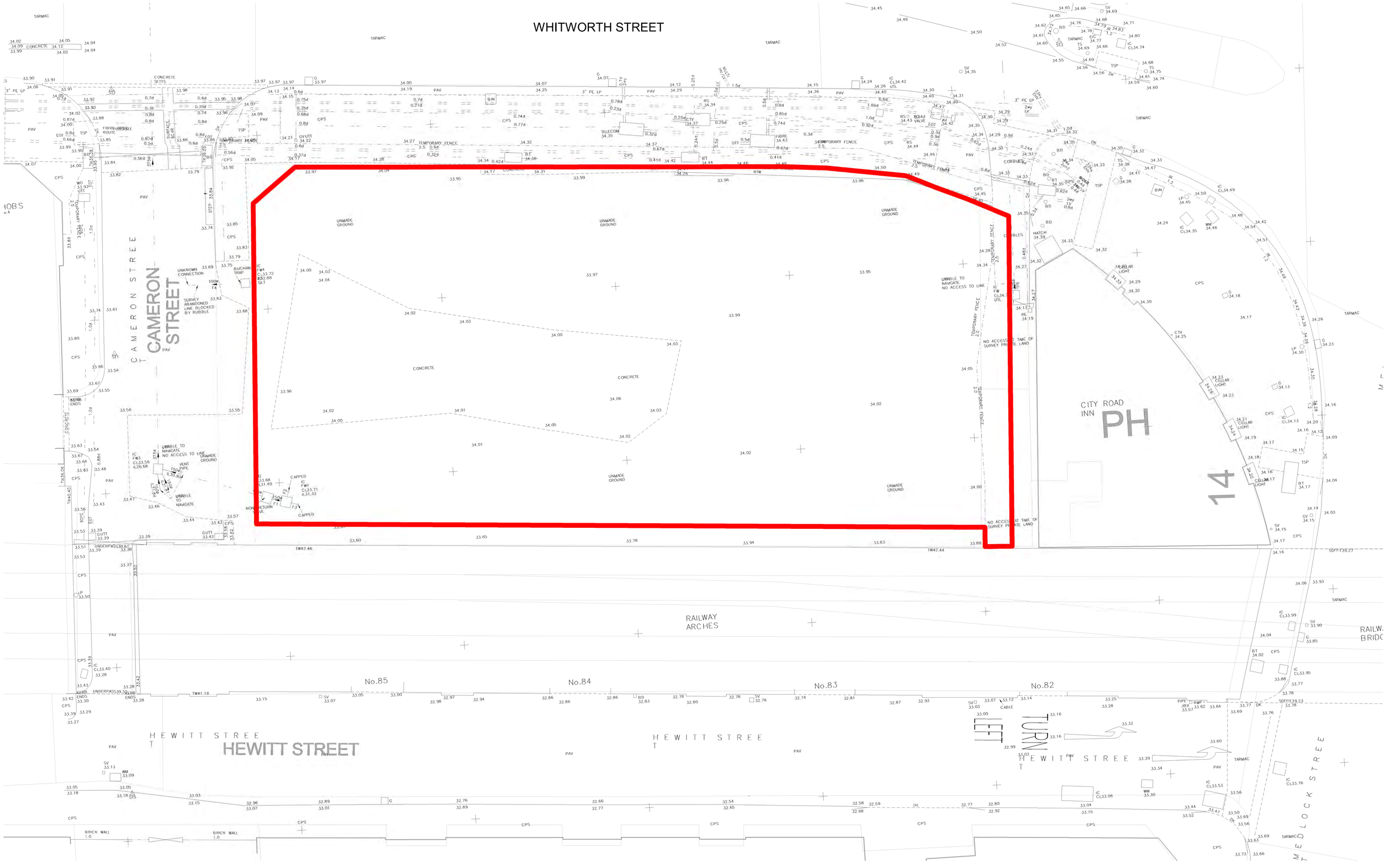
APPENDICES

Appendix A

Existing Site Plan



NORTH

0 1.0 2.0 3.0 4.0 5.0 10.0m

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Rev.	Description	Date	Drw.	Chk.
P02	Drawing reissued for comment	04/06/2025	AR	AR
P01	FIRST ISSUE	26/11/2024	AR	AR

Client:
Tri 7

Project:
Whitworth Street, Manchester

Drawing Title:
Existing Site Plan

Drawing Status:
WIP

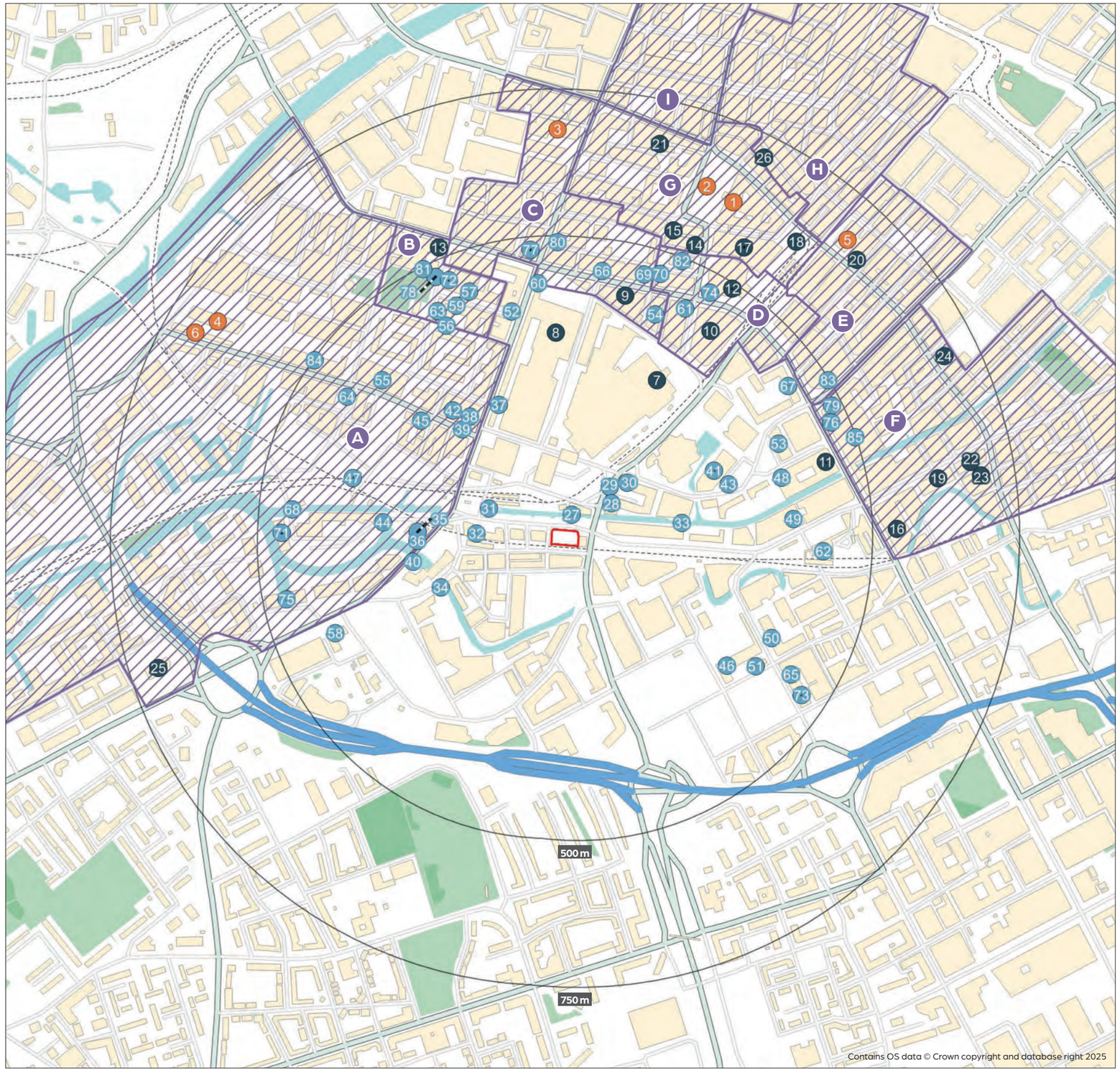
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2090	P02

Project No.	Drawn	Checked	Size	Scale	Date
22987	AR	AR	A1	1 : 100	11/16/20

Appendix B

Heritage Asset Plan



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HERITAGE ASSET PLAN

Application Site

Conservation Areas

A. Castlefield
B. St John Street
C. Deansgate and Peter Street
D. St Peter's Square
E. George Street
F. Whitworth Street and Princess Street
G. Albert Square
H. Upper King Street
I. St Ann's Square

Listed Buildings

Grade I

1. Town Hall
2. Albert Memorial
3. John Rylands Library and attached Railings, Gates and Lamp Standards
4. Old Warehouse to North of former Liverpool Road Railway Station
5. Manchester Art Gallery
6. Former Liverpool Road Railway Station, Station Masters House

Grade II*

7. G Mex
8. Deansgate Goods Station and attached Carriage Ramp
9. Free Trade Hall
10. Midland Hotel
11. Tootal, Broadhurst and Lee Building
12. Central Public Library
13. Cobden House, 19 Quay Street
14. Lawrence Buildings
15. Memorial Hall
16. Former Refuge Assurance Company Offices
17. Town Hall Extension
18. Manchester War Memorial
19. India House (including attached Wrought Iron Gateway linked to Lancaster House)
20. The Athenaeum
21. Roman Catholic Church of St Mary (The Hidden Gem)
22. Lancaster House
23. Asia House
24. 103, Princess Street
25. Church of St George
26. Manchester Law Library

Grade II (within 500m)

27. Rochdale Canal Lock No. 90, Approx. 30 metres West of Albion Bridge
28. 13–17, Albion Street
29. Manchester South Junction and Altrincham Railway Viaduct
30. The Britons Protection Public House
31. Rochdale Canal Lock Keepers Cottage at Lock No. 91, Next to Gaythorn Tunnel, and Rochdale Canal Lock No. 91 at East End of Gaythorn Tunnel
32. Deansgate Station
33. Rochdale Canal Lock No. 89 (Tib Lock), on South Side of Havelock Mills
34. Boundary Stone on Knott Mill Bridge, and Floodgate on East Side of Knott Mill Bridge
35. Former Congregational Chapel
36. Electricity Junction Box in Castlefield Canal Basin, Manchester
37. 235–291, Deansgate
38. Castlefield Information Centre
39. K6 Telephone Kiosk Beside South West Corner of No. 330 Deansgate
40. Electricity Junction Box in Castlefield Canal Basin, Manchester
41. Chepstow House
42. Former Market Hall
43. Peveril of The Peak Public House
44. Electricity Junction Box on Castle Street, Manchester
45. 29–41, Liverpool Road
46. Former Cotton Mill on West Side of Junction with Cambridge Street
47. Castlefield Railway Viaduct from G-Mex to Dawson Street
48. Lee House
49. The Ritz Dance Hall
50. Chorlton New Mill and attached Chimney
51. Mill Chimney Stack on West Side of Junction with Cambridge Street
52. K6 Telephone Kiosk in front of St John Street Chambers
53. Canada House
54. Royale Club
55. Museum of Science and Industry, Air and Space Museum
56. Manchester & Salford Junction Canal Tunnel
57. 8 and 8a, 10, 12–16, 18 and 20, 22, 24, 24a and 26, and 28, St John Street
58. Bridgewater Canal Offices
59. 11–17, 19, and 21–25, St John Street
60. Former Entrance to Deansgate Goods Station including Nos 223 to 233
61. 56–58, Peter Street
62. Manchester Oxford Road Station (including Platform Structures)
63. Nos 25 to 31 and attached former Chapel
64. Former St Matthews Sunday School
65. Chorlton Old Mill
66. Albert Memorial Hall
67. Princes Buildings
68. Rochdale Canal Lock No. 92 and Castle Street Bridge
69. Harvester House
70. Lancashire House
71. Merchants Warehouse
72. 15a, Byrom Street
73. Mill on North East Corner of Junction with Chester Street
74. Sculptural Group adrift to South-West of Central Public Library, Peter Street, Manchester
75. Middle Warehouse, at former Castle Field Goods Yard
76. 61, Oxford Street
77. Royal London House
78. Two Bollards at East End of St Johns Passage
79. 127–133, Portland Street
80. Onward Buildings
81. No. 14, Byrom Street
82. Manchester Quaker Meeting House, Boundary Walls and Steps
83. 116 and 118, Portland Street
84. Power Hall of Museum of Science and Industry
85. St James Buildings

Scheduled Monuments

86. Remains of eastern wall of the Roman fort

LOCATION:
10–12 Whitworth Street West, Manchester

DATE:
April 2025

SCALE:
1:7,500 @ A3

FIGURE:

▲ **NORTH**

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Appendix C

Preliminary Ecological Appraisal

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ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
INFRASTRUCTURE AND UTILITIES
LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT



FUSION STUDENTS AND ATRI7 6 LIMITED

WHITWORTH STREET WEST

PRELIMINARY ECOLOGICAL APPRAISAL

JUNE 2025

wardell armstrong | PART OF SLR

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STATUS:	**FINAL**

FUSION STUDENTS AND ATRI7 6 LIMITED

WHITWORTH STREET WEST

PRELIMINARY ECOLOGICAL APPRAISAL

JUNE 2025

PREPARED BY:

Tess McAlister Ecologist [redacted]

REVIEWED BY:

Jake Smith Principal Ecologist [redacted]

APPROVED BY:

Tosha Allen Technical Director (Ecology) [redacted]

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CONTENTS

EXECUTIVE SUMMARY 1
1 INTRODUCTION 1
1.1 Terms of Reference 1
1.2 Scope of Report 1
1.3 Background Information 2
1.4 Site Context 2
1.5 National Planning Policy Framework (NPPF) 3
1.6 Local Planning Policy 3
2 METHODOLOGY 6
2.1 Desk Study 6
2.2 Extended UKHab Classification Survey 6
2.3 Bats: Preliminary Roost Assessment of Buildings/Structures 7
2.4 Evaluation and Assessment of Features 8
2.5 Nomenclature 9
2.6 Limitations / Deviations 9
2.7 Quality Assurance & Environmental Management 9
3 RESULTS AND EVALUATION 10
3.1 Statutory and Non-Statutory Designated Sites 10
3.2 Habitats 13
3.3 Species 17
4 DISCUSSION AND RECOMMENDATIONS 23
4.1 Sensitive Receptors 23
4.2 Non-Statutory Conservation Sites 23
4.3 Protected Species 23
4.4 General Recommendations 24
5 BIODIVERSITY ENHANCEMENTS 25
5.1 Biodiversity Enhancements 25
6 CONCLUSION 26
6.1 Conclusion 26
6.2 Report Validity 26
7 REFERENCES 27

APPENDICES

Appendix 1 Legislation Summary

Appendix 2 Preliminary Roost Assessment of Structures

DRAWINGS	TITLE	SCALE
ST21315-001	UKHab Baseline Survey Plan	1:500@A3
ST21315-002	Site Location Plan	1:1,000@A3

EXECUTIVE SUMMARY

Wardell Armstrong LLP (WA) was commissioned by Atri7 6 Limited to undertake a Preliminary Ecological Appraisal (PEA) in support of a proposed change of use and design modifications for an existing 35-storey apartment scheme.

The following conservation sites, habitats, and species (receptors) have been evaluated as being subject to potential adverse effects in the absence of mitigation and/or further survey or assessment:[1]:

- Roosting bats
- Birds

Additional assessments, surveys and pre-construction checks have been recommended as necessary to fully inform the planning application:

- Should the railway bridge wall be impacted, one dusk emergence survey is recommended to establish the status of roosting bats.

Mitigation[2] and compensation[3] are discussed in Section 4 of the report but include the following:

- Construction works undertaken outside of the bird nesting season or an inspection carried out by an appropriately qualified ecologist.
- Provision of a Construction Environmental Management Plan to ensure protective mitigation.

Opportunities for ecological enhancements are set out in Section 5 of this report. This includes a green roof, suitable native planting to be included in the landscape scheme and provision of bat boxes and bird nest boxes.

In conclusion, given the identified evidence of presence and/or likely presence of ecological constraints, further surveys and assessments are required to inform a full evaluation of adverse effects. The results of further protected species surveys and evaluations should be

[1] Note: the Preliminary Ecological Appraisal Report provides an overview of likely effects and therefore may not be sufficient to support a planning application on its own. Specialist surveys may be required to fully investigate effects and/or to support an Ecological Impact Assessment (EcIA).

[2] Mitigation are measures required in order to reduce the severity and magnitude of identified effects to an acceptable level.

[3] Compensation is required where effects cannot be fully mitigated.

considered within an Ecological Impact Assessment (EcIA) report, in line with standard industry practice (CIEEM 2018, updated 2022). This report should include a formal assessment of impacts and will be suitable to fully inform the planning application.

This report is valid for 18 months from the date the habitat survey was undertaken.

1 INTRODUCTION

1.1 Terms of Reference

1.1.1 Wardell Armstrong LLP (WA) was commissioned by Atri7 6 Limited in January 2025 to undertake a Preliminary Ecological Appraisal (PEA) in support of a planning application for the proposed change of use and design modifications for an existing 35-storey apartment scheme. The project is located at 10-12 Whitworth Street West, Manchester centred on approximate National Grid Reference (NGR) SJ 83579 97521.

1.1.2 This report has been produced with reference to current guidelines for UK Habitat (UKHAB) Classification V2.0 (UKHAB, 2023), Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017) and Biodiversity – Code of Practice for Planning and Development (BSI, 2013).

1.2 Scope of Report

1.2.1 The purpose of the PEAR is in broad terms to undertake the following:

- Identify and report to the project team the likely ecological constraints associated with a project, such that the site design can adequately take account of ecological features;
- identify any mitigation measures likely to be required, following the 'Mitigation Hierarchy' (BSI, 2013);
- identify any additional surveys that may be required to inform an Ecological Impact Assessment (EcIA); and
- Identify the opportunities offered by a project to deliver ecological enhancement.

1.2.2 Certain species, habitats and nature conservation sites receive legislative protection which is detailed fully within Appendix 1. Other species/groups and habitats are notable due to their identification in national and/or local planning policy or via local records. An indicative assessment of potential adverse effects to such receptors is provided, although this is not a substitute for full EcIA (CIEEM 2018) which may be required to fully inform any subsequent planning application along with additional surveys and assessments.

1.2.3 Provisional mitigation and enhancement opportunities are also discussed, where appropriate.

1.3 Background Information

1.3.1 Based on the size of the site and scale of the proposals the development is likely to fall under Schedule 2 of the Town and Country Planning EIA Regulations 2017. Considering the planning history an EIA will likely be required.

1.4 Site Context

1.4.1 The Site is situated in the centre of Manchester as shown on Drawing Number ST21315-002 (Site Location Plan).

1.4.2 The planning application area comprises an empty plot of land, currently used for storage, covering approximately 0.12 hectares (ha) (henceforth known as the Application Site). The study site (the Site) includes all land within the Application Site plus additional land 50m from the site boundary, where feasible. The Site is bounded by hoarding, with Whitworth St and the Rochdale Canal just beyond the northern extent and a railway line to the south. There are buildings to the east and west of the Site. The Site is situated in the centre of Manchester and is surrounded by commercial and residential land uses.

1.5 National Planning Policy Framework (NPPF)

1.5.1 The NPPF (2024) requires the Planning Authority to have a responsibility to promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan. In addition, the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological that are more resilient to current and future pressures.

1.6 Local Planning Policy

1.6.1 Relevant current and emerging policies are summarised in Box 1, below and are discussed with regard to compliance in the final Discussion section of the report.

Policy Reference	Policy Summary
Policy EN 9: Green Infrastructure	New development will be expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Where the opportunity arises and in accordance with current Green Infrastructure Strategies the Council will encourage developers to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between areas of green infrastructure. Where the benefits of a proposed development are considered to outweigh the loss of an existing element of green infrastructure, the developer will be required to demonstrate how this loss will be mitigated in terms of quantity, quality, function and future management. Key features of Manchester's green infrastructure will include: • The continued development of a network of green spaces, water bodies, canals, paths and cycleways, with priority given to those parts of the City where there is an identified existing lack of open space. The Council will seek to protect existing street trees and promote new planting, particularly where this can enhance green links in the urban area. • The continued maintenance and management of the Rivers Mersey and Irwell and their tributaries, for example the River Irk, River Medlock, Chorlton Platt Gore, Gatley Brook, Moston Brook and adjoining land, with regard to their multiple functions including recreation, flood management, and biodiversity. • The provision of new, and improvements to the quality and accessibility of existing green infrastructure assets, to mitigate for any loss of green infrastructure as a result of development such as the Metrolink extension programme.

	• The encouragement of green roofs, green walls, tree planting and other forms of green infrastructure to allow for the adaption to climate change in heavily urbanised areas. New green infrastructure provision should be an exemplar of best practice and innovation in terms of both its design and management
Policy EN 10: Safeguarding Open Space, Sport and Recreation Facilities	The Council will seek to retain and improve existing open spaces, sport and recreation facilities to the standards set out above and provide a network of diverse, multi-functional open spaces. Proposals will be supported that: • improve the quality and quantity of accessible open space, sport and recreation in the local area • provide innovative solutions to improving the network of existing open spaces, increase accessibility to green corridors, and enhance biodiversity • improve access to open space for disabled people Proposals on existing open spaces and sport and recreation facilities will only be permitted where: • Equivalent or better replacement open space, sport or recreation facilities will be provided in the local area; or • The site has been demonstrated to be surplus for its current open space, sport or recreation function and the City wide standards set out above are maintained, and it could not fulfil other unsatisfied open space, sport or recreation needs, and • a proposed replacement will remedy a deficiency in another type of open space, sport or recreation facility in the local area; or • The development will be ancillary to the open space, sport or recreation facility and complement the use or character.
Policy EN 13: Green Belt	The extent of Green Belt in Manchester will be amended in the vicinity of Manchester Airport, in accordance with policy MA1. Otherwise, there are no amendments to the Green Belt boundary to be effected through the Core Strategy. This does not preclude further consideration of sites currently within the Green Belt through subsequent Development Plan Documents.
Policy EN 15: Biodiversity and Geological Conservation	The Council will seek to maintain or enhance sites of biodiversity and geological value throughout the City. Particular consideration will be given to: • sites with international or national designations for their biodiversity value. Manchester contains one Site of Special Scientific Interest (SSSI) (Cotteril Clough); there is a Special Area of Conservation (SAC) and an SSSI just over the border in Oldham (both on the Rochdale Canal within Oldham); • other sites of biodiversity value, including Sites of Biological Importance (SBIs) and Local Nature Reserves (LNRs); Manchester currently has 35 SBIs (including the Rochdale and Ashton Canals) and 7 LNRs; priority habitats found within Manchester, as listed in the Manchester Biodiversity Strategy and included in the Greater Manchester Biodiversity Action Plan (GM BAP);

	• protected and priority species, as listed in the Manchester Biodiversity Strategy and included in the Greater Manchester Biodiversity Action Plan (GM BAP); • sites that are recognised for their geological importance; • the Council's objective to protect and conserve the City's existing trees and woodlands and the aim for a net increase in trees across the City. Developers will be expected to identify and implement reasonable opportunities to enhance, restore or create new biodiversity, either on-site or adjacent to the site, contributing to linkages between valuable or potentially valuable habitat areas where appropriate, with reference to: • the Manchester Biodiversity Strategy, which provides further details of priority habitats within Manchester and opportunities for biodiversity enhancement including corridors such as the Mersey, Medlock and Irk river valleys, the canals and disused railway lines and areas of managed greenspace particularly in parks; • the Green Infrastructure Framework for Greater Manchester, which encompasses an ecological framework that seeks to guide and inform habitat creation and repair, including identifying large 'biodiversity opportunity areas' including the Moston Brook Corridor and Nutsford Vale; • the Open Space, Sport & Recreation Study, which identifies areas where there is a deficit of natural and semi-natural greenspace, opportunities for green corridors and other linkages; • Manchester's Climate Change Action Plan; • the Strategic Flood Risk Assessment (SFRA) for Manchester; • the Habitats Regulations Assessment (HRA) for Manchester, which gives detailed consideration to Special Areas of Conservation (SACs), including the Rochdale Canal SAC just outside the district boundary; • the River Basin Management Plan for the North West; • the Manchester Tree Strategy. Any adverse impacts on biodiversity will need to be justified against the wider benefits of the proposal, assessed against other LDF policies. Where adverse impacts are unavoidable, developers will be required to provide appropriate mitigation and/or compensation. Development should wherever possible seek to maintain, enhance or restore existing geology.

2 METHODOLOGY

2.1 Desk Study

2.1.1 The desk study was informed by review of existing available information provided by Greater Manchester Ecology Unit (GMEU) and from available internet-based resources, such as MAGIC Map (Natural England, 2025) for a 2km search radius from the Site boundary. The search area was extended to 10km for statutory sites designated for bats. Ordnance Survey (OS) and satellite mapping was also used to gain contextual habitat information.

2.1.2 Specific information was sought for:

- Statutory designated sites;
- Locally designated sites;
- Ancient woodland (Natural England, 2025);
- Protected and priority species;
- Priority (s.41) Habitats and Species (NERC, 2006);
- Local Biodiversity Action Plan (LBAP) priority habitats and species.

2.2 Extended UKHab Classification Survey

2.2.1 WA carried out a UK Habitat (UKHab) Classification Survey of the Site on 22nd January 2025. The survey was carried out by a member of CIEEM who is competent at carrying out ecological habitat surveys.

2.2.2 The survey followed the 'UK Habitat Classification' (UKHab, 2023) methodology with each of the main habitats classified according to the relevant criteria including vegetation composition expressed according to the DAFOR[4] system.

2.2.3 In addition to the mapping and description of habitats, the survey was 'extended' to include the incidental observations of protected and/or notable species and the potential for such species to occur on Site (and in the surrounding landscape where relevant) were also recorded onto secure digital media for mapping and data collection. The extended element of the survey was based on professional judgement.

[4] D = dominant, A = abundant, F = frequent, O = occasional, R = Rare

2.2.4 Specific habitat features are mapped on Drawing Number ST21315-001 (UKHab Baseline Survey Plan) with appropriate reference numbers identifying features of particular note.

2.3 Bats: Preliminary Roost Assessment of Buildings/Structures

2.3.1 An external Preliminary Roost Assessment (PRA) of the railway bridge wall bordering the Site to the south was undertaken by an experienced ecologist from WA. The location of this structure is shown in Drawing Number ST21315-001 (UKHab Baseline Survey Plan) and Appendix 2 provides the full PRA results.

2.3.2 The aim of the PRA survey was to assess the suitability of the buildings to support roosting bats, identify any evidence of roosting bats and determine whether there is a requirement for further surveys.

2.3.3 Any features determined to be suitable for roosting bats and the overall condition of the buildings were noted. Field signs such as droppings, feeding remains and dead or living bats were also recorded.

2.3.4 Equipment used for the PRA included binoculars.

2.3.5 The buildings were categorised using the assessment criteria the 4th ed. of the Bat Conservation Trust (BCT) Guidelines (Collins, 2023) as set out below:

High: Structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitats. These structures have the potential to support high conservation status roosts e.g. maternity or class cool/stable hibernation site;

Moderate: Structure with one or more potential roost sites that could be used by of bats due to their size, shelter, protection, conditions, and surrounding habitats, but unlikely to support a roost of high conservation concern;

Low: Structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on

a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation);

Negligible: No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion;

None: No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).

2.4 Evaluation and Assessment of Features

2.4.1 Evaluation of the importance / likely importance of ecological features and the likelihood of impacts affecting important features was made, where possible, using professional judgement in accordance with published guidance (CIEEM 2017).

2.4.2 Protected and s.41 species were evaluated in order to identify potential adverse effects in Table 2, based on the following criteria:

- Desk study records;
- Evidence found during the survey;
- Presence, extent, quality and viability of suitable on-site habitat;
- Ecological connectivity to viable off-site habitats; and
- Perceived impacts of habitat loss/impact to individuals in relation to proposals.

2.4.3 A 'traffic light' system is used in Tables 1, 2 and 3 to highlight potential constraints and opportunities whereby:

- Green: No constraint or limited constraint unlikely to be of planning and/or legal significance.
- Amber: Potential constraints which require further survey and/or mitigation and may be of planning and/or legal significance depending on the outcome of further survey/assessment.
- Red: Constraints which have already been identified by the PEA survey/desk-based assessment and are likely to be of planning and/or legal significance.

2.5 Nomenclature

2.5.1 Vascular plant names follow '*New Flora of the British Isles'* (Stace 2019) with vernacular names as provided in the Botanical Society of the British Isles website (BSBI, 2013). All other flora and fauna names following the National Biodiversity Network (NBN) Atlas (NBN Atlas Partnership, 2021). The common and scientific name of species/taxa is provided (if available) when first mentioned in the text, with only the vernacular name referred to thereafter.

2.6 Limitations / Deviations

2.6.1 Ecological surveys are limited by factors that affect the presence of plants and animals such as time of year, weather, migration patterns and behaviour. The survey was undertaken in January. Although this is outside of the optimum recommended survey period for habitat surveys (April to August)) this still represents a valid sample of ecological evidence present on that date/season as the habitats within the Site are not anticipated to support notable species. The report is not designed, nor is it required to present a complete inventory of flora/fauna.

2.6.2 The absence of desk study records is not relied upon to determine absence of a particular species/habitat. Often, the absence of records is a result of under-recording within the given search area and as such the experience of the ecologist concerned together with a range of additional factors, in particular the presence/absence of potentially supporting habitat; is used to infer likely presence/absence of ecological receptors.

2.7 Quality Assurance & Environmental Management

2.7.1 The surveys and assessments have been overseen by and the report checked and verified by an associate member of CIEEM, who is bound by its code of professional conduct. All surveys and assessments have been undertaken with reference to the recommendations given in British Standard BS 42020, and as stated within specialist guidance, as appropriate and referenced separately.

3 RESULTS AND EVALUATION

3.1 Statutory and Non-Statutory Designated Sites

3.1.1 Desk study results for designated sites are evaluated in Table 1, below.

3.1.2 Designated sites which are considered potentially sensitive to the development proposals by virtue of their supported species or habitat assemblages, the distance/ecological connectivity to the Site and the nature of the perceived impacts are discussed in detail in the final sections of the report.

3.1.3 Designations for which potential adverse effects are not anticipated are excluded from further assessment.

Table 1: Designated Sites Evaluation			
Site Name and Status[5]	**Distance and direction from Site**	**Reason for Designation/identification**	**Potential Constraints**
Rochdale Canal (SAC)	6.45km northeast of the Site.	This SAC is designated for supporting a significant population of floating water-plantain *Luronium natans*, an Annex II species. The SAC has a botanically diverse waterplant community which also holds a wide range of pondweeds *Potamogeton* spp. The canal has predominantly mesotrophic water. This population of *Luronium* is representative of the formerly more widespread canal populations of north-west England.	The Site is 40m south of the Rochdale Canal; however, this section of the canal is approximately 6.7km downstream of the section that is a designated SAC. Due to the significant distance between the SAC and the Site, there are no impacts anticipated from the Proposed Development. Any dust pollution that may arise from the development is anticipated to be very minor and would not travel the distance to the SAC. And any run-off would flow downstream away from the SAC.
Ashton Canal West (SBI)	1.40km northeast of the Site	This SBI is designated for its submerged aquatic flora.	The Site is in close proximity to the Rochdale Canal; however, this section is downstream of the SAC so there is no hydrological connectivity. There are no direct impacts anticipated from the Proposed Development. There is limited potential for dust pollution that may arise from the development, though this is anticipated to be very minor and have very minor impacts upon SBI if it travels. And any run-off would flow downstream away from the SBI.
Rochdale Canal: Stott's Lane to Ducie St Basin (SBI)	1.40km northeast of the Site	This SBI is a continuation of the Rochdale Canal SAC and is designated for its regionally important aquatic habitats and flora.	The Site is in close proximity to the Rochdale Canal; however, this section is downstream of the SBI so there is no hydrological connectivity. There are no direct impacts anticipated from the Proposed Development. There is limited potential for dust pollution that may arise from the development, though this is anticipated to be very minor and have very

[5] **SAC** – Special Area for Conservation, **SBI –** Site of Biological Interest.

.

Table 1: Designated Sites Evaluation			
Site Name and Status[5]	**Distance and direction from Site**	**Reason for Designation/identification**	**Potential Constraints**
			minor impacts upon SBI if it travels. And any run-off would flow downstream away from the SBI.
River Irwell (SBI)	1.55km northwest of the Site	This SBI is designated for its regionally significant numbers of wintering birds, such as tufted duck *Aythya fuligula* and goldeneye *Bucephala clangula*	The Site does not support habitats suitable for these wintering bird species. The Rochdale Canal is in close proximity to the Site; however, it joins the River Irwell downstream of the SBI. Therefore, indirect impacts are unlikely, due to a lack of hydrological connectivity between the two sites.

3.1.4 The search area is extended to allow for the inclusion of Impact Risk Zones (IRZs) for SSSIs (Natural England, 2023). IRZs define areas around SSSIs which could be impacted by development schemes. The zones vary depending on the particular sensitivities of the features for which the SSSI is notified and indicate the types of development proposal which could potentially have adverse impacts.

3.1.5 The desk study shows that the application site falls within an IRZ for several designations, with the following development proposals considered likely to adversely affect the SSSI: air pollution (livestock and poultry units with a floorspace > 500m², slurry lagoons > 4000m²) and combustion (general combustion processes >50MW energy input. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion).

3.1.6 As the proposed development does not meet any of the IRZ's criteria, this potential ecological receptor has been discounted from needing further assessment.

3.2 Habitats

3.2.1 All habitats within the Site are described in Table 2, below, together with an indication of their s.41 status and status and reference within the Greater Manchester Local BAP (Greater Manchester Biodiversity Project, 2009).

3.2.2 Habitats which could be subject to adverse effects (amber or red) are discussed in the latter sections of the report. Habitats for which potential adverse effects are not anticipated are excluded from further assessment. The location and extent of habitats are shown on Drawing Number ST21315-001 (UKHab Baseline Survey Plan).

3.2.3 A review of OS data has identified no waterbodies within 500m of the Site.

Table 2: Habitat Descriptions and Evaluation				
Habitat Description	**UK Hab Classification**	**Photograph**	**Local BAP/s.41**	**Potential Constraints**
<u>Artificial unvegetated – unsealed surface</u> This is the dominant habitat within the Site. At the time of survey, the Site was being used for storage of construction materials and plant, which has led to disturbance of the ground. The ground is primarily comprised of bare earth/mud, with rubble and brick fragments. There are piles of earth/rubble within the Site. In less disturbed areas, ruderal plant species have begun to colonise. Vegetation cover is less than 10%. Within these areas, buddleia *Buddleja davidii*, herb Robert *Geranium robertianum* and Canadian fleabane *Conyza canadensis* are abundant, with frequent willowherb *Epilobium* sp., black medick *Medicago lupulina* and annual meadow grass *Poa annua*.	<u>Primary Code</u> Artificial unvegetated – unsealed surface (u1c) <u>Secondary Code</u> Ruderal or ephemeral (81) Development site (805)		N/A	This habitat may be lost within the development proposals but is of negligible intrinsic value.

Table 2: Habitat Descriptions and Evaluation				
Habitat Description	**UK Hab Classification**	**Photograph**	**Local BAP/s.41**	**Potential Constraints**
Yorkshire fog *Holcus lanatus* and mugwort *Artemisia vulgaris* are occasionally present.				
<u>Other developed land</u> A small area of ground in the northwest corner of the Site is paved. The ruderal species mentioned above are present at the edges of this habitat.	<u>Primary Code</u> Other developed land (u1b6) <u>Secondary Code</u> Ruderal or ephemeral (81) Development site (805)		N/A	This habitat may be modified by the development proposals but is of negligible intrinsic value.

