 4.50m bgl.	
		5.00 5.00	D	N=11 (2,2/2,3,3,3)				Sand bands within clay from 5.10m to 9.50m bgl, max 10cm thick.	
		6.00 - 6.45	U	Ublow=78					
		6.50	D						
		7.00	D						
		7.50 7.50	D	N=9 (1,1/2,2,2,3)					
		8.50	D						
		9.00 - 9.45	U	Ublow=120					
	9.50	D		9.50	39.31				
	9.90	D					Brown clayey slightly sandy GRAVEL of subangular to rounded, fine to coarse of sandstone, mudstone and coal.		

Continued on next sheet

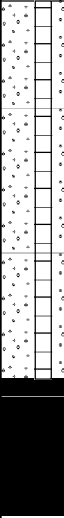
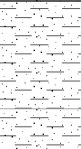
Remarks

Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater encountered at 15.50m bgl. Refusal on bedrock at 22.90m bgl. Borehole installed with ground gas/water monitoring installation to 22.50m bgl in Glacial Till.

					Borehole Log		Borehole No. BH01 Sheet 2 of 3			
Project Name: Postal Street				Project No. 080401		Co-ords: 384738.14 - 398450.85		Hole Type CP		
Location: Northern Quarter, Manchester						Level: 48.81		Scale 1:50		
Client: Faithful & Gould						Dates: 23/05/2022 - 24/05/2022		Logged By JL		
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					10.10	38.71		Stiff brown slightly gravelly CLAY. Gravel is subrounded to rounded, fine to coarse of sandstone and mudstone.	11	
	10.50 10.50 10.50	B D	N=23 (5,5/5,5,6,7)							
	11.50	D								
	12.00 - 12.45	U	Ublow=110							
	12.50	D								
	13.50 13.50 13.50	B D	50 (25 for 110mm/50 for 40mm)							
	14.50	D								
	15.00 15.00 - 15.45	B U	Ublow=120	15.00	33.81	Brown slightly clayey gravelly SAND. Sand is medium to coarse. Gravel is subrounded to rounded, fine to coarse of sandstone.			15	
	16.00	D								
	16.50 16.50 16.50	B D	N=20 (6,12/6,3,5,6)	16.50	32.31				Stiff brown sandy CLAY.	17
	17.50 - 17.95	U	Ublow=120							
	18.50	D								
	19.00	D								
		19.50 19.50 19.50	B D	50 (25 for 105mm/50 for 105mm)						
Continued on next sheet								20		

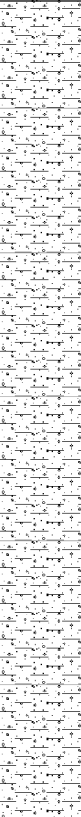
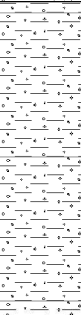
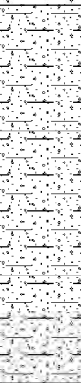
Remarks
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater encountered at 15.50m bgl. Refusal on bedrock at 22.90m bgl. Borehole installed with ground gas/water monitoring installation to 22.50m bgl in Glacial Till.



					Borehole Log			Borehole No. BH01 Sheet 3 of 3		
Project Name: Postal Street					Project No. 080401		Co-ords: 384738.14 - 398450.85		Hole Type CP	
Location: Northern Quarter, Manchester					Level: 48.81		Scale 1:50		Logged By JL	
Client: Faithful & Gould					Dates: 23/05/2022 - 24/05/2022					
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		20.50	D	50 (25 for 70mm/50 for 110mm)	21.00	27.81		Brown coarse SAND.	21	
		21.00	B							
		21.00	D							
		21.80	D	50 (25 for 120mm/50 for 180mm)	21.80	27.01		Brown very sandy GRAVEL of subrounded to rounded, medium to coarse sandstone, mudstone, coal and siltstone.	22	
		22.50	B							
		22.50	D							
		23.00	D	50 (25 for 25mm/50 for 25mm)	22.90	25.91		SANDSTONE recovered as brown sandy GRAVEL of angular to subangular, medium to coarse sandstone.	23	
		23.30								
		23.30								
				50 (25 for 15mm/50 for 20mm)	23.40	25.41		End of borehole at 23.40 m		
										24
										25
								26		
								27		
								28		
								29		
								30		
Remarks										
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater encountered at 15.50m bgl. Refusal on bedrock at 22.90m bgl. Borehole installed with ground gas/water monitoring installation to 22.50m bgl in Glacial Till.										

						Borehole Log		Borehole No. RC01 Sheet 1 of 4	
Project Name: Postal Street				Project No. 080401		Co-ords: 384702.48 - 398428.53		Hole Type RC	
Location: Northern Quarter, Manchester						Level: 48.69		Scale 1:50	
Client: Faithful & Gould						Dates: 23/05/2022 - 26/05/2022		Logged By TW	
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.05 0.10 0.12	48.64 48.59 48.57		MADE GROUND: Tarmacadam	
	0.40	ES	N=14 (1,2/1,4,4,5)	1.50	47.19	MADE GROUND: Brown sandy GRAVEL of subangular to subrounded, fine to coarse of concrete and brick.			
	0.75	ES		MADE GROUND: Tarmacadam					
	1.20 1.20	D		MADE GROUND: Dark brown slightly sandy slightly clayey GRAVEL, with frequent cobbles. Gravel is angular to subrounded, fine to coarse of brick, concrete, ash, and sandstone. Cobbles are angular to subangular of brick.					
	2.00	D		Abundant cobbles of brick from 0.30m to 0.60m bgl.					
				2.40 2.60	46.29 46.09	MADE GROUND: Greyish blackish brown slightly clayey very gravelly SAND, with frequent cobbles. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of brick, tarmac, timber, metal, sandstone, concrete and plastic. Cobbles are angular to subangular of brick.			
	3.50		N=29 (3,4/5,8,8,8)			MADE GROUND: Orangish grey sandy GRAVEL of angular to subrounded, fine to coarse, brick, concrete and sandstone			
	5.00		N=22 (4,4/4,6,6,6)			MADE GROUND: Soft to firm brown gravelly slightly sandy CLAY. Gravel is angular to rounded, fine to coarse of brick, and sandstone (reworked natural)			
	6.50 6.50	D	N=21 (3,5/5,5,5,6)	6.35 7.10	42.34 41.59	Firm to stiff brown gravelly CLAY. Gravel is subangular to rounded, fine to coarse of sandstone and mudstone.			
	8.00		N=34 (2,5/7,8,9,10)			Brown slightly clayey SAND (poor recovery)			
9.50 9.50	D	N=28 (1,3/4,8,7,9)	8.75	39.94	Stiff brown gravelly slightly sandy CLAY. Gravel is subangular to rounded, fine to coarse of sandstone and mudstone.				
Continued on next sheet								10	
Remarks Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater strikes could not be recorded due to use of water flush. Refusal on bedrock at 23.80m bgl. Borehole installed with ground gas/water monitoring installation to 35.0m bgl in sandstone bedrock.									



				Borehole Log			Borehole No. RC01 Sheet 2 of 4					
Project Name: Postal Street				Project No. 080401		Co-ords: 384702.48 - 398428.53		Hole Type RC				
Location: Northern Quarter, Manchester				Level: 48.69		Scale 1:50						
Client: Faithful & Gould				Dates: 23/05/2022 - 26/05/2022		Logged By TW						
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		11.00	D	N=32 (3,4/5,9,9,9)	15.40	33.29			11			
		12.50 12.50		N=44 (3,5/11,10,12,11)					12			
		14.00		N=50 (5,8/50 for 288mm)					13			
		15.50 15.50	D	N=50 (5,9/50 for 235mm)					17.50	31.19		14
		17.00		50 (20 for 55mm/50 for 105mm)								15
		18.50 18.50	D	50 (25 for 70mm/50 for 135mm)					20.00	28.69		16
							18					
							19					
								20				

Continued on next sheet

Remarks
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater strikes could not be recorded due to use of water flush. Refusal on bedrock at 23.80m bgl. Borehole installed with ground gas/water monitoring installation to 35.0m bgl in sandstone bedrock.



				Borehole Log			Borehole No. RC01 Sheet 3 of 4			
Project Name: Postal Street				Project No. 080401		Co-ords: 384702.48 - 398428.53		Hole Type RC		
Location: Northern Quarter, Manchester				Level: 48.69		Scale 1:50				
Client: Faithful & Gould				Dates: 23/05/2022 - 26/05/2022		Logged By TW				
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		20.00		50 (25 for 70mm/50 for 77mm)	23.80	24.89		Brown very clayey sandy GRAVEL of rounded, fine to coarse, sandstone, mudstone, limestone and shale.	21	
	21.50 21.50	D	50 (10,15/50 for 105mm)	22						
				23						
			24.08 - 24.50	C					Weak, thinly bedded, brown medium grained SANDSTONE <i>Moderately spaced, 0-5 degrees, planar and stepped smooth</i>	24
			24.66 - 24.78	C						Very closely to medium spaced, 10-15 degrees, planar rough
			25.00 - 25.33	C						
			25.74 - 25.94	C		26.78	21.91		Set 1-Extremely closely to closely spaced, 5-10 degrees, planar rough. Set 2-Closely spaced, 85 degrees, planar rough	27
			26.02 - 26.10	C						
			27.64 - 27.80	C		27.75	20.94		Set 1-Extremely closely to moderately spaced, 5-10 degrees, planar rough. Set 2-Medium spaced, 65 degrees, planar smooth	29
			28.36 - 28.49	C						
			28.72 - 28.97	C					Weak, thinly bedded, brown medium grained SANDSTONE	
			29.21 - 29.38	C		29.13	19.56			

Remarks
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater strikes could not be recorded due to use of water flush. Refusal on bedrock at 23.80m bgl. Borehole installed with ground gas/water monitoring installation to 35.0m bgl in sandstone bedrock.

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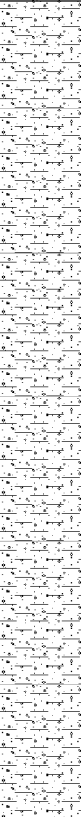
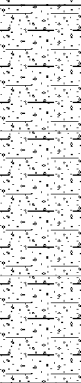
					Borehole Log		Borehole No. RC01 Sheet 4 of 4			
Project Name: Postal Street				Project No. 080401		Co-ords: 384702.48 - 398428.53		Hole Type RC		
Location: Northern Quarter, Manchester				Level: 48.69		Scale 1:50				
Client: Faithful & Gould				Dates: 23/05/2022 - 26/05/2022		Logged By TW				
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		30.01 - 30.08	C		30.42	18.27		Weak to moderately strong, thinly bedded, brown fine to medium grained SANDSTONE. <i>Very closely to medium spaced, 5-15 degrees, planar and undulating rough, planar smooth</i>		
		30.50 - 30.80	C							
		30.90 - 31.11	C							
		31.17 - 31.35	C							
		31.51 - 31.78	C							
				32.00 - 32.33	C		33.15	15.54		Gravel band of subangular fine to medium sandstone and mudstone at 32.69m to 32.78m bgl <i>Very closely to closely spaced, 10-15 degrees, planar rough</i>
				32.90 - 33.09	C					
				33.60 - 33.68	C					
				34.09 - 34.45	C					
				34.68 - 34.86	C					
					34.47	14.22		Weak, thinly bedded, brown coarse grained SANDSTONE with frequent gravel inclusions <i>Very closely to medium spaced, 5-10 degrees, planar rough and planar smooth</i>		
					35.00	13.69				Weak, thinly bedded, brown fine grained SANDSTONE
End of borehole at 35.00 m										

Remarks

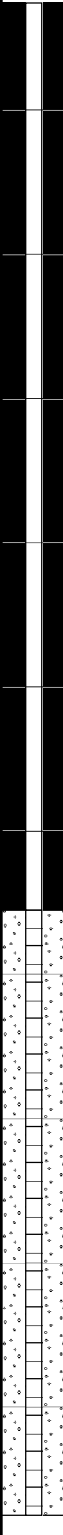
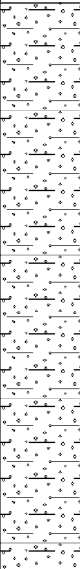
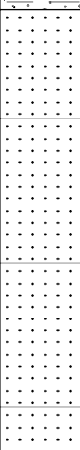
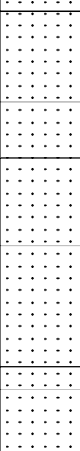
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater strikes could not be recorded due to use of water flush. Refusal on bedrock at 23.80m bgl. Borehole installed with ground gas/water monitoring installation to 35.0m bgl in sandstone bedrock.

								Rotary Core Log		Borehole No. RC01 Sheet 1 of 4	
Project Name: Postal Street				Project No. 080401		Co-ords: 384702.48 - 398428.53		Hole Type RC			
Location: Northern Quarter, Manchester				Level: 48.69		Scale 1:50		Logged By TW			
Client: Faithful & Gould				Dates: 23/05/2022 - 26/05/2022							
Well	Water Strikes	Depth (m)	Type / Fl	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
							0.05 0.10 0.12	48.64 48.59 48.57		MADE GROUND: Tarmacadam MADE GROUND: Brown sandy GRAVEL of subangular to subrounded, fine to coarse of concrete and brick. MADE GROUND: Tarmacadam MADE GROUND: Dark brown slightly sandy slightly clayey GRAVEL, with frequent cobbles. Gravel is angular to subrounded, fine to coarse of brick, concrete, ash, and sandstone. Cobbles are angular to subangular of brick. <i>Abundant cobbles of brick from 0.30m to 0.60m bgl.</i> MADE GROUND: Greyish blackish brown slightly clayey very gravelly SAND, with frequent cobbles. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of brick, tarmac, timber, metal, sandstone, concrete and plastic. Cobbles are angular to subangular of brick. MADE GROUND: Orangish grey sandy GRAVEL of angular to subrounded, fine to coarse, brick, concrete and sandstone MADE GROUND: Soft to firm brown gravelly slightly sandy CLAY. Gravel is angular to rounded, fine to coarse of brick, and sandstone (reworked natural) Soft to firm brown slightly gravelly slightly sandy CLAY. Gravel is subangular to rounded, fine to coarse of sandstone, mudstone and coal.	
		0.40	ES								1
		0.75	ES								
		1.20	D				1.50	47.19			
		2.00	D				2.00	46.69			2
		2.00 - 3.50		73	0	0	2.40 2.60	46.29 46.09			
		3.50 - 5.00		100	0	0					
		5.00 - 6.50		97	0	0					5
		6.50	D				6.35	42.34			
		6.50 - 8.00		43	0	0	7.10	41.59			7
	8.00 - 9.50		57	0	0	8.75	39.94				
	9.50	D									
Continued on next sheet											10

Remarks
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater strikes could not be recorded due to use of water flush. Refusal on bedrock at 23.80m bgl. Borehole installed with ground gas/water monitoring installation to 35.0m bgl in sandstone bedrock.

							Rotary Core Log			Borehole No. RC01 Sheet 2 of 4					
Project Name: Postal Street							Project No. 080401		Co-ords: 384702.48 - 398428.53		Hole Type RC				
Location: Northern Quarter, Manchester							Level: 48.69		Scale 1:50		Logged By TW				
Client: Faithful & Gould							Dates: 23/05/2022 - 26/05/2022								
Well	Water Strikes	Depth (m)	Type / Fl	Coring			Depth (m)	Level (m)	Legend	Stratum Description					
				TCR	SCR	RQD									
		9.50 - 11.00	D	100	0	0	15.40	33.29		Firm brown very gravelly CLAY. Gravel is subrounded to rounded, fine to medium of sandstone, shale, coal, quartz and mudstone	11				
		11.00 - 12.50		87	0	0					12				
		12.50		100	0	0					13				
		12.50 - 14.00													
		14.00 - 15.50	87	0	0	D					17.50	31.19		Brown slightly clayey gravelly SAND (poor recovery). Gravels is subrounded to rounded, medium to coarse of sandstone, mudstone and shale	15
		15.50	77	0	0										16
		15.50 - 17.00													
		17.00 - 18.50	33	0	0										17
		18.50	13	0	0	18									
		18.50 - 20.00													
										19					
										20					
							20.00	28.69	Continued on next sheet						
Remarks Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater strikes could not be recorded due to use of water flush. Refusal on bedrock at 23.80m bgl. Borehole installed with ground gas/water monitoring installation to 35.0m bgl in sandstone bedrock.															



							Rotary Core Log				Borehole No. RC01 Sheet 3 of 4			
Project Name: Postal Street							Project No. 080401		Co-ords: 384702.48 - 398428.53			Hole Type RC		
Location: Northern Quarter, Manchester							Level: 48.69			Scale 1:50				
Client: Faithful & Gould							Dates: 23/05/2022 - 26/05/2022			Logged By TW				
Well	Water Strikes	Depth (m)	Type / FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description				
				TCR	SCR	RQD								
		20.00 - 21.50	D	37	0	0	23.80	24.89		Brown very clayey sandy GRAVEL of rounded, fine to coarse, sandstone, mudstone, limestone and shale.		21		
		21.50										22		
		21.50 - 23.00		0	0	0						23		
		23.00 - 23.80		38	0	0								
		24.08 - 24.50 23.80 - 24.50	C	100	100	100	26.78	21.91		Weak, thinly bedded, brown medium grained SANDSTONE <i>Moderately spaced, 0-5 degrees, planar and stepped smooth</i> <i>Very closely to medium spaced, 10-15 degrees, planar rough</i>		24		
		24.66 - 24.78	C									25		
		25.00 - 25.33	C											
		24.50 - 26.00	11	96	90	74								
		25.74 - 25.94	C											
		26.02 - 26.10	C									26		
		26.00 - 27.50	15	100	83	37						27		
		27.64 - 27.80	NI C				27.75	20.94		Extremely weak to weak, thinly bedded, brown coarse grained SANDSTONE <i>Set 1-Extremely closely to moderately spaced, 5-10 degrees, planar rough. Set 2-Medium spaced, 65 degrees, planar smooth</i> Weak, thinly bedded, brown medium grained SANDSTONE		28		
		27.50 - 29.00 28.36 - 28.49	13 C	91	88	56								
		28.72 - 28.97	C NI									29		
		29.21 - 29.38 29.00 - 30.50	6 13	95	77	28	29.13	19.56		Set 1-Very closely to closely spaced, 0-5 degrees, planar rough and planar smooth. Set 2-Medium spaced, 45 degrees, planar rough Extremely weak, thinly bedded, brown medium to coarse grained SANDSTONE		30		
		Continued on next sheet												
Remarks Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater strikes could not be recorded due to use of water flush. Refusal on bedrock at 23.80m bgl. Borehole installed with ground gas/water monitoring installation to 35.0m bgl in sandstone bedrock.														
														

							Rotary Core Log		Borehole No. RC01 Sheet 4 of 4		
Project Name: Postal Street				Project No. 080401		Co-ords: 384702.48 - 398428.53		Hole Type RC			
Location: Northern Quarter, Manchester				Level: 48.69		Scale 1:50			Logged By TW		
Client: Faithful & Gould				Dates: 23/05/2022 - 26/05/2022							
Well	Water Strikes	Depth (m)	Type / FI	Coring			Depth (m)	Level (m)	Legend	Stratum Description	
				TCR	SCR	RQD					
		30.01 - 30.08	C				30.42	18.27		Weak to moderately strong, thinly bedded, brown fine to medium grained SANDSTONE. <i>Very closely to medium spaced, 5-15 degrees, planar and undulating rough, planar smooth</i>	31
		30.50 - 30.80	NI								
		30.80 - 30.90	C								
		30.90 - 31.11	C	100	100	95	30.42	18.27		Weak to moderately strong, thinly bedded, brown fine to medium grained SANDSTONE. <i>Very closely to medium spaced, 5-15 degrees, planar and undulating rough, planar smooth</i>	31
		31.17 - 31.35	C								
		30.50 - 32.00	C								
		31.51 - 31.78	C	100	100	95	30.42	18.27		Weak to moderately strong, thinly bedded, brown fine to medium grained SANDSTONE. <i>Very closely to medium spaced, 5-15 degrees, planar and undulating rough, planar smooth</i>	31
		32.00 - 32.33	C								
		32.33 - 32.69	C								
		32.00 - 33.50	NI	87	81	63	33.15	15.54		Gravel band of subangular fine to medium sandstone and mudstone at 32.69m to 32.78m bgl <i>Very closely to closely spaced, 10-15 degrees, planar rough</i>	33
	32.90 - 33.09	C									
	33.09 - 33.60	NI									
	33.60 - 33.68	C	100	100	81	34.47	14.22		Weak, thinly bedded, brown coarse grained SANDSTONE with frequent gravel inclusions <i>Very closely to medium spaced, 5-10 degrees, planar rough and planar smooth</i>	34	
	34.09 - 34.45	C									
	33.50 - 35.00	C									
	34.68 - 34.86	C	100	100	81	34.47	14.22		Weak, thinly bedded, brown fine grained SANDSTONE	35	
						35.00	13.69		End of borehole at 35.00 m	35	
										36	
										37	
										38	
										39	
										40	

Remarks
Location cleared with GPR and Cat & Genny. Hand dug service clearance pit excavated to 1.20m bgl. Groundwater strikes could not be recorded due to use of water flush. Refusal on bedrock at 23.80m bgl. Borehole installed with ground gas/water monitoring installation to 35.0m bgl in sandstone bedrock.

Appendix D Exploratory Hole Logs: Trial Pits

Key to legends

Composite materials, soils and lithology							
	Topsoil		Made Ground		Boulders		Chalk
	Clay		Coal		Cobbles		Concrete
	Gravel		Limestone		Mudstone		Peat
	Sand		Sandstone		Silt		Siltstone

Note: Composite soil types are signified by combined symbols.

Key to 'test results' and 'sampling' columns

Test result		Sampling	
Depth	Records depth that the test was carried out (i.e.: at 2.10m or between 2.10m and 2.55m)	From (m) To (m)	Records depth of sampling
	PP – Pocket penetrometer result reported as an equivalent undrained shear strength (kN/m ²) by applying a factor of 50.		D Disturbed sample
			B Bulk disturbed sample
			ES Environmental sample
Result	SV – Hand held shear vane result reported as an undrained shear strength (kN/m ²). Where multiple readings are taken at the same level the average value is shown on the log. * Signifies that instrument limit reached.	Type	W Water sample
			U Undisturbed thick-walled sample 100mm diameter sampler
			UT Undisturbed thin walled sample 100mm diameter sampler
			UTF Failed undisturbed sample

Water observations

Described at foot of log and shown in the 'water strike' column.

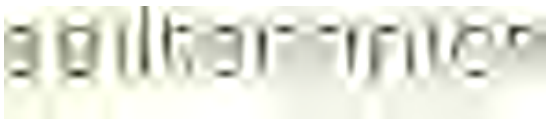
 Water level observed after specified delay in drilling

 Water strike

Density

Density recorded in brackets determined by qualitative field assessment or inferred from density testing and soil descriptions from across the site (i.e.: [Medium dense]).

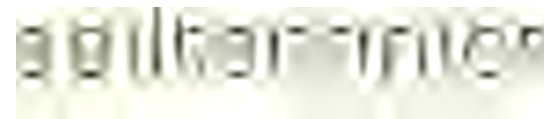
Postal Street, Manchester
STW6854



STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Orangish brown slightly gravelly fine to coarse SAND with a medium cobble content of subangular sandstone, concrete and brick. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. (MADE GROUND)	0.40						0.20 0.30		ES D
Brown sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick, and whole bricks. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. Frequent timber, metal and plastic. (MADE GROUND)							0.60 1.00 1.50		ES ES ES
Brown slightly clayey very sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick and whole bricks and occasional boulder sized pockets of brown slightly gravelly CLAY. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick, clinker and slate. (MADE GROUND)	3.00						3.10 3.20		ES ES ES
...at 3.1m depth, fragment of cement bound chrysotile ACM.	3.30								
TRIAL PIT TERMINATED AT 3.30m									

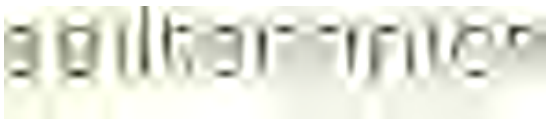
Notes Terminated at scheduled depth.	Groundwater observations		Title Trial pit record	Dimensions (w x l) 0.80m x 2.50m	Date(s) 09/01/2025 - 09/01/2025
	Strike (m)	Comments	Method Machine Excavated	Plant used JCB 3X	Sheet number Sheet 1 of 1
			Level (m OD) -	Logged by OH	Revision A
			Co-ordinates -	Status FINAL	TP01
	No groundwater strike recorded				

STW6854



Notes Terminated at scheduled depth.	Groundwater observations		Title	Dimensions (w x l)	Date(s)
	Strike (m)	Comments	Trial pit record	1.80m x 4.40m	09/01/2025 - 09/01/2025
	3.10	No change in water level after 20 minutes.	Method	Plant used	Sheet number
			Machine Excavated	JCB 3X	Sheet 1 of 1
			Level (m OD)	Logged by	Revision
			-	OH	A
		Co-ordinates	Status	TP02	
		-	FINAL		

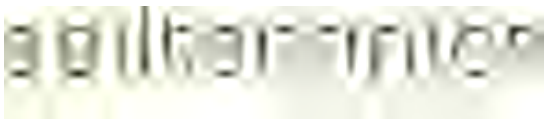
Postal Street, Manchester
STW6854



STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Orangish brown slightly gravelly fine to coarse SAND with a medium cobble content of subangular sandstone, concrete and brick. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. (MADE GROUND)	0.45						0.30		ES
Black very gravelly fine to coarse SAND with a high cobble content of angular concrete, brick, whole bricks and masonry sections. Gravel is fine to coarse angular to subrounded slate, brick, clinker, concrete and ceramic. Occassional glass, metal and plastic. (MADE GROUND)							ES		
							ES		
							1.60		ES
Firm orangish brown mottled grey CLAY with occasional bands of slightly gravelly slightly sandy CLAY. Gravel is fine to medium sandstone. (DEVENSIAN TILL)	2.00				PP 2.60	PP 84	2.50		D
	2.70								
TRIAL PIT TERMINATED AT 2.70m									

Notes Terminated at scheduled depth.	Groundwater observations		Title	Dimensions (w x l)	Date(s)
	Strike (m)	Comments	Trial pit record	0.70m x 3.00m	09/01/2025 - 09/01/2025
	2.70	No change in water level after 20 minutes.	Method Machine Excavated	Plant used JCB 3X	Sheet number Sheet 1 of 1
			Level (m OD) -	Logged by OH	Revision A
			Co-ordinates -	Status FINAL	TP03

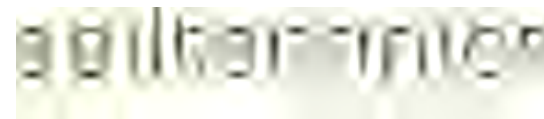
Postal Street, Manchester
STW6854



STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
ASPHALT (MADE GROUND)	0.10								
CONCRETE (MADE GROUND)	0.30								
	0.50								
Brown slightly clayey very sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick and whole bricks and occasional boulder sized pockets of brown slightly gravelly CLAY. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick, clinker and slate. (MADE GROUND)	0.85								
Black very gravelly fine to coarse SAND with a high cobble content of angular concrete, brick, whole bricks and masonry. Gravel is fine to coarse angular to subrounded slate, brick, clinker, concrete and ceramic. Occasional glass, metal and plastic. (MADE GROUND)									
Brown sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick, and whole bricks. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. Frequent timber, metal and plastic. (MADE GROUND)									
Firm greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse angular to subrounded sandstone, concrete and brick. Occasional fabric. (MADE GROUND)	2.30				PP 2.60	PP 92			
TRIAL PIT TERMINATED AT 2.80m	2.80								

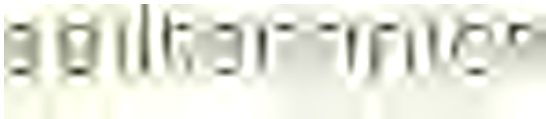
Notes Terminated at scheduled depth.	Groundwater observations		Title	Dimensions (w x l)	Date(s)
	Strike (m)	Comments	Trial pit record	1.50m x 3.40m	09/01/2025 - 09/01/2025
	2.60	Rising to 2.3m after 20 minutes.	Method Machine Excavated	Plant used JCB 3X	Sheet number Sheet 1 of 1
			Level (m OD) -	Logged by OH	Revision A
			Co-ordinates -	Status FINAL	TP04

STW6854

[illegible]

Notes Terminated due to broken water pipe.	Groundwater observations		Title	Dimensions (w x l)	Date(s)
	Strike (m)	Comments	Trial pit record	1.00m x 3.30m	09/01/2025 - 09/01/2025
			Method	Plant used	Sheet number
			Machine Excavated	JCB 3X	Sheet 1 of 1
			Level (m OD)	Logged by	Revision
	-	OH	A		
Co-ordinates	Status	TP05			
-	FINAL				
No groundwater strike recorded					

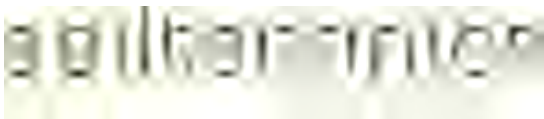
Postal Street, Manchester
STW6854



STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
ASPHALT (MADE GROUND) Black very gravelly fine to coarse SAND with a high cobble content of angular concrete, brick, whole bricks and masonry sections. Gravel is fine to coarse angular to subrounded slate, brick, clinker, concrete and ceramic. Occasional glass, metal and plastic. (MADE GROUND)	0.15								
TRIAL PIT TERMINATED AT 2.95m	2.30								

Notes Terminated at scheduled depth.	Groundwater observations		Title Trial pit record	Dimensions (w x l) 2.20m x 4.00m	Date(s) 09/01/2025 - 09/01/2025
	Strike (m)	Comments	Method Machine Excavated	Plant used JCB 3X	Sheet number Sheet 1 of 1
			Level (m OD) -	Logged by OH	Revision A
	No groundwater strike recorded		Co-ordinates -	Status FINAL	TP06

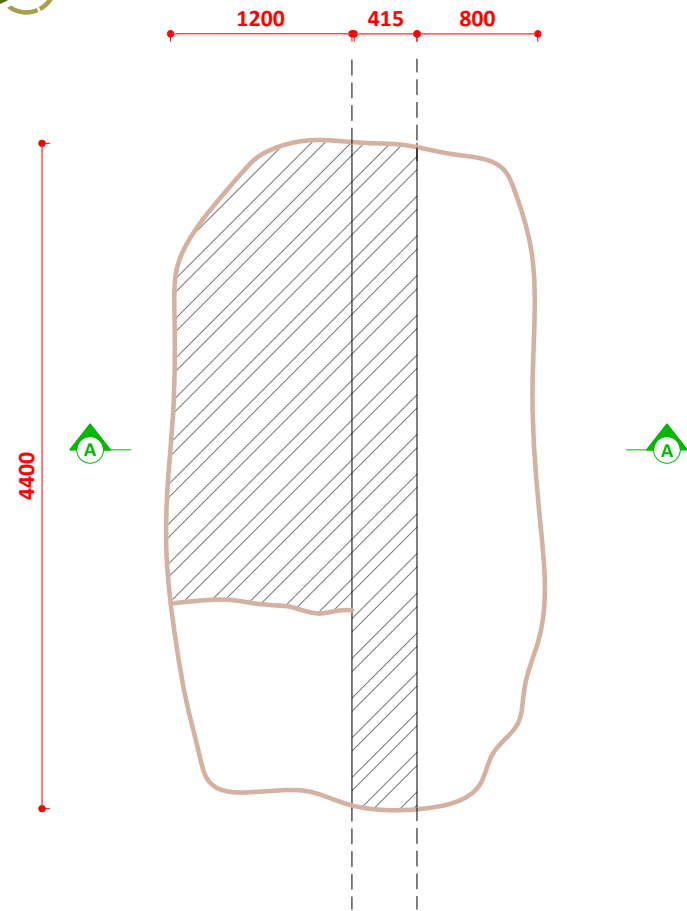
Postal Street, Manchester
STW6854



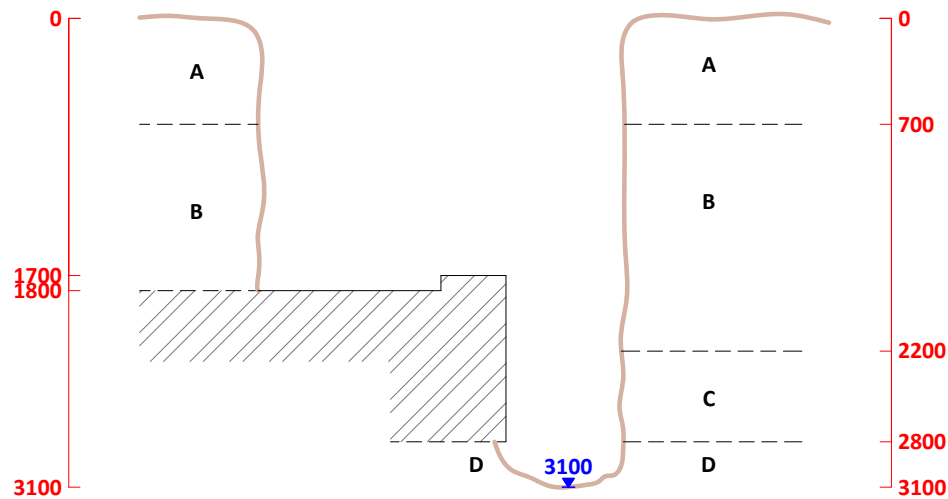
STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Orangish brown slightly gravelly fine to coarse SAND with a medium cobble content of subangular sandstone, concrete and brick. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. (MADE GROUND)	0.40						0.30		ES
Brown sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick, and whole bricks. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. Frequent timber, metal and plastic. (MADE GROUND)	0.70						0.70		ES
	1.30						1.30		ES
	1.70						1.70		ES
	2.20						2.20		ES
Brown slightly clayey very sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick and whole bricks and occasional boulder sized pockets of brown slightly gravelly CLAY. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick, clinker and slate. (MADE GROUND)	2.45						2.30		ES
TRIAL PIT TERMINATED AT 2.45m									

Notes Terminated at scheduled depth.	Groundwater observations		Title Trial pit record	Dimensions (w x l) 0.68m x 3.20m	Date(s) 09/01/2025 - 09/01/2025
	Strike (m)	Comments	Method Machine Excavated	Plant used JCB 3X	Sheet number Sheet 1 of 1
			Level (m OD) -	Logged by OH	Revision A
			Co-ordinates -	Status FINAL	TP07
	No groundwater strike recorded				

Plan



Section A-A



Photographic records



Key

- A. Orangish brown slightly gravelly fine to coarse SAND with a medium cobble content of subangular sandstone, concrete and brick. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. (MADE GROUND)
- B. Brown sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick, and whole bricks. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. Frequent timber, metal and plastic. (MADE GROUND)
- C. Black slightly clayey very sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick and whole bricks and occassional boulder sized pockets of brown slightly gravelly CLAY. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick, clinker and slate. (MADE GROUND)
- D. Firm greyish brown slightly gravelly CLAY. Gravel is fine to coarse angular sandstone and brick. (MADE GROUND)

- Observed features
- Assumed features
- Excavation outline



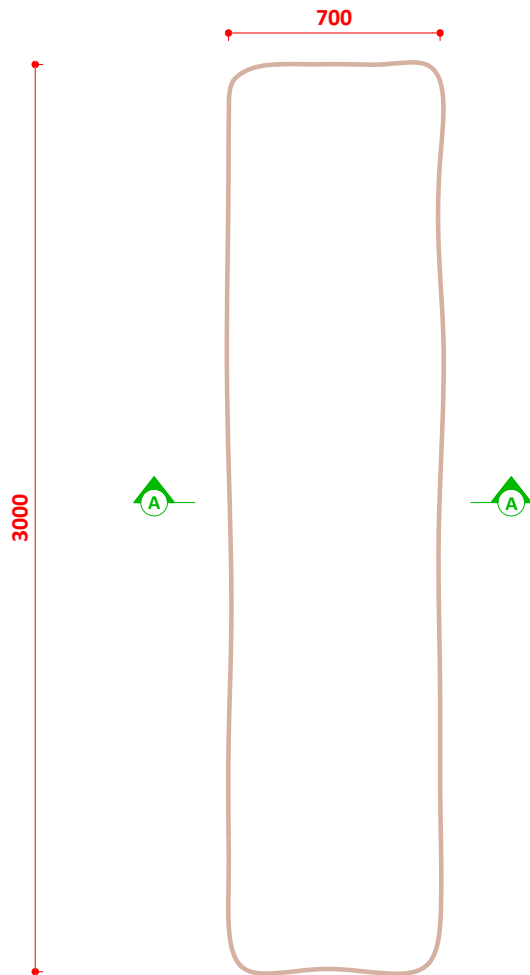
Notes

- Trial pit sides remained upright and stable.
- Dimensions shown in millimetres.
- Groundwater strike at 3.1m depth, no significant rise after 20 minutes.