Table 2: Habitat Descriptions and Evaluation				
Habitat Description	**UK Hab Classification**	**Photograph**	**Local BAP/s.41**	**Potential Constraints**
Built linear feature A railway bridge wall borders the Site to the south. This bridge is comprised of bricks and mortar.	Primary Code Built linear feature (u1e) Secondary Code Railway (802) Mortared wall (853)			This habitat may be modified by the development proposals but is of negligible intrinsic value.

3.3 Species

3.3.1 Protected and s.41 species are evaluated in order to identify potential adverse effects in Table 3 below, based on the following criteria:

- Desk study records;
- Evidence found during the survey;
- Presence, extent, quality, and viability of supporting on-site habitat;
- Ecological connectivity to viable off-site habitats; and
- Perceived impacts of habitat loss/impact to individuals in relation to proposals.

3.3.2 Species for which adverse effects are predicted (amber or red) are discussed in more detail in the Discussion and Recommendations section. Species/taxa for which potential adverse effects are not anticipated (green) are excluded from further assessment.

Receptor (species/taxa)	Desk Study records	Status[6]	Supporting Habitat(s)Present	Potential Constraints
Badger *Meles meles*	No records were returned within 2km from the last 10 years.	BA	Due to the urban nature of the Site, there is no suitable habitat for foraging or sett creation.	This species is unlikely to be present within the Site, therefore no impacts are anticipated.
Bats *Chiroptera*	There are 15 records of granted European Protected Species Licenses for bats within 2km of the Site. The closest of these is located 170m southeast of the Site and was for common pipistrelle *Pipistrellus pipistrellus*. There were 48 records of bats within 2km, featuring the following species: • Common Pipistrelle • Soprano Pipistrelle *Pipistrellus pygmaeus* • *Pipistrellus* sp. • Noctule *Nyctalus noctula* • *Myotis* spp.	EPS, WCA, s.41, LBAP	The Site was assessed as having 'Negligible' suitability for foraging or commuting bats, due to the lack of trees or shrubs. There is some suitable habitat adjacent to the site, in the form of scattered trees and the Rochdale canal. The railway bridge wall to the south of the Site provides suitable roosting opportunities for individual bats. This structure has been assessed as having 'Low' potential for roosting bats as it would not be suitable for larger numbers of bats. See Appendix 2 for further descriptions of roosting features.	No foraging/commuting habitat will be impacted. There may be adverse impacts to roosting bats should the railway bridge wall be modified as a result of the proposals.

[6] **EPS** – European Protected Species, **WCA** – Wildlife and Countryside Act, **WCA (9)** – species listed under Schedule 9, **A1** – Annex 1 (Birds Directive), **BA** – Protection of Badgers Act, **s.41** – species listed under section 41 of the NERC Act as species of principal importance, **BoCC** – Birds of Conservation Concern.

Receptor (species/taxa)	Desk Study records	Status[6]	Supporting Habitat(s)Present	Potential Constraints
	The closest record of a roost was located 780m northwest of the Site. The closest record of a bat was approximately 150m southwest of the Site.			
Birds	A wide range of BoCC and Red List species and WCA Schedule listed species including: **Schedule 1:** • Black redstart *Phoenicurus ochruros* – there are records of this species within 300m of the Site. • Peregrine *Falco peregrinus* • Little ringed plover *Charadrius dubius* • Kingfisher *Alcedo atthis* **BoCC/s.41:** • Herring gull *Larus argentatus* • House sparrow *Passer domesticus* • Starling *Sturnus vulgaris*	s.41, WCA BoCC, LBAP	During the survey, feral pigeon *Columba livia* and magpie *Pica pica* were observed within the Site. Suitable nesting habitat is limited to the railway bridge wall, which features a ledge that may be suitable for common urban bird species to nest, e.g. pigeon. The railway bridge wall may provide suitable nesting habitat for black redstart, which is a WCA Schedule 1 and LBAP species. However, the current disturbance levels on the Site may reduce the likelihood of this species being present.	Nesting birds may be impacted as a result of works to the railway bridge wall, should these be included in the proposals.

Receptor (species/taxa)	Desk Study records	Status[6]	Supporting Habitat(s)Present	Potential Constraints
Brown hare *Lepus europaeus*	No records were returned within 2km from the last 10 years.	s.41, LBAP	This species favours open expanses of pastoral farmland and therefore are unlikely to utilise the urban habitats within the Site.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.
European hedgehog *Erinaceus europaeus*	There were 21 records of hedgehog returned within 2km, from the last 10 years. The closest record was located 450m south of the Site.	s.41	There is no suitable foraging or sheltering habitat due to the lack of vegetation within the Site.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.
Great crested newt (GCN) *Triturus cristatus*	Two records of GCN were returned within 2km, the closest of which was located 1.70km northwest of the Site.	EPS, WCA, s.41, LBAP	There are no waterbodies within 500m and no suitable terrestrial habitat e.g. tall/ tussocky grassland, within the Site.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.
Common toad *Bufo bufo*	Two records of common toad were returned within 2km, the closest of which was located 1.70km northwest of the Site.	s.41	There are no waterbodies within 500m and no suitable terrestrial habitat e.g. tall/ tussocky grassland, within the Site.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.
Common Reptiles	No records were returned within 2km from the last 10 years.	WCA, s.41	There is no suitable habitat for reptiles due to the lack of vegetation, e.g. grassland/scrub, within the Site.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.
Hazel dormouse *Muscardinus avellanarius*	No records were returned within 2km from the last 10 years.	EPS, WCA, s.41	There is no suitable habitat for this species within the Site e.g. hedgerows and scrub.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.

Receptor (species/taxa)	Desk Study records	Status[6]	Supporting Habitat(s)Present	Potential Constraints
Invertebrates (Protected and notable species)	There were records of white-letter hairstreak *Satyrium w-album* and cinnabar moth *Tyria jacobaeae* returned within 2km from the last 10 years.	WCA, s.41	The Site supports limited vegetation and is therefore unlikely to provide habitat for protected or notable invertebrate species.	Protected or notable invertebrate species are unlikely to be present within the Site, so no adverse impacts are anticipated.
Otter *Lutra lutra*	There were five records of otter within 2km from the last 10 years, the closest of which was located 500m west of the Site, close to the Rochdale Canal.	EPS, WCA, s.41	There are no suitable watercourses for otter within the Site. The Rochdale Canal is 40m north of the Site and may provide some commuting habitat for otter. This species is unlikely to utilise the habitats within the Site due to the high levels of disturbance.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.
Water vole *Arvicola amphibia*	No records were returned within 2km from the last 10 years.	WCA, s.41, LBAP	There are no suitable watercourses for water vole within the Site. The Rochdale Canal may provide some suboptimal habitat for water vole, however there is no suitable terrestrial habitat within the Site.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.
White-clawed crayfish *Austropotamobius pallipes*	No records were returned within 2km from the last 10 years.	EPS, WCA, s.41	There are no suitable watercourses for white clawed crayfish within, or adjacent to, the Site.	This species is unlikely to be present within the Site, so no adverse impacts are anticipated.

Receptor (species/taxa)	Desk Study records	Status[6]	Supporting Habitat(s)Present	Potential Constraints
Protected and notable plant species	Yes – vascular plant species recorded within 2km of the Site in the last 10 years, including: • Bee orchid *Ophrys apifera* – closest record located 870m northwest of the Site.	WCA, s.41	No protected or notable plant species were observed during the survey. The Site has limited vegetation and has been subject to high levels of disturbance so is unlikely to support these plant species.	Protected or notable plant species are unlikely to be present within the Site, so no adverse impacts are anticipated.
Non-native invasive species (INNS)	No records were returned within 2km from the last 10 years.	WCA (9)	No INNS were observed within the Site during the survey.	INNS are likely to be absent from the Site.

4 DISCUSSION AND RECOMMENDATIONS

4.1 Sensitive Receptors

4.1.1 The following conservation sites, habitats, and species (receptors) have been evaluated as being subject to potential adverse effects and hence can be constraints to the proposals:

- Non-statutory Conservation Sites; Ashton Canal West SBI and Rochdale Canal: Stott's Lane to Ducie St Basin SBI
- Roosting bats
- Birds

4.1.2 The nature of potential effects, requirements for further surveys and proposed mitigation/compensation are discussed below for each of the identified receptors.

4.2 Non-Statutory Conservation Sites

4.2.1 Ashton Canal West SBI and Rochdale Canal: Stott's Lane to Ducie St Basin SBI are both located 1.40km northeast of the Site. These sites are designated for their aquatic flora and habitats.

4.2.2 Although limited, there may be indirect impacts to the habitats within these designations via dust produced during construction works. It is recommended that a Construction Environmental Management Plan (CEMP) is produced detailing pollution prevention measures to remove or minimise the impacts of air and dust pollution upon the SBIs.

4.3 Protected Species

Roosting bats

4.3.1 The railway bridge wall to the south of the Site has been assessed as having 'Low' potential for roosting bats. There may be adverse impacts to roosting bats should the railway bridge wall be modified as a result of the proposals.

4.3.2 If this structure will be impacted through the development proposals, it is recommended that further surveys are carried out to establish the status of roosting bats. Following current Bat Survey Guidelines (BCT, 2023) for structures with 'Low' roost suitability, it is recommended that one dusk emergence survey is carried out. This survey should be undertaken between May and August.

Birds

4.3.3 Black redstart, a WCA Schedule 1 and Greater Manchester BAP species, have been recorded within 300m of the Site in the last 10 years. Any works to the railway bridge wall could impact this species, as this species may utilise this habitat for nesting, although the Site does not provide suitable foraging habitat due to the current levels of disturbance. Therefore, further survey has not been deemed necessary.

4.3.4 In order to avoid works affecting breeding birds, it is recommended that any construction works should be avoided during breeding bird season (generally March-August inclusive). If such timescales cannot be accommodated, it is recommended that a check for the presence of active nests and nesting birds should be undertaken by a suitably qualified ecologist no more than 48hrs prior to the commencement of works. Any active nests should be identified and protected subject to the relevant legal provisions until the nesting attempt is complete.

4.4 General Recommendations

4.4.1 If the Site boundary alters and any other habitats are identified to be lost or affected by the development, then further surveys for habitats and protected species may be required.

4.4.2 Night-time work should be avoided whenever possible to limit the potential for disturbance to nocturnal animals.

5 BIODIVERSITY ENHANCEMENTS

5.1 Biodiversity Enhancements

5.1.1 In accordance with the requirements of the NPPF and BSI 42020:2013 ecological enhancements should be proposed that are over and above measures required to mitigate effects on biodiversity. Such enhancements could include the provision of the following, in addition to any measures required as mitigation (with exact specifications to be determined at the detailed design stage):

- A green roof featuring low nutrient substrate or aggregates could be incorporated into the design, to provide the sparsely vegetated habitat favoured by black redstart.
- Planting of native trees and shrubs of local provenance which naturally occur within the local area. To include berry, pollen and nectar producing species.
- Bird boxes, including a variety of designs, such as 45mm entrance boxes, 32mm entrance boxes, black redstart boxes at roof level, sparrow terraces, and swift boxes/house martin cups and the installation of integrated bird bricks directly into the brickwork of new buildings/structures;
- Bat boxes including for a variety of species and for a variety of seasons, to be integrated directly into the brickwork of new buildings and structures.

6 CONCLUSION

6.1 Conclusion

6.1.1 Given the identified likely presence of ecological receptors which may be adversely impacted by the development scheme, further surveys and mitigation have been recommended in order to inform a full evaluation of adverse effects. Consequently, additional protected species survey (dusk emergence survey for bats and pre-works check for nesting birds) and mitigation reports (CEMP) will be required to compliment the planning application. This report should include formal assessment of impacts and will be suitable to fully inform the planning application.

6.2 Report Validity

6.2.1 In general, this report remains valid for a period of 18 months following the date of the habitat survey.

6.2.2 If the Site boundary or layout is subsequently modified and any other habitats are identified to be lost or affected by the development, then further surveys for habitats and protected species may be required.

7 REFERENCES

Botanical Society of the British Isles (2013) *Online atlas of the British and Irish Flora*. https://plantatlas.brc.ac.uk/

British Standards Institute (2013) *Biodiversity – Code of Practice for Planning and Development*. BS 42020:2013.

CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal, 2nd edition.* Chartered Institute of Ecology and Environmental Management, Winchester.

Collins, J (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition),* The Bat Conservation Trust, London.

Department for Levelling Up, Housing and Communities (2023) *National Planning Policy Framework* at https://www.gov.uk/government/publications/national-planning-policy-framework--2

Institute of Environmental Assessment (1995) *Guidelines for Baseline Ecological Assessment*.

Natural England (2025) *Ancient Woodland Inventory* at https://naturalengland-defra.opendata.arcgis.com/datasets/ancient-woodland-england

Natural England (2025) *MAGIC Map* at https://magic.defra.gov.uk/MagicMap.aspx

Natural England (2025) *SSSI Impact Risk Zones England* at https://www.data.gov.uk/dataset/5ae2af0c-1363-4d40-9d1a-e5a1381449f8/sssi-impact-risk-zones-england

Stace. C. A. (2021) *New Flora of the British Isles*. Cambridge University Press.

UKHab Ltd (2023) UK Habitat Classification Version 2.0 at https://www.ukhab.org

APPENDICES

Appendix 1
Legislation and Policy Summary

Appendix 1 – Legislation and Policy Summary

Legislation for Habitats/Sites

Designated Site/Habitat	Status
Ramsar Sites	Ramsar Sites are wetlands of international importance designated following the Ramsar Convention. RAMSAR sites have the same level of protection as SACs and SPAs under the Wildlife and Countryside Act 1981 (as amended).
SPA (Special Protection Areas)	SPAs seek to protect the habitats of rare and vulnerable European and UK birds. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended) protect such sites in the UK.
SAC (Special Areas for Conservation)	SACs are strictly protected areas which represent important and threatened habitats in Europe and the UK. The Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended) protect such sites in the UK.
SSSI (Sites of Special Scientific Interest)	SSSIs protect the best examples of the UK's flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were renotified under the Wildlife and Countryside Act 1981 (as amended). Modified provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000.
NNR (National Nature Reserves)	NNRs are examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. NNRs are declared by the statutory country conservation agencies under the National Parks and Access to the Countryside Act 1949 or the Wildlife and Countryside Act 1981 (as amended). Legal protection of NNRs is provided under the Wildlife and Countryside Act 1981 (as amended).
Hedgerows	All hedgerows are protected by the Hedgerows Regulations 1997, under which it is an offence to remove or destroy certain hedgerows without planning consent or permission from the Local Planning Authority. These regulations do not apply to any hedgerow within the curtilage of, or marking the boundary of the curtilage of, a dwelling house.
LNR (Local Nature Reserves)	Designated by the National Parks and Access to the Countryside Act 1949, LNRs may be declared for nature conservation by local authorities after consultation with the relevant statutory nature conservation agency. Legal protection of LNRs is provided under the Wildlife and Countryside Act 1981 (as amended).

Legislation for Species

Species	Legal Status
Creeping Marshwort, Early Gentian, Fen Orchid, Floating-leaved Water Plantain, Killarney Fern, Lady's Slipper, Shore Dock, Slender Naiad, Yellow Marsh Saxifrage	Under the Conservation of Habitats and Species Regulations 2017 (as amended), it is illegal to deliberately pick, collect, uproot or destroy any such species.
Bats, Dormouse, Otter, Wild Cat, Great Crested Newt, Natterjack Toad, Sand Lizard, Smooth Snake, Large Blue Butterfly	These animals and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats and Species Regulations 2017 (as amended), which makes it illegal to: • Deliberately capture, injure or kill any such animal or to deliberately take or destroy their eggs; • Deliberately disturb[7] such an animal; and • Damage or destroy a breeding site or resting place of such an animal. European Protected Species (EPS) licenses can be granted by Natural England in respect of development to permit activities that would otherwise be unlawful under the Conservation Regulations, providing that the following 3 tests (set out in the EC Habitats Directive) are passed, namely: • The development is for reasons of overriding public interest; • There is no satisfactory alternative; and • The favourable conservation status of the species concerned will be maintained and/or enhanced. LPAs must consider the above 3 'tests' when determining whether Planning Permission should be granted for developments likely to cause an offence under the Conservation Regulations.
Bats, Dormouse, Great Crested Newt, Heath Fritillary, High Brown Fritillary, Large Blue, Marsh Fritillary, Natterjack Toad, Pine Martin, Otter, Red Squirrel, Sand Lizard, Smooth Snake, Swallowtail, Water Vole, Wildcat	These animals receive full protection under the Wildlife and Countryside Act 1981 (as amended), which makes it illegal (subject to certain exceptions) to: • Intentionally kill, injure or take any such animal; • Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection; and

Locations of badger activity are confidential due to the sensitivity of this species

ticular any disturbance which is likely to: (i) impair their ability to survive, breed or reproduce, or to rear or nurture their young or to hibernate or migrate; (ii) significantly affect the local distribution or abundance of the species in question.

Species	Legal Status
	• Intentionally or recklessly disturb such animals while they occupy a place used for shelter or protection.
Adder, Common Lizard, Grass Snake, Slow Worm, White-clawed Crayfish	These animals receive partial protection under the Wildlife and Countryside Act 1981 (as amended), which provide protection against intentional killing or injury of any such animal.
Nesting Birds	All wild birds (as defined by the act) are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it illegal (subject to exceptions) to: • Intentionally kill, injure or take any wild bird; • Take, damage or destroy the nest (whilst being built or in use) or eggs of any wild bird.
Wildlife and Countryside Act 1981 (as amended) Schedule 1 listed Birds	Additional protection is provided to birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). In addition to the offences detailed above relating to all wild birds, it is illegal to intentionally or recklessly disturb any bird listed on Schedule 1, or their dependent young while nesting.
Badgers	The Protection of Badgers Act 1992 makes it illegal to wilfully kill or injure a Badger, or attempt to do so and to intentionally or recklessly interfere with a Badger sett. This includes: • damaging or destroying an active sett; • obstructing access to a sett; and • disturbing a Badger while it is occupying a sett. Licences can be granted to permit sett closure and/or disturbance between July and November inclusive (i.e. outside the sow pregnancy/birth period).
Wild Mammals	The Wild Mammals (Protection) Act 1996 provides legal protection to all wild mammals (as defined by the act) against the following actions: mutilate, kick, beat, nail, or otherwise impale, stab, burn, stone, drown, crush, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.
Wildlife and Countryside Act 1981 (as amended) Schedule 9 listed invasive animals (Part 1) and plants (part 2)	Certain species of plants and animals that do not naturally occur in Great Britain have become established in the wild and represent a threat to the natural fauna and flora. Section 14 of the Wildlife and Countryside Act 1981 (as amended) prohibits the release or allowed escape of animals listed in Schedule 9 to the Act and planting, or allowed growth, of any plant listed in Schedule 9 to the Act.

Policy Summary

Section 40 of the Natural Environment and Rural Communities (NERC) Act imposes a legal duty on Planning Authorities to 'have regard' to the conservation of biodiversity when considering planning applications.

Section 41 of the NERC Act requires the Secretary of State to publish a list of species and habitats of principal importance for conserving biodiversity in the UK. Such Biodiversity Action Plan (BAP) Habitats and Species (2007) do not offer the species any specific protection but help to highlight the species importance at a national level. This list is used by Local Planning Authorities to identify the species and habitats that should be afforded priority when applying the requirements of the National Planning Policy Framework (NPPF).

The NPPF underpins the Government's planning policies for England and how these are to be applied. The central theme of the NPPF is a presumption in favour of sustainable development. This presumption does not apply where development requiring Appropriate Assessment because of its potential impact on a habitats site is being planned or determined.

The NPPF states:

> *When determining planning applications, local planning authorities should apply the following principles:*
>
> - *If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
> - *Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
> - *Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[63] and a suitable compensation strategy exists; and*

- *Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.*
- *The following should be given the same protection as habitats sites:*

  a) potential Special Protection Areas and possible Special Areas of Conservation;

  b) listed or proposed Ramsar sites; and

  c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

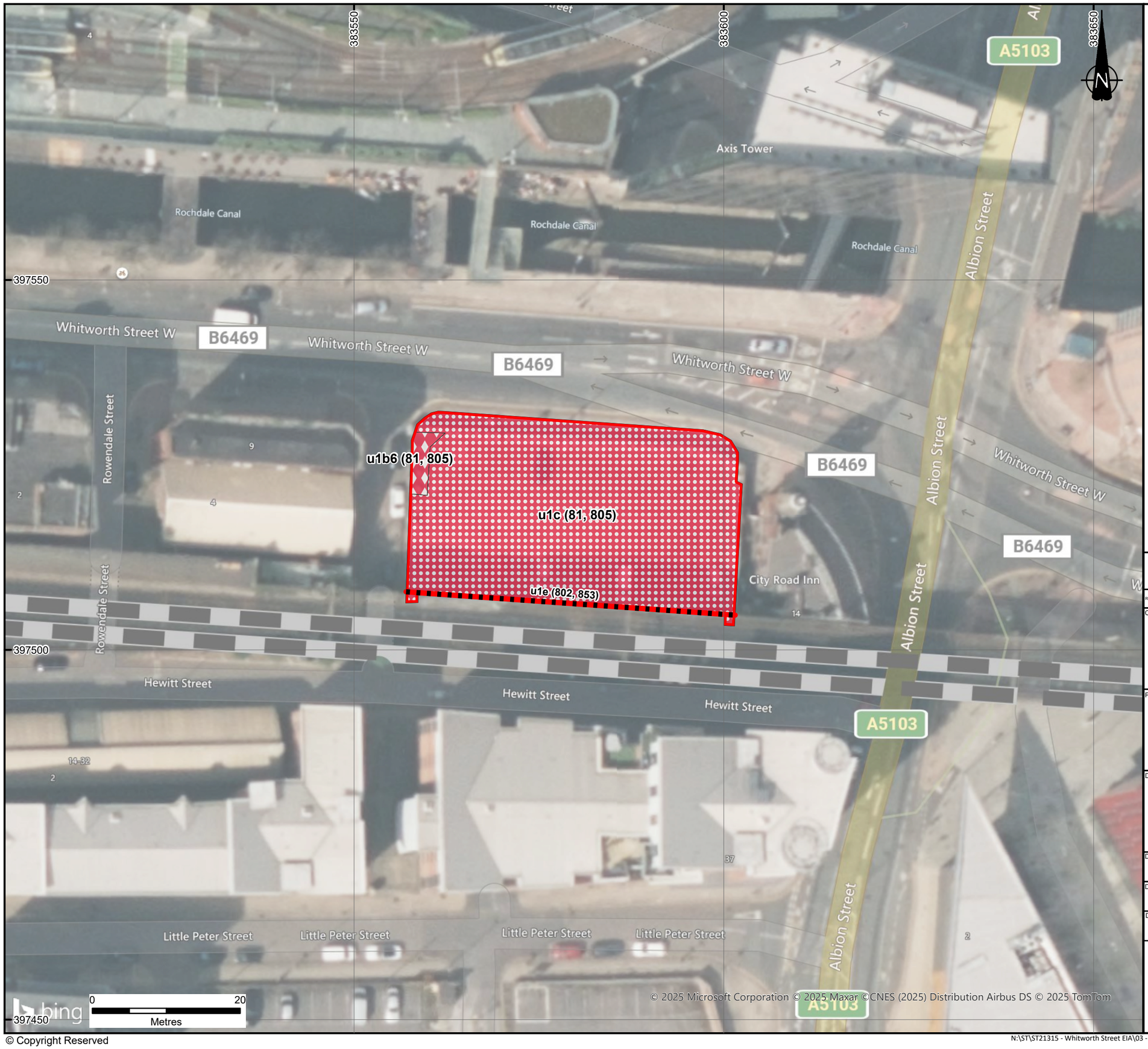
The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

The NPPF requires the Planning Authority to have a responsibility to promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan. In addition, the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

Appendix 2
Preliminary Roost Assessment of Structures

Building Name	Description	Photographs	Bat Features Present	Bat Signs	Bat Roost Potential
Railway bridge wall	The Site is bordered by a raised railway bridge to the south. This bridge is brick-built and features railway arches which have been bricked up. The mortar is in poor condition in some areas, forming several crevices and gaps.	   	Crevices where mortar is absent. Large holes in brickwork (missing bricks). The hole in the bottom-left photo extends approximately 20cm deep and may provide access to an inner cavity.	None	Low

DRAWINGS



KEY

- Site Boundary
- u1b6 - Other developed land
- u1c - Artificial unvegetated, unsealed surface
- u1e - Built linear feature

Secondary Codes:

81 - Ruderal or ephemeral
802 - Railway
805 - Development site
853- Mortared Wall

Notes:

Boundaries are indicative. Aerial imagery shown for context purposes only.

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REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
A	FIRST ISSUE	10/04/25	CP	JS	TA

CLIENT: ATRI7 6 LIMITED

PROJECT: WHITWORTH STREET WEST

DRAWING TITLE: UKHAB BASELINE SURVEY PLAN

DRG No.	REV	SUIT. CODE
ST21315-001	A	--

DRG SIZE	SCALE	DATE
A3	1:500	10/04/2025

DRAWN BY	CHECKED BY	APPROVED BY
SRW	JS	TA

wardell armstrong PART OF SLR

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N:\ST\ST21315 - Whitworth Street EIA\03 - Design\GIS\ST21315 001 UKHab Baseline Survey Plan\ST21315 001 UKHab Baseline Survey Plan.aprx



KEY

Site Boundary

Notes:

Boundaries are indicative. Aerial imagery shown for context purposes only.

REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
A	FIRST ISSUE	10/04/25	CP	JS	TA

CLIENT

ATRI7 6 LIMITED

PROJECT

WHITWORTH STREET WEST

DRAWING TITLE

SITE LOCATION PLAN

DRG No.	REV	SUIT. CODE
ST21315/002	A	--

DRG SIZE	SCALE	DATE
A3	1:1,000	10/04/2025

DRAWN BY	CHECKED BY	APPROVED BY
BRC	JS	TA

wardell armstrong
PART OF SLR

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PART OF SLR

Appendix D

Phase I Geo-Environmental Assessment Report

BROWNFIELD SOLUTIONS LTD

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

DOMIS CONSTRUCTION LTD

Vision, Whitworth Street West, Manchester

Phase I Geo-Environmental Assessment Report

OH/C5504/13646

December 2024

PROJECT QUALITY CONTROL DATA SHEET

Site Name:	Vision, Whitworth Street West, Manchester		
Document Name:	Phase I Geo-Environmental Assessment Report		
Reference:	OH/C5504/13646		
Status:	-	19/12/2024	Final.

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CONTENTS

1.0 INTRODUCTION 1

1.1 Context 1
1.2 Proposed Development 1
1.3 Objectives and Scope 1
1.4 Limitations 1

2.0 THE SITE 3

2.1 Location 3
2.2 Site Description 3

3.0 GEO-ENVIRONMENTAL SETTING 4

3.1 Historical Setting 4
3.2 Published Geology 5
3.3 BGS Exploratory Hole Records 6
3.4 Mining and Mineral Extraction 6
3.5 Hydrogeology 7
3.6 Hydrology 7
3.7 Landfill and Waste Management Sites 8
3.8 Environmental Regulatory Data 8
3.9 Radon 8
3.10 UXO Risk 8

4.0 PHASE 1 SUMMARY AND RISK ASSESSMENT 9

4.1 Introduction 9
4.2 Potential Contaminative Sources 9
4.3 Pathways 10
4.4 Receptors 11
4.5 Preliminary Conceptual Site Model (CSM) 11

5.0 PRELIMINARY GEOTECHNICAL ASSESSMENT 16

5.1 Hazard Identification 16
5.2 Foundation and Geotechnical Design 16
5.3 Drainage 16
5.4 Recommendations 16

6.0 CONCLUSIONS AND RECOMMENDATIONS 17

6.1 Geo-Environmental Summary 17
6.2 Geotechnical Summary 17
6.3 Further Work 17

7.0 ABBREVIATIONS AND DEFINITIONS 18

8.0 REFERENCES 21

DRAWINGS

Drawing Number	Rev	Title
22987-2095-00	P01	Proposed Development Layout Plan
C5504/01	-	Site Location Plan
C5504/04	-	Site Features Plan

APPENDICES	
Appendix	**Title**
Appendix A	BSL Methodology and Guidance
Appendix B	Historical Maps
Appendix C	Geo-Environmental Data Report
Appendix D	BGS Exploratory Hole Records
Appendix E	Mining Search Report
Appendix F	UXO Screening Map

1.0 INTRODUCTION

1.1 Context

This report describes a desk-based Phase I Geo-Environmental Assessment Report carried out by Brownfield Solutions Limited (BSL) for Atri7 6 Ltd on a site off Whitworth Street West, Manchester and has been completed in general accordance with the following guidance:

- Environment Agency guidance - Land Contamination: Risk Management (LCRM).
- BS 10175:2011+A2:2017 Investigation of Potentially Contaminated Sites.
- BS5930: 2015+A1:2020 Code of Practice for Ground Investigations.
- BS EN 1997-1:2004+A1:2013 Eurocode 7. Geotechnical design. General rules plus UK National Annex.
- BS EN 1997-2:2007 Eurocode 7 Geotechnical design. Ground investigation and testing plus UK National Annex.
- NHBC Standards. Chapter 4.1: Land Quality - Managing Ground Conditions.

Definitions of terms and acronyms used within this report are presented in Section 7.0.

1.2 Proposed Development

The proposed development is for a residential end use of a 38-storey residential apartment block with associated soft landscaping, drawing No. 22987-2095-00 P01 provided to BSL by the client.

1.3 Objectives and Scope

The objectives of this assessment were to determine the environmental setting and ground conditions of the site, highlighting potential areas of concern that may govern the redevelopment.

The scope of works comprises a Phase I Assessment and site walk-over, with a review of the site, surroundings, historical uses and environmental setting in order to develop a preliminary Conceptual Site Model (CSM).

This report is intended to meet the requirements of a Preliminary Investigation as defined in BS10175:2011+A2:2017 and has been produced in general accordance with the recommendations for a Tier 1 Preliminary Risk Assessment as described in LCRM guidance.

1.4 Limitations

This Phase I Geo-Environmental Assessment Report has been prepared in accordance with the relevant legislative framework, guidance and risk assessment methodology as outlined in Appendix A.

The findings and opinions conveyed via this assessment are based on information obtained from a number of sources as detailed within this report, BSL have assumed this information is correct and reliable. Nevertheless, BSL cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

BSL have used reasonable skill, care and diligence in the production of this report. There may be other conditions prevailing on the site which are outside the scope of work and have not been highlighted by this assessment and therefore have not been taken into account by this report. Responsibility cannot be accepted for such site conditions not revealed by the assessment.

This report has been prepared for the sole use and reliance of the Client, Atri7 6 Ltd. No other third party may rely upon or reproduce the contents of this report without the written permission of Brownfield Solutions Ltd (BSL); a charge may be levied against such approval. If any unauthorised third party comes into possession of this report, then they rely on it at their own risk and BSL do not owe them any Duty of Care. This report may not be relied upon by the client or submitted to a third party for their reliance for the purposes of valuation, mortgage, insurance and regulatory approval, until all invoices have been settled in full.

Any recommendations made in this report should be confirmed with the Regulatory Authorities prior to implementation to ensure compliance.

This assessment has been based on the proposed planning layouts provided. Any subsequent change to the planning layout may have an impact on the validity of recommendations made within this report. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

The site plans enclosed in this report should not be scaled off. Any site boundary line depicted on plans does not imply legal ownership of land.

Notwithstanding site observations concerning the presence or otherwise of archaeological issues, asbestos-containing materials (ACM) or invasive weeds (e.g. Japanese knotweed), this report does not constitute a formal survey of these potential issues and specialist advice should be sought.

2.0 THE SITE

2.1 Location

The site is located off Whitworth Street West, Manchester, M1 5NZ, centred on National Grid Reference 383579, 397518 as shown on the Site Location Plan, Drawing No. C5504/01.

2.2 Site Description

A site reconnaissance survey was carried out at the site on 4th November 2024. The main site features and potential issues identified during this survey are detailed below and are shown on the Site Features Plan, Drawing No. C5504/02

Feature	Description
Site Area	Approximately 0.11 hectares.
Site Access	Access to the site is gained off Whitworth Street West to the north.
Site Overview Imagery	 Orientated South
	Update from Google: All images: Imagery Google©2024, Imagery ©2024 Airbus, CNES / Airbus, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, The Geoinformation Group, Map data ©2024.
Current Land Use and Site Features	The site comprises a parcel of land currently used for storage and parking surfaced in made ground across the majority of the site with concrete across the centre and an access road along the western part of the site.
Potential Sources of Gross Contamination	No significant sources of contamination were noted onsite.
Vegetation / Ecology	Sparse vegetation comprising grasses and small bushes along the north, east and south border of the site.
Topography	The site is generally flat with a slight slope to the west onto the access road.
Site Boundaries	The site is bordered by wooden fencing to the north, commercial buildings to the east and west, and a railway viaduct bridge to the south.
Surrounding Area	The site is set within a commercial area with a tram station to the north of the site alongside a number of bars and bordered by a railway bridge to the south.
Anecdotal Evidence	All services have been grubbed out and the made ground underlying the site is compacted due to previous use as a piling mat.

3.0 GEO-ENVIRONMENTAL SETTING

3.1 Historical Setting

A review of the available historical Ordnance Survey Maps and satellite imagery has been conducted, with the pertinent issues that may have affected the site, or its environs, summarised below. The Historical Maps are presented in Appendix B. A review of the historical industrial data within the geo-environmental data report has also been undertaken below, the report is presented in Appendix C.

Notable features on site, and potentially contaminative or geotechnically relevant features within 100m of the site boundary have been presented. Any features that have potentially been infilled will be considered up to 250m from the site boundary.

Feature	Distance (m) & Direction	Years Present	Description
Previous development / warehouse	On site	1848 - 1905 1932 - 2015	On the earliest mapping of the site, it was indicated to be occupied by residential housing until 1905 mapping where a single building is seen to occupy the entire site. This is later denoted as a warehouse until 2015 mapping and is no longer present by 2022 mapping.
Railway Lines	Abutting the site from S	1848 – Present	Deansgate Station Railway Lines are present on the viaduct abutting the site along the southern border of the site on 1851 mapping and are indicated to remain present.
	Circa 60m NW	1891 - 1965	Former railway lines, associated with the Central Station and the Cheshire Lines Railway Good Station, are indicated to be present circa 60m north of the site on 1891 mapping and remain present until 1980 mapping. these as seen to alter slightly during this time, reducing in their extent and indicated to no longer be present on 1972 mapping.
Tramway	Circa 5m N	1908 - 1949	A tramway is indicated to be present circa 10m north of the site on 1908 mapping and remains present until 1932 mapping, following this, they are no longer present.
Works / Warehouses	From circa 15m	1851 – present	Multiple works and warehouses are indicated to surround the site from the earliest mapping. Early mapping only indicates a few works to be present circa 40m such as a small ware manufactory and a brass and copper works. Various additional works and warehouses are indicated on mapping after this from circa 15m surrounding the site, such as an iron & steel warehouse, printing works, gum and starch works, Upholstery works and engineering works. By 2003 mapping only one works is present 85m west of the site.
Mills	From circa 25m	1851 - 1973	Multiple Mills are seen surrounding the site from as early as 1851 mapping from circa 25m to 90m from the site. Some of the mills are indicated to have associated tanks, chimneys and pumps from 1891 mapping. Several of these are indicated to be finishing works on 1891 mapping, all but one (Gaythorn Mill ~60m S) is no longer present by 1908 mapping, this is referred to as a wire and cable mill from 1932 until 1957 but remains on mapping until 1973.
Yards	From circa 40m N-NW	1851	Three yards a present on 1851 mapping from circa 40m north of the site, referred to as a coal yard and a stone yard. These are not present on subsequent mapping.
Tanks	Circa 70m N	1949 - 1965	Tanks are indicated to be present circa 70m north associated with the large railway and remain present until 1965 mapping. These are not present on subsequent mapping.
Gas Works	Circa 60m SE	1893 - 1985	Gaythorn Gas Works and the associated gas holders are present circa 110m south-east on 1893 mapping. The works extended north-west to be circa 60m south-east of the site on 1908 mapping and remains present until 1980 mapping when it is indicated to be smaller and is referred to as a gas holding station, that is later indicated to be disused on 1985 mapping. The feature is not present after 1985 mapping.