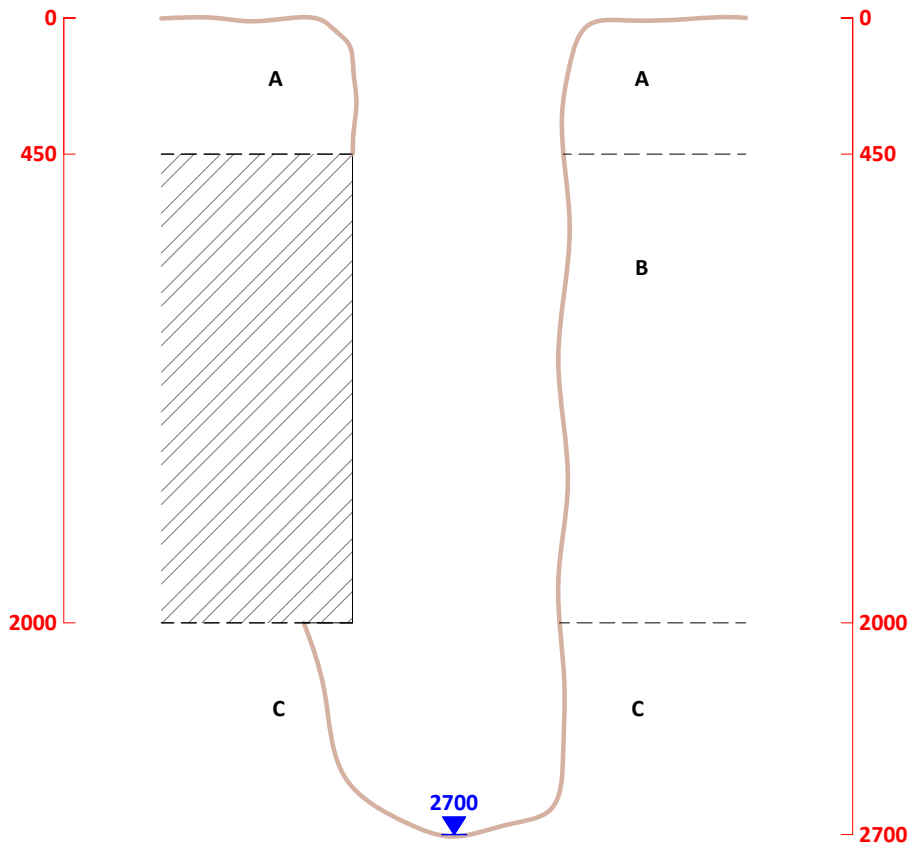
Samples - Disturbed (D) / Environmental (ES) / Bulk (B)

- 0.5m (ES)
- 0.9m (ES)
- 1.7m (ES)
- 2.5m (ES)
- 3.0m (ES)
- 3.0m (D)

A	First issue	OH	AM	07.02.2025
REV	DESCRIPTION	LOGD	PREP	DATE
soiltechnics environmental • geotechnical • building fabric				
PROJECT Postal Street, Manchester				
TITLE Trial pit record				
METHOD Machine excavated		DATE OF WORKS 09.01.2025		
PROJECT NO. STW6854	SCALE AT A3 1:50	LOCATION REFERENCE TP02		



Section A-A



Photographic records



Key

- A. Orangish brown slightly gravelly fine to coarse SAND with a medium cobble content of subangular sandstone, concrete and brick. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. (MADE GROUND)
- B. Black very gravelly fine to coarse SAND with a high cobble content of angular concrete, brick, whole bricks and masonry sections. Gravel is fine to coarse angular to subrounded slate, brick, clinker, concrete and ceramic. Occassional glass, metal and plastic. (MADE GROUND)
- C. Firm orangish brown mottled grey CLAY with occassional bands of slightly gravelly slightly sandy CLAY. Gravel is fine to medium sandstone. (DEVANSIAN TILL)

- Observed features
- Assumed features
- Excavation outline



Notes

- Trial pit sides remained upright and stable.
- Dimensions shown in millimetres.
- Groundwater strike at 2.7m depth, no significant rise after 20 minutes.

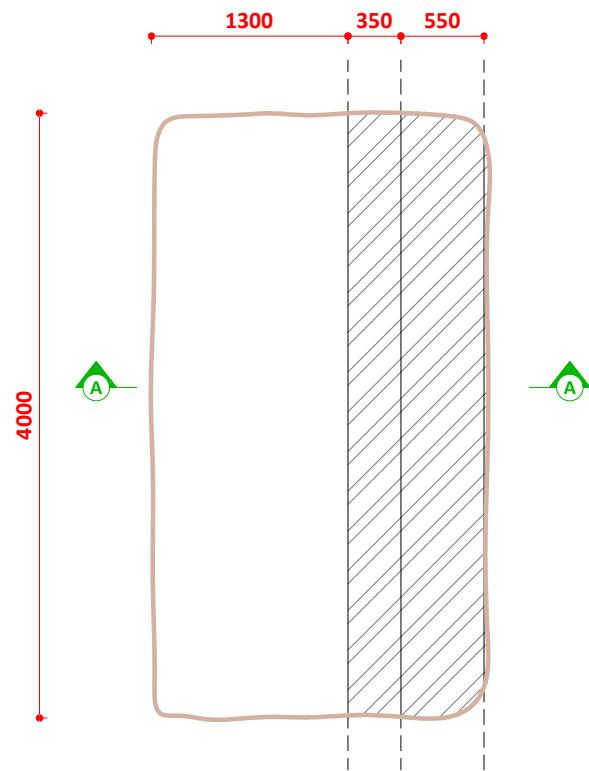
Samples - Disturbed (D) / Environmental (ES) / Bulk (B)

- 0.3m (ES)
- 0.5m (ES)
- 0.8m (ES)
- 1.6m (ES)
- 2.5m (ES)

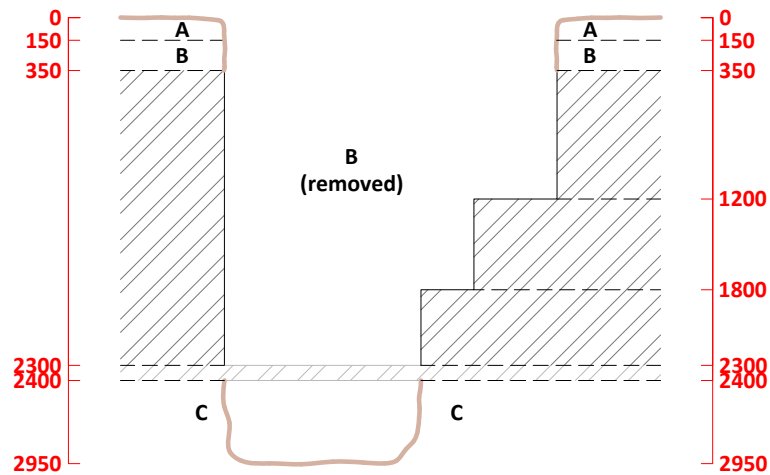
Pocket penetrometer testing

- 2.6m - 84kN/m²

A	First issue	OH	AM	07.02.2025
REV	DESCRIPTION	LOGD	PREP	DATE
soiltechnics environmental • geotechnical • building fabric				
PROJECT Postal Street, Manchester				
TITLE Trial pit record				
METHOD Machine excavated		DATE OF WORKS 09.01.2025		
PROJECT NO. STW6854	SCALE AT A3 1:25	LOCATION REFERENCE TP03		



Section A-A



Photographic records



Key

- A. ASPHALT
- B. Black very gravelly fine to coarse SAND with a high cobble content of angular concrete, brick, whole bricks and masonry sections. Gravel is fine to coarse angular to subrounded slate, brick, clinker, concrete and ceramic. Occassional glass, metal and plastic. (MADE GROUND)
- C. Firm grey mottled orangish brown slightly gravelly CLAY. Gravel is fine to medium subangular sandstone. (DEVENSIAN TILL)

- Observed features
- Assumed features
- Excavation outline



Notes

- Trial pit sides remained upright and stable.
- Dimensions shown in millimetres.
- No groundwater encountered.

Samples - Disturbed (D) / Environmental (ES) / Bulk (B)

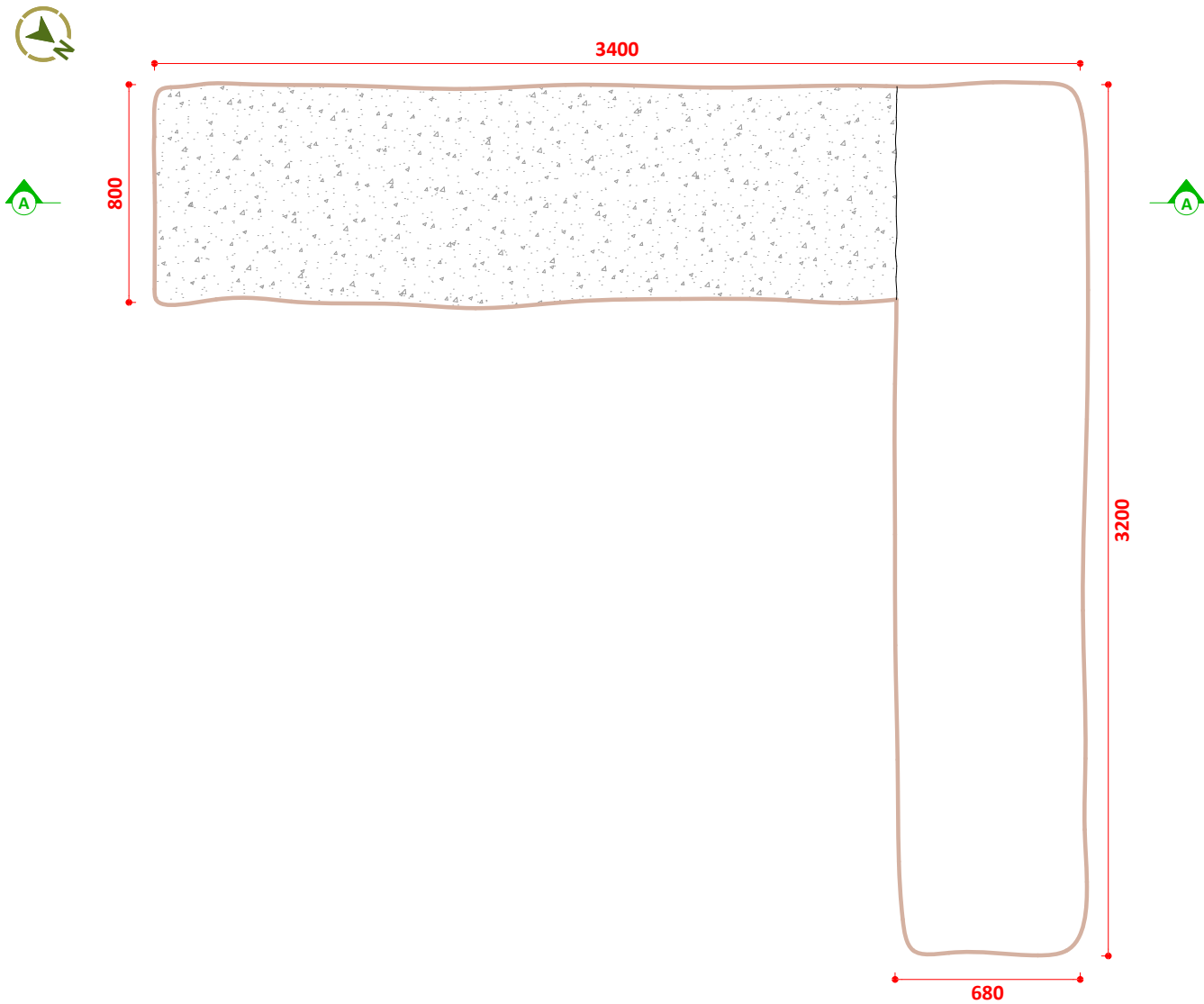
- 0.3m (ES)
- 0.5m (ES)
- 0.8m (ES)
- 1.6m (ES)
- 2.5m (ES)

Pocket penetrometer testing

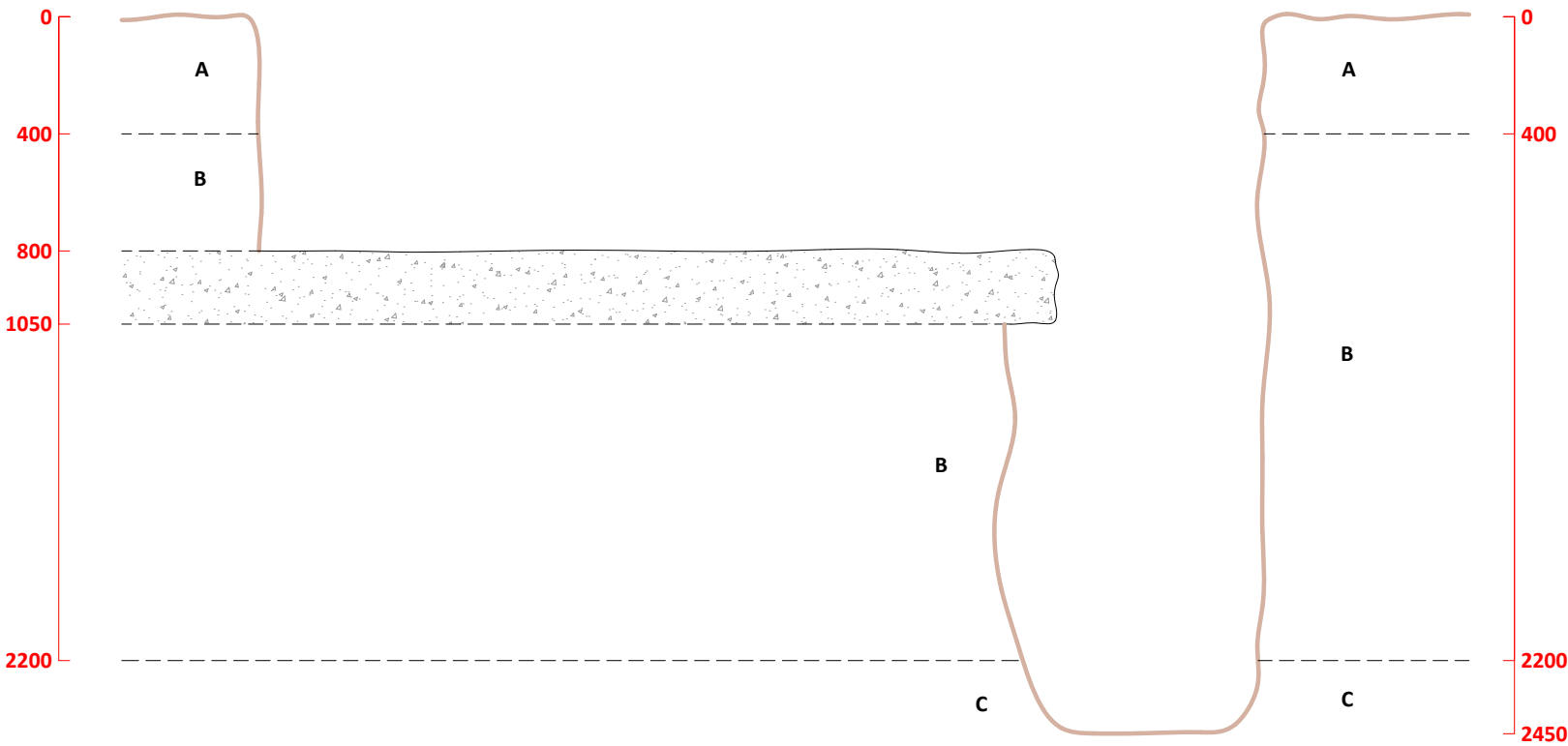
- 2.9m - 84kN/m²

A	First issue	OH	AM	07.02.2025
REV	DESCRIPTION	LOGD	PREP	DATE
soiltechnics environmental • geotechnical • building fabric				
PROJECT Postal Street, Manchester				
TITLE Trial pit record				
METHOD Machine excavated		DATE OF WORKS 09.01.2025		
PROJECT NO. STW6854	SCALE AT A3 1:50	LOCATION REFERENCE TP06		

Plan



Section A-A



Photographic records



Key

- A. Orangish brown slightly gravelly fine to coarse SAND with a medium cobble content of subangular sandstone, concrete and brick. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and slate. (MADE GROUND)
- B. Brown sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick, and whole bricks. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick and plastic. Frequent timber, metal and plastic. (MADE GROUND)
- C. Brown slightly clayey very sandy fine to coarse GRAVEL with a high cobble content of subangular concrete, brick and whole bricks and occasional boulder sized pockets of brown slightly gravelly CLAY. Gravel is fine to coarse angular to subrounded sandstone, concrete, brick, clinker and slate. (MADE GROUND)

- Observed features
- Assumed features
- Excavation outline



Notes

- Trial pit sides remained upright and stable.
- Dimensions shown in millimetres.
- No groundwater encountered.

Samples - Disturbed (D) / Environmental (ES) / Bulk (B)

- 0.3m (ES)
- 0.7m (ES)
- 1.3m (ES)
- 1.7m (ES)
- 2.3m (ES)

A	First issue	OH	AM	07.02.2025
REV	DESCRIPTION	LOGD	PREP	DATE
soiltechnics environmental • geotechnical • building fabric				
PROJECT Postal Street, Manchester				
TITLE Trial pit record				
METHOD Machine excavated		DATE OF WORKS 09.01.2025		
PROJECT NO. STW6854	SCALE AT A3 1:25	LOCATION REFERENCE TP07		

Appendix E Geoenvironmental Laboratory Test Results



Final Report

Report No.: 25-00787-1

Initial Date of Issue: 23-Jan-2025

Re-Issue Details:

Client Soiltechnics Limited

Client Address: 1st Floor Unit 9 Westpoint Enterprise
Park
Clarence Avenue
Trafford Park
Manchester
M17 1QS

Contact(s): Admin

Project STW6854 Postal Street

Quotation No.: **Date Received:** 14-Jan-2025

Order No.: POR021155 **Date Instructed:** 14-Jan-2025

No. of Samples: 3

Turnaround (Wkdays): 7 **Results Due:** 22-Jan-2025

Date Approved: 23-Jan-2025

Approved By:



Details: David Smith, Technical Director

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

Results - Soil

Project: STW6854 Postal Street

Client: Soiltechnics Limited		Chemtest Job No.:				25-00787	25-00787	25-00787
Quotation No.:		Chemtest Sample ID.:				1916606	1916607	1916608
Order No.: POR021155		Client Sample Ref.:				1	1	1
		Client Sample ID.:				CS01-0-1	CS02-0-1	CS03-0-1
		Sample Location:				CS01	CS02	CS03
		Sample Type:				SOIL	SOIL	SOIL
		Top Depth (m):				0.00	0.00	0.00
		Date Sampled:				09-Jan-2025	09-Jan-2025	09-Jan-2025
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
Moisture		N	2030	%	0.020	15	9.2	17

Results - 2 Stage WAC

Project: STW6854 Postal Street

Chemtest Job No: 25-00787							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 1916606							Limits			
Sample Ref: 1							Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID: CS01-0-1										
Sample Location: CS01										
Top Depth(m): 0.00										
Bottom Depth(m):										
Sampling Date: 09-Jan-2025										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	M	%				2.9	3	5	6
Loss On Ignition	2610	M	%				4.8	--	--	10
Total BTEX	2760	M	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg				< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg				210	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg				9.9	100	--	--
pH at 20C	2010	M					8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0020	--	To evaluate	To evaluate			
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1455	U	0.0022	0.0023	0.0045	0.023	0.5	2	25	
Barium	1455	U	0.032	0.019	0.063	0.21	20	100	300	
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5	
Chromium	1455	U	0.016	0.0087	0.032	0.096	0.5	10	70	
Copper	1455	U	0.0096	0.0040	0.019	0.012	2	50	100	
Mercury	1455	U	0.00009	< 0.00005	0.00017	0.00011	0.01	0.2	2	
Molybdenum	1455	U	0.016	0.0033	0.032	0.049	0.5	10	30	
Nickel	1455	U	0.0055	0.0040	0.011	0.042	0.4	10	40	
Lead	1455	U	0.0010	0.0005	0.0019	0.0058	0.5	10	50	
Antimony	1455	U	0.0026	0.0007	0.0053	0.0098	0.06	0.7	5	
Selenium	1455	U	0.0047	0.0010	0.0088	0.015	0.1	0.5	7	
Zinc	1455	U	0.012	0.010	0.023	0.10	4	50	200	
Chloride	1220	U	20	2.1	40	44	800	15000	25000	
Fluoride	1220	U	0.34	0.27	< 1.0	2.8	10	150	500	
Sulphate	1220	U	1500	260	3000	4100	1000	20000	50000	
Total Dissolved Solids	1020	N	1500	420	2900	5500	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	4.2	2.8	< 50	< 50	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	3.9

Leachate Test Information	
Leachant volume 1st extract/l	0.343
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.221

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: STW6854 Postal Street

Chemtest Job No: 25-00787							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 1916607							Limits			
Sample Ref: 1							Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID: CS02-0-1										
Sample Location: CS02										
Top Depth(m): 0.00										
Bottom Depth(m):										
Sampling Date: 09-Jan-2025										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	M	%				0.99	3	5	6
Loss On Ignition	2610	M	%				3.0	--	--	10
Total BTEX	2760	M	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg				< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg				< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg				< 2.0	100	--	--
pH at 20C	2010	M					8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0020	--	To evaluate	To evaluate			
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1455	U	0.0004	0.0004	0.0008	0.0041	0.5	2	25	
Barium	1455	U	0.033	0.017	0.065	0.20	20	100	300	
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5	
Chromium	1455	U	0.0078	0.0069	0.016	0.071	0.5	10	70	
Copper	1455	U	0.0037	0.0023	0.0074	0.0052	2	50	100	
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2	
Molybdenum	1455	U	0.0026	0.0015	0.0052	0.016	0.5	10	30	
Nickel	1455	U	0.0047	0.0043	0.0093	0.043	0.4	10	40	
Lead	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	10	50	
Antimony	1455	U	0.0010	< 0.0005	0.0019	0.0014	0.06	0.7	5	
Selenium	1455	U	0.0008	< 0.0005	0.0014	0.0011	0.1	0.5	7	
Zinc	1455	U	0.008	0.010	0.016	0.10	4	50	200	
Chloride	1220	U	6.1	< 1.0	12	< 10	800	15000	25000	
Fluoride	1220	U	0.18	0.19	< 1.0	1.9	10	150	500	
Sulphate	1220	U	90	13	180	240	1000	20000	50000	
Total Dissolved Solids	1020	N	280	83	560	1100	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	6.7	2.6	< 50	< 50	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	3.8

Leachate Test Information	
Leachant volume 1st extract/l	0.343
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.246

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: STW6854 Postal Street

Chemtest Job No: 25-00787							Landfill Waste Acceptance Criteria			
Chemtest Sample ID: 1916608							Limits			
Sample Ref: 1							Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Sample ID: CS03-0-1										
Sample Location: CS03										
Top Depth(m): 0.00										
Bottom Depth(m): 0.00										
Sampling Date: 09-Jan-2025										
Determinand	SOP	Accred.	Units							
Total Organic Carbon	2625	M	%				18	3	5	6
Loss On Ignition	2610	M	%				17	--	--	10
Total BTEX	2760	M	mg/kg				< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg				< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg				28	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg				4.6	100	--	--
pH at 20C	2010	M					7.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg				0.0050	--	To evaluate	To evaluate
Eluate Analysis			2:1 mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg			
Arsenic	1455	U	0.0016	0.0006	0.0032	0.0069	0.5	2	25	
Barium	1455	U	0.050	0.035	0.099	0.37	20	100	300	
Cadmium	1455	U	0.00025	< 0.00011	0.00051	0.00033	0.04	1	5	
Chromium	1455	U	0.0077	0.0062	0.015	0.064	0.5	10	70	
Copper	1455	U	0.011	0.0045	0.022	0.014	2	50	100	
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2	
Molybdenum	1455	U	0.0017	0.0015	0.0033	0.015	0.5	10	30	
Nickel	1455	U	0.017	0.0059	0.033	0.073	0.4	10	40	
Lead	1455	U	0.048	0.026	0.096	0.29	0.5	10	50	
Antimony	1455	U	0.0009	0.0006	0.0019	0.0064	0.06	0.7	5	
Selenium	1455	U	0.0042	0.0010	0.0078	0.015	0.1	0.5	7	
Zinc	1455	U	0.20	0.028	0.41	0.51	4	50	200	
Chloride	1220	U	35	5.8	70	96	800	15000	25000	
Fluoride	1220	U	0.12	0.14	< 1.0	1.4	10	150	500	
Sulphate	1220	U	1500	640	3000	7600	1000	20000	50000	
Total Dissolved Solids	1020	N	1600	860	3100	9500	4000	60000	100000	
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-	
Dissolved Organic Carbon	1610	U	5.2	< 2.5	< 50	< 50	500	800	1000	

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	3.5

Leachate Test Information	
Leachant volume 1st extract/l	0.344
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.229

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	TE TS PL LE SW GW
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW FW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	
2010	pH Value of Soils	pH at 20°C	pH Meter	
2015	Acid Neutralisation Capacity	Acid Reserve	Titration	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS. Reported PCB 101 results may contain contributions from PCB 90 due to inseparable chromatography.	
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge	

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SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

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

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

All results are expressed on a dry weight basis.

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

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

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

NEW_ASB Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL

DURHAM Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

A - Date of sampling not supplied

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

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

Report Information

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

Clean Up Codes

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

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

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



Final Report

Report No.: 25-00792-1

Initial Date of Issue: 17-Jan-2025

Re-Issue Details:

Client Soiltechnics Limited

Client Address: 1st Floor Unit 9 Westpoint Enterprise
Park
Clarence Avenue
Trafford Park
Manchester
M17 1QS

Contact(s): Admin

Project STW6854 Postal Street

Quotation No.: **Date Received:** 14-Jan-2025

Order No.: POR021155 **Date Instructed:** 14-Jan-2025

No. of Samples: 6

Turnaround (Wkdays): 5 **Results Due:** 20-Jan-2025

Date Approved: 17-Jan-2025

Approved By:

Details: David Smith, Technical Director

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

Bulk Identification Certificate

Client: Soiltechnics Limited
Site Address:
Date Sampled: 09-Jan-2025
Date Received: 14-Jan-2025

Your Ref.:
Project: STW6854 Postal Street
Job Number: 25-00792
No Samples:
Date Reported: 17-Jan-2025

Sample No.	Sample ID	Sample Ref.	Description	Top (m)	Bottom (m)	SOP	Accred.	Laboratory	Material	Result
1916621	TP01-3.1-8	8	TP01	3.10		2185	U	DURHAM	Cement	Chrysotile

The in-house procedure SOP2185 is in accordance with the requirements of Appendix 2 of the Analyst Guide (HSG 248).
The results relate only to items tested as supplied by the client.
Comments and interpretations are beyond the scope of UKAS accreditation.
Samples associated with asbestos in building surveys are retained for six months (HSG 264 refers)

Results - Soil

Project: STW6854 Postal Street

Client: Soiltechnics Limited		Chemtest Job No.:				25-00792	25-00792	25-00792	25-00792	25-00792
Quotation No.:		Chemtest Sample ID.:				1916620	1916622	1916623	1916624	1916625
Order No.: POR021155		Client Sample Ref.:				2	5	1	3	2
		Client Sample ID.:				TP01-0.6-2	TP01-3.2-5	TP02-0.5-1	TP03-0.8-3	TP07-0.7-2
		Sample Location:				TP01	TP01	TP02	TP03	TP07
		Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):				0.60	3.20	0.50	0.80	0.70
		Date Sampled:				09-Jan-2025	09-Jan-2025	09-Jan-2025	09-Jan-2025	09-Jan-2025
		Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD					
ACM Type		U	2192		N/A	-	-	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	14		9.0	16	14
Soil Colour		N	2040		N/A	Brown		Brown	Black	Brown
Other Material		N	2040		N/A	Stones, Glass and Brick		Stones	Stones	Stones and Brick
Soil Texture		N	2040		N/A	Loam		Sand	Sand	Sand
pH at 20C		M	2010		4.0	7.7		7.5	7.3	7.6
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	1.3		< 0.40	3.5	1.8
Cyanide (Complex)		M	2300	mg/kg	0.50	< 0.50		< 0.50	1.2	< 0.50
Cyanide (Free)		M	2300	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50		< 0.50	1.2	< 0.50
Arsenic		M	2455	mg/kg	0.5	16		3.9	34	15
Beryllium		U	2455	mg/kg	0.5	0.7		0.9	1.0	1.2
Cadmium		M	2455	mg/kg	0.10	0.37		0.29	0.94	0.35
Chromium		M	2455	mg/kg	0.5	14		31	11	17
Copper		M	2455	mg/kg	0.50	76		15	400	150
Mercury		M	2455	mg/kg	0.05	0.56		< 0.05	1.1	1.2
Nickel		M	2455	mg/kg	0.50	15		26	26	19
Lead		M	2455	mg/kg	0.50	390		30	14000	380
Selenium		M	2455	mg/kg	0.25	0.50		0.66	0.98	0.53
Vanadium		U	2455	mg/kg	0.5	21		32	18	29
Zinc		M	2455	mg/kg	0.50	100		73	1800	140
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	3.4		0.47	71	6.7
TPH >C5-C6	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C6-C7	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C7-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0		< 1.0	5.3	< 1.0
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0		< 1.0	16	25
TPH >C21-C35	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0		< 1.0	35	38
Total TPH >C5-C35		N	2670	mg/kg	10	< 10		< 10	56	62
Naphthalene		M	2800	mg/kg	0.10	< 0.10		< 0.10	0.57	0.14
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10

Results - Soil

Project: STW6854 Postal Street

Client: Soiltechnics Limited		Chemtest Job No.:					25-00792	25-00792	25-00792	25-00792	25-00792
Quotation No.:		Chemtest Sample ID.:					1916620	1916622	1916623	1916624	1916625
Order No.: POR021155		Client Sample Ref.:					2	5	1	3	2
		Client Sample ID.:					TP01-0.6-2	TP01-3.2-5	TP02-0.5-1	TP03-0.8-3	TP07-0.7-2
		Sample Location:					TP01	TP01	TP02	TP03	TP07
		Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):					0.60	3.20	0.50	0.80	0.70
		Date Sampled:					09-Jan-2025	09-Jan-2025	09-Jan-2025	09-Jan-2025	09-Jan-2025
		Asbestos Lab:					DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	HWOL Code	Accred.	SOP	Units	LOD						
Acenaphthene		M	2800	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	
Fluorene		M	2800	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	
Phenanthrene		M	2800	mg/kg	0.10	0.68		< 0.10	1.3	0.78	
Anthracene		M	2800	mg/kg	0.10	0.18		< 0.10	0.22	0.18	
Fluoranthene		M	2800	mg/kg	0.10	1.3		< 0.10	0.99	1.3	
Pyrene		M	2800	mg/kg	0.10	1.3		< 0.10	1.1	1.3	
Benzo[a]anthracene		M	2800	mg/kg	0.10	0.65		< 0.10	0.73	0.61	
Chrysene		M	2800	mg/kg	0.10	0.54		< 0.10	0.74	0.67	
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	0.79		< 0.10	1.4	0.91	
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	0.28		< 0.10	0.43	0.28	
Benzo[a]pyrene		M	2800	mg/kg	0.10	0.62		< 0.10	1.2	0.61	
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	0.41		< 0.10	0.80	0.39	
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10		< 0.10	0.16	< 0.10	
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	0.44		< 0.10	0.95	0.46	
Total Of 16 PAH's		N	2800	mg/kg	2.0	7.2		< 2.0	11	7.6	
Total Phenols		M	2920	mg/kg	0.10	< 0.10		< 0.10	< 0.10	< 0.10	

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2185	Asbestos	Asbestos	Polarised light microscopy	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

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DURHAM Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

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Water Sample Category Key for Accreditation

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

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

Appendix F Contamination Assessment Screening



GQRA Screening

Assessments	Status	Date	Created by	Reviewed By
Acute human health risk - Soils	Completed x2 scenarios	12/02/2025	OH	DH
Chronic human health risk - Soils	Completed	12/02/2025	OH	DH
<i>Chronic human health risk - Groundwater vapour</i>	<i>Not undertaken</i>			
<i>Controlled waters risk - Surface water</i>	<i>Not undertaken</i>			
<i>Controlled waters risk - Drinking water</i>	<i>Not undertaken</i>			
<i>Controlled waters - Free phase indicator</i>	<i>Not undertaken</i>			
<i>Phytotoxicity</i>	<i>Not undertaken</i>			
<i>Ecotoxicity</i>	<i>Not undertaken</i>			

Key

Assessment	Abbr.	GQRA Source (in order of preference)	Last Update
All	NGA	No guideline value available	-
Acute human health risk - Soils	AGAC	Acute Generic Assessment Criteria (SoBRA)	April 2019
	sat.	Contaminant poses a low acute risk unless the soil saturation limit is exceeded and a free oil phase is present.	April 2019
Chronic human health risk - Soils	C4SL	Category 4 Screening Levels (DEFRA)	May 2021
	S4UL	Suitable 4 Use Levels (LQM)	August 2015
	ATK	Atrisk Soil Screening Values (Atkins)	June 2017
	CL:AIRE	Generic Assessment Criteria (CL:AIRE)	Jan 2010

Chronic human health risk (soils)

Scenario	
End user	Current and proposed site user
Receptor	Residential without homegrown produce
SOM	1.00%
GAC Preference	C4SLs over S4ULs
Unspeciated TPH GAC	Worst-case aliphatic/aromatic

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP01	TP01	TP01	TP02	TP03
				Depth (m)	0.60	3.10	3.20	0.50	0.80
				Date	09/01/25	09/01/25	09/01/25	09/01/25	09/01/25
Inorganics - Metals									
Arsenic	C4SL	40	34		163.934				
Beryllium	S4UL	1.7	1.2		0.70.91				
Boron	S4UL	11000	3.5		1.3< 0.403.5				
Cadmium	C4SL	150	0.94		0.370.290.94				
Chromium (III)	S4UL	910	31		143111				
Chromium (VI)	C4SL	21	<LoD		< 0.50< 0.50< 0.50				
Copper	S4UL	7100	400		7615400				
Cyanide - Free	ATK	34	<LoD		< 0.50< 0.50< 0.50				
Lead	C4SL	310	14000		3903014000				
Mercury	S4UL	56	1.2		0.56< 0.051.1				
Nickel	S4UL	180	26		152626				
Selenium	S4UL	430	0.98		0.50.660.98				
Vanadium	S4UL	1200	32		213218				
Zinc	S4UL	40000	1800		100731800				
Inorganics - Asbestos									
Asbestos Type		N/A			-Cement--				
Asbestos Screen		N/A			No Asbestos DetectedChrysotileNo Asbestos DetectedNo Asbestos DetectedNo Asbestos Detected				
Inorganics - Soil Parameters									
Organic matter		N/A			3.40.4771				
Organics - PAH & Phenol									
Acenaphthene	S4UL	3000	<LoD		< 0.10< 0.10< 0.10				
Acenaphthylene	S4UL	2900	<LoD		< 0.10< 0.10< 0.10				
Anthracene	S4UL	31000	0.22		0.18< 0.100.22				
Benzo(a)anthracene	S4UL	11	0.73		0.65< 0.100.73				
Benzo(a)pyrene	C4SL	5.3	1.2		0.62< 0.101.2				
Benzo(b)fluoranthene	S4UL	3.9	1.4		0.79< 0.101.4				
Benzo(ghi)perylene	S4UL	360	0.95		0.44< 0.100.95				
Benzo(k)fluoranthene	S4UL	110	0.43		0.28< 0.100.43				
Chrysene	S4UL	30	0.74		0.54< 0.100.74				
Dibenz(a,h)anthracene	S4UL	0.31	0.16		< 0.10< 0.100.16				
Fluoranthene	S4UL	1500	1.3		1.3< 0.100.99				
Fluorene	S4UL	2800	<LoD		< 0.10< 0.10< 0.10				
Indeno(1,2,3-cd)pyrene	S4UL	45	0.8		0.41< 0.100.8				
Naphthalene	C4SL	15	0.57		< 0.10< 0.100.57				
Phenanthrene	S4UL	1300	1.3		0.68< 0.101.3				
Phenol	S4UL	440	<LoD		< 0.10< 0.10< 0.10				
Pyrene	S4UL	3700	1.3		1.3< 0.101.1				
Organics - Banded TPH (unspeciated)									
EC >5-EC6 (unspeciated)	S4UL	42	<LoD		< 1.0< 1.0< 1.0				
EC >6-EC7 (unspeciated)	S4UL	100	<LoD	< 1.0< 1.0< 1.0					
EC >7-EC8 (unspeciated)	S4UL	100	<LoD	< 1.0< 1.0< 1.0					
EC >8-EC10 (unspeciated)	S4UL	27	<LoD	< 1.0< 1.0< 1.0					
EC >10-EC12 (unspeciated)	S4UL	130	<LoD	< 1.0< 1.0< 1.0					
EC >12-EC16 (unspeciated)	S4UL	1100	5.3	< 1.0< 1.05.3					
EC >16-EC21 (unspeciated)	S4UL	1900	25	< 1.0< 1.016					
EC >21-EC35 (unspeciated)	S4UL	1900	38	< 1.0< 1.035					