Feature	Distance (m) & Direction	Years Present	Description
Garage	Circa 75m SE Circa 85m W	1953 – 1965 1955 – 1992	Two garages are present circa 75m south-east and circa 85m west of the site. the closer garage is present from 1953 mapping until 1965 mapping and the other was present from 1955 mapping until 1992 mapping. These are not present on subsequent mapping.
Foundry	Circa 85m NW	1851	The Union (iron) Foundry is present circa 85m north-west of the site on 1851 mapping and is not indicated to be present on subsequent mapping.
Factories	Circa 85m SW	1994 - 1995	An unspecified factory is indicated to be present 85m south-west of the site on 1994 mapping until 1995 mapping and isn't seen on subsequent mapping.
	Circa 90m SW	1968 - 1995	A textile factory is indicated to be present circa 90m south-west of the site on 1968 mapping and remains present until 1995 mapping, but is not indicated to be present of subsequent mapping.

In summary, the map evidence indicates that the site originally was used for residential end use of terrace dwellings, however from 1932 up till around 2015 it was used as a warehouse, but since has remained undeveloped.

Historical land use in the surrounding area has been predominantly industrial with numerous mills, works, yards, garages and factories. A large gas works was present in the area until 1985 mapping but is now developed as commercial land with shops, bars, restaurants and offices.

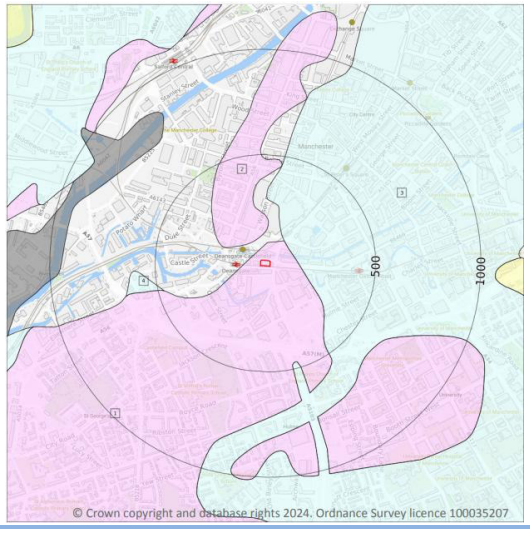
3.2 Published Geology

The following publications of the British Geological Survey (BGS) were examined in respect of the geology underlying the site:

- British Geological Survey (BGS) 1:50,000 Scale Geological Map Sheet 85 Manchester. Solid and Drift Edition.
- BGS Geology of Britain Map Viewer.
- BGS GeoIndex Onshore.
- Coal Authority Interactive Map.
- Geo-Environmental Data Report.

Extracts of the 1:10,000 geological mapping from the Geo-Environmental Data Report are presented below for reference:

BGS 1:10 000 Superficial Geology



BGS 1:10 000 Solid Geology



Made Ground
BGS mapping displays made ground deposits on site.

Superficial Deposits
The site is indicated to be underlain by Glaciofluvial Sheet Deposits. This stratum typically comprises sand and gravel.

Solid Geology
The deeper solid geology is indicated to be part of the Chester Pebble Beds Formation which typically comprises Sandstone.

3.3 BGS Exploratory Hole Records

There are 3No. BGS exploratory hole records within a relevant distance of the site (assumed as an approximate 50m radius), 2 of these are confidential, however, the available boreholes comprises 5 separate boreholes within close proximity of each other.

A summary of the ground conditions is presented in the table below.

Reference		Distance from Site (m) and Direction	Depth Made Ground (m)	Depth Superficial Deposits (m)	Depth Solid Geology (m)
SJ89NW 116-120	116	42m NE	GL-3.66 – Stone, clay and sand	3.66 – 6.71 – Sand & Gravel	6.71 – 11.28 - Sandstone
	117		GL-3.66 – Sand, clay and stones	3.66 – 7.01 – Sand & Gravel	7.01 – 11.28 - Sandstone
	118		GL-3.66 – Sand, clay and stones	3.66 – 7.01 – Sand & Gravel	7.01 – 11.28 - Sandstone
	119		GL-4.57 –Clay, sand and stones	4.57 – 9.45 – Sand & Gravel	9.45 – 14.02 - Sandstone
	120		GL-4.57 – sand, clay and stones	4.57 – 9.14 – Sand & Gravel	9.14 – 12.50 - Sandstone

The BGS Borehole Logs are presented in Appendix D.

3.4 Mining and Mineral Extraction

Coal Mining

As the site lies within the Coal Authority Reporting Area, a mining search has been undertaken as the site could be affected by past or current coal mining. The mining searches are presented in Appendix E. No significant issues are identified therefore coal mining risks are not any considered further in this report.

3.5 Hydrogeology

Based on the inferred geology, a summary of the Environment Agency aquifer designations is presented in the table below:

Stratum	Coverage	Aquifer Designation
Glaciofluvial sheet deposit	Full Site	Secondary (A) Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
Chester Pebble Beds Formation	Full Site	Principal Aquifer. This is Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

A summary of the pertinent hydrogeological features within the Geo-Environmental Data Report are provided below:

Feature	Distance (m) & Direction	Details
Nearest Active Groundwater Abstraction	468m NW	Licence No: NW/069/0004/021/R01 Details: Heat pump Direct Source: Ground water – North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (A) Annual Volume (m3): 346000 Original Start Date: 04/04/2024
Nearest Active Potable Groundwater Abstraction	-	None within 2000m.
Source Protection Zones	132m E	Type 3, total catchment.

3.6 Hydrology

A summary of the pertinent hydrological aspects within the Geo-Environmental Data Report are provided below:

Feature	Distance (m) & Direction	Details
Nearest Watercourse	25m N	Rochdale Canal.
Nearest Surface Water Abstraction	-	None within 2000m.
Closest Active Licenced Discharge Consent	206m W	Effluent type: Sewage Discharges – Sewer Storm Overflow – Water Company Receiving water: River Medlock Effective date: 29/03/2021

Information obtained from the Environment Agency (EA) Risk of Flooding from Rivers and the Sea (RoFRaS) database indicates that the risk of flooding across the site is very low (less than 1 in 1000 in any given year).

The British Geological Survey indicate there is a potential for groundwater flooding at the subject site, with a moderate risk rating.

No further consideration of flood risk is undertaken in this report. Specialist flood risk advice should be sought with regards to drainage and flooding.

3.7 Landfill and Waste Management Sites

There are no active or historical landfill sites recorded within 500m.

There are no current waste management sites recorded within 250m of the site.

There are seven historical waste management site recorded as a scrap yard, located 149m to the south of the site and 174m south-west.

3.8 Environmental Regulatory Data

A summary of the relevant environmental aspects, both on site and within 250m of the site contained in the Geo-Environmental Data Report, are presented in the table below:

Entry	On-site	0 – 50m	50 – 250m	Details
Recent Industrial Land Uses	0	2	22	The closest is 6m south-west of the site indicated to be for food and beverage industry machinery.
Current or Recent Fuel Stations	0	0	0	
Licensed Industrial Activities (Part A(1))	0	0	2	The closest of these is Manchester Heat Network Tradeco Limited located 179m north-east of the site, that was effective from 20/08/2020.
Licensed Pollutant Release (Part A(2)/B)	0	0	0	
Radioactive Substances	0	0	0	
Pollution Incidents (EA/NRW)	0	0	0	

3.9 Radon

Information from the environmental database report indicates the property is in an area where <1% of properties are above the Action Level for radon, and therefore radon protective measures are not required in accordance with BRE Report 211 'Radon – Guidance on protective measures for new dwellings'.

3.10 UXO Risk

In accordance with CIRIA Report C681, BSL have reviewed non-specialist UXO data for the site using the online Zetica Bomb Risk Mapping data.

There is no indication of former military use from the Phase I Assessment. The map indicates the site to be in an area where the bomb risk is moderate. A copy of the map is presented in Appendix F.

A Detailed UXO Desk Study has historically been produced for the site by EOD which reveals there to be a low risk.

4.0 PHASE 1 SUMMARY AND RISK ASSESSMENT

4.1 Introduction

The risk posed by any contaminants in soil or groundwater will depend on the nature and level of the source, the probability of exposure occurring, the potential pollution pathway and the likely effects on the receptors.

A contaminant is defined as a substance that has the potential to cause harm, a risk is considered to exist if such a substance is present at sufficient concentrations to cause harm and if a pathway is present through which a receptor could be exposed to the contaminant.

The following sections discuss the identified potential on-site and off-site sources, and any pollution that could impact receptors via the pathways associated with the proposed development. Pollution linkages are assessed which may represent a risk to human health and/or controlled water receptors from the information gained from the Phase I Assessment searches. The assessment has been carried out on a qualitative basis and aims to produce a complete and comprehensive Preliminary Conceptual Site Model.

Three potential impacts exist for any given site and all three need to be considered in the qualitative risk assessment, these are:

- On-site impacts.
- The site impacting its surroundings.
- Off-site sources impacting the subject site.

4.2 Potential Contaminative Sources

On-Site
From the information obtained, the following sources have been identified which may affect the redevelopment of the site for residential end use:

- Made ground associated with the former warehouse.
- Warehouse.

Off-Site
The following off-site sources have been identified which may affect the redevelopment of the site:

- Railway (closest abutting the site from the south).
- Tramway (closest circa 5m N).
- Works / Warehouses (closest circa 15m).
- Mills (closest circa 25m).
- Tanks (70m N).
- Gas Works (closest 60m SE).
- Garages (closest circa 75m SE).
- Foundry (85m NW).
- Factories (closest circa 85m SW).

The yards from circa 40m north to north-west and the foundry circa 80m north-west of the site are not considered to pose a significant risk to the site due to them not being present since 1851 mapping, it is assumed that any contamination associated with these features will have attenuated over time and

therefore a negligible risk is assumed and they are not considered further. Similarly, the tramway is not considered to pose sufficient risk given the age and nature of the historical feature.

Associated Contaminants
The contaminants commonly associated with the potential sources of contamination identified are tabulated below:

Contaminative Sources	Department of the Environment Industry Profile or Other Source	Commonly Associated Contaminants
On Site		
Made Ground	AGS Guides BS8485 and BS8576	Heavy metals, polycyclic aromatic hydrocarbons (PAHs), asbestos, ground gases (carbon dioxide and methane).
Warehouse	-	Heavy metals, PAHs, petroleum hydrocarbons, asbestos
Off Site		
Railway	Railway land	Heavy metals, PAHs, petroleum hydrocarbons, PCBs, asbestos
Factories, Works, Mills, warehouses	Textile and Dye Manufacturing, Metal Manufacturing, refining, and finishing works	Heavy metals, hydrocarbons, PAHs, asbestos, VOC, detergents, degreasers, inorganic compounds, organic solvents
Tanks and chimneys	Road vehicle fuelling, service and repair	Heavy metals, PCBs, oils, petroleum hydrocarbons, BTEX, MTBE, VOCs, SVOCs
Gas works	Gas works	Heavy metals, PAHs, petroleum hydrocarbons, BTEX, SVOCs, cyanides
Garages (including possible PFS, MOT testing station and body-shop)	Road vehicle fuelling, service and repair	Petroleum hydrocarbons, PAHs, heavy metals, oils, asbestos, VOCs and SVOC

4.3 Pathways

A pathway is defined as a medium by which a contaminant comes into contact with, or otherwise impacts a receptor.

At this stage the potential contaminants identified above are considered to present potential risks to site end users and controlled waters through the following pathways:

Potential Pathways	
Pathways in respect to Human Health	• Dermal contact with contamination. • Inhalation of dusts. • Inhalation of gases or vapours in both indoor and outdoor air.
Pathways in respect to Controlled Waters – Surface water	• Surface run-off /over land flow. • Drainage discharge. • Base flow from groundwater.
Pathways in respect to Controlled Waters – Groundwater	• Leaching of mobile contamination into groundwater via the unsaturated zone. • Migration of perched groundwater in any permeable soils or along existing or proposed service runs. • Migration into the saturated zone and flow through the aquifers underlying the site.

Potential Pathways	
Pathways in respect to Property/structures/water pipes	• Direct contact with substances deleterious to building materials and potable water supply pipelines. • Migration of ground gases (methane) into confined spaces (explosion and damage to property).

4.4 Receptors

The identified receptors are listed below:

- Residential end users (human health).
- Structures/Property/Potable water supply pipes.
- Nearest watercourse. Rochdale Canal 25m N (Controlled waters).
- Superficial Aquifer. Sand and gravel /Glaciofluvial deposits (Controlled waters).
- Bedrock Aquifer. Sandstone/Chester Pebble Beds Formation (Controlled waters).

Under current UK health and safety legislation, employers are required to carry out their own appropriate site-specific risk assessments and mitigation to protect employees. It has been assumed that any future construction works onsite will be undertaken in compliance with these requirements. Therefore, construction workers have not been specifically considered as part of this assessment.

4.5 Preliminary Conceptual Site Model (CSM)

The information obtained in the previous sections has been used to compile a Preliminary CSM. The identified potential contaminants and receptors have been assessed in the table below as to whether a plausible source-pathway-receptor pollutant linkage for the proposed end use of the site exists. The risk classification has been estimated in accordance with information in the BSL Guidance and Methodology in Appendix A.

The Preliminary CSM's are presented in the tables overleaf, any assessed risk above moderate will possibly require further action:

Human Health						
Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk	Justification
On site **Made ground associated with previous development and former warehouse** Heavy metals, PAHs, asbestos, hydrocarbons, PCBs, ground gases (carbon dioxide and methane).	Root uptake, ingestion, direct contact, inhalation of dusts	End-users/ Structure	Low likelihood	Medium	Moderate/ low	Given the industrial heritage of the site, it is possible contaminants associated with the previous industrial development of the site are present across the site. However, no areas of gardens or POS are indicated on the proposed development plan and therefore end users have a low likelihood of being in contact with potential associated contaminants and a moderate to low risk is considered. Further investigation and assessment will be required to confirm the risk.
On site **Made Ground** Metals and organic contamination	Migration into/chemical attack of water supply pipelines	Water Pipelines / End users	Low likelihood	Medium	Moderate/ low	Contaminants within the soil/groundwater could potentially attack the clean potable water supply pipe, contaminants should be assessed to determine the correct pipe material and level of precautions required.
On site **Natural Geology** Radon	Migration into confined spaces, inhalation	End-users	Negligible	Medium	No linkage	BR 211 radon advice indicates no protection measures are required.
Off site **Railway** Heavy metals, PAHs, petroleum hydrocarbons, PCBs, asbestos	Root uptake, ingestion, direct contact, inhalation of dusts	End-users	Unlikely	Medium	Low	It is considered unlikely that contaminants associated with the railway could be present across the site due to the low mobility of the associated contaminants. Additionally, despite the proximity of the railways to the site both of these closest features are at a significantly higher elevation along the viaducts. The proposed development also indicates no areas of soft landscaping or POS. Therefore, it is considered unlikely that these contaminants will be in contact with the end users and a low risk is considered. Further investigation and assessment will be required to confirm the risk.
Off site **Factories, works, mills, warehouses** Heavy metals, hydrocarbons,	Root uptake, ingestion, direct contact, inhalation of dusts	End users	Low likelihood	Medium	Moderate/ Low	Various industrial buildings are present surrounding the site from varying distances from circa 15m from the site. The majority of these are considered not to impact the site due to the length of time since they were present and the distance from site which allow the potential contaminants to attenuate over time and distance before migration onto and impacting the site. The proposed

Human Health						
Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk	Justification
PAHs, asbestos, VOC, detergents, degreasers, inorganic compounds, organic solvents						development also indicates no areas of soft landscaping or POS limiting the risk to end users. Therefore, a moderate to low risk is considered to end users. Further investigation and assessment will be required to confirm the risk.
Off site Tanks and chimneys Heavy metals, PCBs, oils, petroleum hydrocarbons, BTEX, MTBE, VOCs, SVOCs	Root uptake, ingestion, direct contact, inhalation of dusts	End users	Unlikely	Mild	Very low	It is considered unlikely that contaminants associated with the tanks and chimneys could be present across the site due to the low mobility of the associated contaminants and the distances of the associated features from the site. Additionally, the proposed development also indicates no areas of soft landscaping or POS. Therefore, it is considered unlikely that these contaminants will be in contact with the end users and a low risk is considered. Further investigation and assessment will be required to confirm the risk.
Off site Gas works Heavy metals, PAHs, petroleum hydrocarbons, BTEX, SVOCs, cyanides	Root uptake, ingestion, direct contact, inhalation of dusts	End users	Low likelihood	Medium	Moderate/ low	A low likelihood is considered for contaminants associated with the gasworks to be present across the site due to the distance of the features from the site. Additionally, the majority of the main gas works exceeds 100m from the site. Therefore, the majority of the associated contaminants are likely to attenuate before migrating onto the site. The proposed development also indicates no areas of soft landscaping or POS. Areas of the gas works within 100m of the site is now wholly redeveloped into a commercial area with offices, shops and restaurants and underwent widespread remediation. However, contamination may have migrated prior to this. However, there is considered to be a low likelihood of these contaminants being in contact with the end users and a moderate to low risk is considered. Further investigation and assessment will be required to confirm the risk.
Offsite Garages Petroleum hydrocarbons, PAHs, heavy metals, oils, asbestos, VOCs and SVOC	Root uptake, ingestion, direct contact, inhalation of dusts	End users	Unlikely	Medium	Low	It is considered unlikely that contaminants associated with the garages could be present across the site due to the low mobility of the associated contaminants and the distances of these features from the site. The proposed development also indicates no areas of soft landscaping or POS. Therefore, it is considered unlikely that these contaminants will be in contact with the end users and a low risk is considered. Further investigation and assessment will be required to confirm the risk.

Controlled Waters						
Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk	Justification
Made Ground PAHs, Metals	Overland flow, / migration through saturated zone	Rochdale Canal 25m away (Surface waters)	Unlikely	Medium	Low	The Rochdale Canal is indicated to be located 25m from the site, it is considered contaminants associated with the made ground and other past industrial uses are unlikely to impact the Rochdale Canal due to the distance of the canal from the site and the associated contaminants are not considered to have significant mobility. Furthermore, canals are considered to be man made structures which are typically clay-lined and not in hydraulic continuity with the underlying aquifers. Therefore a low risk is posed to the canal from the made ground.
	Leaching through unsaturated zone / Migration through saturated zone	Secondary A Aquifer (Groundwater)	Unlikely	Medium	Low	The proposed development comprises building footprint in the majority with a new surface water drainage system installed which will further reduce the risk to controlled waters. The risk is considered to be low.
	Migration through saturated zone	Principal Aquifer (Groundwater)	Unlikely	Medium	Low	There is a groundwater abstraction 468m north-west and a Source Protection Zone 132m east. The site is currently partially surfaced in hardstanding and will have building footprint or hard surfacing across almost the entirety of the site, with a new surface water drainage system installed which will reduce the risk to controlled waters. Therefore, a low risk is considered.

Human Health Risk – Soils Contamination Summary
Based on the preliminary CSM and the current use of the site, the overall risk from land contamination at the site is considered to be **low to moderate** for a redeveloped site. This would need to be confirmed by appropriate intrusive investigation, testing and assessment.

Human Health Risk – Ground Gas Summary
A potential on-site gas source has been identified associated with the made ground associated with previous uses. Off-site potential sources include the former gas works. Potentially viable linkages are considered to exist and the preliminary CSM considers these sources to be of low to moderate risk.

In accordance with BS8576 and CIRIA C665 as set out in Appendix A of this report, the gas generation potential is considered to be very low. The sensitivity of the development is moderate on account of the proposed high rise apartments use.

In line with current guidance, it is recommended that ground gas monitoring should comprise 6 visits over a 3 month period.

Controlled Waters Risk - Summary
Based on the preliminary CSM, BSL believes the overall risk to controlled waters at the site is **low**.

The above assessed level of risk will need to be confirmed by intrusive investigation and quantitative risk assessment.

5.0 PRELIMINARY GEOTECHNICAL ASSESSMENT

5.1 Hazard Identification

A preliminary geotechnical hazard identification exercise has been undertaken in general accordance with the Highways England document CD 622, 'Managing geotechnical risk'. Potential geotechnical hazards based on the expected ground conditions are listed below:

- Made ground of unknown nature; if placed in a non-engineered manner may cause excessive settlement of foundations, highways and infrastructure.
- Attack of buried concrete by aggressive ground conditions; the site may contain unknown made ground and potentially sulphate bearing soils. The coal measures are known to be high in naturally occurring sulphates.
- Shallow groundwater/groundwater rise causing resulting in difficulties with excavations due to trench collapse.

The above identified geotechnical hazards will need to be considered as part of further investigations and assessments.

5.2 Foundation and Geotechnical Design

The proposed development will comprise a 38-storey apartment block. In light of the likely imposed loads, a deep foundation solution, such as piles will likely be required. However, the exact type of foundation solution should be informed by an onsite intrusive investigation to the confirm ground conditions.

5.3 Drainage

Drainage to SuDS is a potentially viable option for the site, given the indicated presence of permeable Glaciofluvial Sheet deposits, subject to the depth of the groundwater and test results.

This would need to be confirmed by an onsite intrusive investigation to confirm ground conditions and infiltration rates. Testing should be carried out in general accordance with BRE Digest 365 “Soakaway design” and CIRIA C753 “The SuDS Manual”.

5.4 Recommendations

To confirm the ground conditions in respect to the identified potential geotechnical hazards and risks, an appropriate intrusive investigation will need to be undertaken.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Geo-Environmental Summary

The site has had previous uses of residential dwellings and more recently a warehouse, based on the proposed residential development, the overall risk to human health from on site soils contamination is considered to be moderate to low.

The risk from off-site sources of contamination is considered to be moderate to low.

The risk from permanent ground gases is considered to be moderate to low.

Radon is not considered to pose a risk.

The overall risk to controlled waters is considered to be low.

Intrusive investigations will be required to confirm the above assessed levels of risks and determine remedial requirements, if any.

6.2 Geotechnical Summary

Intrusive investigations will be required to confirm the most suitable foundation solution and to obtain parameters for concrete classification, floor slab and highways design.

Drainage to SuDS is potentially viable, subject to intrusive investigation and testing.

6.3 Further Work

To confirm the risks to the identified receptors and confirm the ground conditions in respect to the identified geotechnical and geo-environmental risks, an appropriate intrusive investigation will need to be undertaken. The following further works are recommended, although this list is not exhaustive and should be read in conjunction with any planning conditions that are applicable to the site:

- Topographical survey / utility mapping.
- Intrusive ground investigation comprising:
  - Trial pitting, windowless sampling and rotary cored drilling.
  - Installation of standpipes in boreholes to allow gas concentrations and groundwater levels to be monitored.
  - The undertaking of soil infiltration rate testing.
  - Geotechnical testing of soils and rock.
  - Contamination analyses of soil.
- Assessment and recommendations based on the above, including requirements for further work, if necessary.

7.0 ABBREVIATIONS AND DEFINITIONS

GLOSSARY	
Term / Abbreviation	**Definition**
AST	Above Ground Storage Tank.
B(a)P	Benzo (a) Pyrene.
BGS	British Geological Survey.
BRE	Building Research Establishment.
BS	British Standard.
BSL	Brownfield Solutions Ltd.
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes.
CBR	California Bearing Ratio (used in pavement/highways design).
CAR 2012	Control of Asbestos Regulations (2012).
CBCB	Cheshire Brine Compensation Board.
CBCD	Cheshire Brine Compensation District.
CBR	California Bearing Ratio.
CIEH	Chartered Institute of Environmental Health.
CIRIA	Construction Industry Research Association.
CL:AIRE	Contaminated Land: Applications in Real Environments.
CLEA	Contaminated Land Exposure Assessment.
CLO	Contaminated Land Officer.
COMAH	Control of Major Accident Hazards.
Contamination	Presence of a substance which is in, on or under land, and which has the potential to cause significant harm or to cause significant pollution of controlled water. There is no assumption in this definition that harm results from the presence of the contamination. Naturally enhanced concentrations of harmful substances can fall within this definition of contamination. Contamination may relate to soils, surface water, groundwater or ground gas.
Controlled Waters	Inland freshwater (any lake, pond or watercourse above the freshwater limit), water contained in underground strata and any coastal water between the limit of highest tide or the freshwater line to the three-mile limit of territorial waters.
CPT	Cone Penetration Test.
CSM	Conceptual Site Model. A schematic hypothesis of the nature and sources of contamination, potential migration pathways (including description of the ground and groundwater) and potential receptors, developed on the basis of the information from the preliminary investigation and refined during subsequent phases of investigation and which is an essential part of the risk assessment process. The conceptual site model is initially derived from the information obtained by the preliminary investigation (i.e. the Phase I Phase I Assessment). This conceptual model is used to focus subsequent investigations, where these are considered to be necessary, in order to meet the objectives of the investigations and the risk assessment. The results of intrusive investigations can provide additional data that can be used to further refine the conceptual site model.
DCP	Dynamic Cone Penetrometer.
DNAPL	Dense Non-Aqueous Phase Liquid.
DoWCoP	Definition of Waste Code of Practice.
DWS	Drinking Water Standard.
EA	Environment Agency.
EHO	Environmental health Officer.
EQS	Environmental Quality Standard.
GAC	Generic Assessment Criteria.

GLOSSARY	
Term / Abbreviation	**Definition**
GDR	Geotechnical Design Report.
GFR	Geotechnical Feedback Report.
GIR	Ground Investigation Report.
GSV	Gas Screening Value.
Harm	Adverse effect on the health of living organisms, or other interference with ecological systems of which they form part, and, in the case of human health, including property/structures and water supply pipelines.
Hazard	Inherently dangerous quality of a substance, procedure or event.
HDPE	High Density Polyethylene.
HSV	Hand Shear Vane.
K	Modulus of Subgrade Reaction.
LCRM	Land Contamination: Risk Management (EA guidance).
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene).
LOD	Limit of Detection (for particular method adopted).
MMP	Materials Management Plan.
Mv	Modulus of Volume of Compressibility.
ND	Not Detected.
NHBC	National House Building Council.
NR	Not Recorded.
OS	Ordnance Survey.
PAH	Polycyclic Aromatic Hydrocarbon.
Pathway	Mechanism or route by which a contaminant comes into contact with, or otherwise affects, a receptor.
PCB	Poly-Chlorinated Biphenyl.
PCSM	Preliminary Conceptual Site Model.
pH	Scale used to specify how acidic or basic a water-based solution is.
PHC	Petroleum Hydrocarbons.
PID	Photo Ionisation Detector.
PNEC	Predicted No-Effect Concentration.
Precision	Level of agreement within a series of measurements of a parameter.
PSD	Particle Size Distribution.
PVC	Polyvinyl Chloride.
Receptor	Human health, living organisms, ecological systems, controlled waters (surface waters and groundwater within aquifers), atmosphere, structures and utilities that could potentially be adversely affected by contaminant(s).
Risk	Probability of the occurrence, magnitude and consequences of an unwanted adverse effect on a receptor.
Risk Assessment	Process of establishing, to the extent possible, the existence, nature and significance of risk.
Sampling	Methods and techniques used to obtain a representative sample of the material under investigation.
SOM	Soil Organic Matter.
Source	Location from which contamination is, or was, derived. This could possibly be the location of the highest soil, groundwater or gas concentration of the contaminant(s).
SPT	Standard Penetration Test.
SVOCs	Semi Volatile Organic Compounds.
TOC	Total Organic Carbon.
TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group).

GLOSSARY	
Term / Abbreviation	**Definition**
TVOCs	Total volatile organic compounds.
UCS	Unconfined Compressive Strength.
Uncertainty	Parameter, associated with the result of a measurement that characterises the dispersion of the values that could reasonably be attributed to the measurement.
UST	Underground Storage Tank.
UXO	Unexploded Ordnance.
VCCs	Vibro Concrete Columns.
VSCs	Vibro Stone Columns
VOCs	Volatile Organic Compounds.
WAC	Waste Assessment Criteria.
WFD (in waste context)	Waste Framework Directive.
WFD (in water context)	Water Framework Directive.
Units	**Definition**
°	Degrees
Φ	Phi angle (in degrees)
g/l	Grams per Litre
Km	Kilometres
kPa	Kilo Pascal (Equivalent to kN/m^2)
$KN/m^2/mm$	Kilo Newton per metered squared per millimeter
kN/m^2	Kilo Newtons per metre squared
kPa	Kilo Pascal (Equivalent to kN/m^2)
l/hr	Litres per hour
MJ/kg	Mega joule per kilogram
MN	Mega Newton
M^2/MN	Mega Newton per metre squared
M	Metres
m bgl	Metres Below Ground Level
m OD	Metres Ordnance Datum (sea level)
µg/l	Micrograms per Litre (parts per billion)
µm	Micrometre
mb	Millibars (atmospheric pressure)
mg/kg	Milligrams per kilogram (parts per million)
mg/m^3	Milligram per metre cubed
mm	Millimetre
ppb	Parts Per Billion
Ppm	Parts Per Million

8.0 REFERENCES

References used in the production of this report are listed below; note not all of the below are relevant to the subject site and may not have been utilised.

Association of Ground Investigation Specialists. 'Description Of Anthropogenic Materials– A Practitioners' Guide'. 2018.

BS 8576 'Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)'. 2013.

BS 5930+A1:2020: 'Code of Practice for Site Investigations'. 2020.

BS 10175:2011+A2:2017 'Investigation of Potentially Contaminated sites - code of practice'. 2017.

BRE Report BR211, Scivyer, C. 'Radon – Guidance on protective measures for new buildings' 2023 Edition.

CIRIA Special Publication SP32, PSA Civil Engineering Technical Guide 34, 'Construction over abandoned mine workings'. 1984.

CIRIA C574 'Engineering in Chalk'. 2002.

CIRIA C665 'Assessing Risks Posed by Hazardous Ground Gases to Buildings'. 2007.

CIRIA C681 'Unexploded Ordnance (UXO) A guide for the construction industry'. 2009.

CIRIA C753 'The SuDS Manual'. 2015.

CIRIA C758 'Abandoned Mine Workings Manual'. 2019.

CL:AIRE RB17 'A Pragmatic Approach to Ground Gas Risk Assessment'. 2012.

CL:AIRE TB19 'Managing Risks and Liabilities associated with Per and Polyfluoroalkyl Substances (PFASs)'. 2019.

CL:AIRE TB22 'An overview of the uses of PFAS to assist with identification of sites of concern'. 2023.

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

DEFRA and the Environment Agency, CLR Report No 11 'Model Procedures for the Management of Contaminated Land'. 2004. [Withdrawn 2019.]

Environment Agency (EA) - Land Contamination Risk Management (LCRM). 2019.

Health and Safety Executive (HSE). Control of Asbestos Regulations (CAR). 2012.

Highways England. CD 622, 'Managing geotechnical risk'. 2020.

National Planning Policy Framework (NPPF). 2023.

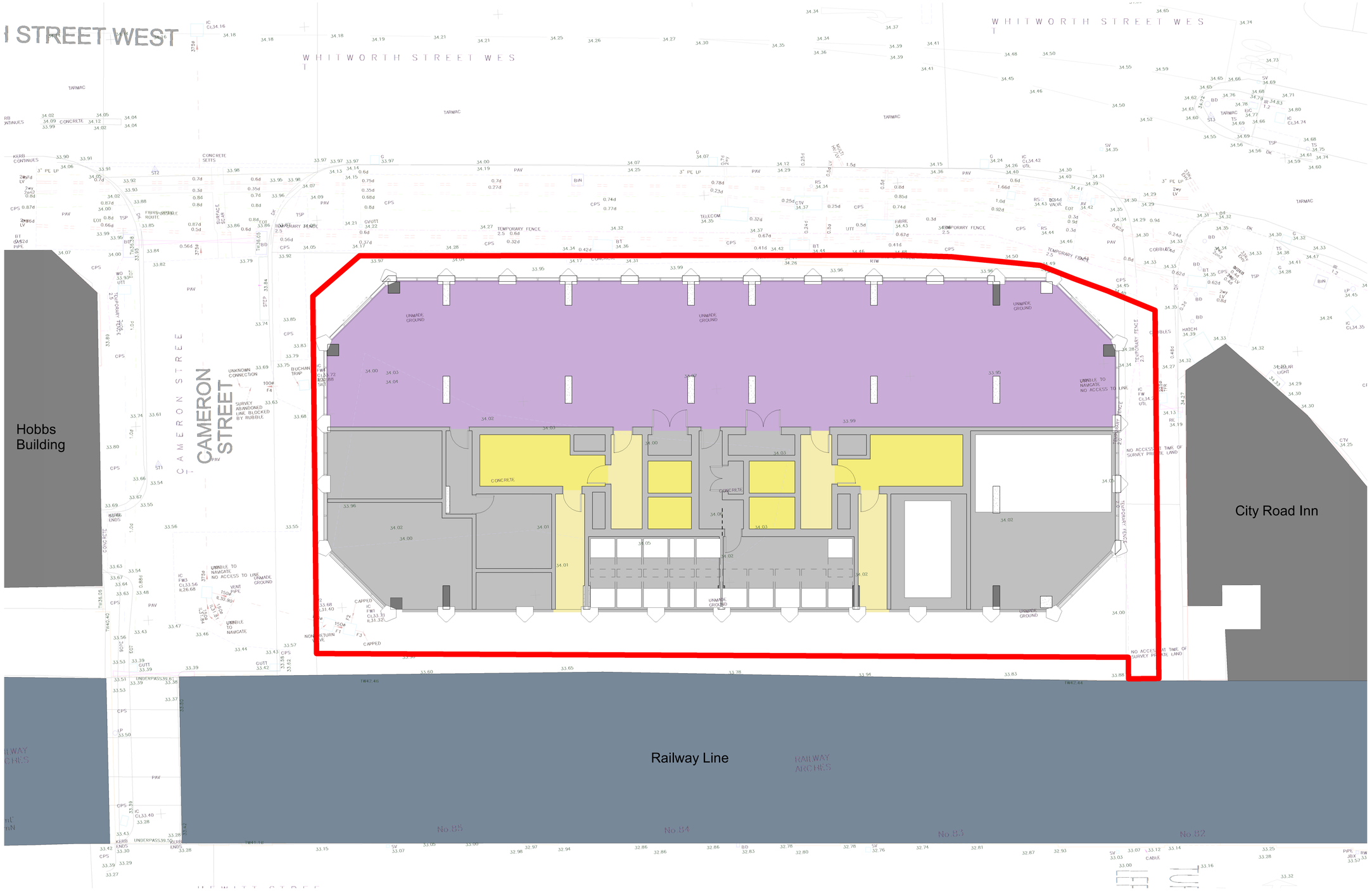
National Planning Policy Framework - Technical Guidance. March 2012.