Chronic human health risk (soils)

Scenario	
End user	Current and proposed site user
Receptor	Residential without homegrown produce
SOM	1.00%
GAC Preference	C4SLs over S4ULs
Unspeciated TPH GAC	Worst-case aliphatic/aromatic

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP07
				Depth (m)	0.70
				Date	09/01/25
Inorganics - Metals					
Arsenic	C4SL	40	34		15
Beryllium	S4UL	1.7	1.2		1.2
Boron	S4UL	11000	3.5		1.8
Cadmium	C4SL	150	0.94		0.35
Chromium (III)	S4UL	910	31		17
Chromium (VI)	C4SL	21	<LoD		< 0.50
Copper	S4UL	7100	400		150
Cyanide - Free	ATK	34	<LoD		< 0.50
Lead	C4SL	310	14000		380
Mercury	S4UL	56	1.2		1.2
Nickel	S4UL	180	26		19
Selenium	S4UL	430	0.98		0.53
Vanadium	S4UL	1200	32		29
Zinc	S4UL	40000	1800		140
Inorganics - Asbestos					
Asbestos Type		N/A			-
Asbestos Screen		N/A			No Asbestos Detected
Inorganics - Soil Parameters					
Organic matter		N/A			6.7
Organics - PAH & Phenol					
Acenaphthene	S4UL	3000	<LoD		< 0.10
Acenaphthylene	S4UL	2900	<LoD		< 0.10
Anthracene	S4UL	31000	0.22		0.18
Benzo(a)anthracene	S4UL	11	0.73		0.61
Benzo(a)pyrene	C4SL	5.3	1.2	0.61	
Benzo(b)fluoranthene	S4UL	3.9	1.4	0.91	
Benzo(ghi)perylene	S4UL	360	0.95	0.46	
Benzo(k)fluoranthene	S4UL	110	0.43	0.28	
Chrysene	S4UL	30	0.74	0.67	
Dibenz(a,h)anthracene	S4UL	0.31	0.16	< 0.10	
Fluoranthene	S4UL	1500	1.3	1.3	
Fluorene	S4UL	2800	<LoD	< 0.10	
Indeno(1,2,3-cd)pyrene	S4UL	45	0.8	0.39	
Naphthalene	C4SL	15	0.57	0.14	
Phenanthrene	S4UL	1300	1.3	0.78	
Phenol	S4UL	440	<LoD	< 0.10	
Pyrene	S4UL	3700	1.3	1.3	
Organics - Banded TPH (unspeciated)					
EC >5-EC6 (unspeciated)	S4UL	42	<LoD	< 1.0	
EC >6-EC7 (unspeciated)	S4UL	100	<LoD	< 1.0	
EC >7-EC8 (unspeciated)	S4UL	100	<LoD	< 1.0	
EC >08-EC10 (unspeciated)	S4UL	27	<LoD	< 1.0	
EC >10-EC12 (unspeciated)	S4UL	130	<LoD	< 1.0	
EC >12-EC16 (unspeciated)	S4UL	1100	5.3	< 1.0	
EC >16-EC21 (unspeciated)	S4UL	1900	25	25	
EC >21-EC35 (unspeciated)	S4UL	1900	38	38	



Acute human health risk (soils)

Scenario	Occupational exposure (construction worker)
Critical receptor	Adult female worker
Oral exposure	Ingestion of soil and dusts over a single working day
Demal exposure	Soil being left on the skin for several hours, assumed no PPE worn
Inhalation exposure	30 mins exposure - worker standing adjacent to active excavation (assumed no RPE)

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP01	TP02	TP03	TP07
					Depth (m)	0.60	0.50	0.80	0.70
					Date	09/01/25	09/01/25	09/01/25	09/01/25
Inorganics									
Arsenic	AGAC	Oral	7,000	34		16	3.9	34	15
Cadmium	AGAC	Oral	12,000	0.94		0.37	0.29	0.94	0.35
Cyanide - Free	AGAC	Oral & Inhalation	1,400	<LoD		< 0.50	< 0.50	< 0.50	< 0.50
Organics									
Phenol	AGAC	**sat.**	**sat.**	<LoD		< 0.10	< 0.10	< 0.10	< 0.10



Acute human health risk (soils)

Scenario	Off-site public exposure
Critical receptor	Young female child (1 to 2 years old)
Oral exposure	N/A
Demal exposure	N/A
Inhalation exposure	30 mins exposure to a child off-site, from dusts and vapours generated during excavation

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP01	TP02	TP03	TP07
					Depth (m)	0.60	0.50	0.80	0.70
					Date	09/01/25	09/01/25	09/01/25	09/01/25
Inorganics									
Arsenic	AGAC	Inhalation	7,000,000	34		16	3.9	34	15
Cadmium	AGAC	Inhalation	1,800,000	0.94		0.37	0.29	0.94	0.35
Cyanide - Free	AGAC	Inhalation	380	<LoD		< 0.50	< 0.50	< 0.50	< 0.50
Organics									
Phenol	AGAC	**sat.**	**sat.**	<LoD		< 0.10	< 0.10	< 0.10	< 0.10



Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	STW6854
Site Name	Postal Street, Manchester
Client	AtkinsRealis UK Ltd
Run by	SCD/JB
Date	28.02.25
Scenario details	Construction worker

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

Select ACM type (run model for each type to generate 'Worst Case' output)
Extent of degradation of ACMs at outset of work
Friability and degree of bonding by matrix (ACM matrix, not ground materials)
Distribution of Visible Asbestos Across Affected Area
Amount of asbestos fibre in selected ACM/fibre type as % of host material

Unspecified fibrous board	2
Weathered (Slight degradation in ACM; material still retains its basic integrity)	2
Non-friable ACM or ACM with fibres firmly linked in a matrix	0
Sporadic/random occurrences of visible contamination by ACMs	2
Large quantities - >0.1 %wt/wt	4

Score

Sub-total

10

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

Hazard ranking

Low

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

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

Stage 2

Exposure Factors

Score

Anticipated airborne fibre concentration - Control Limit or SALI?

<0.01 fibres/ml

1

Anticipated duration of exposure to asbestos

> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)

4

Activity type and effect on deterioration of ACMs during work

Sampling, manual or mechanical (no or minimal deterioration expected)

0

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

Made Ground - Recycled Aggregate, Track Ballast

4

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

Medium

3

Sub-total

12

Exposure ranking

Medium

Combined hazard and exposure ranking

22

Medium

Stage 3

Risk Assessment Outputs

Probable Licensing Status	Non-Licensed Work
RPE*	EN140 with P3 filter half mask
Dust Suppression**	Localised mechanical dust suppression
Hygiene/Decontamination***	Localised and enhanced personal decontamination facilities

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

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

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

Appendix G Waste Characterisation Analysis

Waste Classification Assessment Summary

Waste population	Made Ground
Hazard assessment	Hazardous waste containing asbestos
List of waste code	Mixed waste: 17-06-05* and 17-05-03*
List of waste description	Mixed waste: 'Construction material containing asbestos' and Soil and stones containing hazardous substances

Hazard property	Assessment
HP1 - Explosive	Not hazardous by HP1
HP2 - Oxidising	Not hazardous by HP2
HP3 - Flammable	Not hazardous by HP3
HP4 - Irritant	Not hazardous by HP4
HP5 - STOT & aspiration toxicity	Hazardous by HP5
HP6 - Acute toxicity	Not hazardous by HP6
HP7 - Carcinogenic	Hazardous by HP7
HP8 - Corrosive	Not hazardous by HP8
HP9 - Infectious	Not hazardous by HP9
HP10 - Toxic for reproduction	Hazardous by HP10
HP11 - Mutagenic	Not hazardous by HP11
HP12 - Release of an acute toxic gas	Not hazardous by HP12
HP13 - Sensitising	Not hazardous by HP13
HP14 - Ecotoxic	Hazardous by HP14

Waste classification

Overall assessment	
Waste population	Made Ground
Hazard assessment	Hazardous waste containing asbestos
List of Waste code	Mixed waste: 17 06 03* and 17 05 03*
List of waste description	Mixed waste: 'Construction material containing asbestos' and soil and stones containing hazardous substances
Is the statistical approach non-parametric, method B utilized?	No
Moisture content correction factor	No correction Made

Asbestos assessment		
Query	Value	Assessment
Are bulk ACMs visually identifiable?	Yes	HPS and HP7
Have free fibres been detected?	No	Non-hazardous
What is the free fibre concentration (%)?	N/A	Non-hazardous

Flammability assessment	
Comment	Assessment
The waste is not considered flammable as it is a solid waste without a free draining liquid phase, and the TPH concentration and composition is not considered to present a likely flammable hazard.	Non-hazardous

Hydrocarbon assessment	
Query	Assessment
Is the origin of the oil contamination known?	Unknown oil
B[a]P : TPH ratio (%)	Not required
B[a]P marker assessment	Not required

pH assessment		
Query	Value	Assessment
Are all substances present in the waste known?	No	See pH assessment below
pH - Min	7.30	Non-hazardous
pH - Max	8.20	Non-hazardous

Oxidising assessment	
Comment	Assessment
Cr (VI) is the only compound with an oxidising hazard statement (H271). On review, the concentration is considered too low to present a viable oxidising hazard in a waste soil	Non-hazardous

Ecotoxic assessment			
Equation	Sum	Criteria	Assessment
WM3, Eq. 2	2.05%	25%	Non-hazardous
WM3 Eq. 3	231.72%	25%	SP14
WM3 Eq. 4	2.32%	25%	Non-hazardous

Compound hazard assessments

[illegible]



Waste acceptance

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in a non-hazardous landfill cell (SNRHW)	Hazardous waste landfill	Location	CS01	CS02	CS03
				Depth (m)	0.00	0.00	0.00
				Date	09/01/25	09/01/25	09/01/25
Parameters determined on the waste							
Total organic carbon	3	5	6		2.9	0.99	18
Loss on ignition			10		4.8	3	17
BTEX	6				< 0.010	< 0.010	< 0.010
PCBs (7 congeners)	1				< 0.10	< 0.10	< 0.10
Mineral oil	500				210	< 10	28
PAH (17 congeners)	100				9.9	< 2.0	4.6
pH		6			8	8.2	7.8
Acid neutralisation capacity (pH 6)		To be evaluated	To be evaluated		0.002	0.002	0.005
Limit values (mg kg ⁻¹) for compliance test using BN 12457-3 at L/S 10 l							
Arsenic	0.5	2	25		0.023	0.0041	0.0069
Barium	20	100	300		0.21	0.2	0.37
Cadmium	0.04	1	5		< 0.00011	< 0.00011	0.00033
Chromium (III)	0.5	10	70		0.096	0.071	0.064
Copper	2	50	100		0.012	0.0052	0.014
Mercury	0.01	0.2	2		0.00011	< 0.00005	< 0.00005
Molybdenum	0.5	10	30		0.049	0.016	0.015
Nickel	0.4	10	40		0.042	0.043	0.073
Lead	0.5	10	50		0.0058	< 0.0005	0.29
Antimony	0.06	0.7	5		0.0098	0.0014	0.0064
Selenium	0.1	0.5	7		0.015	0.0011	0.015
Zinc	4	50	200		0.1	0.1	0.51
Chloride	800	15,000	25,000		44	< 10	96
Fluoride	10	150	500		2.8	1.9	1.4
Sulphate	1,000	20,000	50,000		4100	240	7600
Total dissolved solids	4,000	60,000	100,000		5500	1100	9500
Phenol	1				< 0.50	< 0.50	< 0.50
Dissolved organic carbon	500	800	1000		< 50	< 50	< 50
Classifications							
Waste classification					Hazardous	Hazardous	Hazardous
Landfill type					SNRHW	SNRHW	Exceeds hazardous - requires treatment

Key Notes:

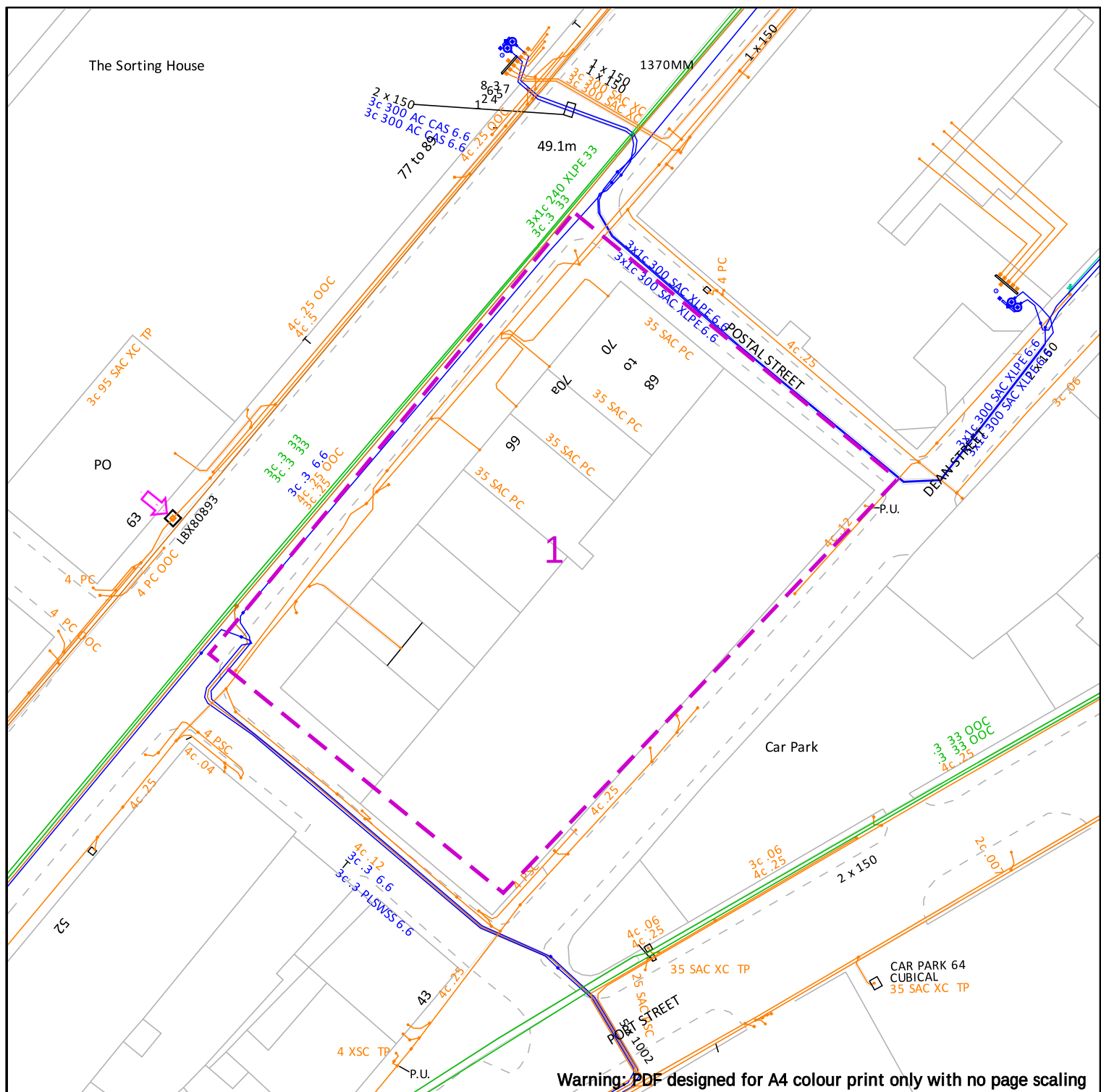
1) The values for total dissolved solids (TDS) can be used alternatively to the values for sulphate and chloride.

2) Soils with TOC values over the limit value may still be accepted provided the DOC value falls are below it's respective limit value.

3) In a hazardous waste, either the TOC or LOI must be used.

4) Where Notes 1, 2, and 3 can apply, the waste contractor or landfill operator should be contacted to determine acceptance.

Appendix H Utility Service Plans



electricity
north west

Bringing energy to your door

Operating Voltage	Colour Code	Line Colour
132kV	Black	
33kV	Green	
22kV-25kV	Yellow	
11kV	Red	
6kV-6.6kV	Blue	
1kV-6kV	Violet	
LV	Orange	
Unknown Voltage	Brown	

In an emergency call 105,
24 hours a day

Dig Sites

Line:

Area:

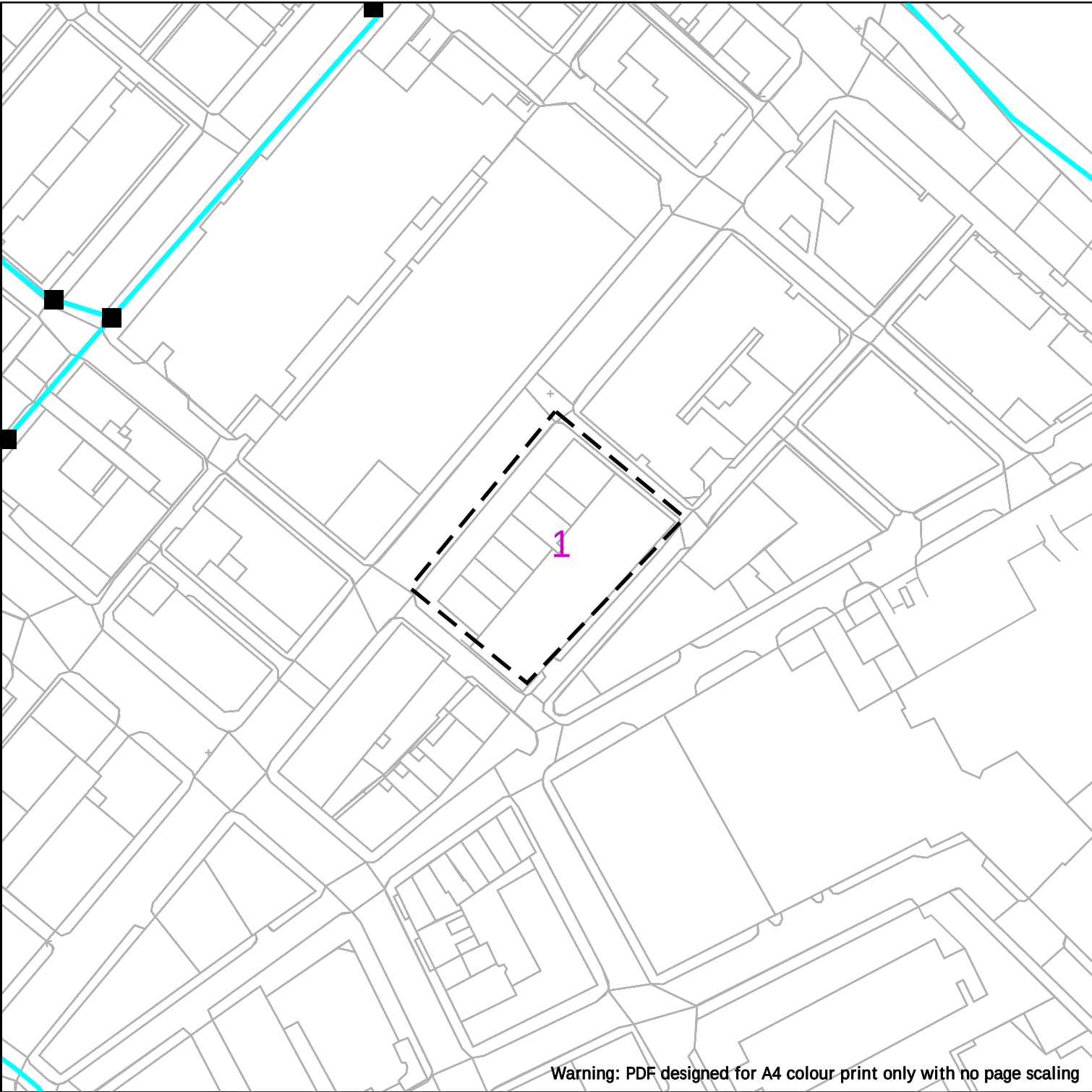
IMPORTANT INFO

Unless otherwise indicated the depth of Electricity North West Limited cables are in accordance with NJUG (450mm for Low Voltage & 600mm for 11kV cables) 33kV and 132kV cables are laid at depths as marked. The depth and positions of Electricity North West Limited equipment was accurate as shown when the equipment was installed. However third parties may have altered the level & other reference data. Therefore Electricity North West Limited accept no responsibility for the position of Electricity North West Limited equipment being different from shown. No person, body or company, shall be relieved from liability for damage caused to Electricity North West Limited equipment by reason of being located differently to the indications on this drawing or from any regulatory loss of income or incentive, or expense, which may be suffered by Electricity North West Limited and which is caused or contributed to by any loss of supply as a result of any damage caused to Electricity North West Limited's equipment. Service cables are not necessarily shown but must be assumed to exist to all premises, streetlights and signs. There may be other Electricity North West Limited apparatus in the vicinity which is not indicated on the cable records. Other apparatus may also be present which is owned by a third party other than Electricity North West Limited.

Reference should be made to HSE Guidance, HS(G)47 "Avoiding Danger from Underground Services" and GS6 "Avoiding Danger from Overhead Power Lines".

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Warning: PDF designed for A4 colour print only with no page scaling

 100m Dig Sites Line: - - - - Area: 

Key

Duct  Long-haul (LHN) Duct  Chamber Location 

IMPORTANT WARNING

The information supplied is given in good faith as a guide to locating underground apparatus. Its accuracy cannot be guaranteed, nor does it include comprehensive information about the existence or location of service pipes or cables to individual premises. The responsibility for locating and avoiding damage to apparatus on site shall be that of the persons proposing to excavate in the street shall be liable to the apparatus owner and any third party who may be affected in any way for any loss or damage caused by their failure to do so.

IF IN DOUBT PLEASE ASK!
PHONE: 07896 087585

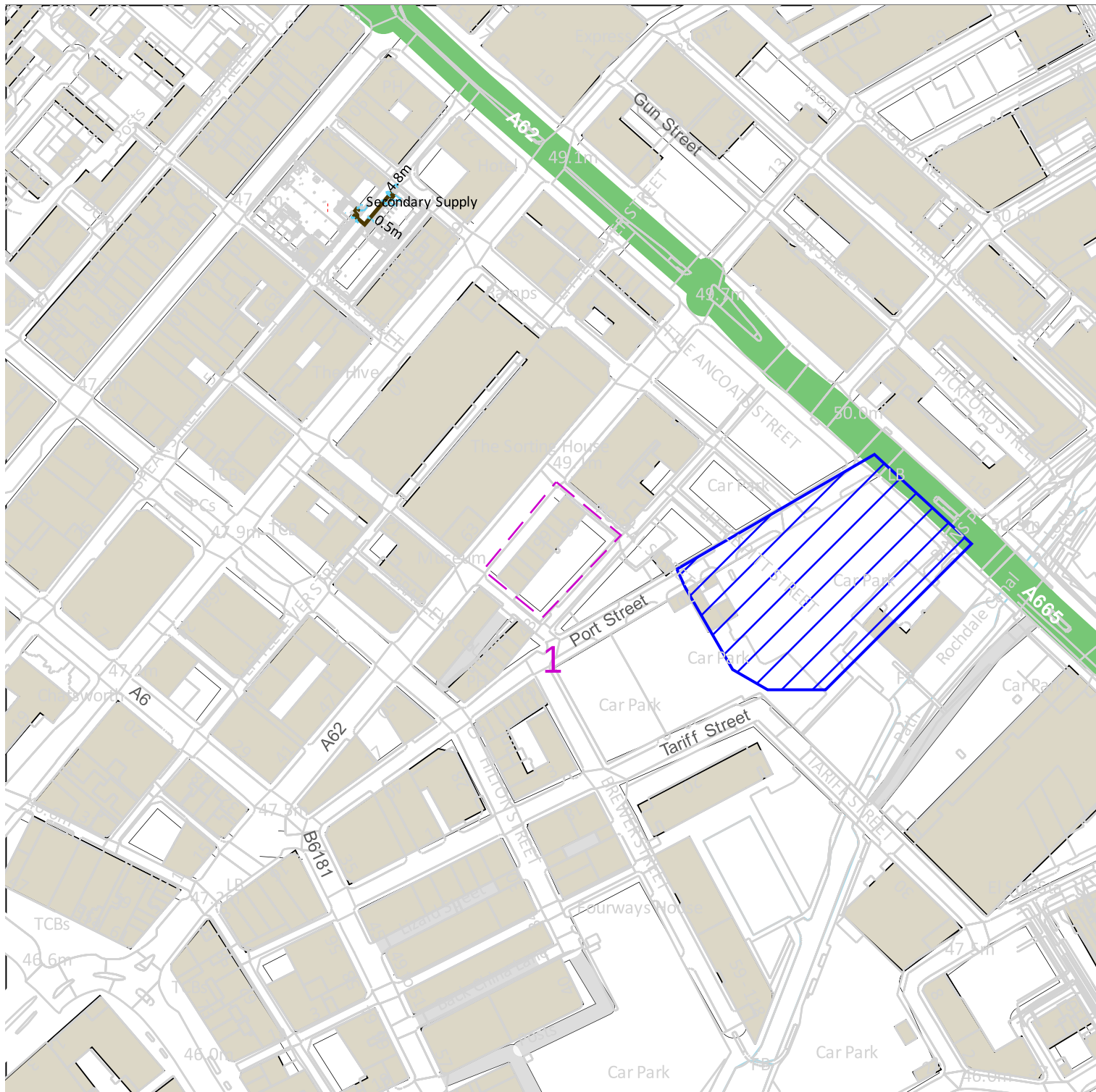
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Ordnance Survey License number 100019980


eunetworks

Contact us:
plantprotection@eunetworks.com

Date Requested: 20/12/2024
Job Reference: 35779373
Site Location: 384722 398413
Requested by: Miss Lauren Wenham
Your Scheme/Reference: STW6854

Scale: 1:1250 (When plotted at A4)



Last Mile Asset Management
Limited
Fenick House, Lister Way
Hamilton International Technology
Park
Glasgow G72 0FT
Telephone 03300 587 443

Date Requested: 20/12/2024
Job Reference: 35779373
Site Location: 384722 398413
Requested by: Miss Lauren Wenham
Your Scheme/Reference: STW6854

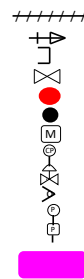
Scale: 1:2500 (When plotted at A4)

GAS KEY

PROPOSED LP SERVICE
INSTALLED LP SERVICE
PROPOSED MP SERVICE
PROPOSED LP MAINS
INSTALLED LP MAINS
PROPOSED MP MAINS
PROPOSED IP MAINS
EXISTING/AS LAID LP SERVICE
EXISTING/AS LAID MP SERVICE
EXISTING/AS LAID LP MAINS
EXISTING/AS LAID MP MAINS
INSTALLED MP MAINS
EXISTING/AS LAID IP MAINS



PIPE TO BE DECOMMISSIONED
DIAMETER CHANGE
CAP END
VALVE
GAS METERBOX/KIOSK
GAS RISER
GAS METER
CATHODIC PROTECTION
PRESSURE REDUCTION INSTALLATION (P.R.I.)
MEDIUM PRESSURE SERVICE EXCESS FLOW VALVE
PRESSURE PROTECTION
RIDER PURGE POINT
PLOTS WITH CONNECTIONS OFF OTHER
GT/EXISTING GAS NETWORKS



Dig Sites

Line: ---
Area: []

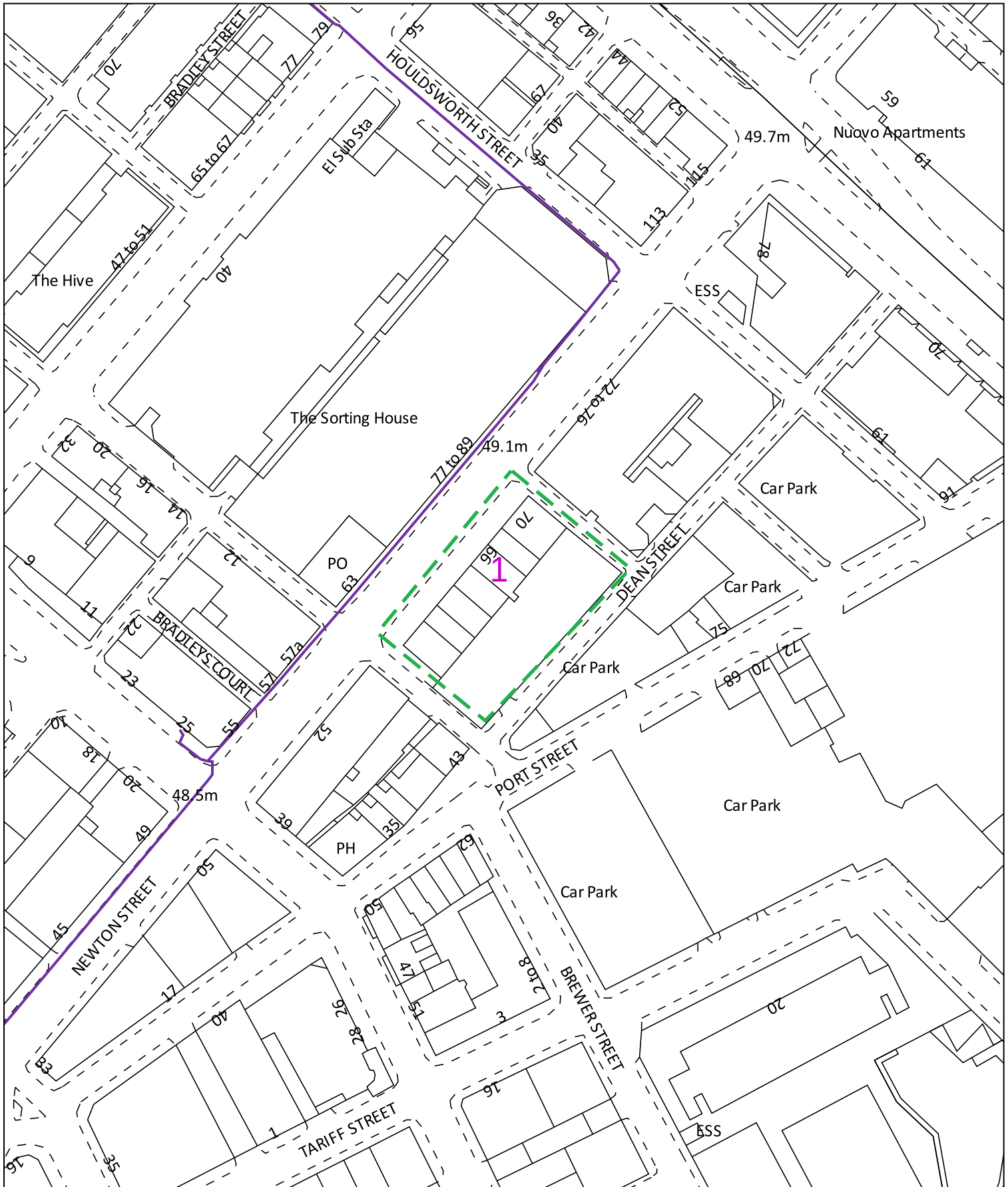


This plan shows those pipes owned by Last Mile Gas Limited in their role as a Licensed Gas Transporter (GT). Gas pipes owned by other GTs, or otherwise privately owned (or, indeed, any other apparatus, equipment or infrastructure) may be present in this area. Information regarding such pipes (or any such other apparatus, equipment, or infrastructure) should be obtained from the relevant owners.

The information shown on these plans is provided for general information purposes only and should not be relied on or treated as a substitute for your own enquiries. We make no warranty, representation, or guarantee, whether express or implied, regarding the content of the plans or that the content is accurate, complete, or up to date. No liability of any kind whatsoever is accepted by Last Mile Asset Management Limited, or their agents, servants or contractors for any error, omission, or misstatement.

Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

In an emergency call 0800 111 999, 24 hours a day



0 50m Dig Sites Area: Line: The quality and accuracy of any print will depend on your printer, your computer and its print settings. Measurements scaled from this plan may not match measurements between the same points on the ground.

Date Requested: 20/12/2024
Job Reference: 35779373
Site Location: 384722 398413

Requested by: Miss Lauren Wenham
Your Scheme/Reference: STW6854

Scale: 1:1250 (When plotted at A4)

The information on this document is proprietary and shall not be used, copied, reproduced or disclosed in whole or in part without written consent of Neos Networks. Approximate location only is shown. To determine exact location a trial hole must be dug. Before excavation, please refer to HSG47. Neos Networks accept no liability for errors or omissions.

Neos Networks Underground Route Emergency Number: 0345 305 3337



Registered Office:
Inverlmond House,
200 Dunkeld Road,
Perth, PH1 3AQ

Conditions and information regarding electricity mains

These general conditions and precautions apply to the electricity distribution system of Electricity North West Limited.

Please ensure that a copy of these conditions is passed to your representative and contractor on site.

1. There may be other Electricity North West Limited apparatus in the vicinity, which is not indicated on the cable records. Other apparatus may also be present which a third party owns other than Electricity North West Limited.
2. Before any machines are used, all of Electricity North West's underground apparatus should be located by manual excavation taking the appropriate safety precautions in accordance with the **Health and Safety Executive Guidance note HS(G)47 "Avoiding danger from underground services"**. This contains advice to site personnel when working near underground services.

Underground services, particularly electricity and gas, can be dangerous. Damage to electricity cables can cause a dangerous flash, leading to severe burns or even death. Gas leaks can cause fire or explosion.

Damage can result from excavation or penetration of the ground, e.g. by a road pin.

Underground services may be found in roads, footpaths and on sites. Always assume that they are present. Treat any services found anywhere as live.

Accidents have happened because people have mistaken one service for another, e.g. black plastic covered electricity cables look like black plastic water pipes and cast iron gas and water mains look alike. Check before you act.

3. Before starting work you must:
 - Make sure you have plans of the underground services in the area. This may not always be possible for emergency or unforeseen works. **Remember that service connection cables and pipes from the main to building or streetlight may not be shown.**
 - Use a cable and pipe locator to trace electricity cables and metal pipes.
 - Look for signs of service connection cables or pipes, e.g. a gas meter or service connection entry into a house or a streetlight.
 - Hand dig trial holes (as many as necessary) to confirm the position of services in close proximity to the area of work.

4. When you start work:

- Hand dig near buried services whenever possible. Spades and shovels are safer than picks, pins or forks.
- Remember that cables may be embedded in concrete. Electricity cables embedded in concrete **must** either be made dead before the concrete is broken out or another safe way of working agreed with the cable owner.
- Watch out for signs of services as work continues.
- Report damage to a cable, pipe or pipe coating however slight.
- Do not use hand held power tools within 0.5m of the marked position of an electricity cable, unless this is impracticable and the line of the cable has been identified by plans and positively confirmed by a locator.
- Do not use hand held power tools directly over the marked line of cable unless:
 - a) You have already found the cable at that position by careful hand digging beneath the surface and it is at a safe depth (at least 300mm) below the bottom of the surface to be broken, or
 - b) Physical means have been used to prevent the tool striking it.
- If an excavator is used near an electricity cable keep everyone clear of the bucket while it is digging. Buckets should not be used near cable – hand dig.
- Do not use exposed services as a convenient step or handhold.
- Do not handle or attempt to alter the position of an exposed service.
- Do not install plant close to an existing service.
- Do not build existing services into a manhole or other structure or encase them in concrete.

Please ensure that all site operators have this information and if any electrical apparatus is damaged, they/you should contact Electricity North West Limited on **0800 195 4141 (option 1)**.

5. **Overhead lines** are not necessarily shown on the Electricity North West Limited cable records but may be present. In the event of work being carried out adjacent to overhead lines (including access, storage etc.) please always ensure strict adherence to the requirements of the **Health and Safety Executive's Document GS6 "Avoiding Danger from Overhead Power Lines"**.

Extreme personal danger can result from contact, or near contact, with live conductors or overhead lines.

Treat all overhead lines and other electrical apparatus as live. If in doubt, get advice.