NHBC Standards. Chapter 4.1: Land Quality - Managing Ground Conditions.

NHBC. 'Hazardous Ground Gas - An essential guide for housebuilders'. May 2023.

Water Framework Directive, 2000.

DRAWINGS



1 Level 0 - Site Plan Proposed
1 : 100

NORTH

0 1.0 2.0 3.0 4.0 5.0 10.0m

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Rev.	Description	Date	Drw.	Chk.
P01	FIRST ISSUE	10/12/2024	AR	AR

Client: Tri 7

Project: Whitworth Street, Manchester

Drawing Title: General Arrangement - Site Plan

Drawing Status: S1 - COORDINATION

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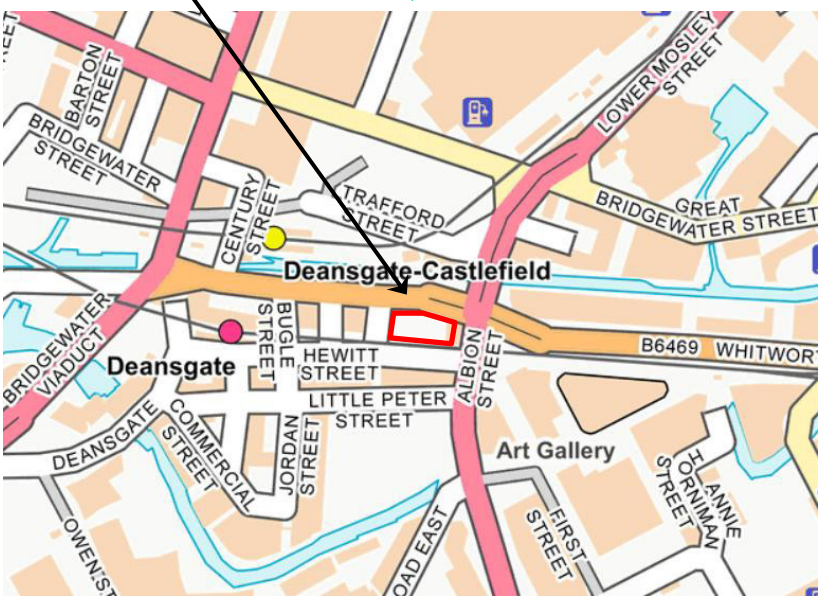
Project No.	Drawn	Checked	Size	Scale	Date
22987	AR	AR	A1	1 : 100	11/23/20



SITE LOCATION

NEAREST POSTCODE: M1 5NZ

SITE ENTRANCE WHAT3WORDS: ///PROOF.BUTTER.POETIC



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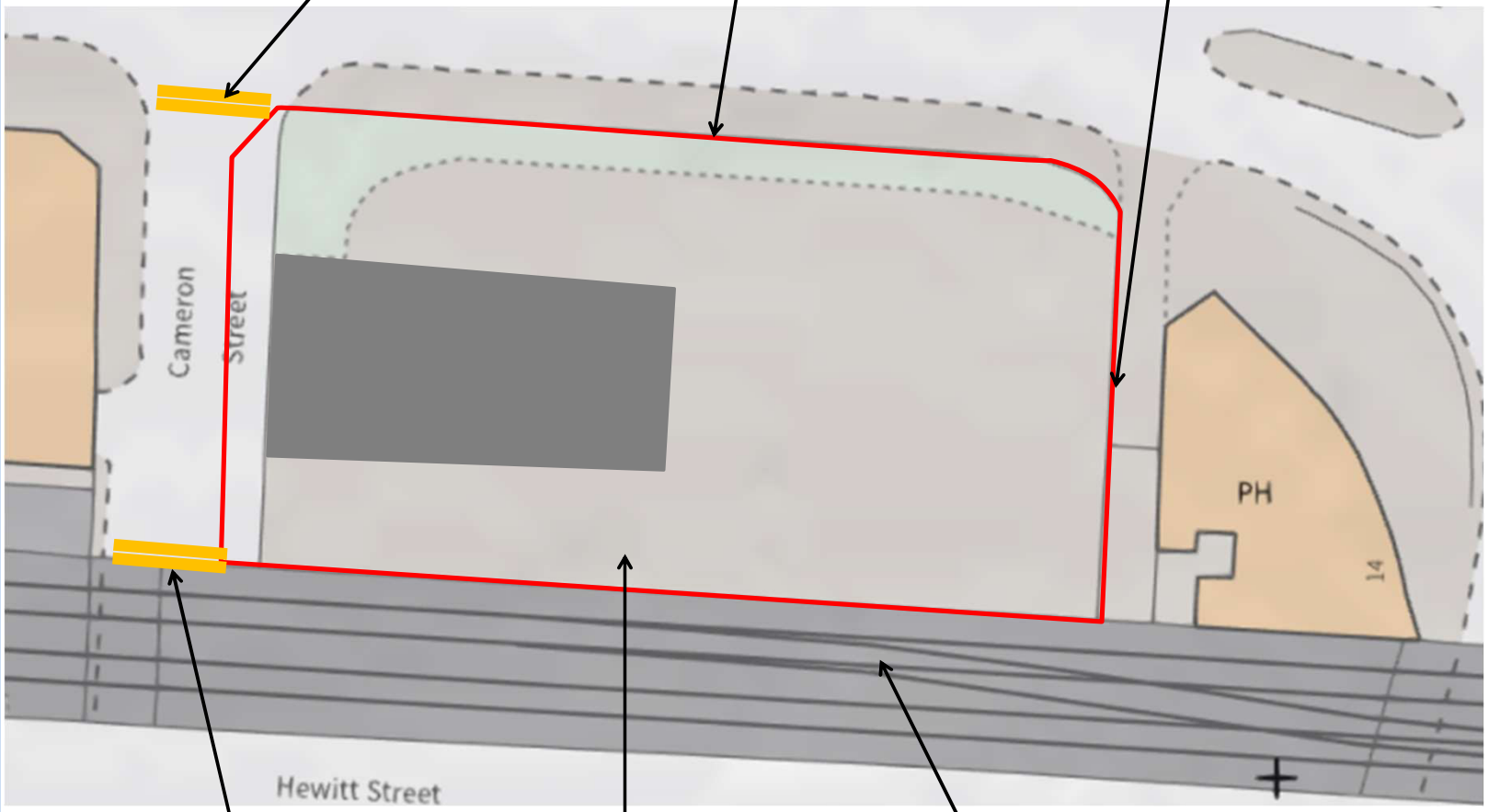
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PROJECT TITLE
VISION, MANCHESTER

DRAWING TITLE
SITE LOCATION PLAN

DRAWING No.	REVISION	SCALE	DATE
C5504/01	-	NTS	17/12/24

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KEY

- APPROXIMATE SITE BOUNDARY
- VEHICULAR SITE ACCESS
- CONCRETE HARDSTANDING

NOTES

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DRAWING TITLE
SITE FEATURES PLAN

DRAWING No.	REVISION	SCALE	DATE
C5504/04	-	NTS	18/12/2024

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APPENDIX A

BSL Methodology and Guidance

BSL Phase I Geo-Environmental Assessment Reports - Methodology and Guidance

Background

This Appendix provides information on the approaches, methods and guidance used by Brownfield Solutions Ltd in the preparation of this report.

The term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential soils and groundwater contamination). The term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements). It should be noted that this is an integrated investigation and these two main aspects are related, unless otherwise specified within the report.

Phase I reports are written in general accordance with the description of a Preliminary Investigation as defined in BS10175:2011+A2:2017 and are also produced in general accordance with the recommendations for a Tier 1 Preliminary Risk Assessment as described in LCRM guidance.

The first stage of the investigation and assessment of a site is the Preliminary Investigation/Tier 1 Preliminary Risk Assessment, often referred to as a Phase 1 Desk Study, comprising a desk study and walk-over survey and collation of desk-based searches, which culminates in the Preliminary Risk Assessment and the development of a preliminary/initial **Conceptual Site Model (CSM)**. From this are identified any potential geotechnical and geo-environmental hazards and the qualitative degree of risk associated with them. In the case of the geotechnical hazard identification, this is referred to as the **Ground Model.**

From the geo-environmental perspective, the hazard Identification process uses professional judgement to evaluate all the hazards in terms of possible contaminant linkages (of source-pathway-receptor). Possible contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment as part of Phase II investigations and reports.

The second stage is the Ground Investigation, Generic Risk Assessment and Geotechnical Interpretation. This represents the further assessment mentioned above. The Ground Investigation comprises field work and laboratory testing based on the findings of the Preliminary Risk Assessment, to reduce uncertainty in the geotechnical and geo-environmental hazard identification. This may include an exploratory, a detailed or/and supplementary Investigations as described in BS 10175:2011+A2:2017. Phase II Assessments are produced in general accordance with the recommendations for a Tier 2 Generic Quantitative Risk Assessment as described in LCRM guidance and are also intended to fulfil the requirements of a Ground Investigation Report (GIR) as detailed in BS EN 1997-2:2007.

Contaminated Land - Legislative Background

Land contamination can be addressed in several ways, e.g. during planning, under Part 2A, following an incident, during an investigation into environmental damages, or during the application of an environmental permit, or its surrender.

For the planning process the key test is **as a minimum the site cannot be determined as contaminated land**, e.g. there is not significant harm, significant possibility of significant harm to human health or that there is not significant harm to, or the significant possibility that the pollution of controlled waters will occur.

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

- The 1995 Environment Act.
- The Contaminated Land Statutory Guidance, DEFRA – April 2012.
- The Contaminated Land (England) Regulations 2006.
- The Contaminated Land (England) Amendment Regulations 2012.
- Water Resources Act.
- Water Framework Directive.
- Environmental Damage Regulations.
- Environment Agency (EA) - Land Contamination Risk Management (LCRM) 2019.

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

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

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

Source - substances that are potential contaminants or pollutants that may cause harm.
Pathway - a potential route by which contaminants can move from the source to the receptor, and the impact of that migration on the source e.g., attenuation.
Receptor - a receptor that may be harmed, for example the water environment, humans and water, considering the sensitivity of the receptor.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused.



Where any one of the “pollution linkages” between the above is absent there is deemed to be no risk.

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

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

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

- DETR: Circular 02/2000: Environmental Protection Act 1990: Part IIA: Contaminated land. 2012.
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002.
- BS 10175:2011+A2:2017.
- Environment Agency (EA) - Land Contamination Risk Management (LCRM). 2019.
- Groundwater Protection https://www.gov.uk/government/collections/groundwater-protection
- UK Technical Advisory Group (UKTAG) - - Water Framework Directive
- Incidents and their classification: the Common Incident Classification Scheme (CICS) – Used by the Environment Agency to classify pollution incidents.

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

- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012).
- The Environment Protection Act (1990).
- The Water Resources Act (1991).
- The Environment Act (1995).
- The Contaminated Land (England) Act (2000).
- The Pollution Prevention and Control (England and Wales) Regulations (2000).
- The Landfill Regulations (England and Wales) Regulations (2002).
- The Landfill (England and Wales) (Amendment) Regulations (2004).
- Contaminated Land (England) Regulations (2012).
- The Environmental Damage (Prevention and Remediation) Regulations (2009).
- Environmental Permitting Regulations (England and Wales) Regulations (2010).
- The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017).
- Health and Safety at Work Act.
- National Planning Policy Framework (NPPF) – latest version.

Contaminated Land Risk Assessment Approach

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



LCRM outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process. Under LCRM, three tiers of risk assessment exist – Stage/Tier Preliminary Risk Assessment, Stage 2 Generic Quantitative Assessment and Stage 3 Detailed Quantitative Assessment.

Further information can be found at the below site:
https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm

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

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

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

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552, with reference to Incidents and their classification: the Common Incident Classification Scheme (CICS), Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance 2012 and other guidance as appropriate which will be detailed within the main body of the report if applied.

The likelihood of a given receptor being impacted is related to a number of factors, e.g. the geology which could inhibit contaminant migration. For example, a site with a significant thickness of clay between it and a receptor may reduce migration of contamination via the subsurface, which will reduce the likelihood of a given receptor being impacted. The geology or drainage for example could offer a preferential pathway e.g. mines shafts/faults increasing the likelihood and potential magnitude of an impact. The depth of contamination will also affect the exposure pathway, for example petroleum hydrocarbons at depth are unlikely to reach a receptor via dermal contact but could via vapour pathways which will influence the likelihood of an impact being felt e.g. if there are no buildings on site.

The terms and definitions used for the assessment of the likelihood are provided below:

High likelihood: There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Examples - Extensive areas with concentrations above saturation limits for mobile contamination e.g. petroleum hydrocarbons within the water table.

Likely: There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term.
Examples – Localised areas of contaminants with concentrations above saturation limits for mobile contamination e.g. localised petroleum hydrocarbons within the water table; shallow contamination above relevant human health generic assessment criteria is present with little or no hardstanding,

Low likelihood: There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term.
Examples - A thickness/distance of low permeability deposits preventing contaminant migration to a receptor is present; a site is mostly covered hard standing preventing exposure to soil contamination.

Unlikely: There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.
Examples – A site is underlain by a substantial thickness of low permeability clays, between the source and potential receptors which will inhibit significantly, but not completely rule out migration to sensitive receptors.

The severity is also classified using a system based on CIRIA C552, with reference to Incidents and their classification: the Common Incident Classification Scheme (CICS), Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance 2012 and other guidance as appropriate which will be detailed within the main body of the report, if applied. The terms and definitions are:

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

Medium: Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve.

Mild: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment.
Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.

Minor: harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.
Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

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

		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very Low	Very low
	Negligible	Negligible Risk / No Linkage			

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

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

High: Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the longer term.

Moderate: It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term.

Low: It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.

Very Low: There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

Some linkages may be identified which constitutes a theoretical connection between a source and a receptor, but professional judgement shows them not to be possible for some reason. These are labelled 'negligible risk' and 'no linkage' in the summary table, which give rise to an overall **negligible** risk category and no further action is required.

Ground Gas Risk Assessment

BS8485:2015+A1:2019, BS 8576:2013, CL:AIRE RB17, and NHBC 'Hazardous Ground Gas - An essential guide for housebuilders' 2023, are the current guidance which gives up-to-date advice on all aspects of permanent ground gas risk. BS8576 alongside CIRIA C682 also provides guidance on assessment of hydrocarbon vapour intrusion.

The CL:AIRE publication 'Good Practice for Coal Mine Gas Emissions" 2021 provides guidance on the assessment of risks from mine gas sources.

The above all outline good practice in investigation, the collection of relevant data and monitoring programmes in a risk-based approach to ground gas contamination. The aim of the guidance is for a consistent approach to decision making, particularly relating to the scope of protective design measures on a site-specific basis.

Legislative Framework
BS8485:2015+A1:2019, BS 8576:2013 and CIRIA C665 provides technical guidance, however they also recognise the context into which the guidance has to be employed. Government policy is based upon a "suitable for use approach", which is relevant to both the current and proposed future use of land. When considering the current use of land, Part IIA of the Environment Protection Act 1990 provides the regulatory regime. The presence of hazardous ground gases could provide the "source" in a "pollutant linkage" which could lead the regulator to determine that considerable harm or there is a significant possibility of such harm being caused. Under such circumstances, the regulator would determine the land to be "contaminated land" under the provisions of the Act, setting out the process of remediation as described in the DETR Circular 02/2000 *Statutory guidance on contaminated land*.

Generation Potential of Sources
BS 8576:2013 Figure 6 provides a basis for assessing the generation potential from sources identified as part of the Phase I Assessment. These are summarised below:

Generation Potential	Typical Sources
Very Low	• Natural carbonate soil and strata, e.g. chalk and limestone. • Natural soil strata with a low degradable organic content, e.g. alluvium, peat. • In-filled pond less than 15 m diameter, in-filled before 1930s to 1940s. • Made ground with low degradable organic content (e.g. up to 5% organic material such as pieces of wood, pieces of paper, rags, etc. with a high proportion of ash and no food or other easily degradable waste). • Mine workings shallow or shaft (where there is clear evidence that they are flooded). • Inert landfill sites.
Low	• Natural soil strata with a high degradable organic content (DOC). • Made ground with total organic carbon (TOC) up to 6% (e.g. dock silt, no food or other easily degradable waste). • Foundry sand (includes phenolic binders, rags and wood that decay, albeit at low rates). • Landfill 1945 to mid 1960s (see also Moderate below).
Moderate	• Sewage sludge. • Mine workings – unflooded, more than 50 years since last worked (gas is liberated from coal when mine workings are excavated; this continues for up to about 50 years). • Landfill 1945 to mid 1960s (this could also be "low" or, if disturbed, "high").
High	• Landfill mid 1960s to early 1990s. • Mine workings – unflooded – less than 50 years since last worked.
Very High	• Municipal landfill sites. • Landfill early 1990s onward.

Frequency and Duration of Monitoring

BS8576 notes to determine where and how to monitor ground gases requires consideration of credible pathways of possible exposure of the receptors, taking into account what is known about the geology and hydrogeology, building construction and services layout, foreseeable events such as flooding, changes in groundwater level, climate change, extreme weather conditions, the closure of mines, and possible changes to the gas regime caused by future development.

The monitoring period for a specific site should cover the "worst case" scenario. A "worst case" scenario will typically occur during falling atmospheric pressure and, in particular, weather conditions such as rainfall, frost and dry weather.

The benefits of additional information and whether it is likely to change the scope of gas protection should be considered, as are the consequences of failing to characterise adequately pollutant linkages. Investigations concerned with ground gas are required to provide monitoring data sufficient to allow prediction of worst case conditions enabling the confident assessment of risk and subsequent design of appropriate gas protection schemes. Monitoring programmes should not be an academic exercise in data collection. CL:AIRE publication TB17 "Ground Gas Monitoring and 'Worst-Case' Conditions" provides further guidance.

Below are matrices that will aid in determining an appropriate number of gas monitoring visits and the length of monitoring period.

Typical/idealised periods of monitoring

		Generation of Potential Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	1 month	2 months	3 months	6 months	12 months
	Moderate (Apartments)	2 months	3 months	6 months	12 months	24 months
	High (Low rise Residential)	3 months	6 months	6 months	12 months	24 months

Typical/idealised frequency of monitoring/Number of Visits Required

		Gas Generation of Potential Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	4	6	6	12	12
	Moderate (Apartments)	6	6	9	12	24
	High (Low rise Residential)	6	9	12	24	24

Notes

1 Generation potential of sources based on descriptions within BS 8576:2013.

2 At least two sets of readings should be at low and falling atmospheric pressure (but not restricted to periods below <1000 mb) known as worst case conditions. Historical data can be used as part of the data set (Table 5.5b).

RB17 Approach

CL:AIRE RB17 (Card et al 2012) is a pragmatic approach to ground gas risk assessment and was developed because gas concentration, pressure and flow rate measured in a well headspace may not be representative of the conditions in the surrounding formation.

In these low-risk situations, the approach is to use the conceptual site model and the estimation of the likely gas generation from a source to identify where or if gas monitoring is required to better define the risks.

Under this approach, for sites with natural soils only with no credible methane source, then no action is required (no monitoring or gas protection measures) as this represents Characteristic Situation 1 (CS1).

Radon
Advice on radon protection in England is provided by the UK Health Security Agency, https://www.ukradon.org/information/ukmaps and by the BRE (BR 211 (Scivyer 2023)).

Areas of the country can be categorised according to the percentage of existing homes where radon is present above the Action Level:

- 0-1% lower probability.
- 1-3% and 3-10% intermediate probability.
- >10% higher probability.

Basic radon protection measures are required in new buildings and extensions in areas of England and Wales where 3-10% of properties exceed the Action Level and full radon protection measures where >10% exceed the Action Level.

Unexploded Ordnance (UXO) Guidance

Clients have a legal duty under the CDM 2015 Regulations to provide designers and contractors with project-specific health and safety information needed to identify hazards and risks. This includes the possibility of unexploded ordnance (UXO) being encountered on the site. Further details are given in CIRIA report C681.

BSL carry out non-specialist UXO screening exercises by considering any evidence of UK defence activities on or near the site evident from gathered desk study information and the unexploded aerial delivered bomb (UXB) online risk maps produced by Zetica. Other data sources are available, but as a first stage screening exercise the freely available online Zetica maps have been used. The level of risk stated is that determined by Zetica, a company experienced and considered competent in the assessment of UXO.

Geotechnical Guidance

A preliminary risk assessment of geotechnical hazards is carried out at the desk study stage and confirmed (or amended) at the ground investigation stage. The desk-based stage my include the requirements for a Coal Mining Risk Assessment (CMRA) which specifically assesses the risks from mining induced instability and related issues in high risk development areas: https://www.gov.uk/guidance/planning-applications-coal-mining-risk-assessments

APPENDIX B

Historical Maps



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GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: 1056 Scale Town Plan
Map date: **1851**
Scale: 1:1,056
Printed at: 1:1,056

N
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Surveyed 1849
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A

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Grid Ref: 383579, 397517

Map Name: County Series Town Plan

Map date: **1891**

Scale: 1:500

Printed at: 1:1,000

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Surveyed 1891
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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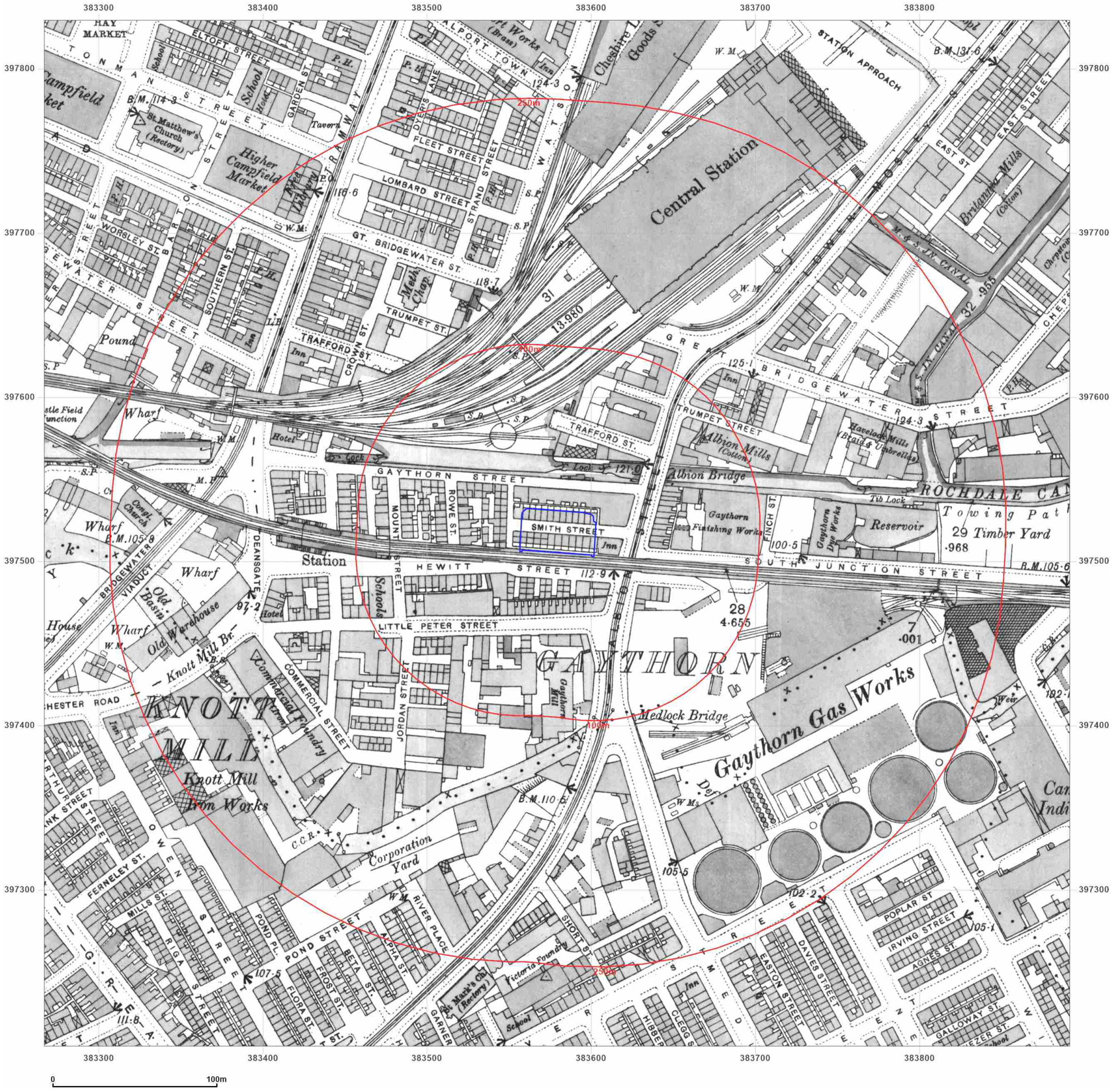
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Grid Ref: 383579, 397517

Map Name: County Series

Map date: **1893**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1893
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Edition N/A
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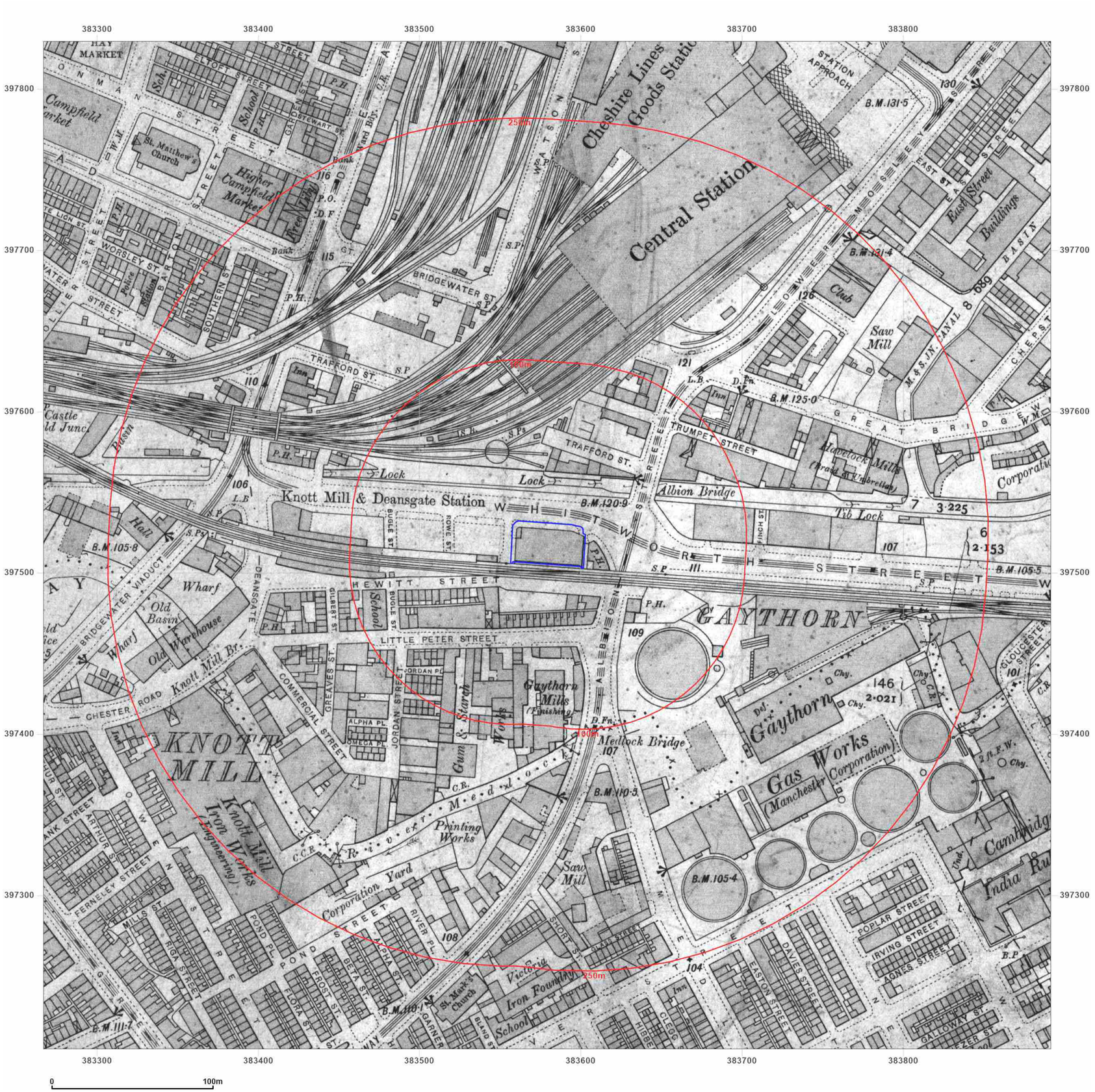
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Grid Ref: 383579, 397517

Map Name: County Series

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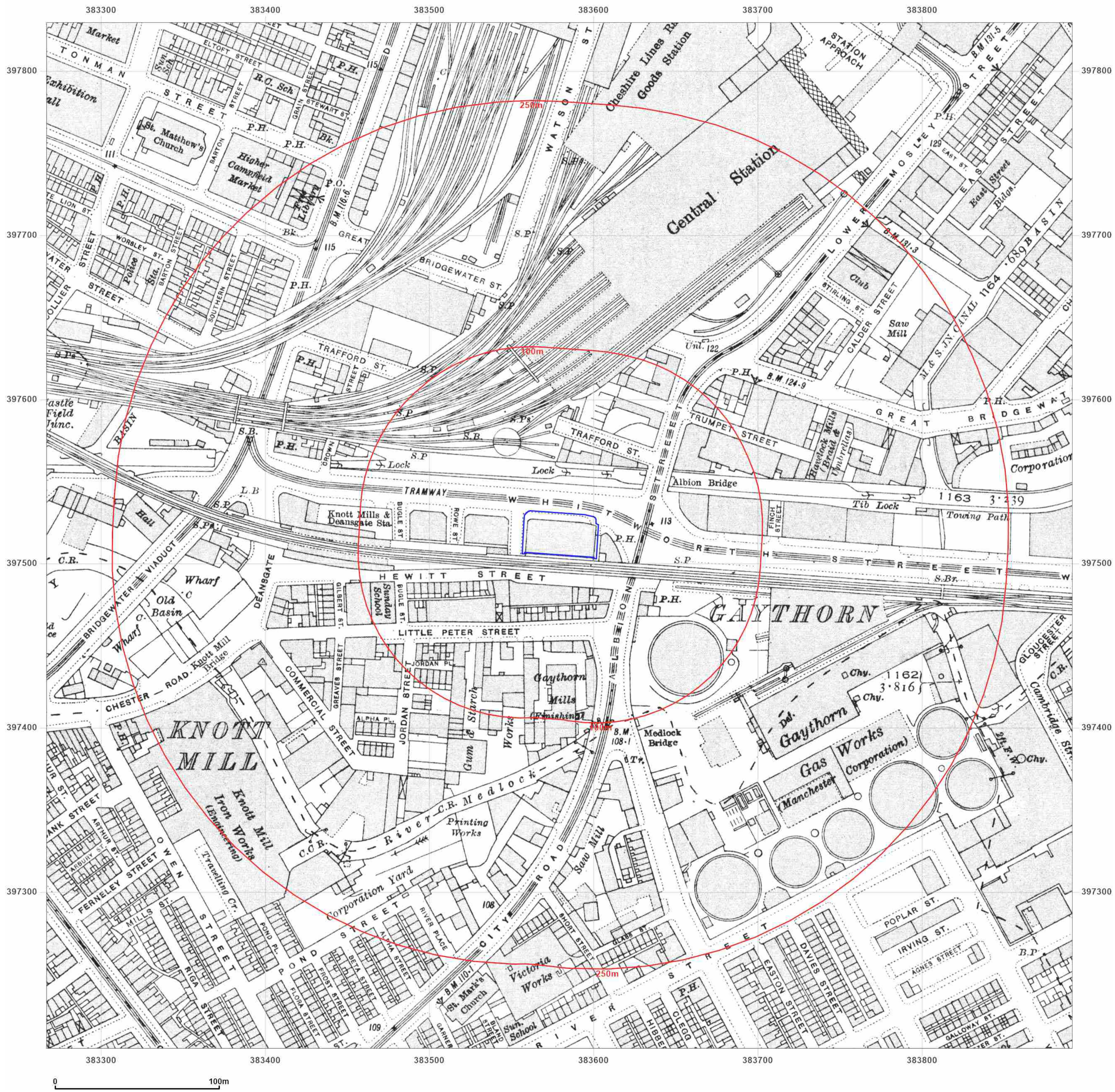
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Map Name: County Series

Map date: **1922**

Scale: 1:2,500

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Revised 1922
Edition N/A
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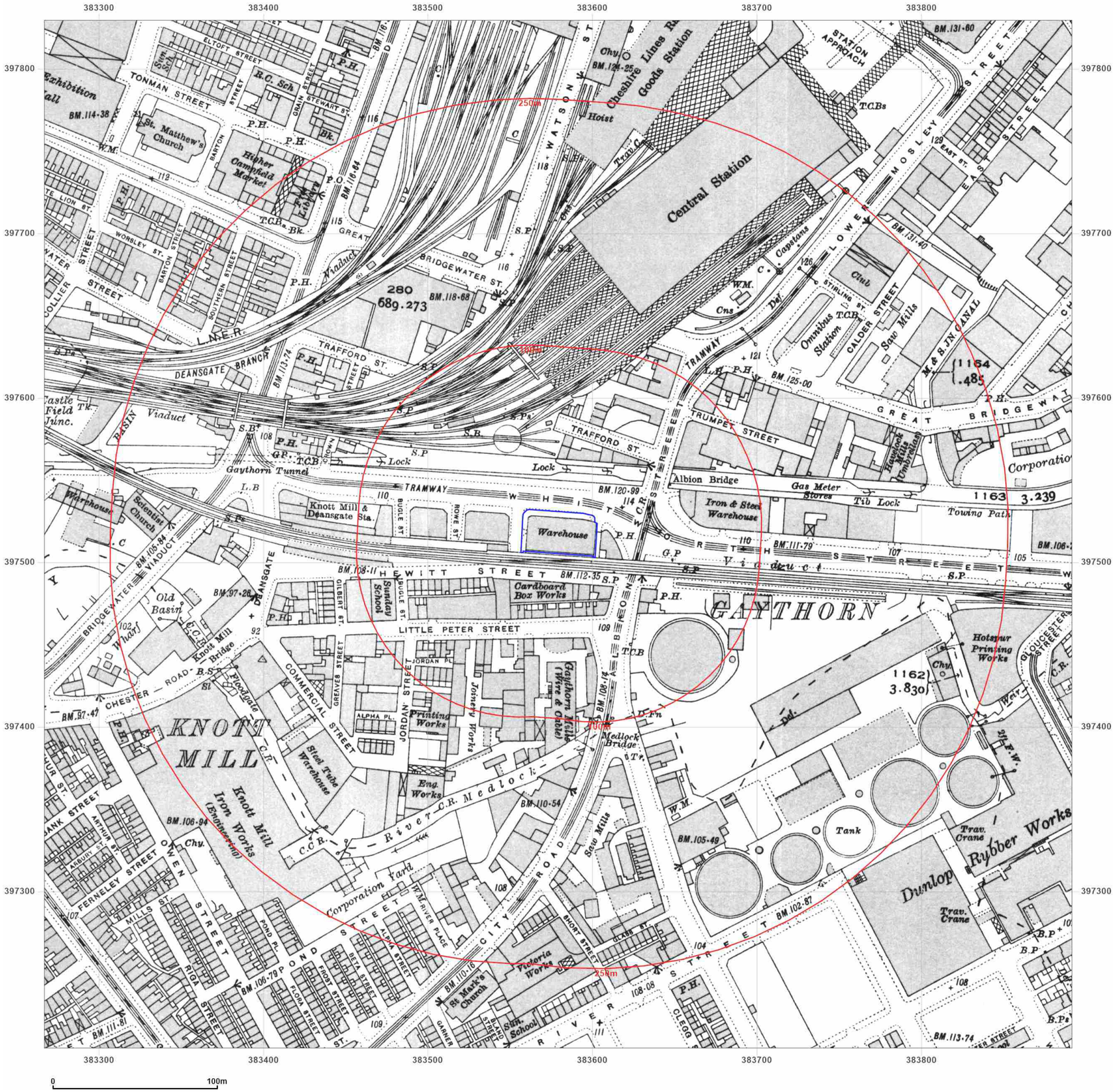
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Grid Ref: 383579, 397517