6. Electricity North West Limited must be consulted if work is to take place within 15 metres of overhead lines on steel towers or 9 metres of overhead lines on wood, concrete or steel pylons. (All distances should be measure at ground level from a position estimated by eye to be vertically under the outermost conductor at a tower or pole position) Any person involved in work in the vicinity of overhead lines should:
- Understand and follow the instructions given on safe working areas and methods of work.
 - Make sure that warning notices are in the cabs of machines working in the vicinity of an overhead line.
 - Make sure that barriers and warning notices are erected as required.
 - Not tip soil or stack material underneath overhead lines as this may reduce the clearance to an unsafe distance.
 - Make sure when handling or using platforms, scaffold, poles, piping, ladders, hand tools etc., that they are kept at a safe distance from overhead lines.
 - Not steady a suspended load, skip, hoist wire, slings etc., unless satisfied that there isn't any danger from overhead lines.
 - Remember that when mobile plant, such as a crane or excavator, is operating near overhead lines, the raising or slewing of the jib may introduce danger.
 - Always keep overhead lines in view when manoeuvring mobile plant.
 - Never operate a machine unless carefully guided by an experienced banksman.
 - Not approach or touch any broken or fallen conductors or any plant in contact with an overhead line before Electricity North West Limited confirms that conditions are safe. Warn others to keep well clear.

Machine operators should note that: if a machine comes into contact with an overhead line and cannot be disentangled by backing off, remain seated in the cab and warn others to keep clear of the machine until Electricity North West Limited confirms that conditions are safe. If it is essential to

leave the machine while it is in contact with the overhead line, for example if it catches fire, jump well clear – and **do not** attempt to climb down in the normal way nor touch any part of the machine when on the ground.

7. Electricity North West Limited provides approximate locations of its electricity mains or apparatus according to its records but these records are not necessarily accurate or complete and do not always show the position of private cables from mains to properties. No person or company shall be relieved from liability for any damage caused by reason of the actual positions and/or depths being different from those indicated.

8. Care should be taken when excavating near cables. Known road crossings are highlighted on the enclosed plans. Should any cable, or Electricity North West Limited apparatus indicated on the attached plans, be affected by your proposals please contact us as follows:

Electricity North west Limited
Borrton Street
Portwood, Stockport
Cheshire
SK1 2JD

Telephone: **0800 195 4141 (option 4)**

Details of diversion costs, if any, will be provided on request once your firm proposals have been submitted.

9. Please note that service cables may be affected by some of the works being carried out on site.

If any services do require temporary disconnection please phone **0800 195 4141 (option 2)** for domestic and commercial disconnection, so that arrangement can be made to disconnect before work commences on site.

10. Please note that cable records supplied may not be up to date, or may be incomplete, if the area concerned is a new site.

11. For information regarding wayleave or easement agreements contact WayleaveEnquiries@enwl.co.uk

12. The latest cable records are always available for inspection during normal working hours and you should satisfy yourself that the information you have is up to date at the time you commence work. This service is consistent with the requirement of Regulation 36 of the Electricity Supply Regulations and paragraph 79 of the New Road and Street Works Act.

Electricity North West Limited
Borrton Street, Portwood
Stockport
SK1 2JD

www.enwl.co.uk

Registered in England and Wales
Registered Number 2366949

GUIDE TO CONTRACTORS UNDERTAKING EXCAVATIONS IN THE VICINITY OF ZAYO PLANT

1. Prior to commencing any work or moving heavy plant or equipment over any portion of the site, the Contractor shall confirm details of the location of the Zayo apparatus by contacting and requesting utility drawings from LinesearchbeforeUdig

All Enquirers should register free of charge for the Zayo plant enquiry service at LinesearchbeforeUdig <http://www.linesearchbeforeudig.co.uk/>

Or follow the direct link to register at <http://onecall.linesearchbeforeudig.co.uk/RegisterNewUser> and start your search there.

If you have any queries or wish to speak to a member of the JSM Plant Protection Team please call 01992 655 919.

The accuracy of information on the plans cannot be guaranteed and no liability can be accepted for errors or omissions.

2. Where the utility drawings show that the works or the movement of plant or equipment may endanger the Zayo Apparatus the Contractor must mark out the location of the Zayo Apparatus and ensure the apparatus is adequately protected from damage.
3. The contractor should note that damage to Zayo's Fibre-optic network is extremely disruptive and costly to reinstate. The Contractor shall make every effort to avoid the disturbance of Zayo's apparatus for the completion of the work.
4. When excavating, moving or backfilling around Zayo's apparatus The Contractor should note that the normal depth of cover for Zayo ducts are as follows:
 - Carriageway 600mm
 - Footway 350mm
 - Verge 350mm
5. With regard to excavation in the vicinity of Zayo's apparatus the Contractor should be aware of the possibility of reduced cover and the possibility of encountering Zayo apparatus at depths of cover less than that given above.
6. All excavation adjacent to Zayo apparatus is to be carried out by hand until the exact extent and/or location of the Zayo apparatus is known. Use spades and shovels in preference to other tools.

7. Do NOT use Mechanical borers and/or excavators within 0.5m of Zayo Apparatus.
8. To prevent any movement of Zayo apparatus during excavations, complete shuttering shall be used if:
 - The excavation is deeper than the depth of cover of the adjacent Zayo apparatus.
 - The excavation is within 1.0m of Zayo apparatus in stable ground.
 - The excavation is within 5.0m of Zayo apparatus in unstable ground.
9. If for the completion of the works the Contractor intends using any of the following:
 - Pile driving equipment within 10.0m of Company Apparatus.
 - Explosives within 20.0m of Company Apparatus.

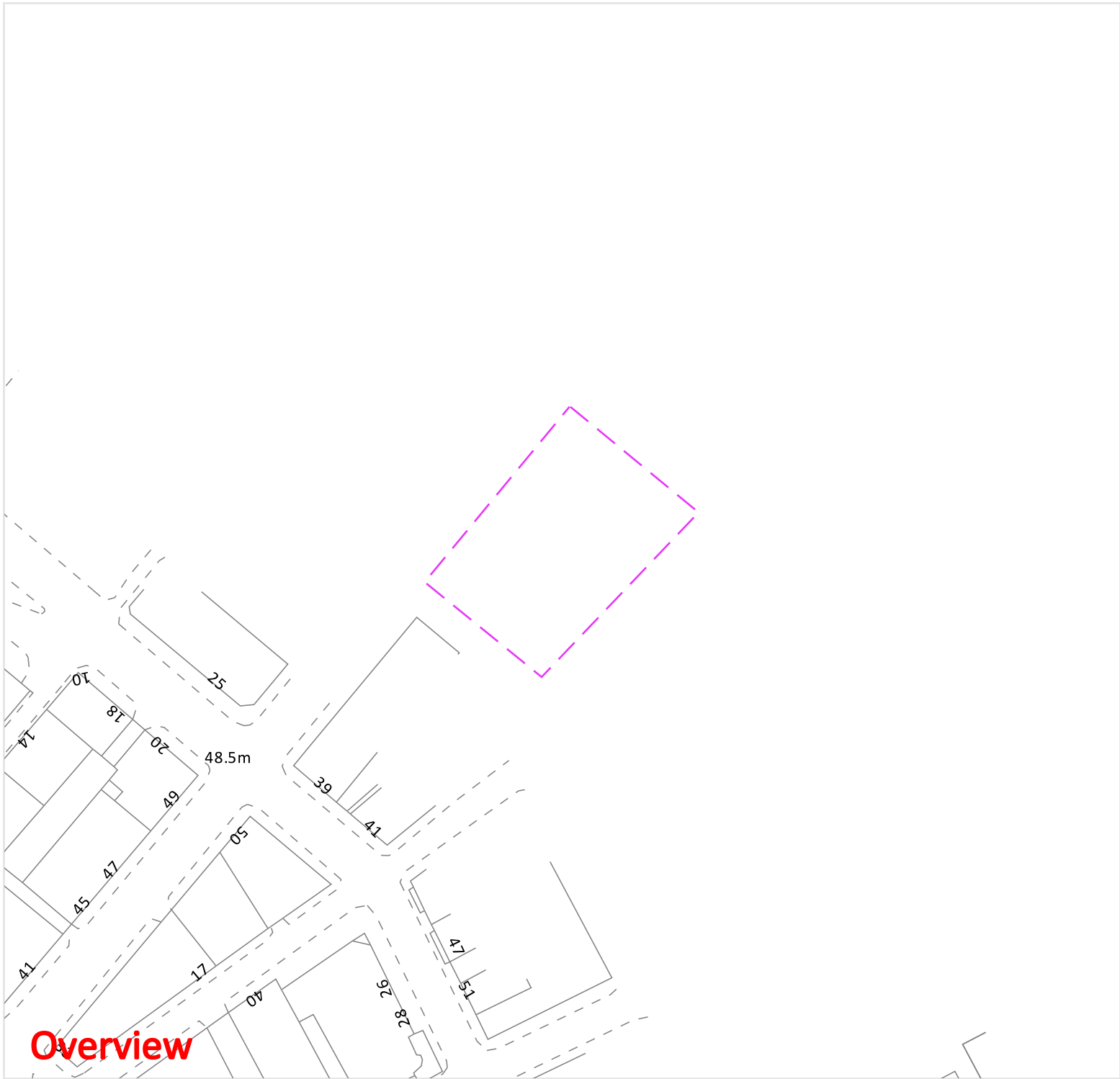
Then the Contractor shall advise the Zayo Plant Protection Centre giving a minimum 10 working days written notice.

10. All Zayo manhole, joint box and /or other access points and chambers within the site shall be kept clear and unobstructed at all times to allow access by Zayo and /or their Contractor to carryout maintenance on the network. The Contractor should particularly note that footway type jointing chambers are not specified for carriageway loadings and will need to be adequately protected and/or demolished and rebuilt by Zayo where such chambers are likely to be placed at risk, either temporarily or permanently, from the movement of plant and/or equipment on the site.
11. The covers to Zayo chambers and/or apparatus shall only be lifted by means of appropriate manhole keys under the direct supervision of a Zayo Representative. No employee of the Contractor or of any sub-contractor employed by the Contractor shall enter any Zayo chamber and/or apparatus unless under the supervision of a Zayo Representative.
12. In the event of any damage whatsoever to Zayo apparatus, the Contractor shall immediately report the incidence to Zayo by contacting Zayo as follows:

Telephone: 0800 169 1646 (Zayo 24Hr Network Operations Centre)

Damage to Communications Plant is Expensive – Please Take Care

Please note these basic safety details are explained in detail in the HSE booklet HS(G)47 – Avoiding Danger from Underground Services.



Zayo Group UK Ltd
4th Floor Harmsworth House
13-15 Bouverie Street
London, EC4Y 8DP



JSM Group Ltd
Sterling House
Mutton Lane, Potters Bar
Hertfordshire, EN6 3AR
T: 01992 655 919
zayoplatenquiries@jsmgroup.com

Legend

-  Zayo Duct
-  Zayo Chamber
-  Enquiry Area

Date requested: 20 Dec 2024
Requested by: Miss Lauren Wenham
Company: Soiltechnics Ltd
Job reference: 35779373
Your reference: STW6854

Scale on A4 paper: 1:1250

Warning: PDF designed for colour print only with no page scaling. This Information is given as a guide only and its accuracy cannot be guaranteed.



The information on this document is proprietary and shall not be used, copied, reproduced or disclosed in whole or in part without written consent of Zayo Group UK Ltd. Approximate location only is shown. To determine exact location a trial hole must be dug with a Zayo Group UK Ltd Supervisor present. Zayo Group UK Ltd accept no liability for any errors or omissions.



Protecting Lives, Cables & Pipes

In Emergency Only and if Zayo Plant or Cables damaged call: 0800 169 1646

Enquirer

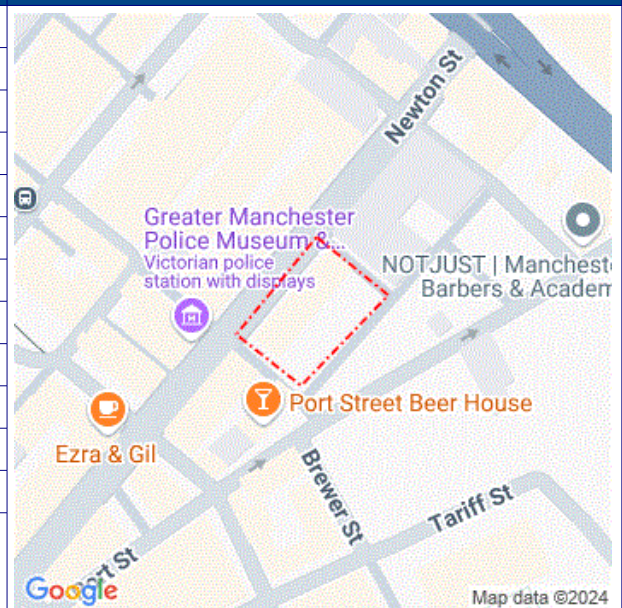
Name	Miss Lauren Wenham	Phone	01604 781877
Company	Soiltechnics Ltd	Mobile	Not Supplied
Address	Cedar Barn White Lodge Walgrave NTH NN6 9PY		
Email	admin@soiltechnics.net		

Enquiry Details

Enquiry type	Planned Works
Work category	Development Projects
Work type	Piling
Work type buffer*	150 metres
Start date	21/12/2024
End date	21/12/2024
Scheme/Reference	STW6854
Search location	XY= 384726, 398445
Confirmed location	384722 398413
Site size	0 metres square
Site Contact Name	Rosie Dean - Soiltechnics Limited
Site Phone No.	01604781877
Description of Works	boreholes

* The WORK TYPE BUFFER is a distance added to your search area based on the Work type you have chosen.

Site Map



Please note that the above map only displays the location of the proposed work site and will not display any of the Members' pipes and cables. It is imperative that this area accurately reflects the proposed work site.

Affected LSBUD members

(LSBUD Members who have assets registered on LSBUD within the vicinity of your search area.)

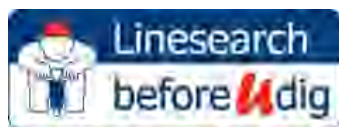
Do not proceed until all Members listed below have confirmed that your works can continue.

Asset Owner	Phone/Email	Emergency Only	Status
Cadent Gas	0800688588	0800111999	Await response
Electricity North West Limited	08001954141	08001954141	Await response
EUNetworks Fiber UK Limited	02031788003	02031788003	Await response
Fulcrum Pipelines Limited	03330146455	0800111999	Await response
Last Mile	plantenquiries@lastmile-uk.com	0800111999	Await response
Neos Networks	03453053337	03453053337	Await response
Zayo Group UK Ltd c/o JSM Group Ltd	01992 655 919	0800 169 1646	Await response

Status explanation

Await Response means that the asset owner will contact you. This is typically by sending the plan response but they may ask for further information before being able to do so, particularly if any payments or authorisations are required.

Email Additional Info means that the asset owner needs further information about your works to assess your enquiry before providing a response. Please provide any details you have available including plans, method statements etc. if available.



Enquiry Confirmation

LSBUD Ref: 35779373

Date of enquiry: 20/12/2024

Time of enquiry: 15:54

Important notices

It is very important that you correctly understand what the service does and the procedures in order for you to work safely. Please refer to the LSBUD Support Page (www.lsbud.co.uk/lineasearchbeforeudig-support) for further guidance.

This information includes how to provide additional information to the LSBUD Members who request it to provide a response to your enquiry.

Validity and search criteria. The results of this enquiry are based on the confirmed information you entered and are valid only as at the date and time of the enquiry. It is your responsibility to ensure that the Enquiry Details are correct, and LineasearchbeforeUdig (LSBUD) accepts no responsibility for any errors or omissions in the Enquiry Details or any consequences thereof. LSBUD Members update their asset information on a regular basis so you are advised to consider this when undertaking any works. It is your responsibility to choose the period of time after which you need to resubmit any enquiry but the maximum time (after which your enquiry will no longer be dealt with by the LSBUD Helpdesk and LSBUD Members) is 28 days. If any details of the enquiry change, particularly including, but not limited to, the location of the work, then a further enquiry must be made.

Terms and Conditions. Please note that this enquiry is subject always to our standard terms and conditions available at www.lsbud.co.uk ("Terms of Use") and the disclaimer at the end of this document. Please note that in the event of any conflict or ambiguity between the terms of this Enquiry Confirmation and the Terms of Use, the Terms of Use shall take precedence.

List of not affected LSBUD members (LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area.)

AllPoints Fibre	Angus Energy	AWE Pipeline
B & D Energy Limited	Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)
Box Broadband	BP Exploration Operating Company Limited	BPA
Cambridge Water	Cambridgeshire County Council Climate Change and Energy Services	CATS Pipeline c/o Wood Group PSN
Cemex	Centrica Storage Ltd	CNG Services Ltd
Concept Solutions People Ltd	ConocoPhillips (UK) Teesside Operator Ltd	D.S.Smith
Diamond Transmission Corporation	DIO (MOD Live Pipelines)	Drax Power Limited
EDF Energy Renewables Ltd	EET Fuels	EirGrid
Eleclink Limited	Energy Assets Networks	ENI & Himor c/o Penspen Ltd
EnQuest NNS Limited	EP Langage Limited	ESB CCGT Power station (Carrington Gas Pipeline)
ESP Utilities Group	Esso Petroleum Company Limited	EXA Infrastructure
Exolum Pipeline System	Fulcrum Electricity Assets Limited	G.Network Communication Ltd c/o JSM Group Ltd
Gamma	Gas Networks Ireland (UK)	Gateshead Energy Company
Gigaclear Ltd	Greenlink Interconnector Ltd	Harbour Energy
Heathrow Airport LTD	Humbly Grove Energy	IGas Energy
INEOS FPS Pipelines	INEOS Manufacturing (Scotland and TSEP)	INOVYN ChlorVinyls Limited
INOVYN Enterprises Limited	Intergen (Coryton Energy or Spalding Energy)	Kensa Utilities
Liverpool City Region Connect	Mainline Pipelines Limited	Manchester Jetline Limited
Manx Cable Company	Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited
MUA Group Limited	National Gas Transmission	National Grid Electricity Distribution
National Grid Electricity Transmission	National Grid Ventures	Northern Gas Networks Limited
Northumbrian Water Group	NPower CHP Pipelines	NTT Global Data Centers EMEA UK Ltd
NYnet Ltd	Ogi	Oikos Storage Limited
Ørsted	Palm Paper Ltd	Perenco UK Limited (Purbeck Southampton Pipeline)
Petroineos	Phillips 66	Portsmouth Water
Premier Transmission Ltd (SNIP)	Redundant Pipelines - LPDA	RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station)
RWEnpower (Little Barford and South Haven)	SABIC UK Petrochemicals	SAS Utility Services Ltd
Scottish and Southern Electricity Networks	Scottish Power Generation	Seabank Power Ltd
SES Water	SGN	Shell
Shell NOP	South Staffs Water	SP Energy Networks
Spring Fibre Limited	Squire Energy Networks	SSE Generation Ltd



Enquiry Confirmation

LSBUD Ref: 35779373

Date of enquiry: 20/12/2024

Time of enquiry: 15:54

SSE Transmission	SSE Utility Solutions Limited	Storengy
Tata Communications (c/o JSM Construction Ltd)	TfL – London Underground HV Cables (Road & Track Side Cables)	toob Limited
Total (Colnbrook) c/o Penspen	Total Finaline Pipelines	Transmission Capital
Trojan Energy Limited	UK Power Networks	Uniper UK Ltd
University of Cambridge Granta Backbone Network	Vattenfall	Veolia ES SELCHP Limited
Veolia ES Sheffield Ltd	Voneus Limited	VPI Power Limited
Wales and West Utilities	Welsh Power	West of Duddon Sands Transmission Ltd
West Sussex OpenNetwork (Cooperative National Infrastructure)	Westminster City Council	Winnington CHP Ltd

Non-LSBUD members (Asset owners not registered on LSBUD)

(The following Non-LSBUD Members may have assets in your search area. It is YOUR RESPONSIBILITY to contact them before proceeding.