Map Name: County Series

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Edition N/A
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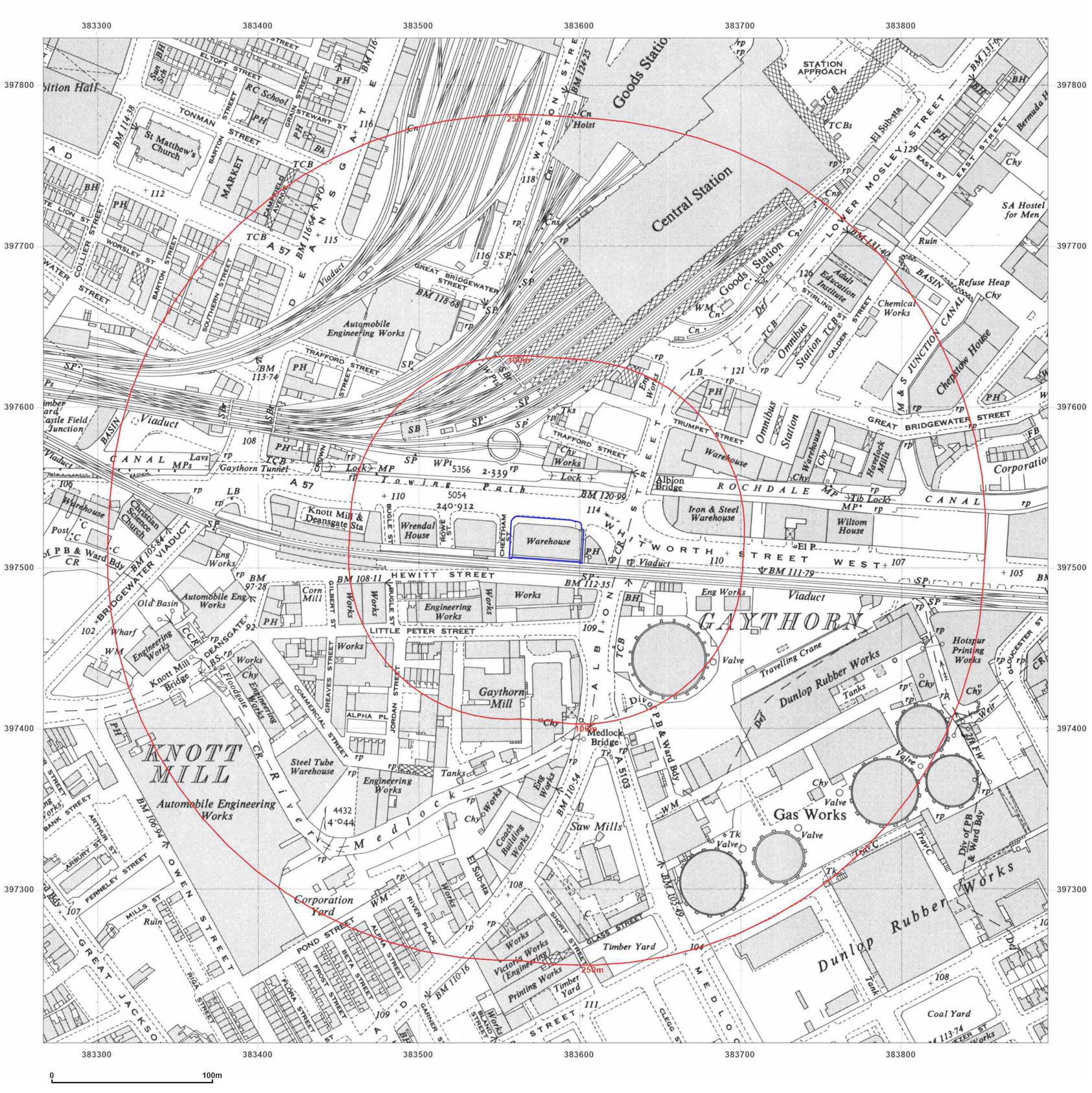
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Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1949**

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Edition N/A
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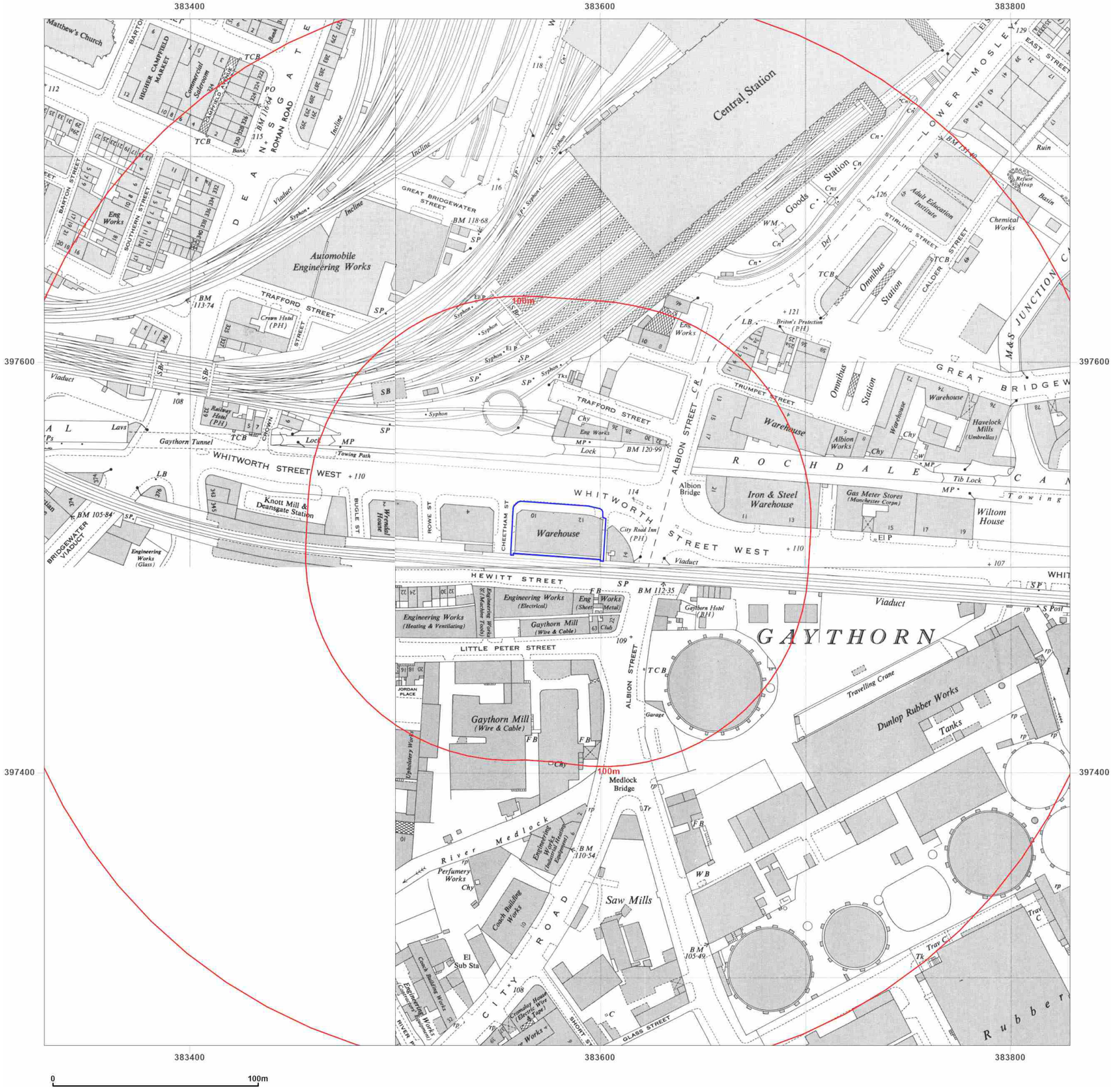
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Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1948-1953**

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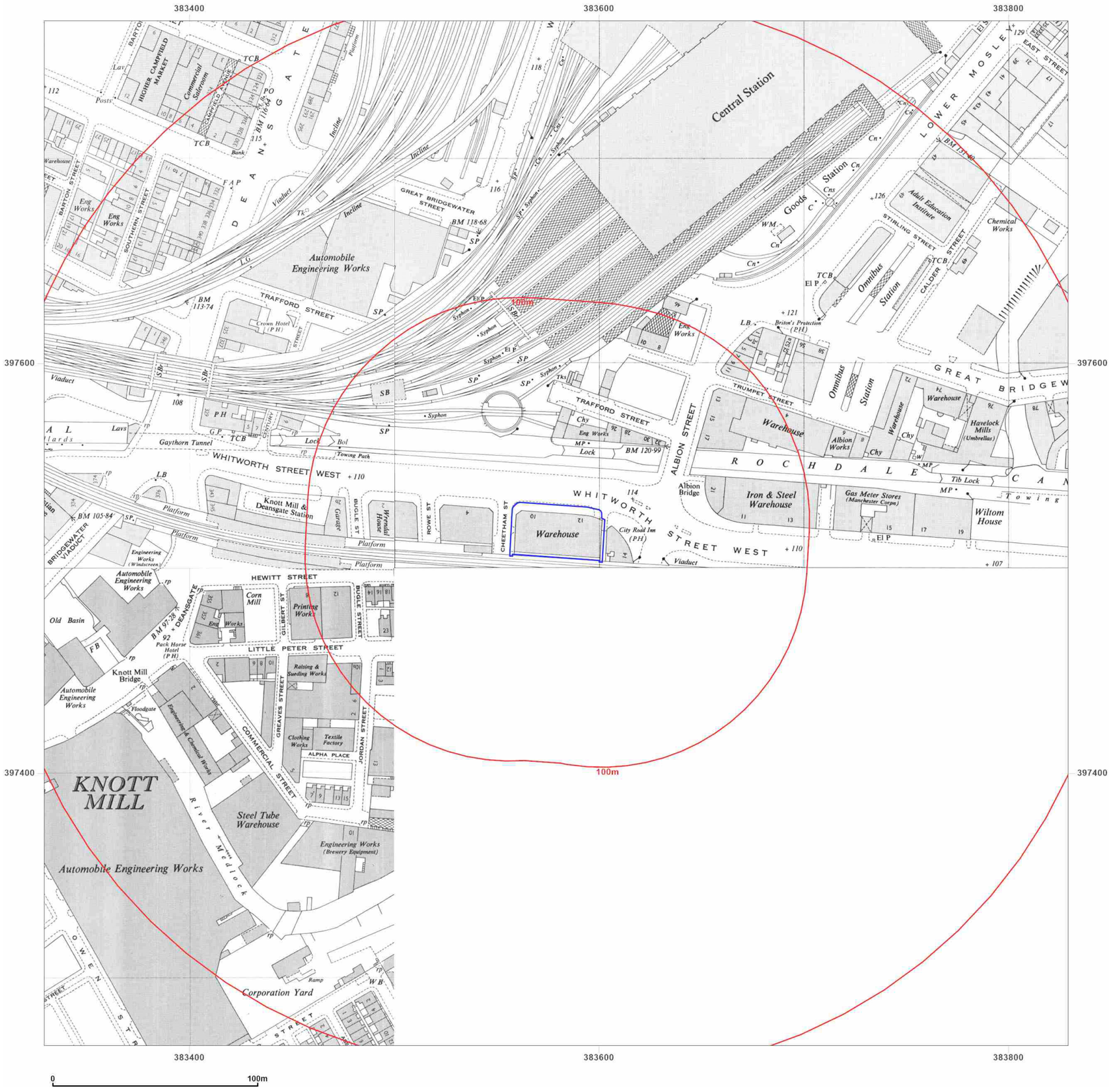
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Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1951-1955**

Scale: 1:1,250

Printed at: 1:2,000

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Revised 1951
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Copyright N/A
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Surveyed 1953
Revised 1953
Edition N/A
Copyright 1954
Levelled 1927

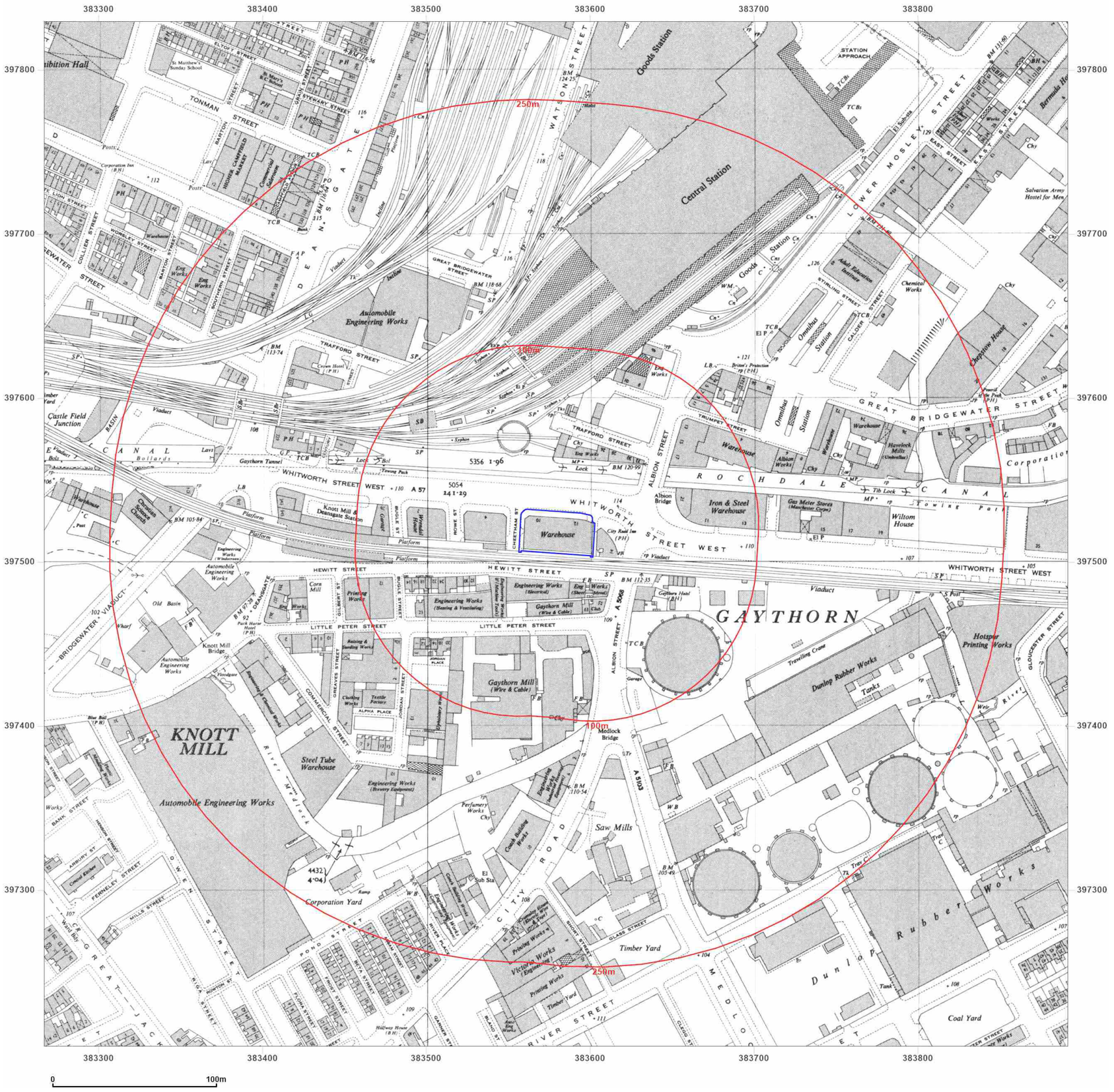
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Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1957**

Scale: 1:2,500

Printed at: 1:2,500

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Edition N/A
Copyright 1957
Levelled 1927

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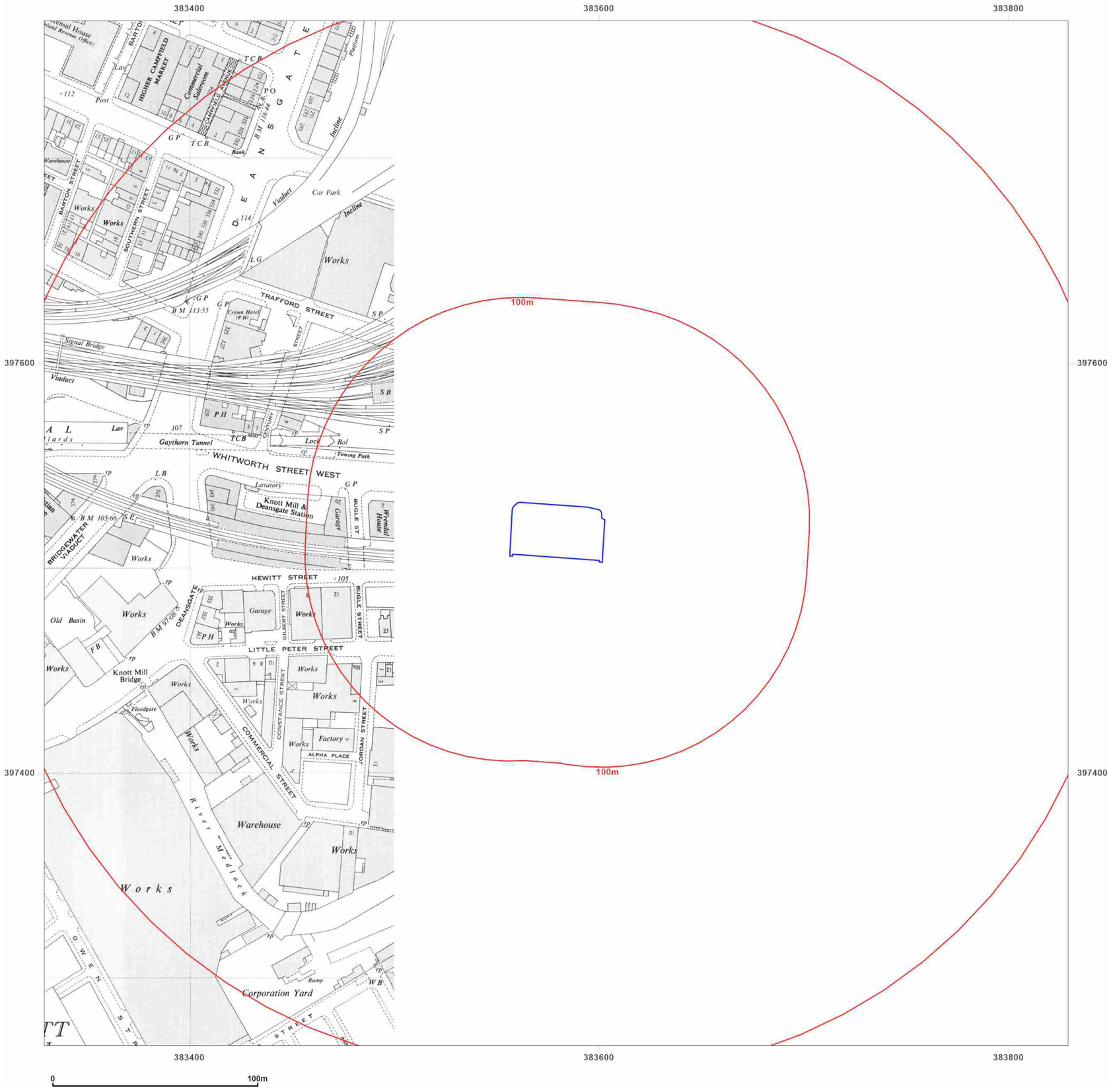
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Grid Ref: 383579, 397517

Map Name: National Grid

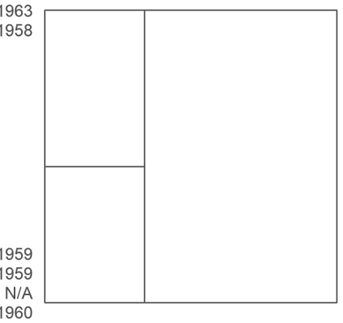
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Scale: 1:1,250

Printed at: 1:2,000

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Revised 1962
Edition N/A
Copyright 1963
Levelled 1958



Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1958

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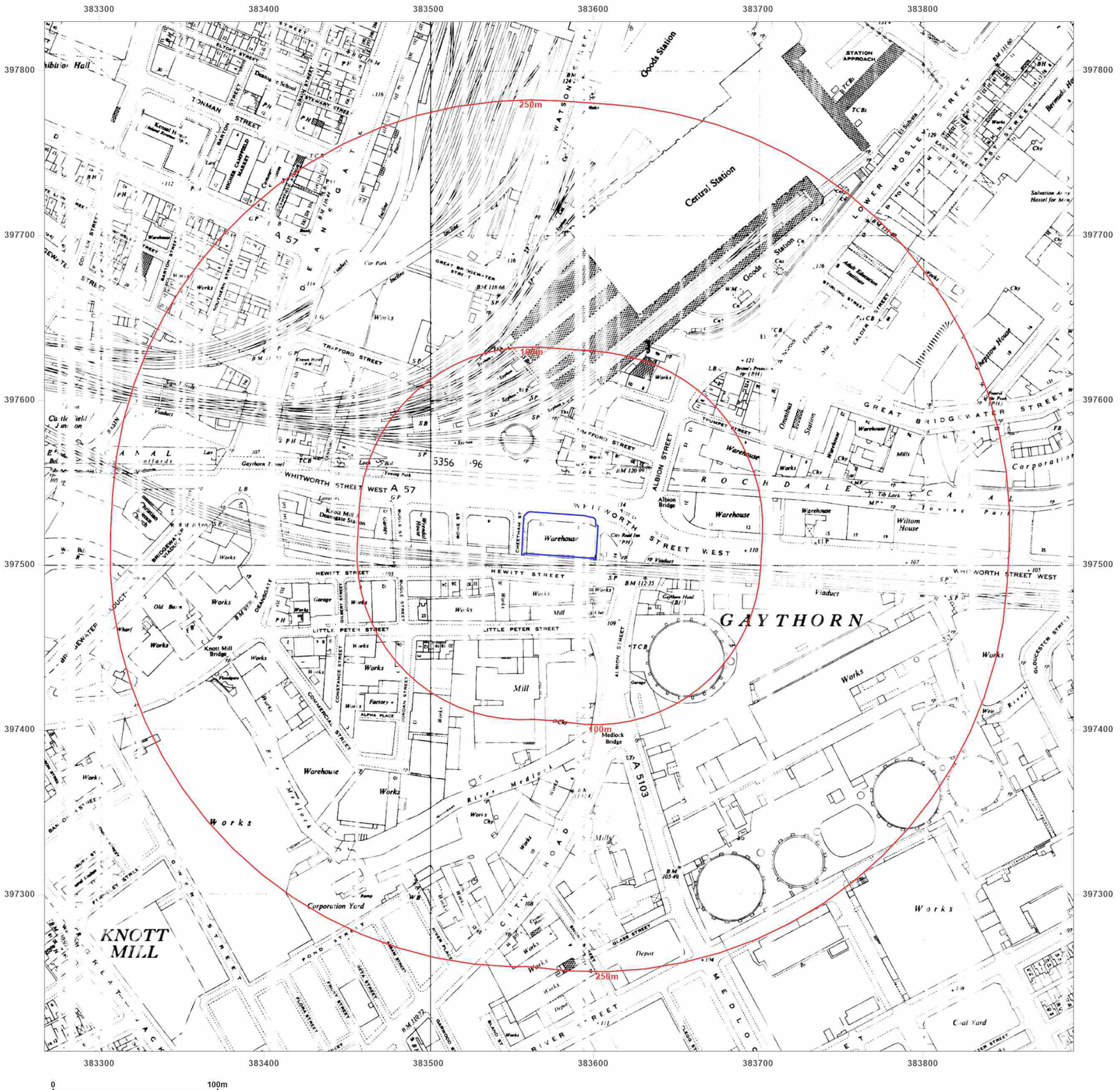
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Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1965**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised 1963
Edition 1965
Copyright N/A
Levelled 1958

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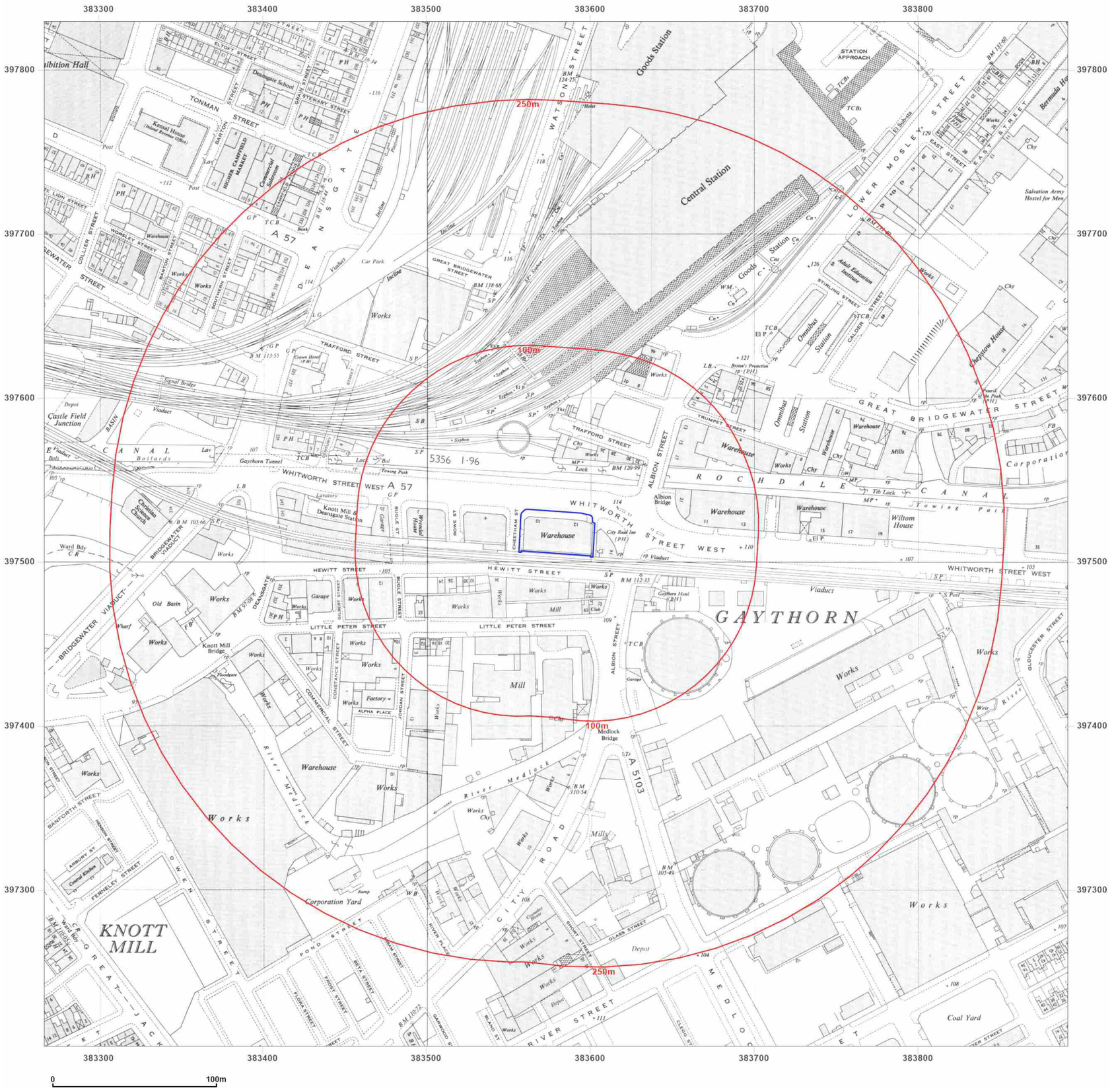
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1965**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1963
Revised 1963
Edition N/A
Copyright 1965
Levelled 1958

Groundsure INSIGHTS

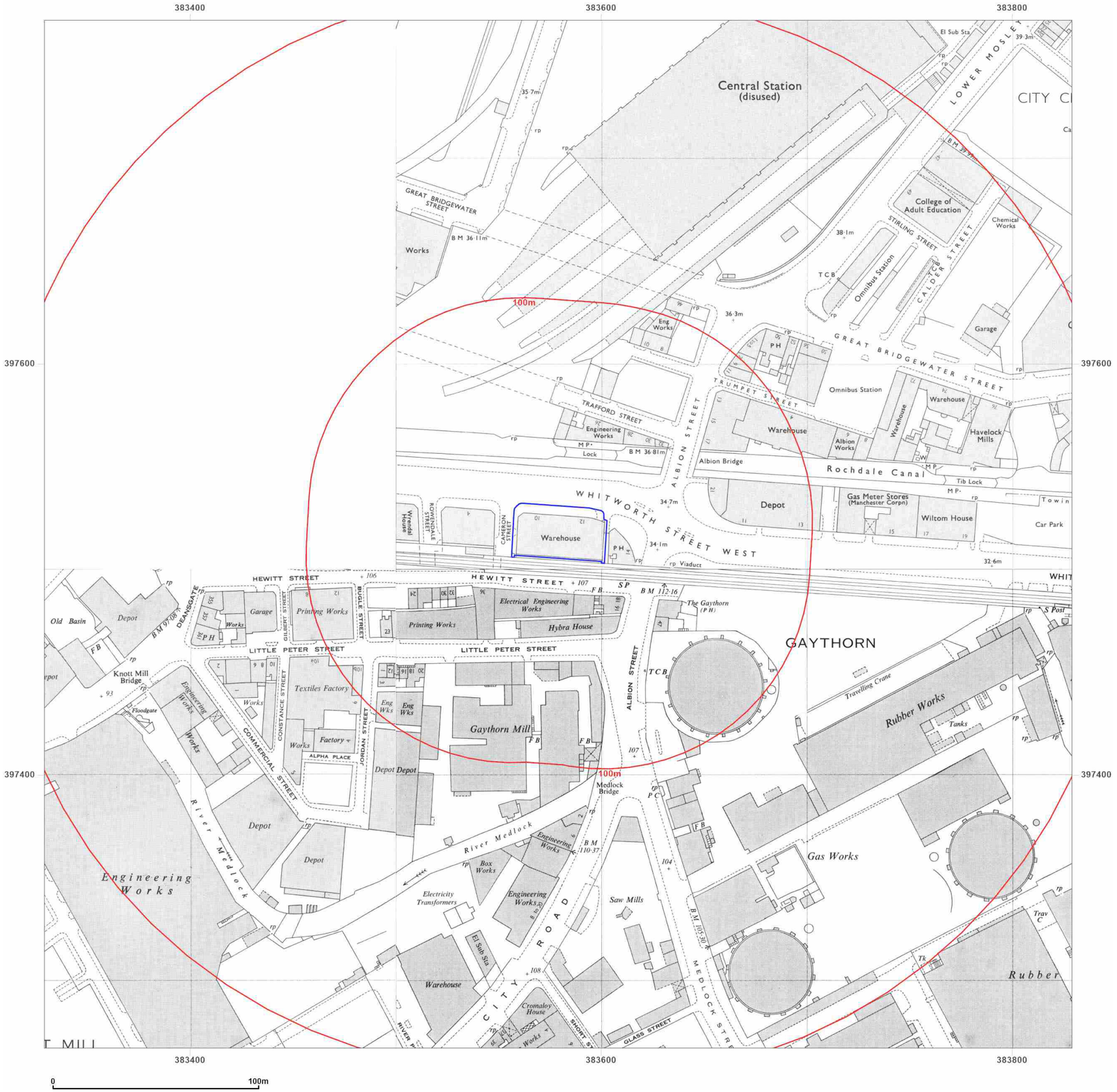
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1969-1973**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1948
Revised 1972
Edition N/A
Copyright 1973
Levelled 1963

Surveyed 1948
Revised 1968
Edition N/A
Copyright 1969
Levelled 1963

Surveyed 1948
Revised 1968
Edition N/A
Copyright 1969
Levelled 1963

Groundsure INSIGHTS

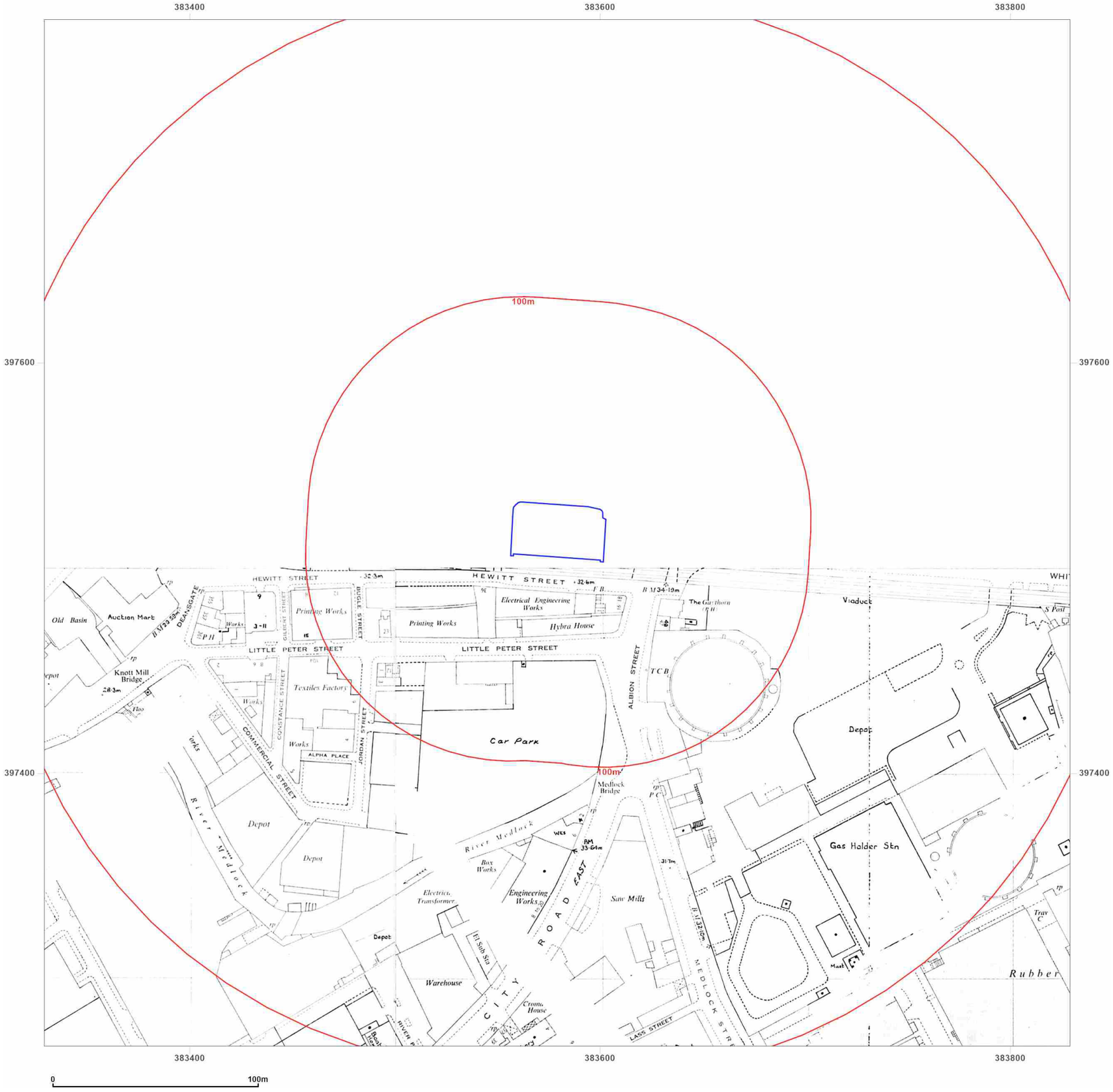
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

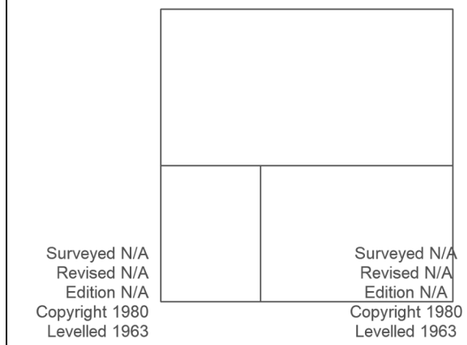
Map Name: National Grid

Map date: **1980**

Scale: 1:1,250

Printed at: 1:2,000

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Groundsure INSIGHTS

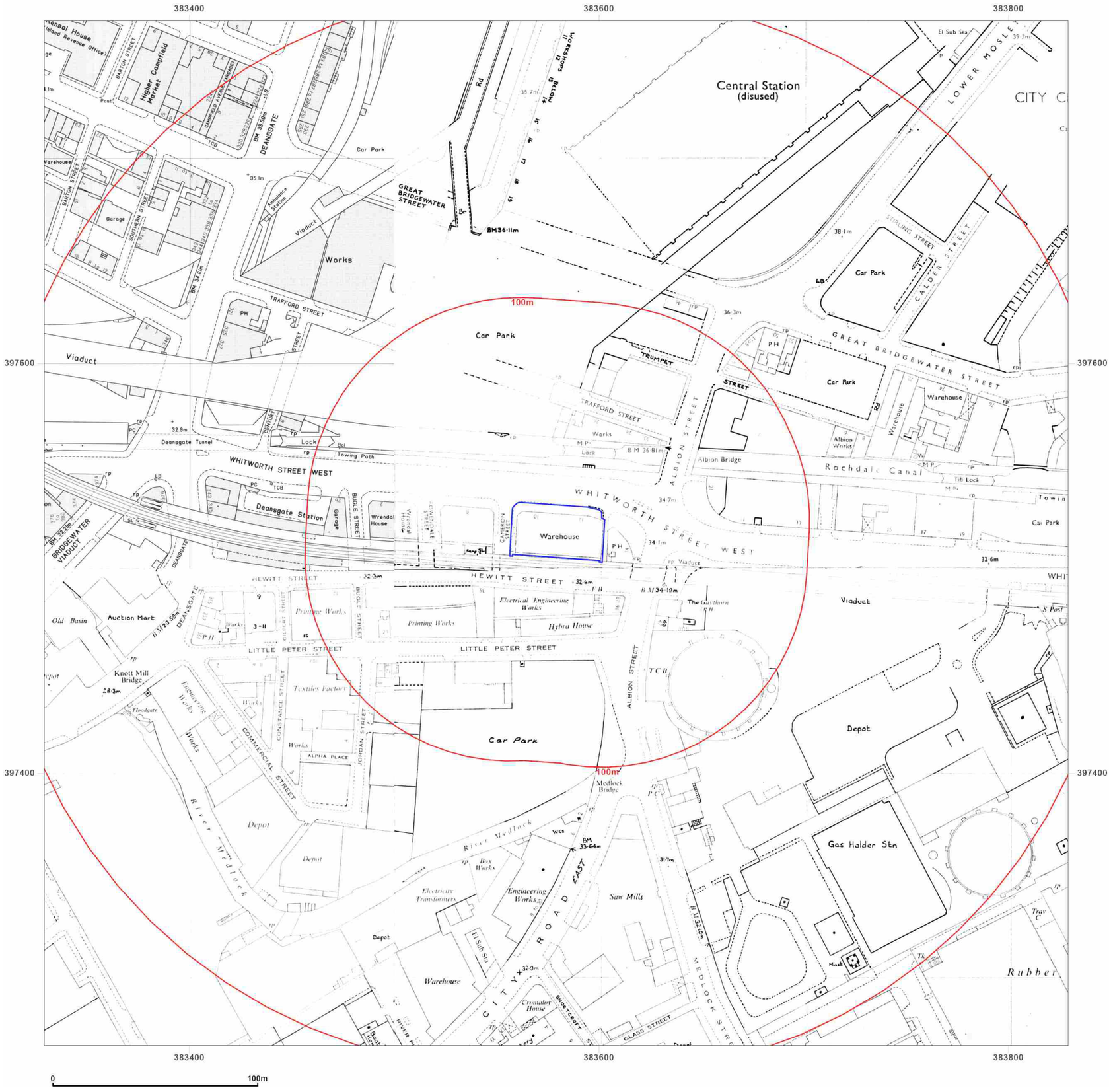
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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1980-1985**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1948 Revised 1979 Edition N/A Copyright 1981 Levelled 1963	Surveyed N/A Revised N/A Edition N/A Copyright 1985 Levelled 1963
Surveyed N/A Revised N/A Edition N/A Copyright 1980 Levelled 1963	Surveyed N/A Revised N/A Edition N/A Copyright 1980 Levelled 1963

Groundsure INSIGHTS

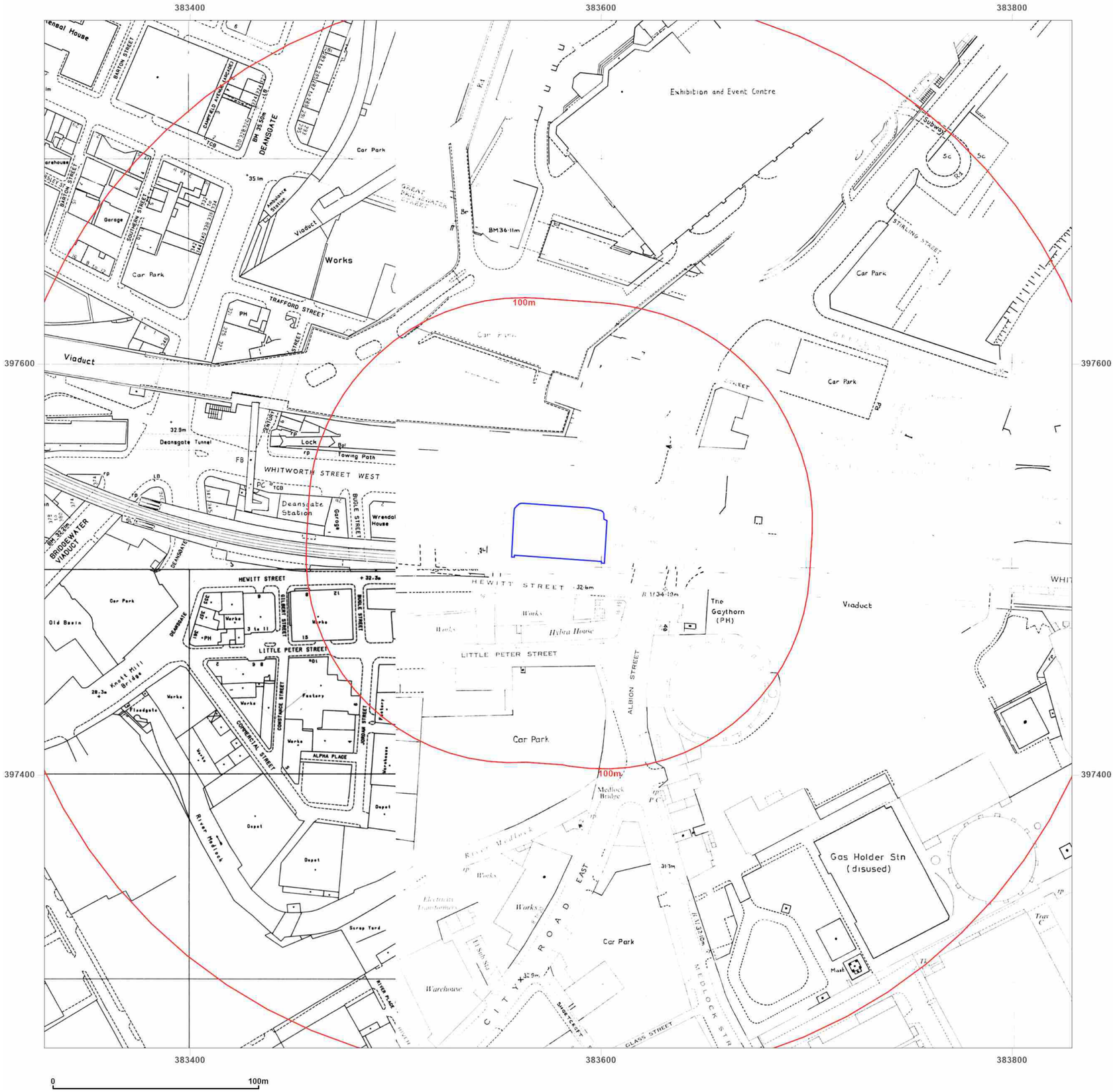
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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1985-1990**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1963
Revised 1986
Edition N/A
Copyright 1986
Levelled 1963

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1986
Levelled 1963

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1990
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1985
Levelled 1963

Groundsure INSIGHTS

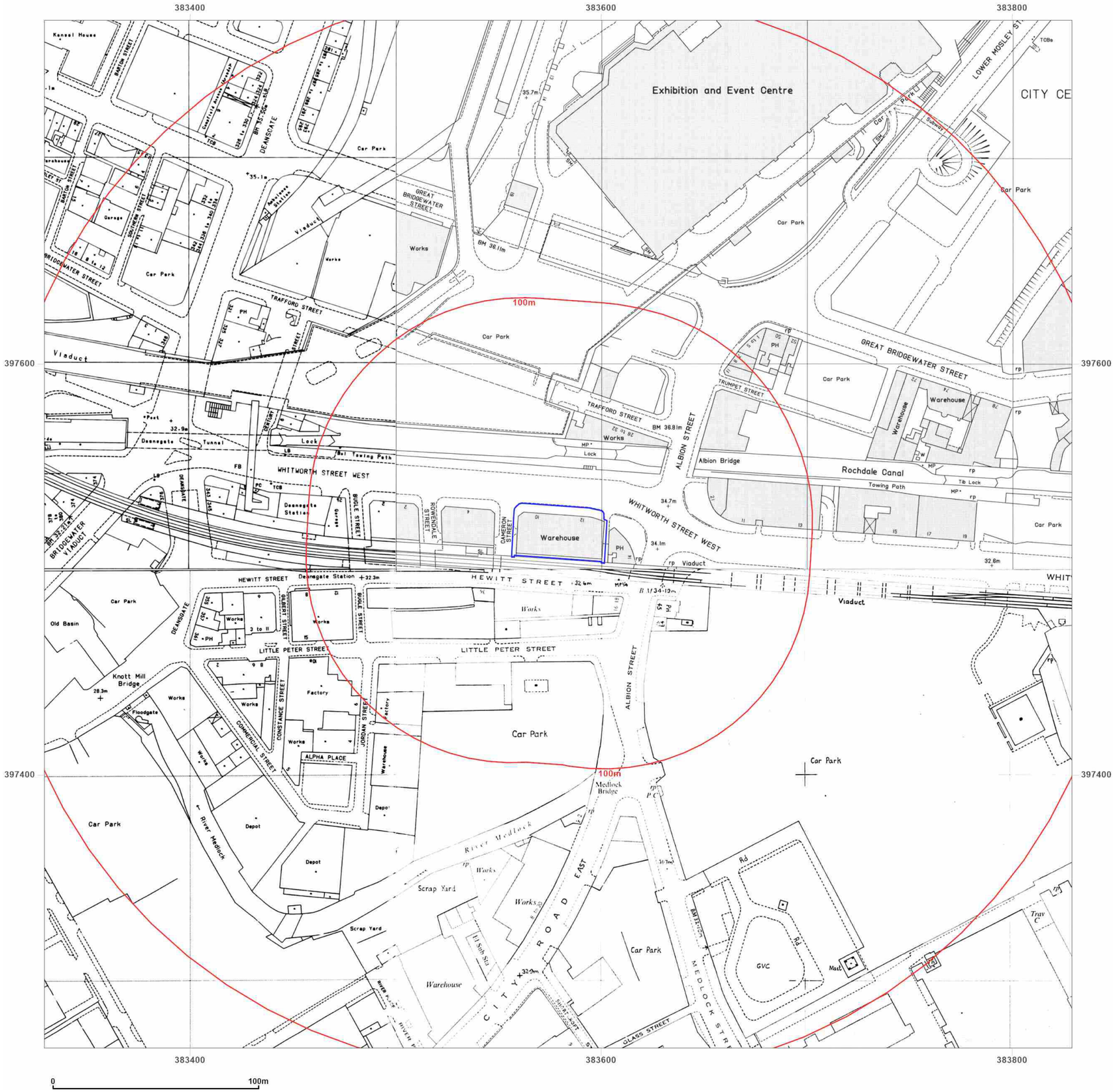
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1948 Revised 1979 Edition N/A Copyright 1990 Levelled N/A	Surveyed 1948 Revised 1987 Edition N/A Copyright 1988 Levelled 1963
Surveyed N/A Revised N/A Edition N/A Copyright 1992 Levelled N/A	Surveyed N/A Revised 1987 Edition N/A Copyright 1987 Levelled 1963

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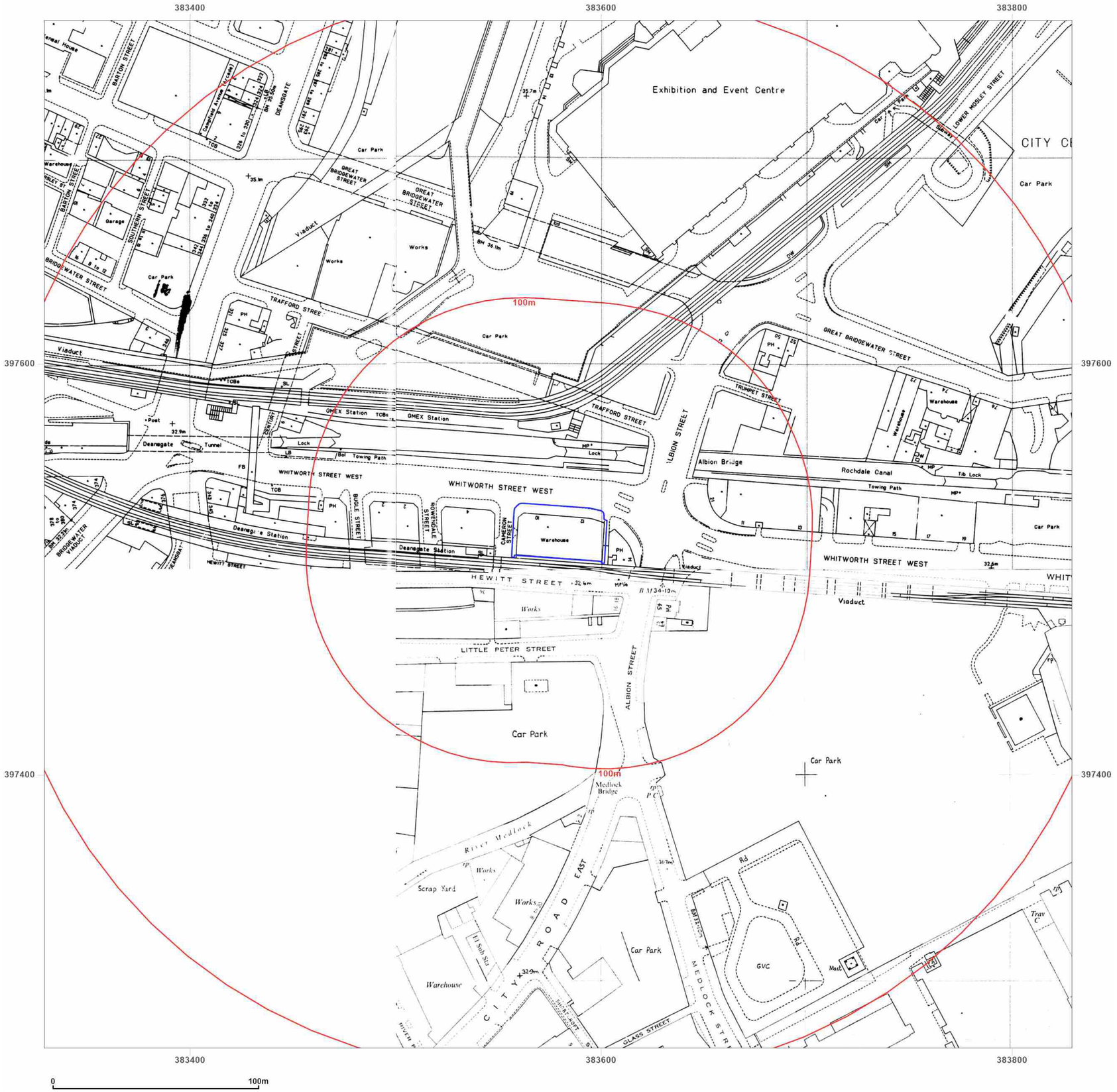
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed 1963
Revised 1987
Edition N/A
Copyright 1987
Levelled 1963

Groundsure INSIGHTS

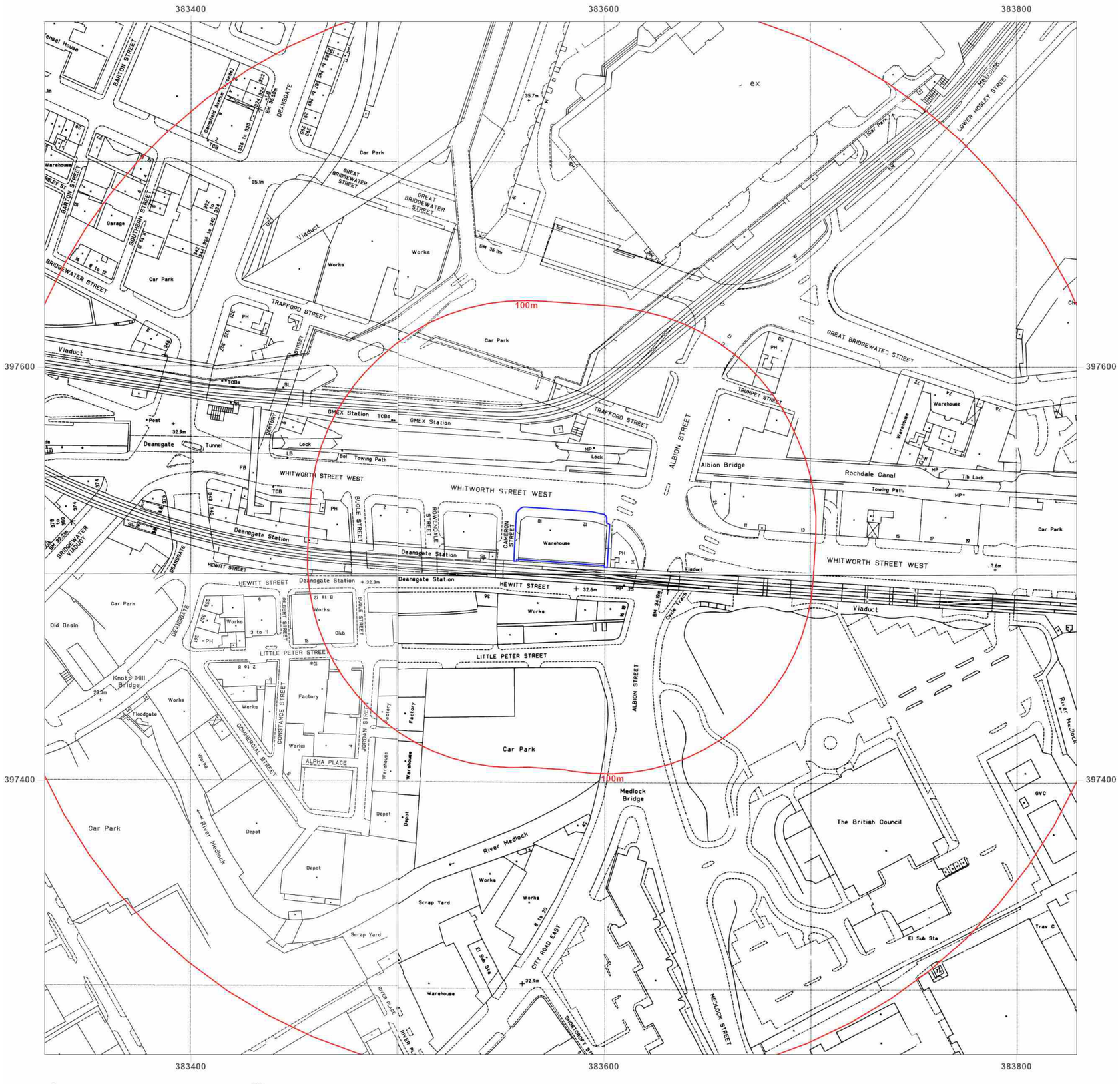
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Site Details:

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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1994 Revised 1994 Edition N/A Copyright 1994 Levelled N/A	Surveyed N/A Revised 1994 Edition N/A Copyright 1994 Levelled N/A
Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A	Surveyed N/A Revised N/A Edition N/A Copyright 1992 Levelled N/A

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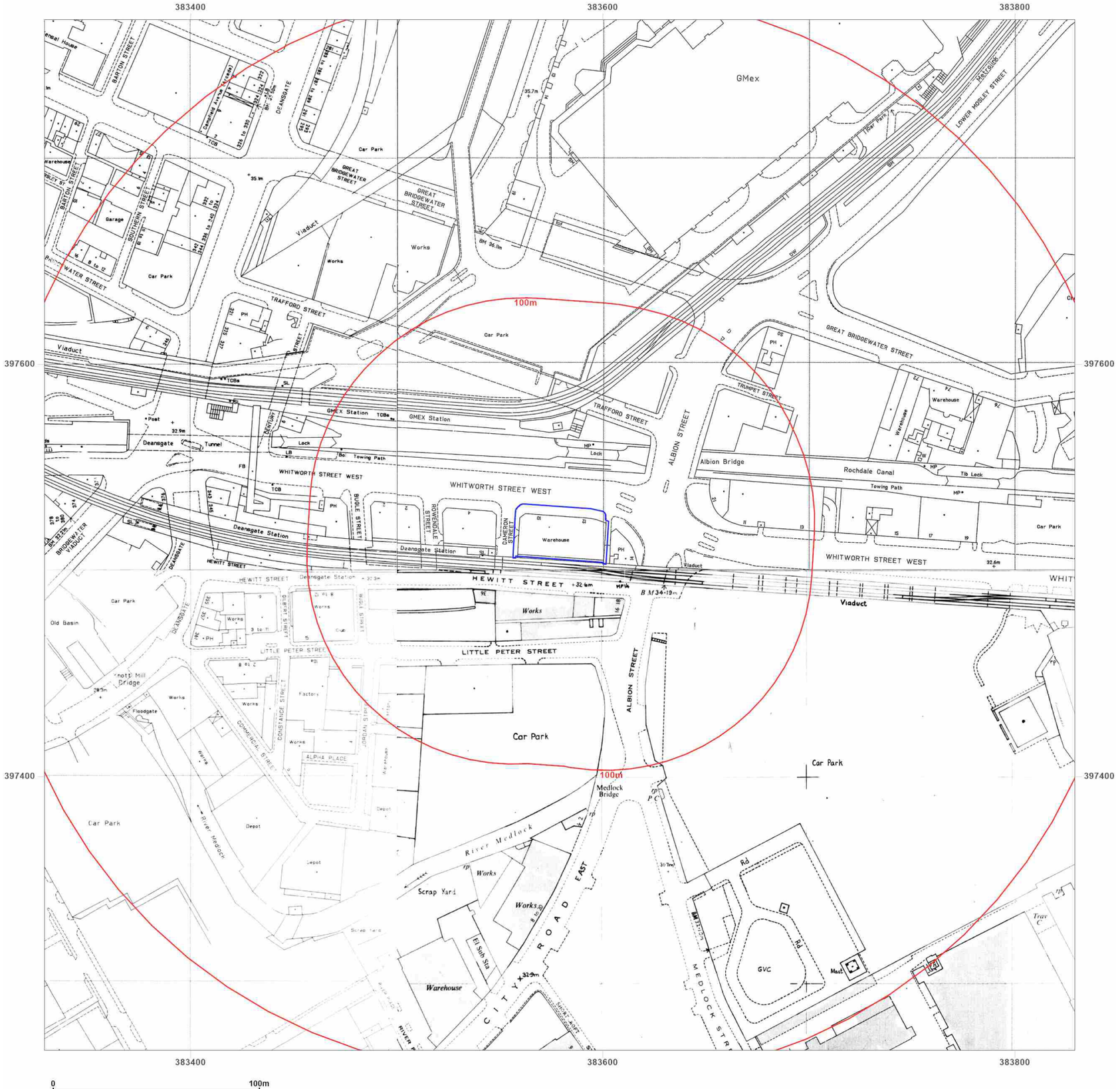
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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1990-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised 1994
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Surveyed 1963
Revised 1990
Edition N/A
Copyright 1990
Levelled 1963

Groundsure INSIGHTS

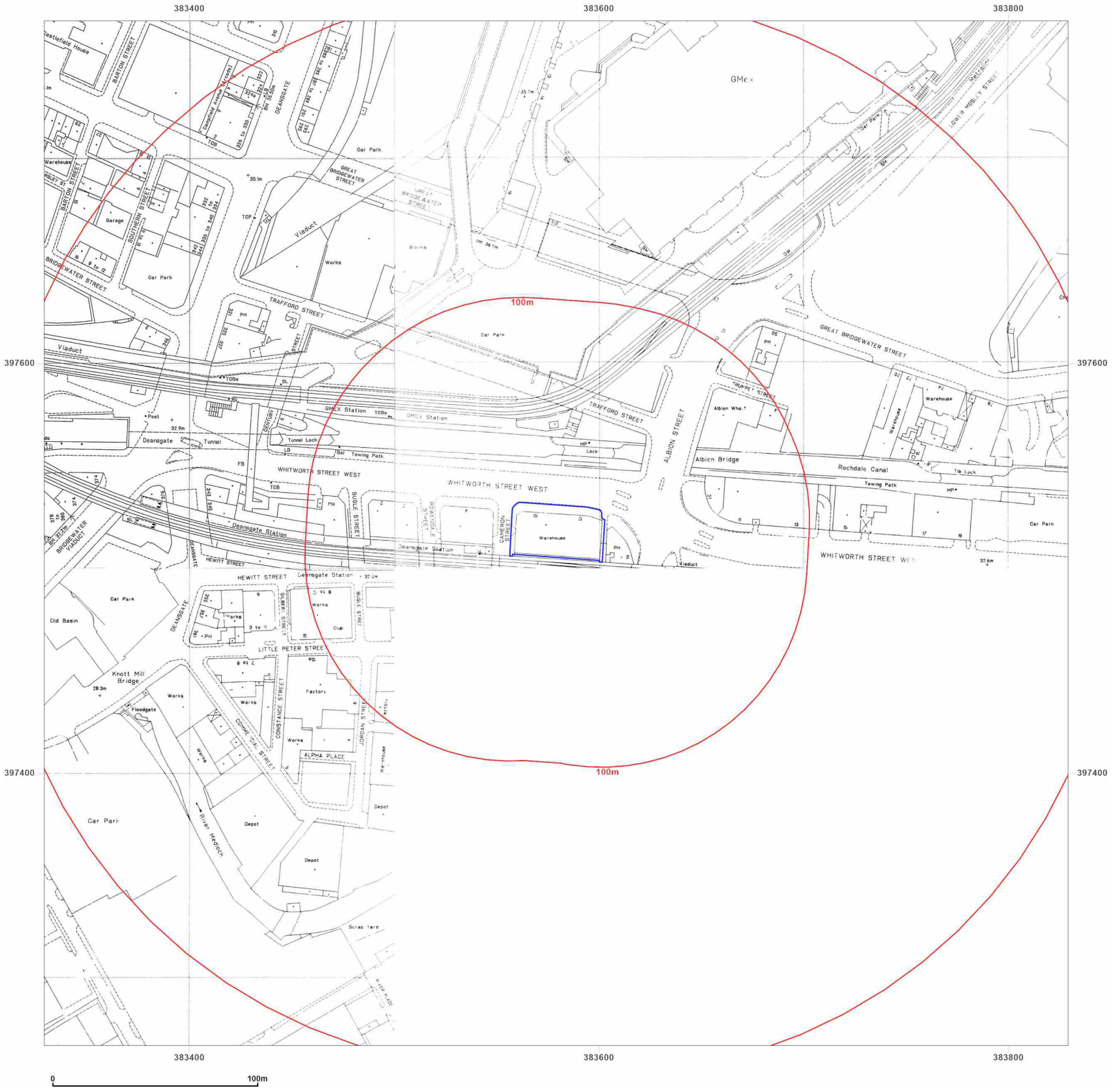
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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed 1995
Revised 1995
Edition N/A
Copyright 1995
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

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Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
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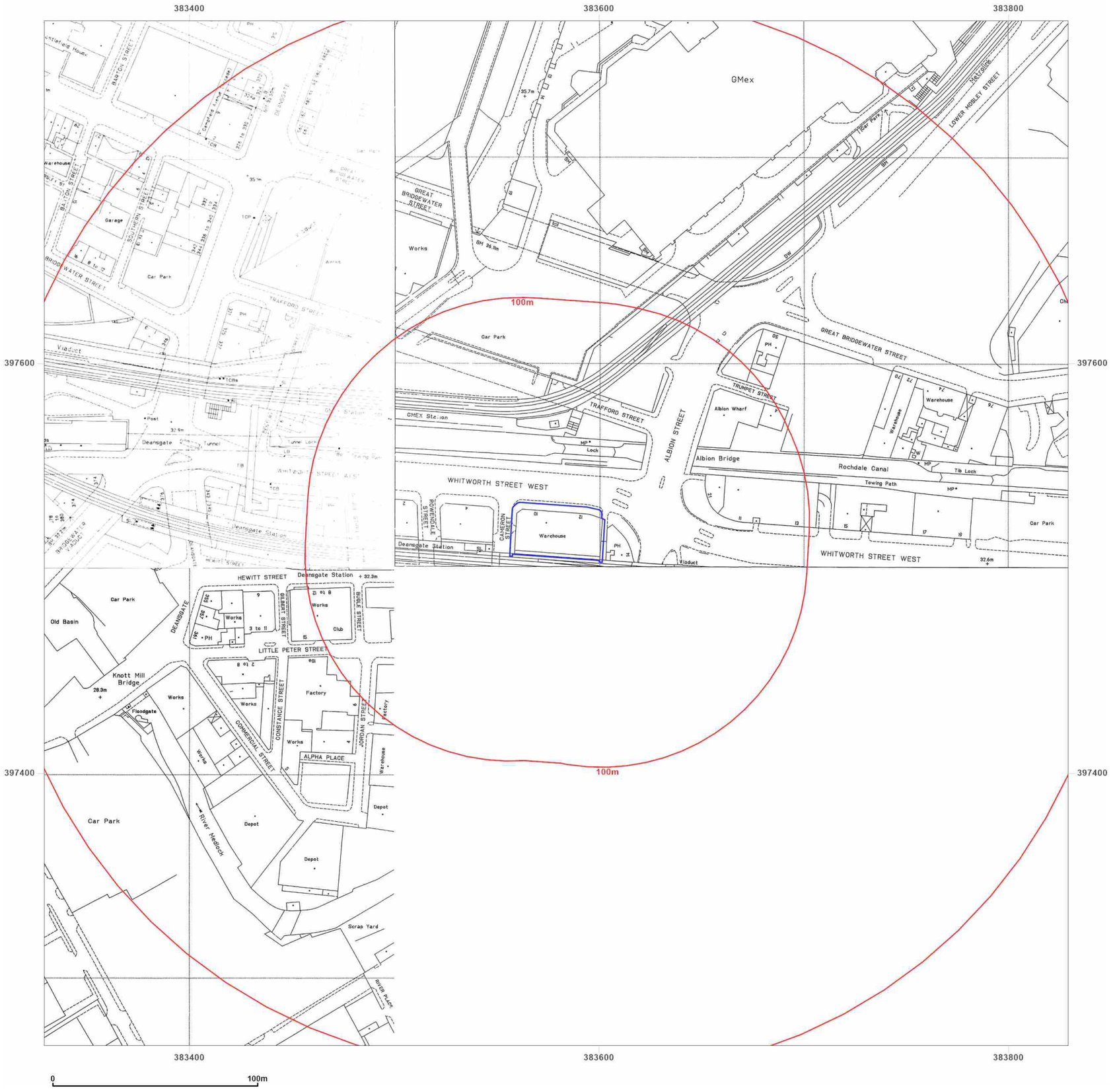
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

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Revised 1995
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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2003