Please be aware this list is not exhaustive and it is your responsibility to identify and contact all asset owners within your search area.)

Asset Owner	Preferred contact method	Phone	Status
Arelion UK Ltd	check-network@arelion.com		Not Notified
Bring Energy	nrsua@bringenergy.com	0800 130 3600	Not Notified
BT	https://www.swns.bt.com/pls/mbe/welcome.home	08000232023	Not Notified
CityFibre	asset.team@cityfibre.com	033 3150 7282	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	Not Notified
Lumen Technologies	plantenquiries@ocugroup.com	02087314613	Not Notified
Manchester City Council	https://www.manchester.gov.uk		Not Notified
Mobile Broadband Network Limited	mbnl.plant.enquiries@turntown.com	01212 621 100	Not Notified
Sky UK Limited	nrsua@sky.uk	02070323234	Not Notified
Sota	sota.plantenquiries@ocugroup.com		Not Notified
United Utilities	WastewaterDeveloperServices@uuplc.co.uk	08707510101	Not Notified
Utility assets Ltd	assetrecords@utilityassets.co.uk		Not Notified
Verizon Business	osp-team@uk.verizonbusiness.com	01293611736	Not Notified
Virgin Media	http://www.digdat.co.uk	08708883116	Not Notified
Vodafone	osm.enquiries@atkinsglobal.com	01454662881	Not Notified

Disclaimer

Please refer to LSBUD's Terms of Use for full terms of use available at www.lsbud.co.uk

The results of this Enquiry are personal to the Enquirer and shall not be shared with or relied upon by any other party. The asset information on which the Enquiry results are based has been provided by LSBUD Members, therefore LSBUD will provide no guarantee that such information is accurate or reliable nor does it monitor such asset information for accuracy and reliability going forward. There may also be asset owners which do not participate in the enquiry service operated by LSBUD, including but not exclusively those set out above. Therefore, LSBUD cannot make any representation or give any guarantee or warranty as to the completeness of the information contained in the enquiry results or accept any responsibility for the accuracy of the mapping images used. LSBUD and its employees, agents and consultants accept no liability (save that nothing in this Enquiry Confirmation excludes or limits our liability for death or personal injury arising from our negligence, or our fraud or fraudulent misrepresentation, or any other liability that cannot be excluded or limited by English law) arising in respect thereof or in any other way for errors or omissions including responsibility to any person by reason of negligence.

Our Ref: 35779373 Your Ref: STW6854

Friday, 20 December 2024

Lauren Wenham
Cedar Barn White Lodge
Walgrave
NTH
NN6 9PY

Dear Lauren Wenham

Neos Networks - Asset Network Plans

We acknowledge with thanks your request for information on the location of our assets.

We have attached a plan showing the location of Neos Networks apparatus in the proposed work area for your information. If the map provided is missing any required information e.g. a background map, then please email C2requests@neosnetworks.com who will provide a more detailed map.

If you're laying your own services, please use the map provided showing our apparatus and follow your safe dig procedures. There is no need to contact us for permission to dig or arrange any supervision.

If you have determined your works may impact our existing apparatus, then please contact alterations@neosnetworks.com for a Budget Estimate. For us to provide you with a Budget Estimate we will require the following information in order to progress your query as quickly and as efficiently as possible:

- A covering letter or details on the email
- Plans / maps showing existing & proposed conditions (min 1:500 scale and PDF format if emailed)
- Scheme cost apportionment information with confirmation of who the works principal is (the person or company funding your project)

Neos Networks will respond with a Budget Fee letter (if your scheme falls outside of NRSWA) showing the payment required to prepare a Budget Estimate.

Yours sincerely

Neos Networks Team

Address: Neos Networks, 4 Penner Road, Havant, Hampshire, PO9 1QH
Telephone: 023 92 494 923
Email: C2requests@neosnetworks.com

For more information, visit our website:

<https://neosnetworks.com/our-network/plant-enquires>

Soiltechnics

**Soiltechnics
Cedar Barn,
Walgrave,
NN6 9PY**

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: STW6854
Our Ref: UUPS-ORD-622379
Date: 08/01/2025**

Dear Sirs**Location: Postal Street Manchester**

I acknowledge with thanks your request dated 23/12/2024 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

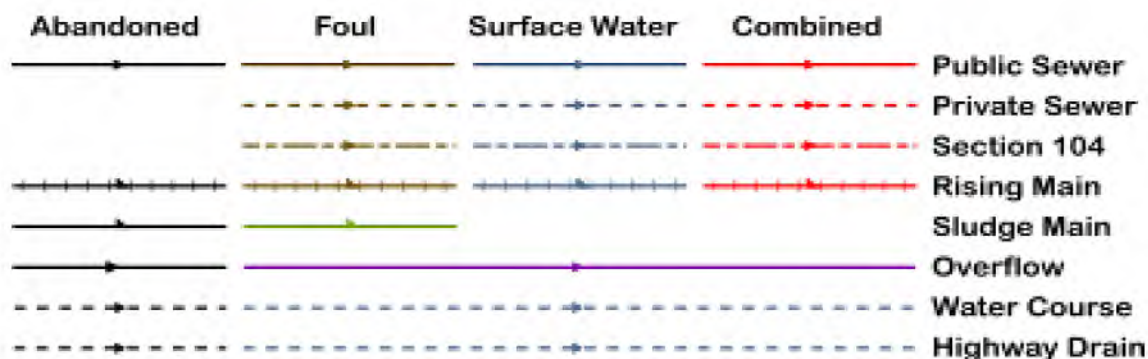
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

Wastewater Symbolology



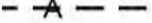
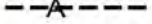
All point assets follow the standard colour convention: red – combined brown - foul
blue – surface water purple - overflow

Manhole	Side Entry Manhole
Head of System	Outfall
Extent of Survey	Screen Chamber
Rodding Eye	Inspection Chamber
Inlet	Bifurcation Chamber
Discharge Point	Lamp Hole
Vortex	T Junction / Saddle
Penstock	Catchpit
Washout Chamber	Valve Chamber
Valve	Vent Column
Air Valve	Vortex Chamber
Non Return Valve	Penstock Chamber
Soakaway	Network Storage Tank
Gully	Sewer Overflow
Cascade	Ww Treatment Works
Flow Meter	Ww Pumping Station
Hatch Box	Septic Tank
Oil Interceptor	Control Kiosk
Summit	DNM Network Monitoring Point
Drop Shaft	Change of Characteristic
Orifice Plate	

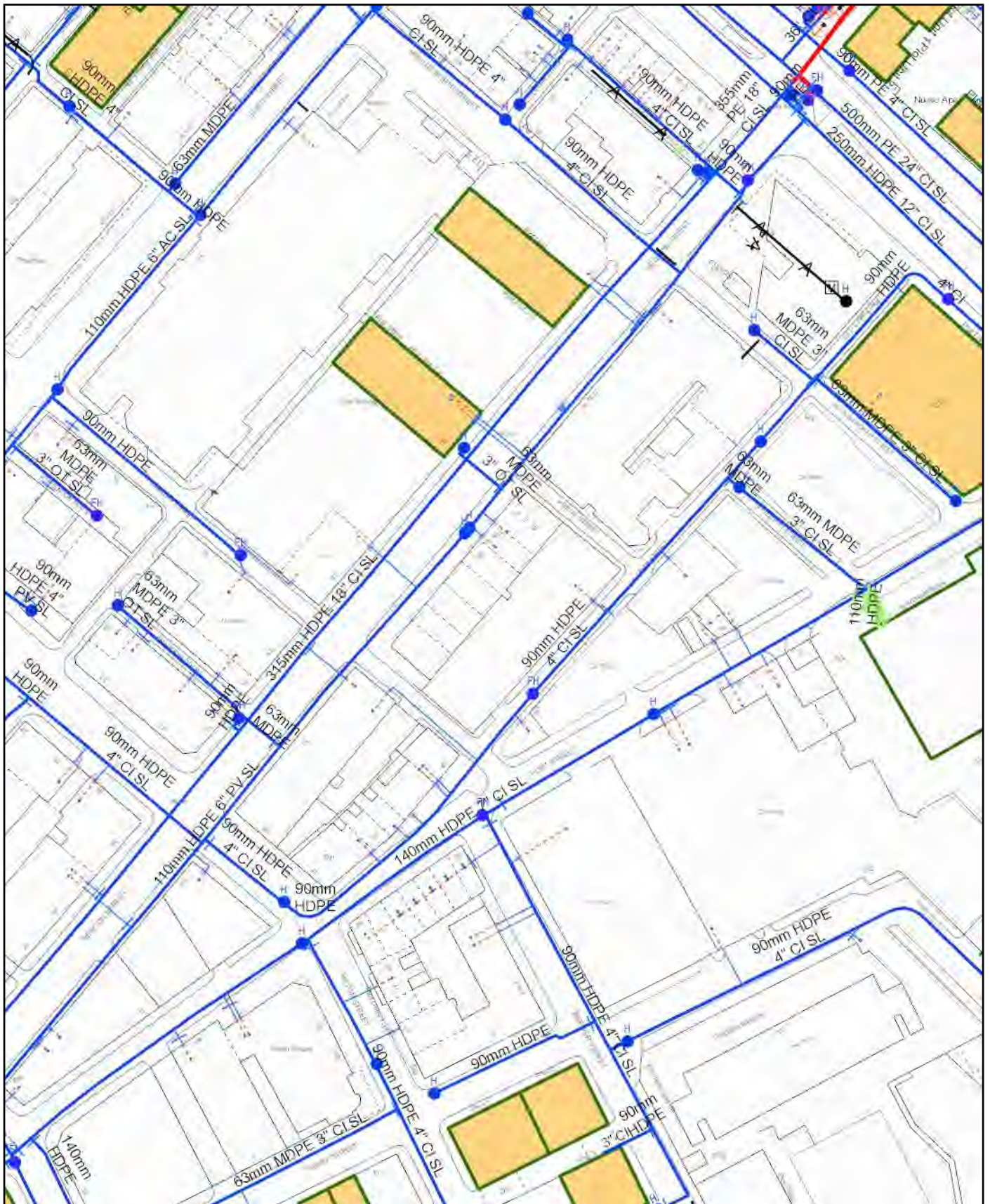


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Clean Water Symbolology

Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water
			Air Valve
			AC Valve, open
			AC Valve, closed
			CC Valve, open
			CC Valve, closed
			Non Return Valve
			Pressure Management Valve
			OMS Valve
			Stop Tap
			Flow Meter
			Domestic Meter
			Commercial Meter
			Pump
			Hydrant
			Fire Hydrant
			Anode
			Chlorination Point
			De-chlorination Point
			Strainer Point
			Access Point
			Hatch Box
			IP Point
			Sampling Station
			Logger Box
			Bore Hole
			Inlet Point
			Bulk Supply Point
			End Cap
			Site Termination
			Change of Characteristic
			Condition Report
			<u>Property Types</u>
			Water Tower
			Valve House
			Booster Pumping Station
			Intake Pumping Station
			Water Treatment Works
			Supply Reservoir
			Service Reservoir
			Impounding Reservoir
			Pipe Bridge

Symbology for proposed assets is the same as above, but shown in **green**
Symbology for abandoned assets is the same as above, but shown in **black**



Scale: 1:1250
Date: 08/01/2025

WATER MAINS RECORDS

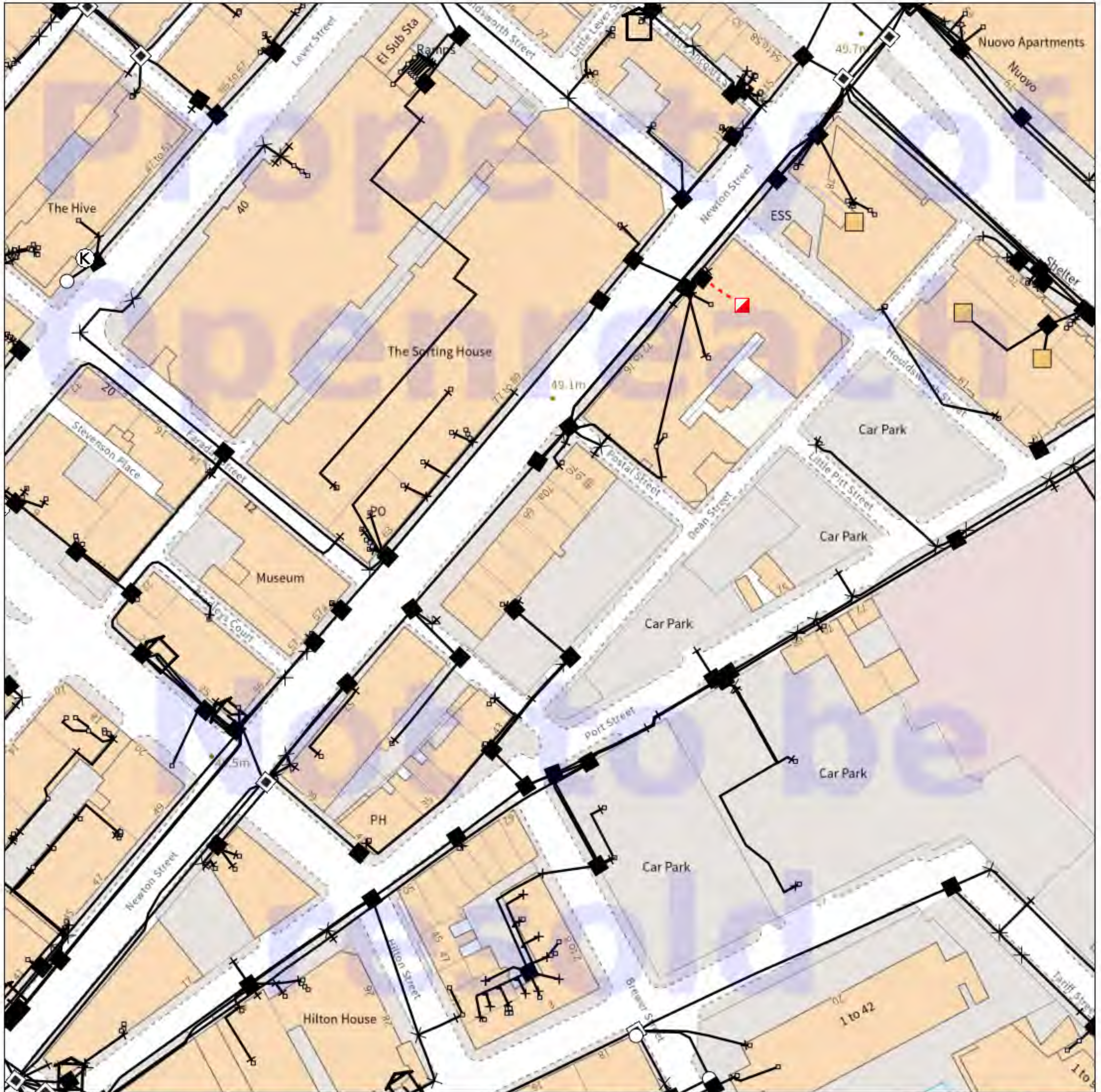


Address or Site Reference: Postal Street Manchester
Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Maps on Demand Plant Information Reply



IMPORTANT WARNING

Information regarding the location of BT apparatus is given for your assistance and is intended for general guidance only. No guarantee is given of its accuracy. It should not be relied upon in the event of excavations or other works being made near to BT apparatus which may exist at various depths and may deviate from the marked route.

openreach

CLICK BEFORE YOU DIG

FOR PROFESSIONAL FREE ON SITE ASSISTANCE PRIOR TO COMMENCEMENT OF EXCAVATION WORKS INCLUDING LOCATE AND MARKING SERVICE

email cbyd@openreach.co.uk

ADVANCE NOTICE REQUIRED
(Office hours: Monday - Friday 08.00 to 17.00)
www.openreach.co.uk/cbyd

Accidents happen

If you do damage any Openreach equipment please let us know by calling 0800 023 2023 (opt 1 + opt 1) and we can get it fixed ASAP

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KEY TO BT SYMBOLS

	Planned	Live	Change Of State	+	Hatchings	
			Split Coupling	×	Built	
PCP			Duct Tee	▲	Planned	
Pole			Building	■	Inferred	
Box			Kiosk	Ⓚ	Duct	
Manhole			Other proposed plant is shown using dashed lines. BT Symbols not listed above may be disregarded. Existing BT Plant may not be recorded. Information valid at time of preparation. Maps are only valid for 90 days after the date of publication.			
Cabinet						
	Pending Add	In Place	Pending Remove	Not In Use		
Power Cable						
Power Duct				N/A		

BT Ref : VUP15529U

Map Reference : (centre) SJ8472698445

Easting/Northing : (centre) 384726,398445

Scale : 1:250

Issued : 20/12/2024 15:52:13

WARNING: IF PLANNED WORKS FALL INSIDE HATCHED AREA IT IS ESSENTIAL BEFORE PROCEEDING THAT YOU CONTACT THE NATIONAL NOTICE HANDLING CENTRE. PLEASE SEND E-MAIL TO: nnhc@openreach.co.uk