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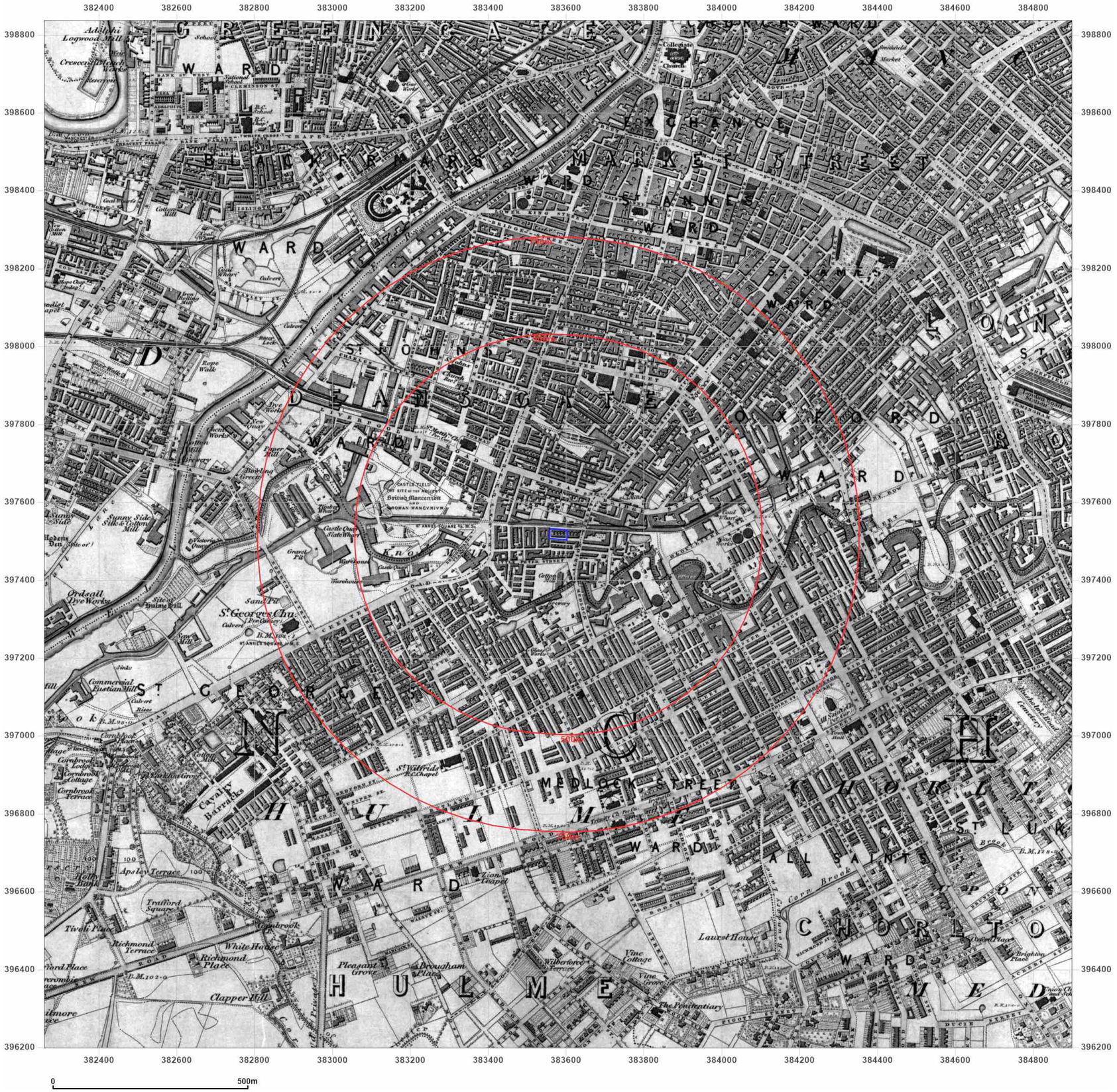
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: County Series

Map date: **1848**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1845
Revised N/A
Edition 1848
Copyright N/A
Levelled N/A

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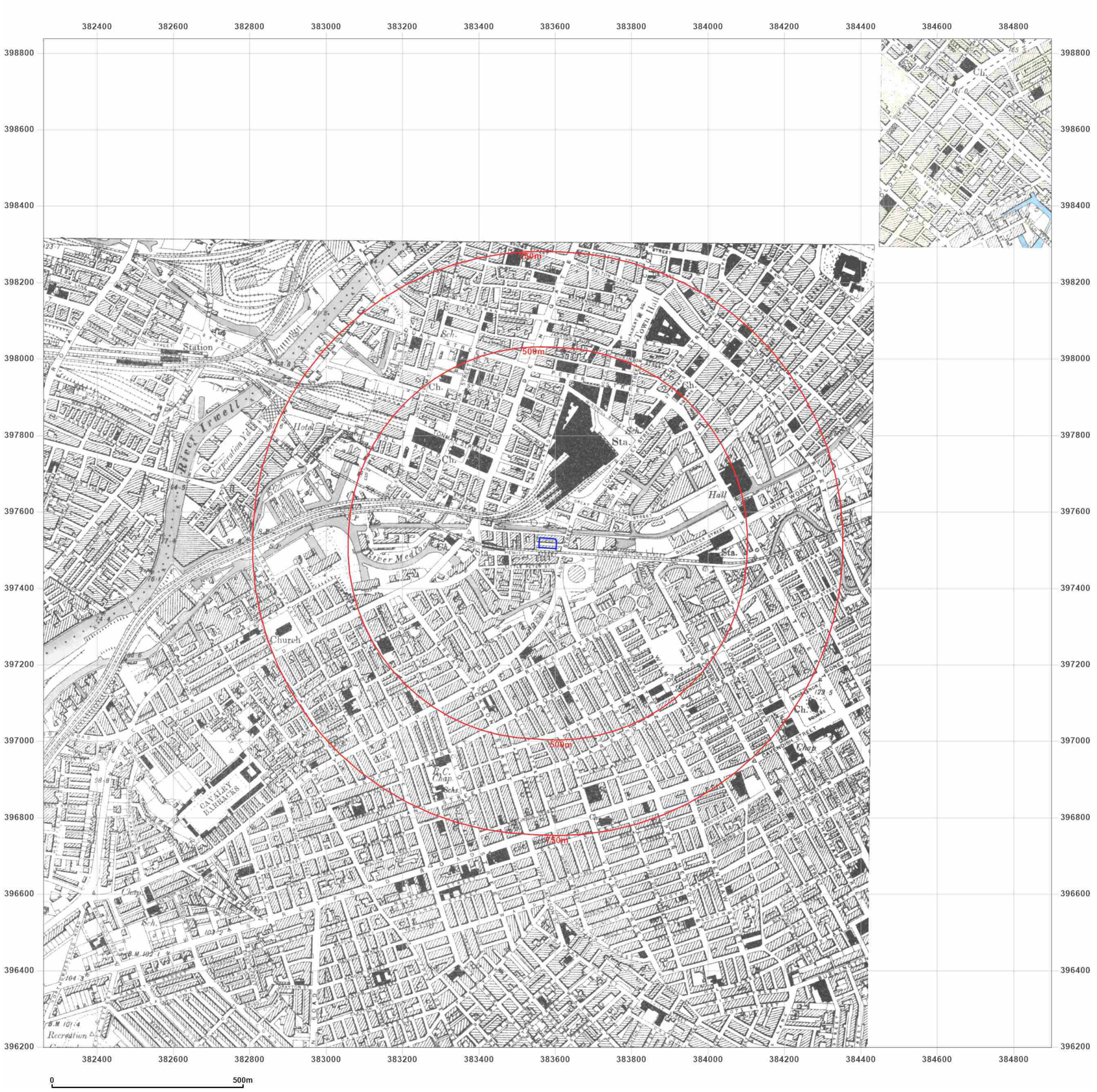
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Site Details:

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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: County Series

Map date: **1891-1896**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1894
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

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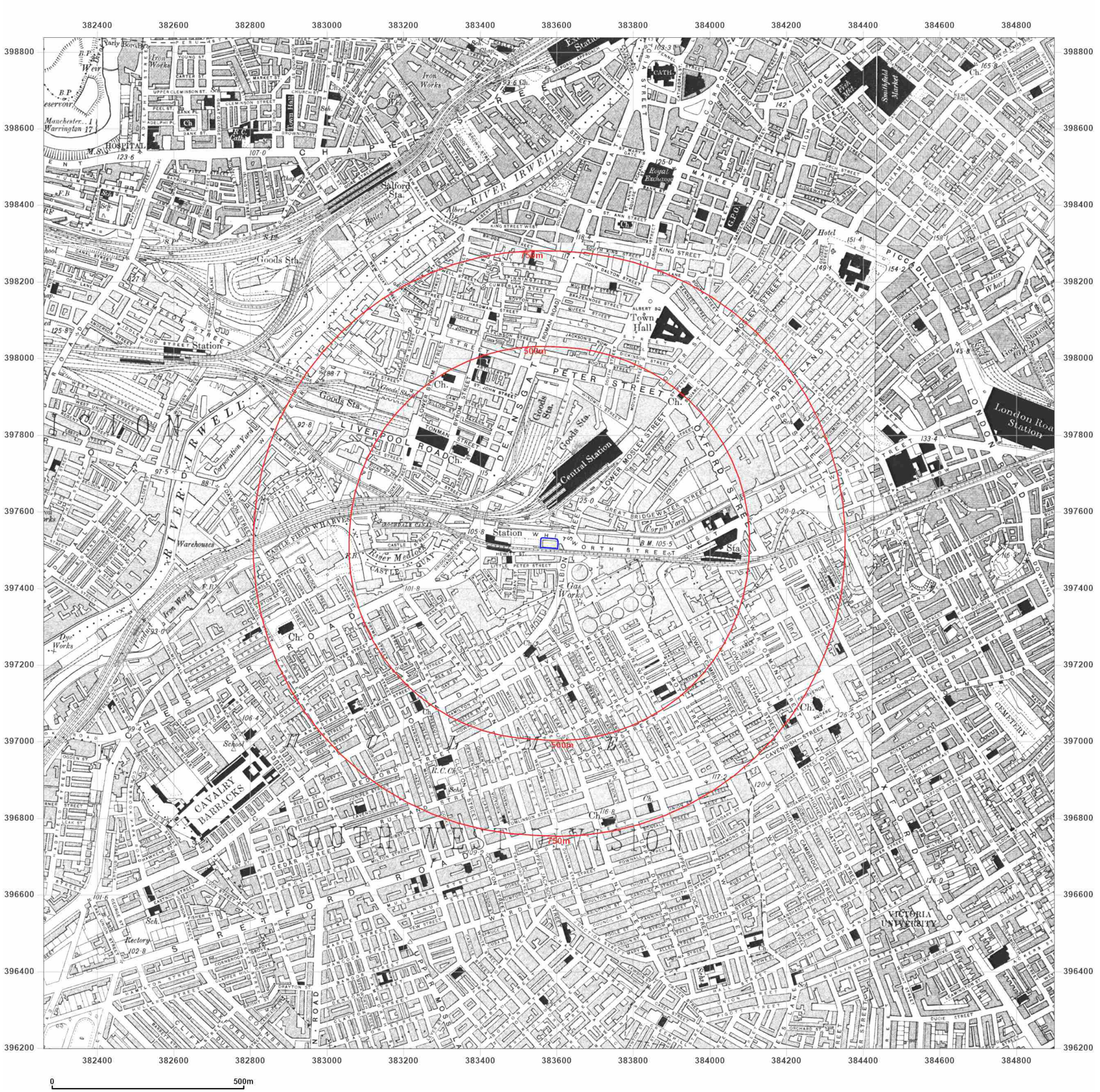
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Site Details:

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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: County Series

Map date: **1905-1906**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: County Series

Map date: **1915-1916**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1915
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

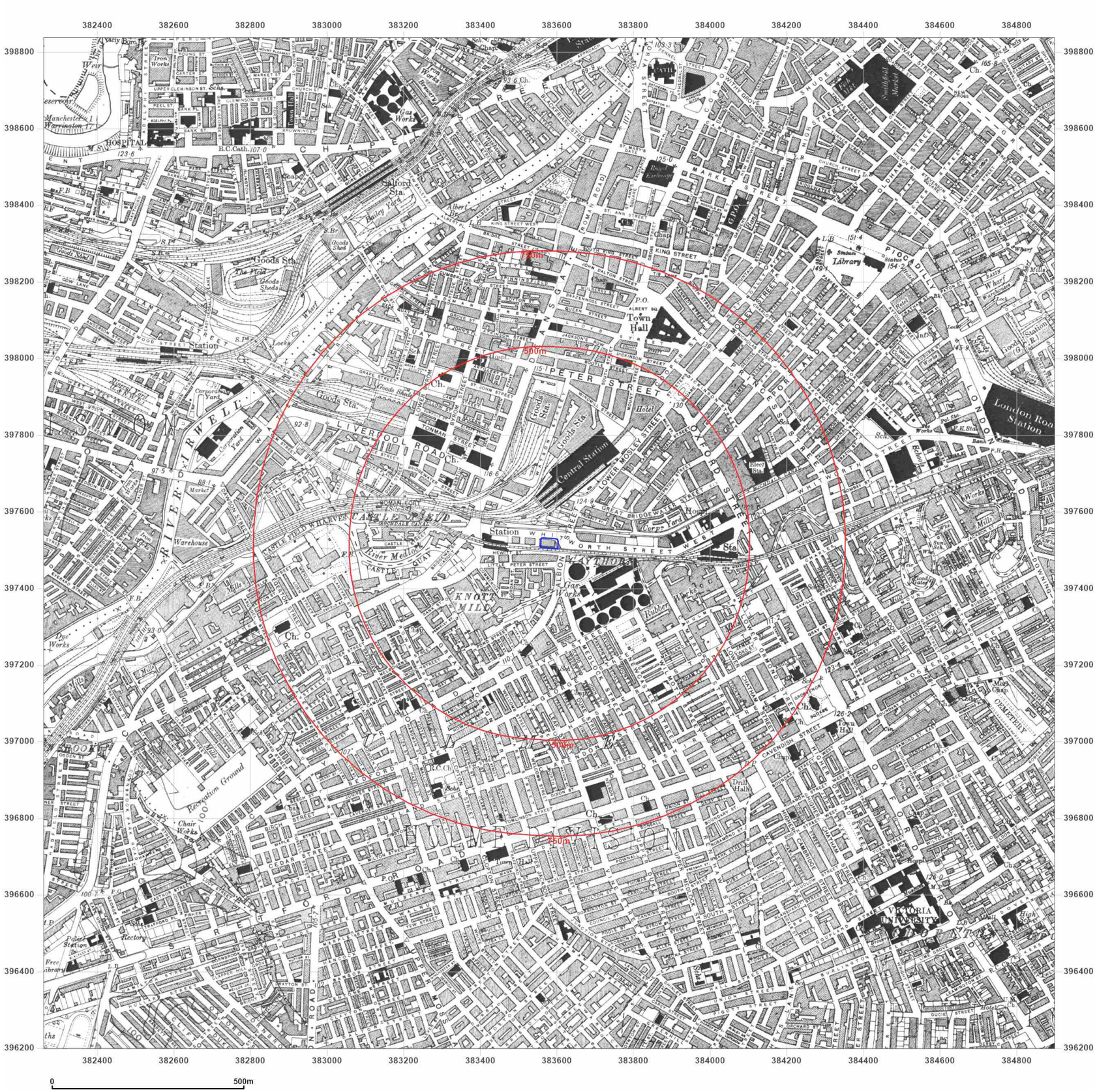
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: County Series

Map date: **1921-1923**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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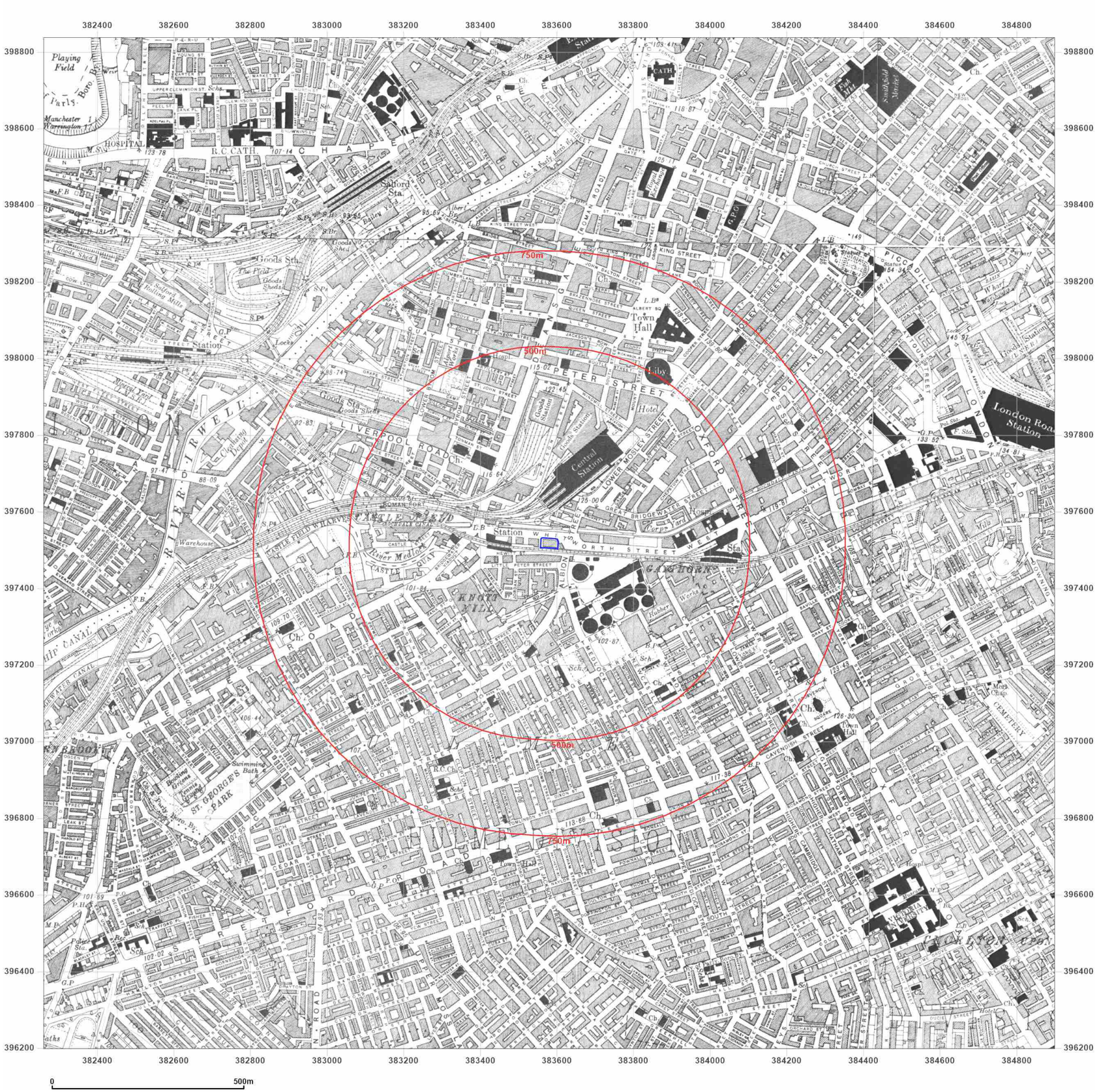
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GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: County Series

Map date: **1931-1934**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1932
Edition N/A
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Surveyed 1844
Revised 1934
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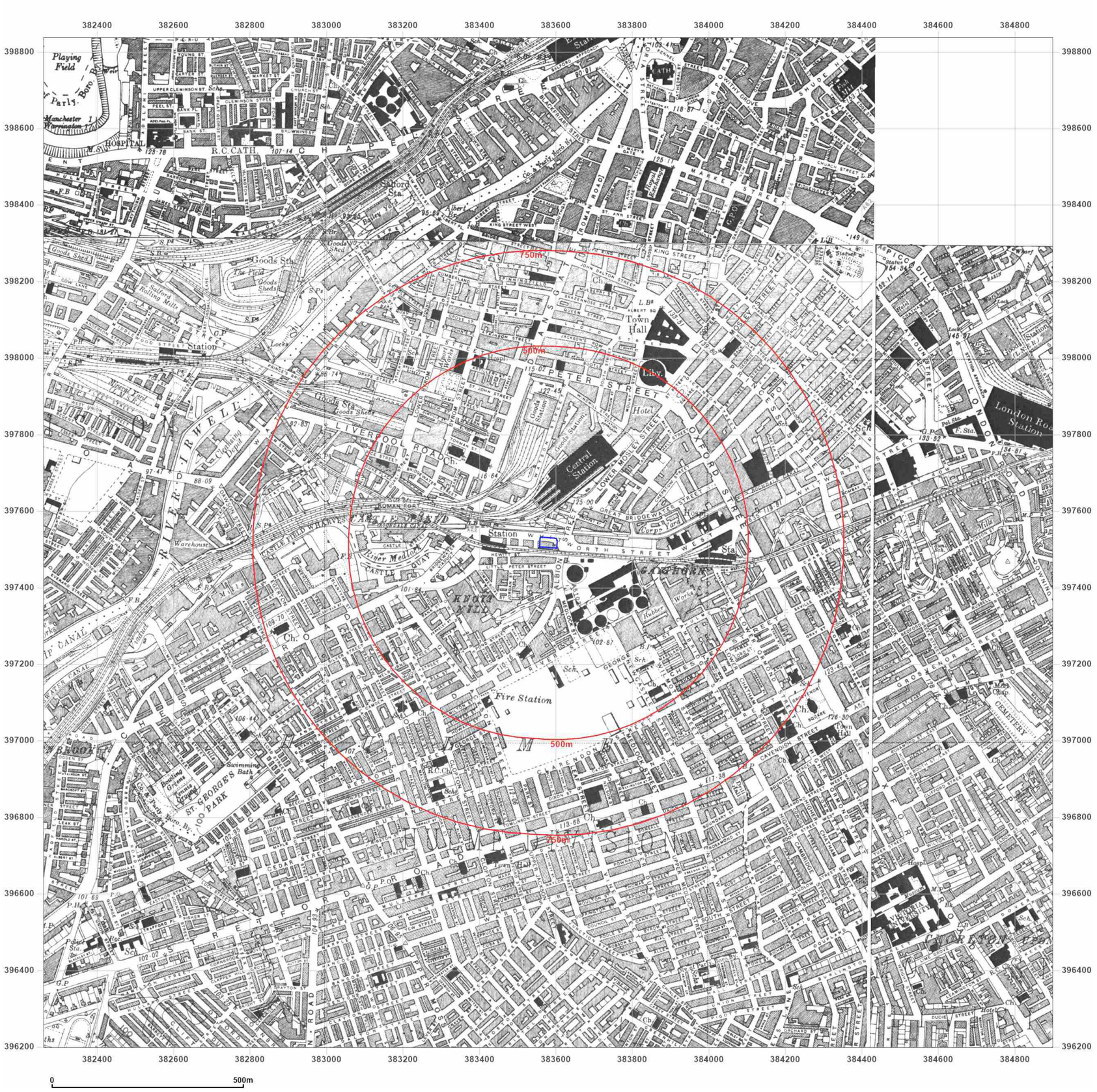
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Site Details:

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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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Revised 1938
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Revised 1938
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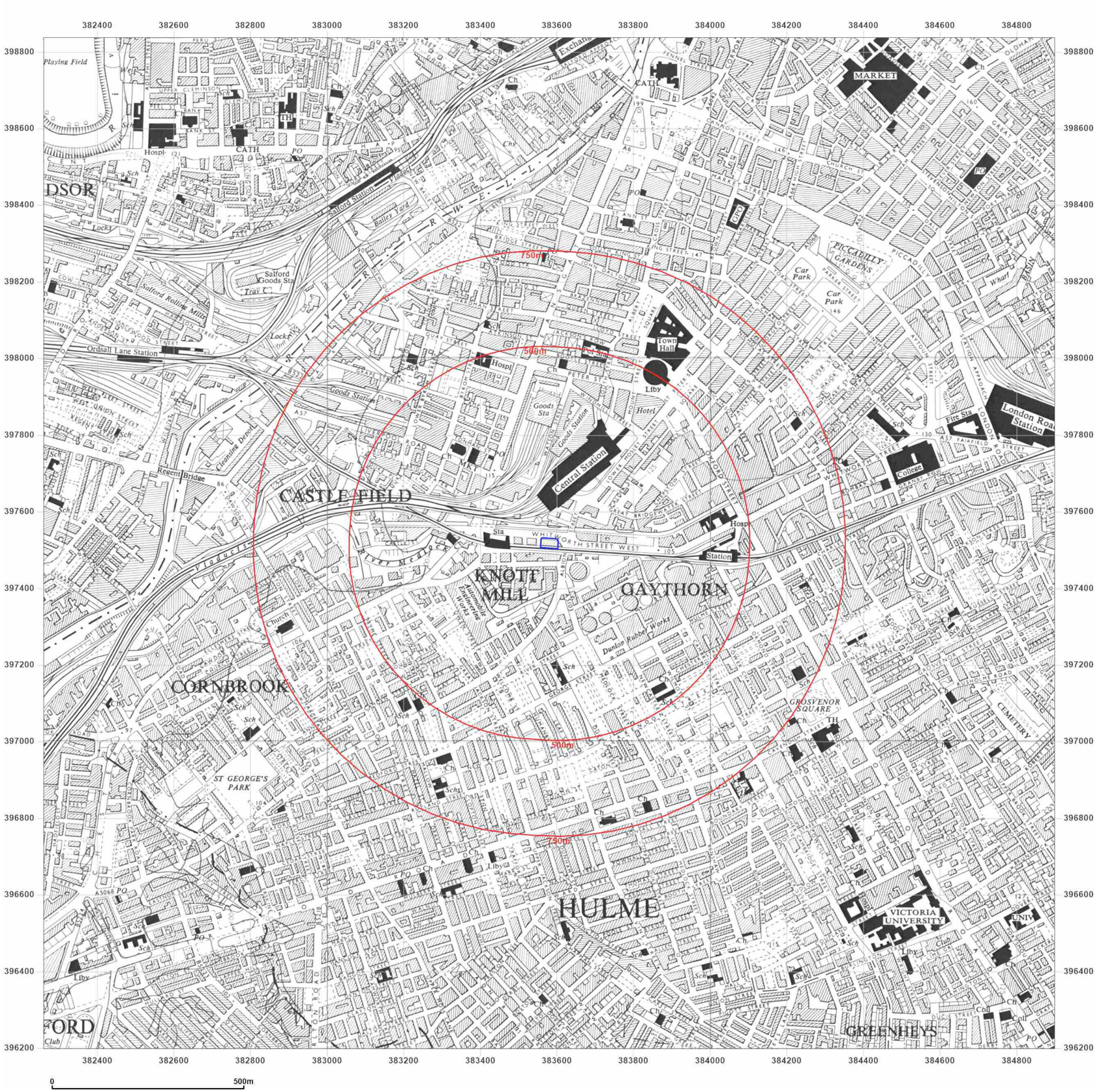
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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: Provisional

Map date: **1956**

Scale: 1:10,560

Printed at: 1:10,560

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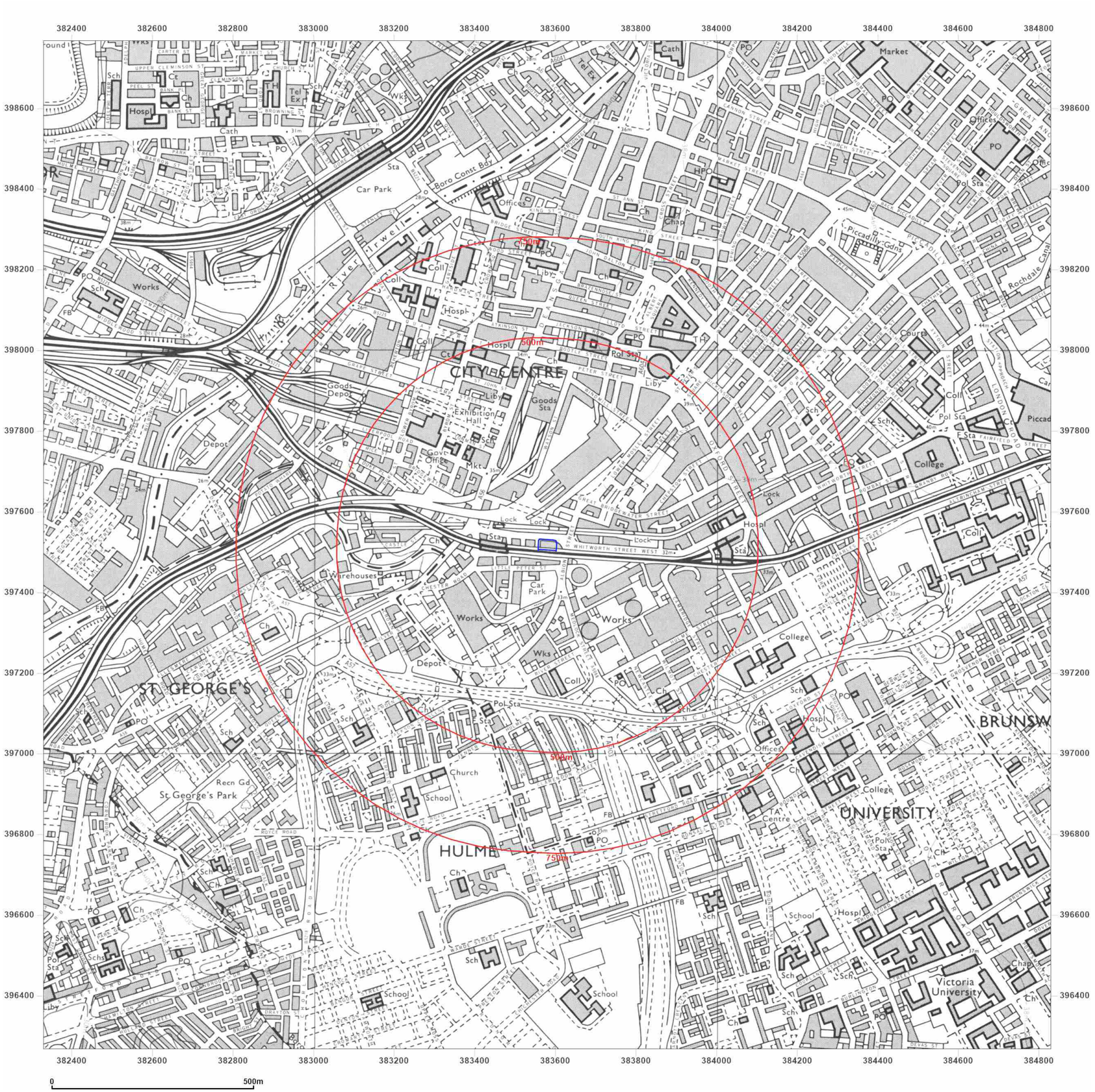
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Site Details:

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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1972**

Scale: 1:10,000

Printed at: 1:10,000

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Edition N/A
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1980**

Scale: 1:10,000

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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1985**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1988**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **1994**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

Whitworth Street West,
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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

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Site Details:

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Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

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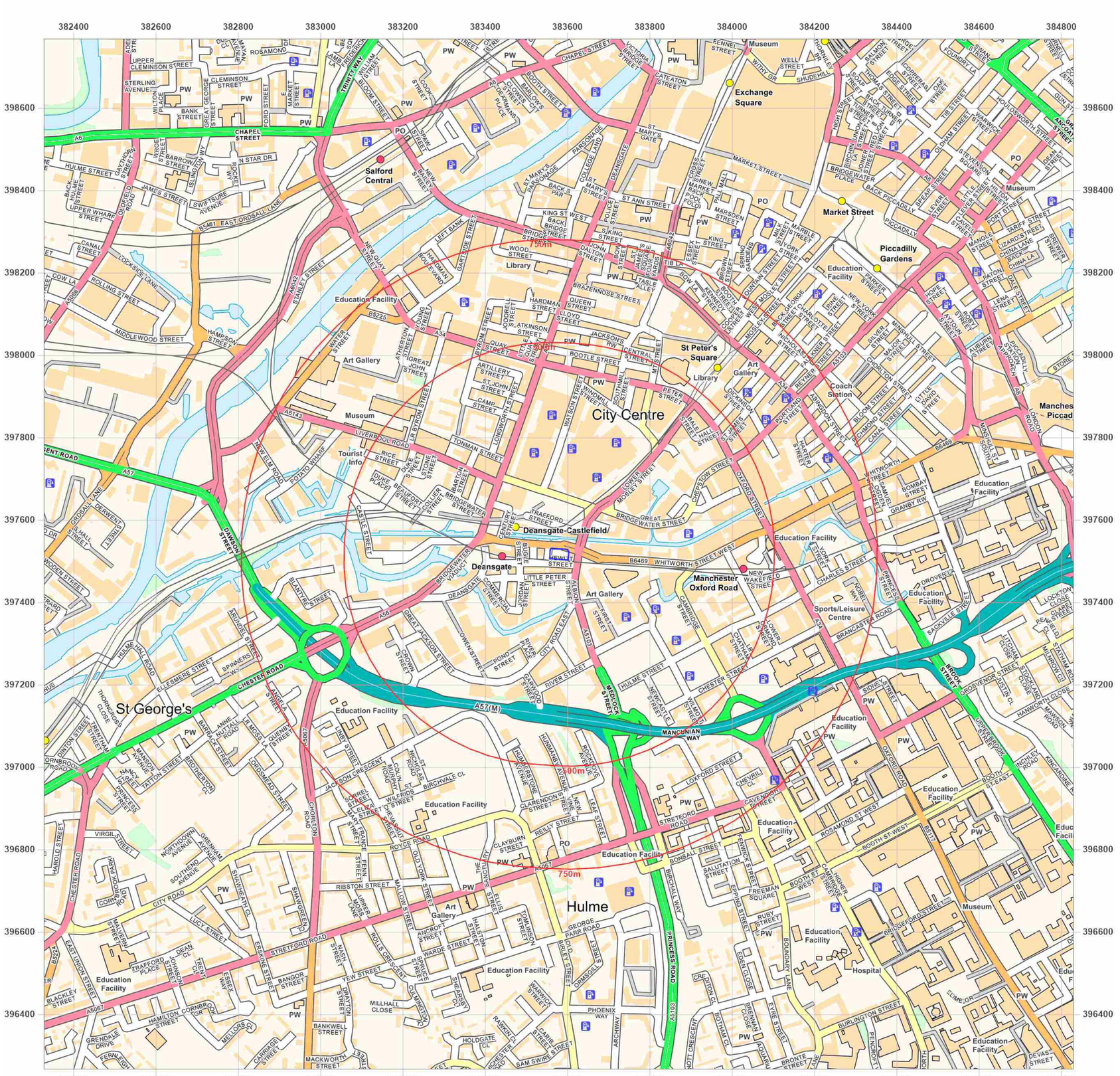
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Site Details:

Whitworth Street West,
Manchester, M1 5NZ

Client Ref: C5504-5783-SD
Report Ref: BRO-9FZ-NG9-Z92-DTF
Grid Ref: 383579, 397517

Map Name: National Grid
Map date: **2024**
Scale: 1:10,000
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Fire Insurance Plans

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LOCATION INTELLIGENCE

Address
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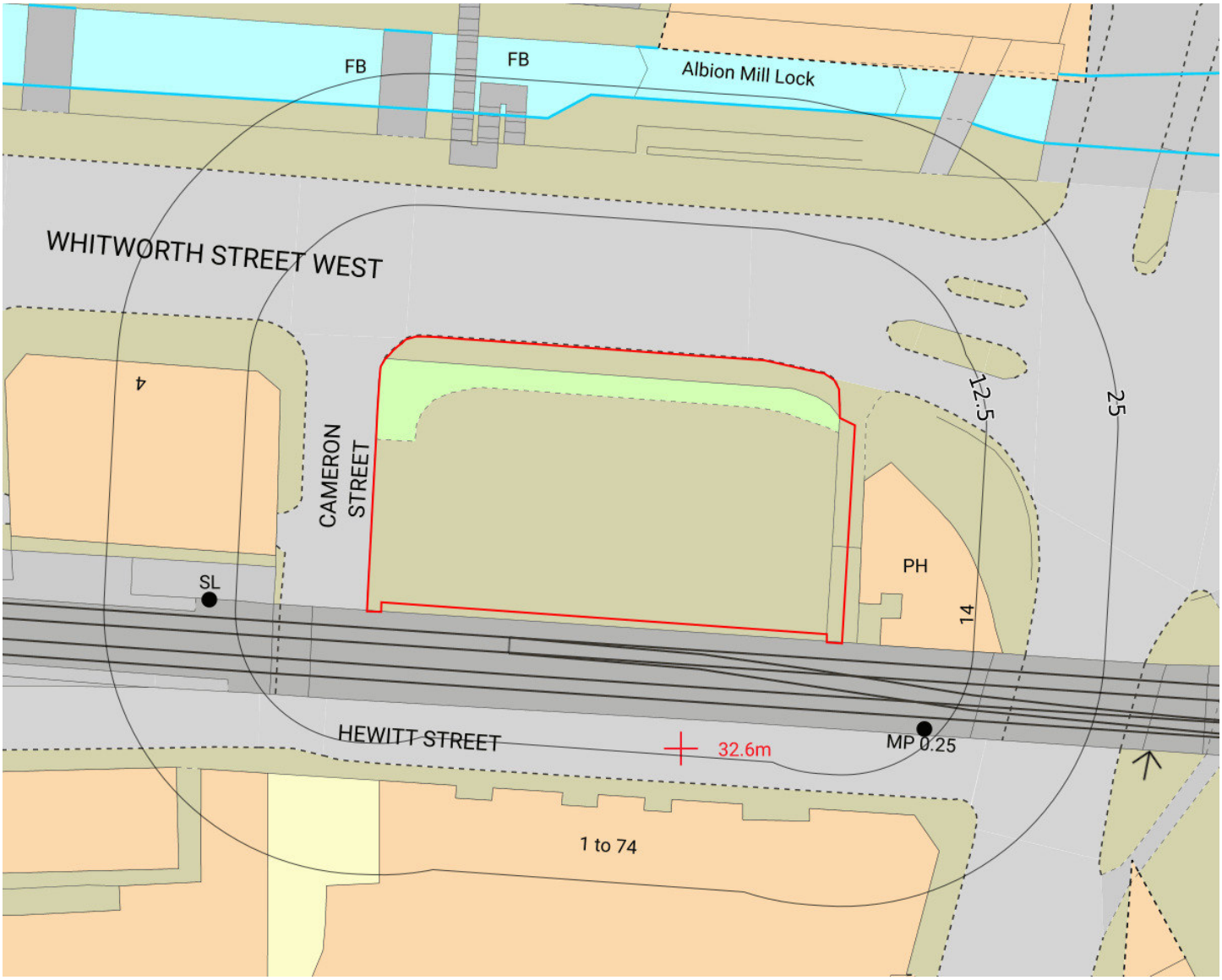
Your reference
C5504-5783-SD

Date
21/10/2024

Groundsure reference
BRO-T5T-6Q2-3UA-EO8

Grid reference
383579 397518

N



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info@groundsure.com
01273 257 755

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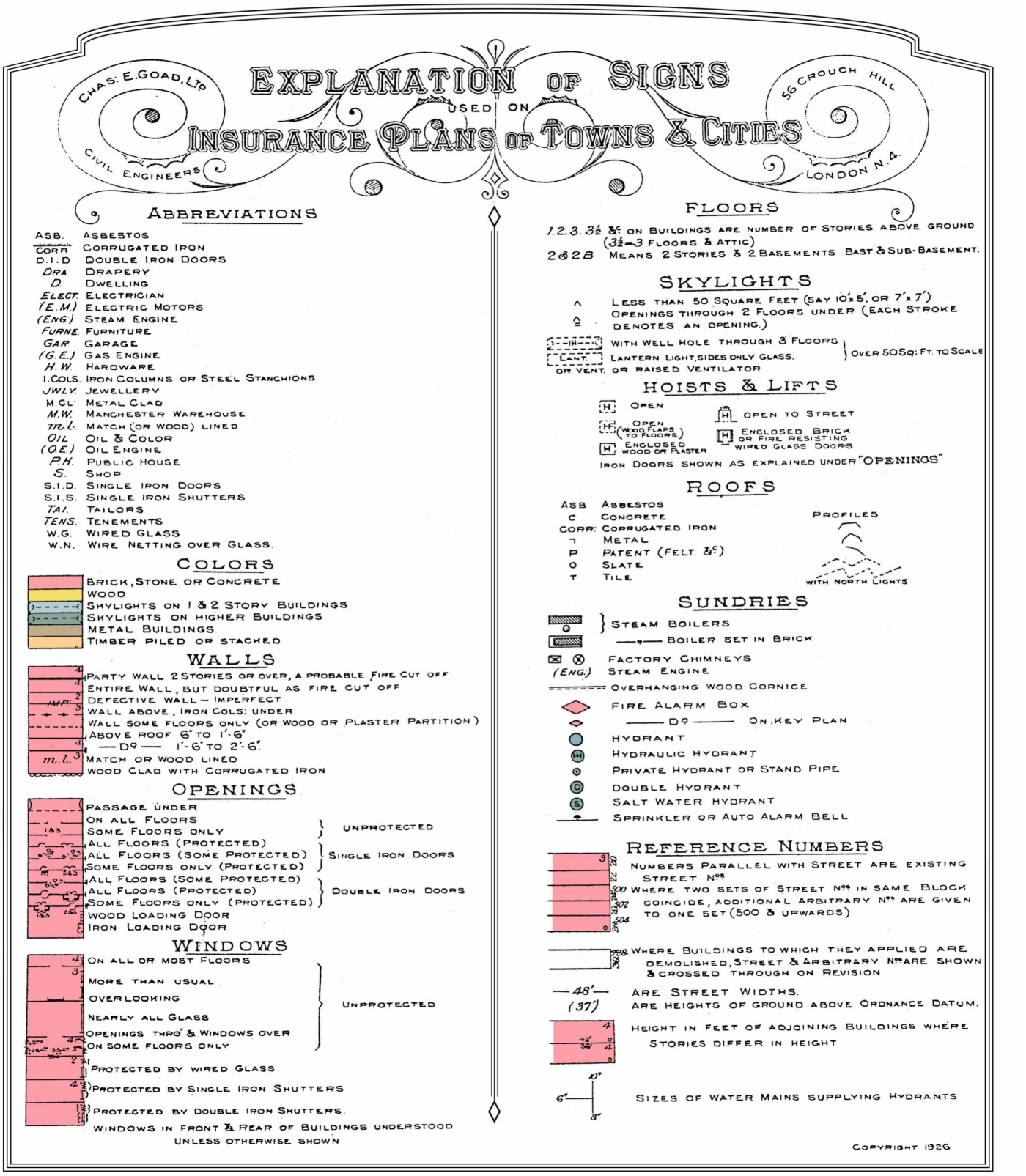
Groundsure
LOCATION INTELLIGENCE

1928, 1928, 1928 Manchester, 3-plan composite



Groundsure
LOCATION INTELLIGENCE

Legend



Further Information

This report contains all Goad plans available for your chosen location. Where plans cover only part of the mapped area, modern background mapping has been included for additional context.

Charles E. Goad

Goad plans were originally produced as Fire Insurance Plans (F.I.Ps) by Charles E. Goad Ltd. in the late 19th century. In addition to showing the materials used in building construction and the location of water supplies, the maps show the location of particular fire hazards such as chemical storage and processing areas, ovens and other such areas which are of interest to contaminated land practitioners. The first plans appeared in 1886, and by 1896 the collection comprised 73 volumes of plans for 37 cities. By 1912 the collection had grown to 124 volumes across 57 cities, though following this there was no significant expansion to new towns. Many cities saw significantly expanded coverage between 1928 and 1935, and regular revision of plans continued until the 1970s.

The maps were produced for the most important towns and cities in Great Britain at a scale of 1:480 (1 inch to 40 feet). Coverage for these towns varies according to the town's relative importance at the time, from an industrial and social perspective. All maps shown in this report are north-orientated and seamlessly stitched together with other maps of a similar age. Gaps in the mapping are filled in with contemporary mapping to provide a clear location context for the study site.

Contact Us

Groundsure Limited: Nile House, Nile Street, Brighton, BN1 1HW

info@groundsure.com ↗

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APPENDIX C

Geo-Environmental Data Report

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Whitworth Street West, Manchester, M1 5NZ

Order Details

Date: 21/10/2024

Your ref: C5504-5783-SD

Our Ref: BRO-QKC-ZDX-M4N-894

Site Details

Location: 383579 397518

Area: 0.11 ha

Authority: Manchester City Council ↗



Summary of findings p. 2 >

OS MasterMap site plan p.14 >

Aerial image p. 9 >

Insight User Guide ↗

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Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	0	11	79	94	-
22 >	1.2 >	Historical tanks >	0	3	78	53	-
27 >	1.3 >	Historical energy features >	0	3	26	24	-
30	1.4	Historical petrol stations	0	0	0	0	-
30 >	1.5 >	Historical garages >	0	0	10	27	-
32	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
33 >	2.1 >	Historical industrial land uses >	0	16	139	137	-
44 >	2.2 >	Historical tanks >	0	4	128	89	-
52 >	2.3 >	Historical energy features >	0	4	45	50	-
56	2.4	Historical petrol stations	0	0	0	0	-
56 >	2.5 >	Historical garages >	0	0	23	51	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
60	3.1	Active or recent landfill	0	0	0	0	-
60	3.2	Historical landfill (BGS records)	0	0	0	0	-
61	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
61	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
61 >	3.5 >	Historical waste sites >	0	0	7	9	-
63 >	3.6 >	Licensed waste sites >	0	0	0	1	-
64 >	3.7 >	Waste exemptions >	0	1	42	26	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
70 >	4.1 >	Recent industrial land uses >	0	2	22	-	-
72 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
72	4.3	Electricity cables	0	0	0	0	-
72	4.4	Gas pipelines	0	0	0	0	-
73	4.5	Sites determined as Contaminated Land	0	0	0	0	-

73	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
73	4.7	Regulated explosive sites	0	0	0	0	-
73	4.8	Hazardous substance storage/usage	0	0	0	0	-
73	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
74 >	4.10 >	Licensed industrial activities (Part A(1)) >	0	0	2	0	-
74 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	0	4	-
75	4.12	Radioactive Substance Authorisations	0	0	0	0	-
75 >	4.13 >	Licensed Discharges to controlled waters >	0	0	13	13	-
79	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
79	4.15	Pollutant release to public sewer	0	0	0	0	-
80	4.16	List 1 Dangerous Substances	0	0	0	0	-
80	4.17	List 2 Dangerous Substances	0	0	0	0	-
80 >	4.18 >	Pollution Incidents (EA/NRW) >	0	0	0	1	-
80	4.19	Pollution inventory substances	0	0	0	0	-
81	4.20	Pollution inventory waste transfers	0	0	0	0	-
81	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
82 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
84 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
86 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
87	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
87	5.5	Groundwater vulnerability- local information	None (within 0m)				
88 >	5.6 >	Groundwater abstractions >	0	0	0	12	53
104 >	5.7 >	Surface water abstractions >	0	0	0	0	2
105 >	5.8 >	Potable abstractions >	0	0	0	0	9
108 >	5.9 >	Source Protection Zones >	0	0	1	0	-
108	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
109 >	6.1 >	Water Network (OS MasterMap) >	0	3	15	-	-

111 >	6.2 >	Surface water features >	0	2	6	-	-
111 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
112 >	6.4 >	WFD Surface water bodies >	0	1	1	-	-
112 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
113	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
113	7.2	Historical Flood Events	0	0	0	-	-
113	7.3	Flood Defences	0	0	0	-	-
114	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
114	7.5	Flood Storage Areas	0	0	0	-	-
115 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
116	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding >	
117 >	8.1 >	Surface water flooding >	1 in 250 year, 0.1m - 0.3m (within 50m)

Page	Section	Groundwater flooding >	
119 >	9.1 >	Groundwater flooding >	Moderate-High (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
120	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
120	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
120	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
120	10.4	Special Protection Areas (SPA)	0	0	0	0	0
121	10.5	National Nature Reserves (NNR)	0	0	0	0	0
121	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
121	10.7	Designated Ancient Woodland	0	0	0	0	0
121	10.8	Biosphere Reserves	0	0	0	0	0
122	10.9	Forest Parks	0	0	0	0	0
122	10.10	Marine Conservation Zones	0	0	0	0	0
122	10.11	Green Belt	0	0	0	0	0
122	10.12	Proposed Ramsar sites	0	0	0	0	0

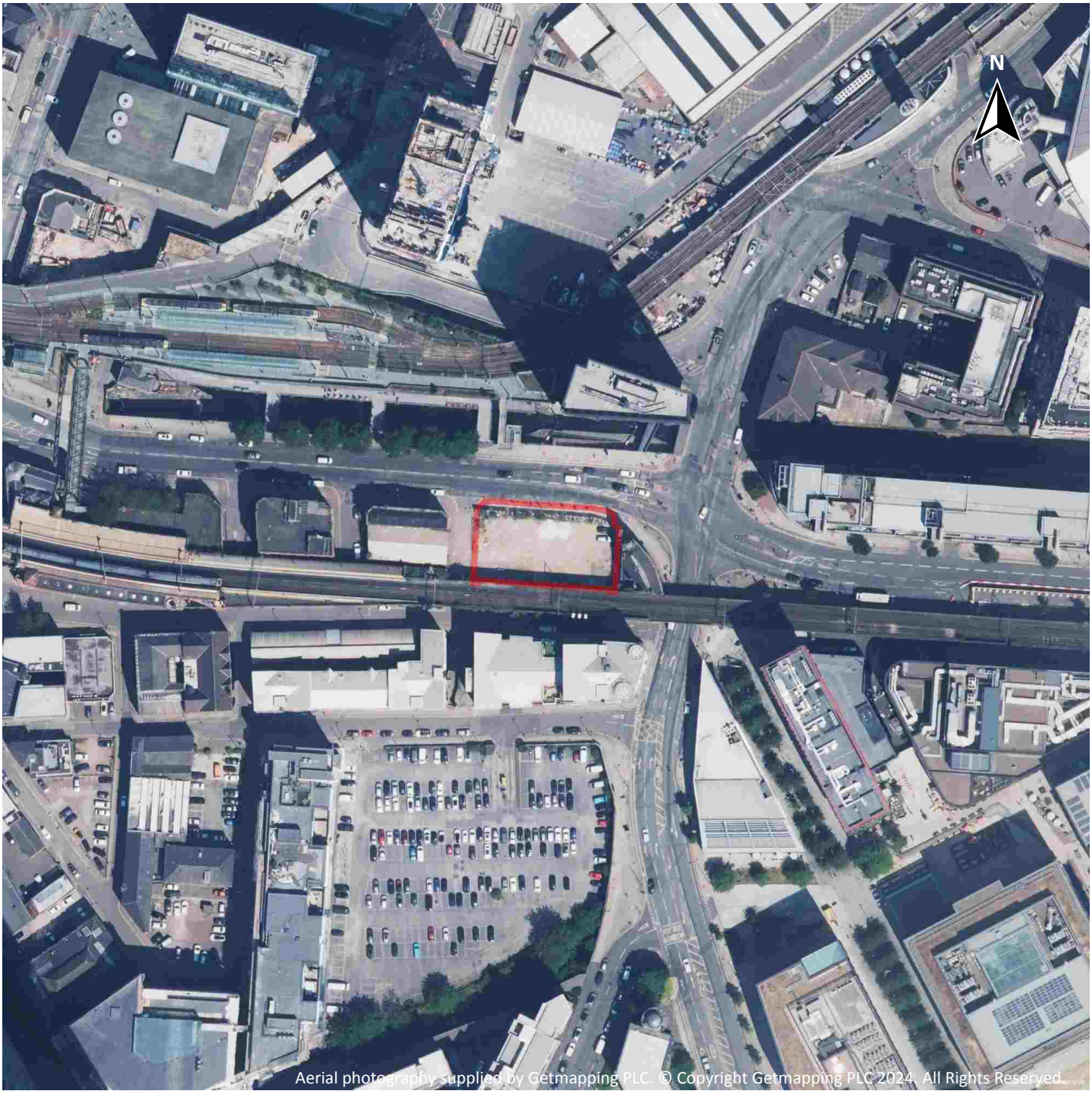
122	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
123	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
123	10.15	Nitrate Sensitive Areas	0	0	0	0	0
123 >	10.16 >	Nitrate Vulnerable Zones >	0	0	0	0	3
124 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
125	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
126	11.1	World Heritage Sites	0	0	0	-	-
127	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
127	11.3	National Parks	0	0	0	-	-
127 >	11.4 >	Listed Buildings >	0	1	15	-	-
128 >	11.5 >	Conservation Areas >	0	0	1	-	-
129	11.6	Scheduled Ancient Monuments	0	0	0	-	-
129	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
130 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
131	12.2	Open Access Land	0	0	0	-	-
131	12.3	Tree Felling Licences	0	0	0	-	-
131	12.4	Environmental Stewardship Schemes	0	0	0	-	-
131	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
132	13.1	Priority Habitat Inventory	0	0	0	-	-
132	13.2	Habitat Networks	0	0	0	-	-
132	13.3	Open Mosaic Habitat	0	0	0	-	-
132	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
133 >	14.1 >	10k Availability >	Identified (within 500m)				
134 >	14.2 >	Artificial and made ground (10k) >	1	0	1	2	-
136 >	14.3 >	Superficial geology (10k) >	1	0	2	1	-

137	14.4	Landslip (10k)	0	0	0	0	-
138 >	14.5 >	Bedrock geology (10k) >	1	0	1	0	-
139 >	14.6 >	Bedrock faults and other linear features (10k) >	0	0	1	2	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
140 >	15.1 >	50k Availability >	Identified (within 500m)				
141 >	15.2 >	Artificial and made ground (50k) >	1	0	0	0	-
142 >	15.3 >	Artificial ground permeability (50k) >	1	0	-	-	-
143 >	15.4 >	Superficial geology (50k) >	1	0	2	1	-
144 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
144	15.6	Landslip (50k)	0	0	0	0	-
144	15.7	Landslip permeability (50k)	None (within 50m)				
145 >	15.8 >	Bedrock geology (50k) >	1	0	1	0	-
146 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
146 >	15.10 >	Bedrock faults and other linear features (50k) >	0	0	1	2	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
147 >	16.1 >	BGS Boreholes >	0	3	77	-	-
Page	Section	Natural ground subsidence >					
152 >	17.1 >	Shrink swell clays >	Negligible (within 50m)				
153 >	17.2 >	Running sands >	Very low (within 50m)				
154 >	17.3 >	Compressible deposits >	Very low (within 50m)				
156 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
157 >	17.5 >	Landslides >	Very low (within 50m)				
158 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
160	18.1	BritPits	0	0	0	0	-
161 >	18.2 >	Surface ground workings >	0	8	12	-	-
162	18.3	Underground workings	0	0	0	0	0
162	18.4	Underground mining extents	0	0	0	0	-
162	18.5	Historical Mineral Planning Areas	0	0	0	0	-

162	18.6	Non-coal mining	0	0	0	0	0
162 >	**18.7 >**	**JPB mining areas >**	Identified (within 0m)				
163	18.8	The Coal Authority non-coal mining	0	0	0	0	-
163	18.9	Researched mining	0	0	0	0	-
163	18.10	Mining record office plans	0	0	0	0	-
164	18.11	BGS mine plans	0	0	0	0	-
164 >	**18.12 >**	**Coal mining >**	Identified (within 0m)				
164	18.13	Brine areas	None (within 0m)				
164	18.14	Gypsum areas	None (within 0m)				
164	18.15	Tin mining	None (within 0m)				
165	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
166	19.1	Natural cavities	0	0	0	0	-
166	19.2	Mining cavities	0	0	0	0	0
166	19.3	Reported recent incidents	0	0	0	0	-
166	19.4	Historical incidents	0	0	0	0	-
167	19.5	National karst database	0	0	0	0	-
Page	Section	**Radon >**					
168 >	**20.1 >**	**Radon >**	Less than 1% (within 0m)				
Page	Section	**Soil chemistry >**	On site	0-50m	50-250m	250-500m	500-2000m
170 >	**21.1 >**	**BGS Estimated Background Soil Chemistry >**	1	1	-	-	-
170 >	**21.2 >**	**BGS Estimated Urban Soil Chemistry >**	2	2	-	-	-
171	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	**Railway infrastructure and projects >**	On site	0-50m	50-250m	250-500m	500-2000m
172	22.1	Underground railways (London)	0	0	0	-	-
172	22.2	Underground railways (Non-London)	0	0	0	-	-
173	22.3	Railway tunnels	0	0	0	-	-
173 >	**22.4 >**	**Historical railway and tunnel features >**	1	22	64	-	-
176	22.5	Royal Mail tunnels	0	0	0	-	-

176 >	22.6 >	Historical railways >	0	0	3	-	-
177 >	22.7 >	Railways >	0	11	15	-	-
178	22.8	Crossrail 1	0	0	0	0	-
178	22.9	Crossrail 2	0	0	0	0	-
178	22.10	HS2	0	0	0	0	-

Recent aerial photograph

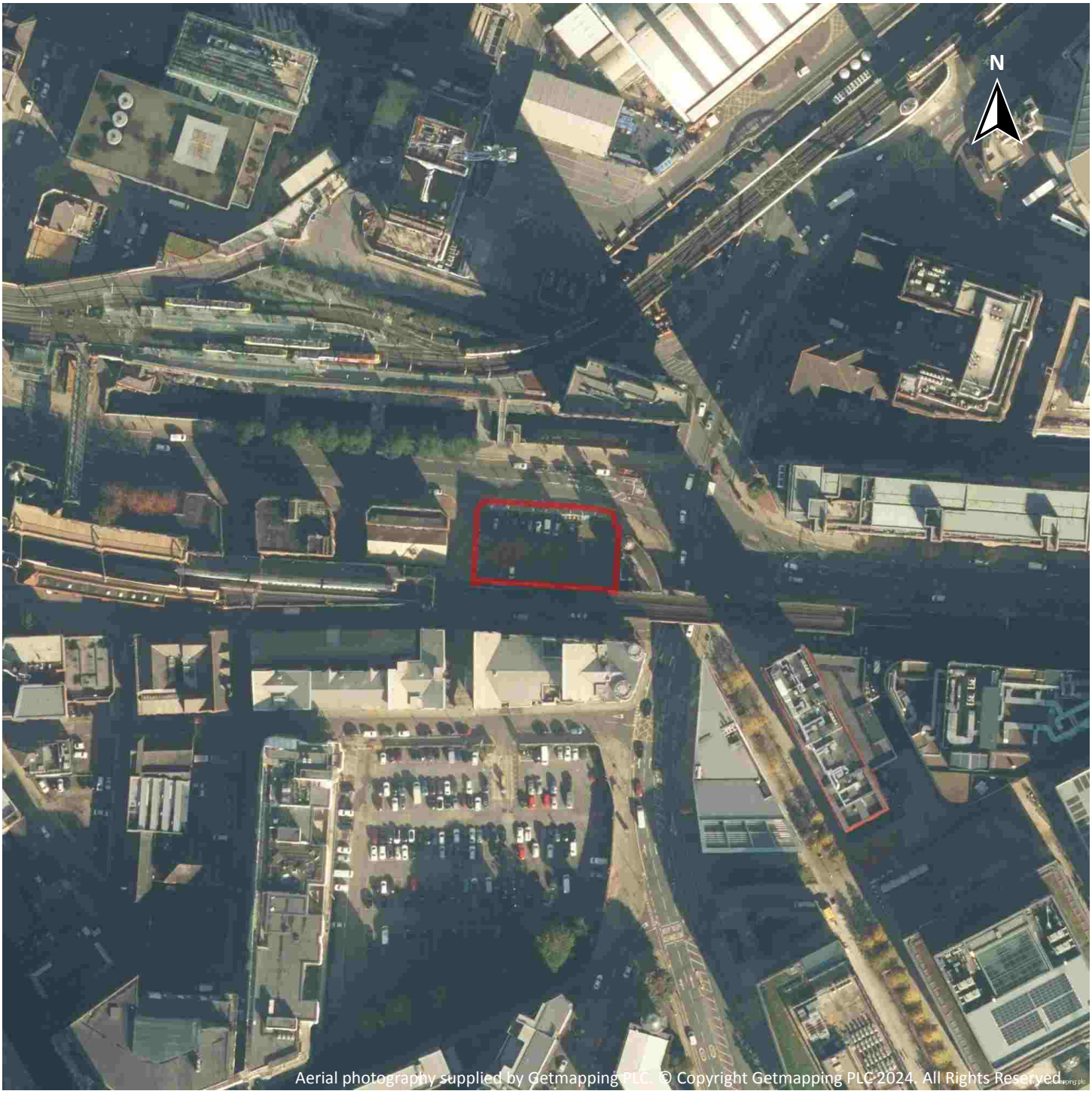


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Capture Date: 07/04/2023

Site Area: 0.11ha

Recent site history - 2022 aerial photograph



Capture Date: 18/10/2022

Site Area: 0.11ha

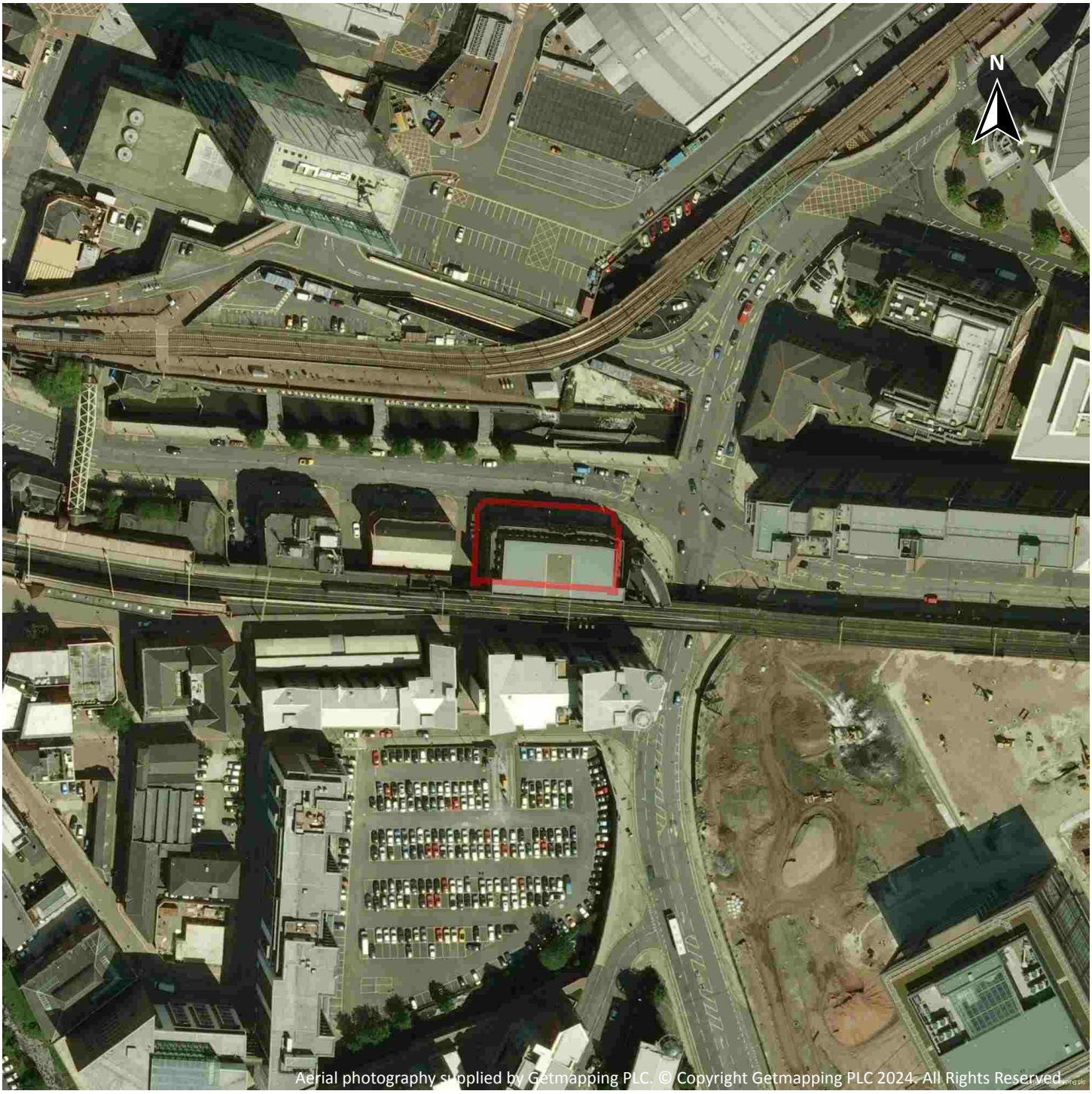
Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 0.11ha

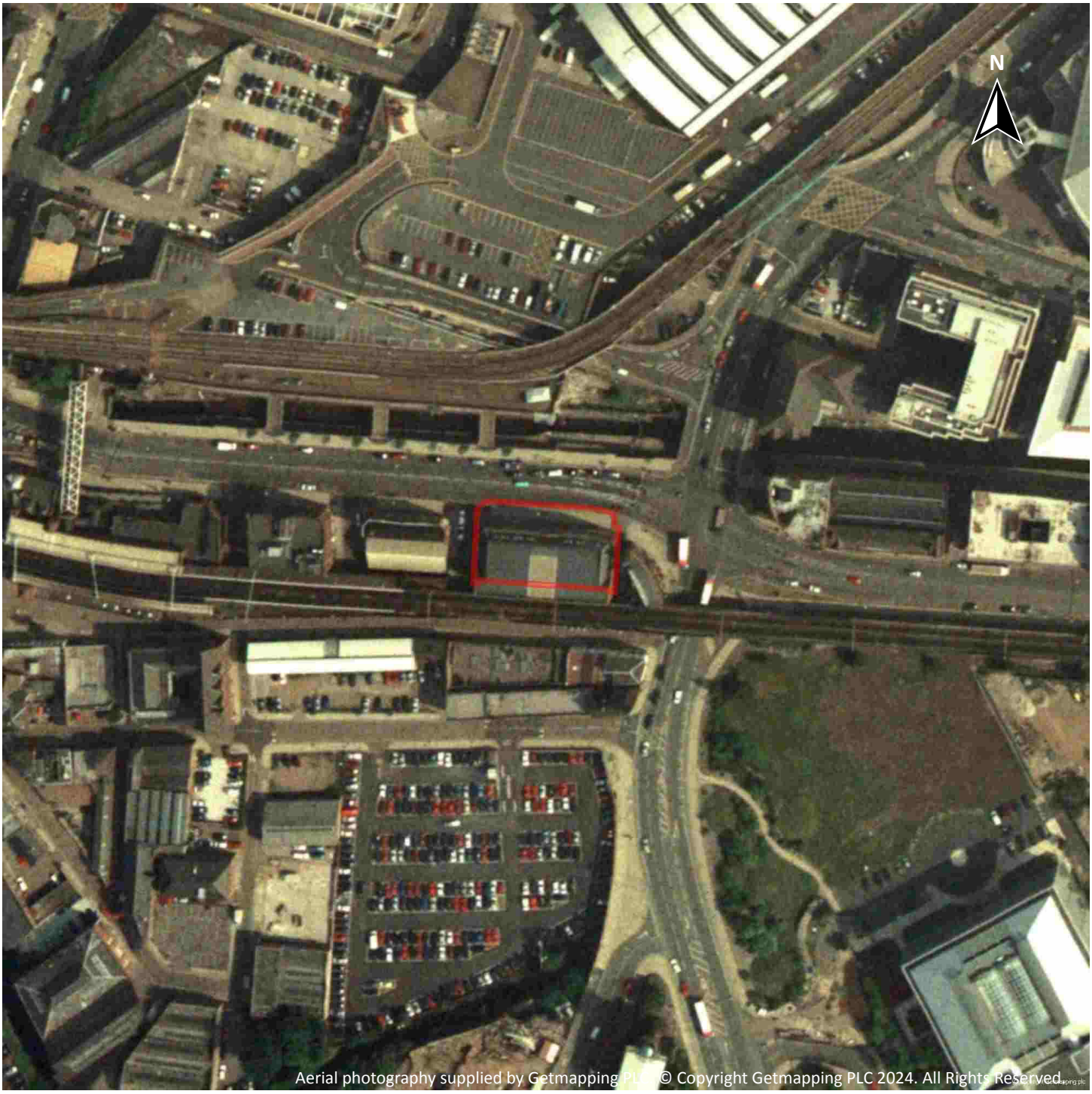
Recent site history - 2009 aerial photograph



Capture Date: 02/06/2009

Site Area: 0.11ha

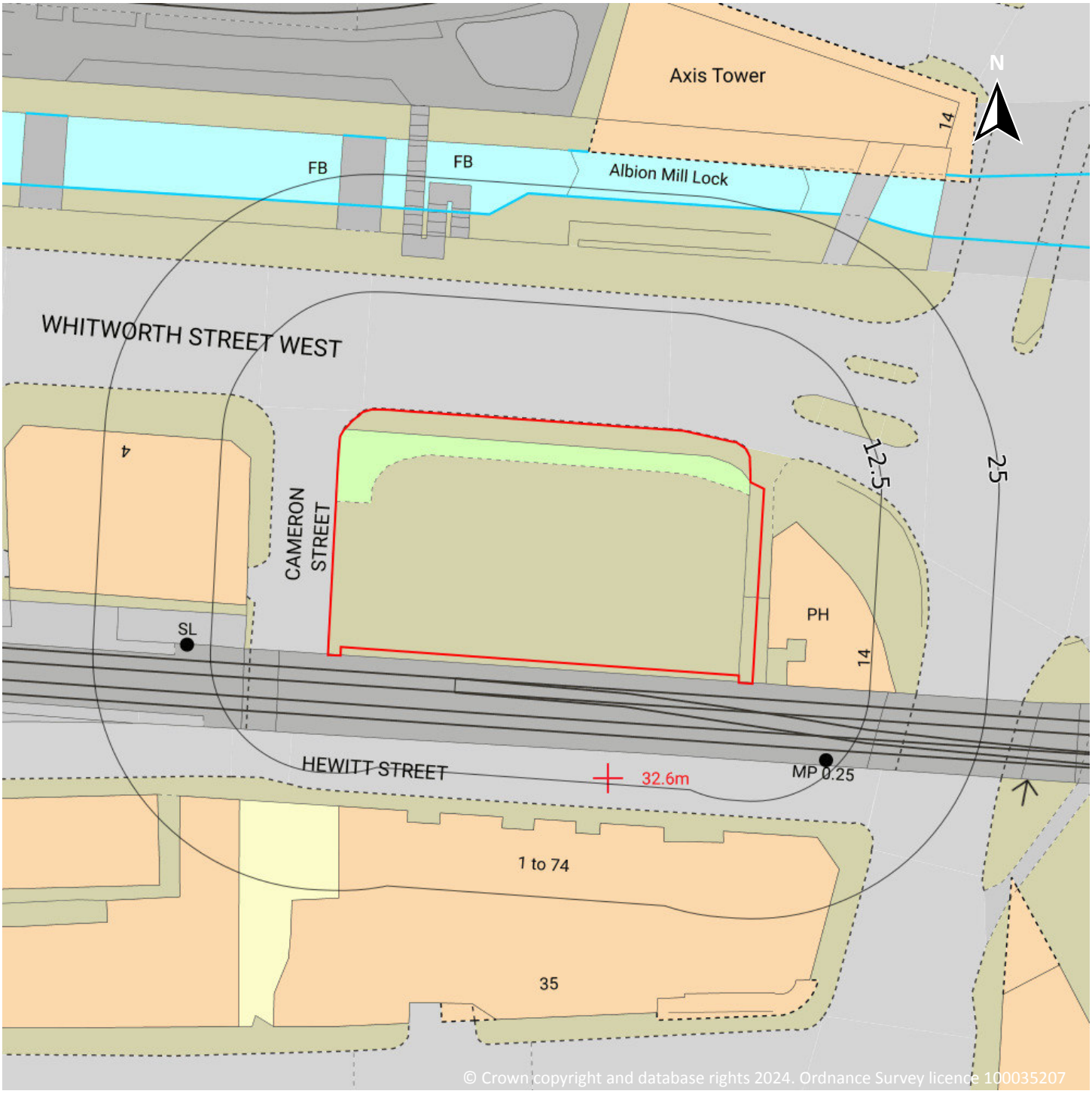
Recent site history - 2000 aerial photograph



Capture Date: 27/06/2000

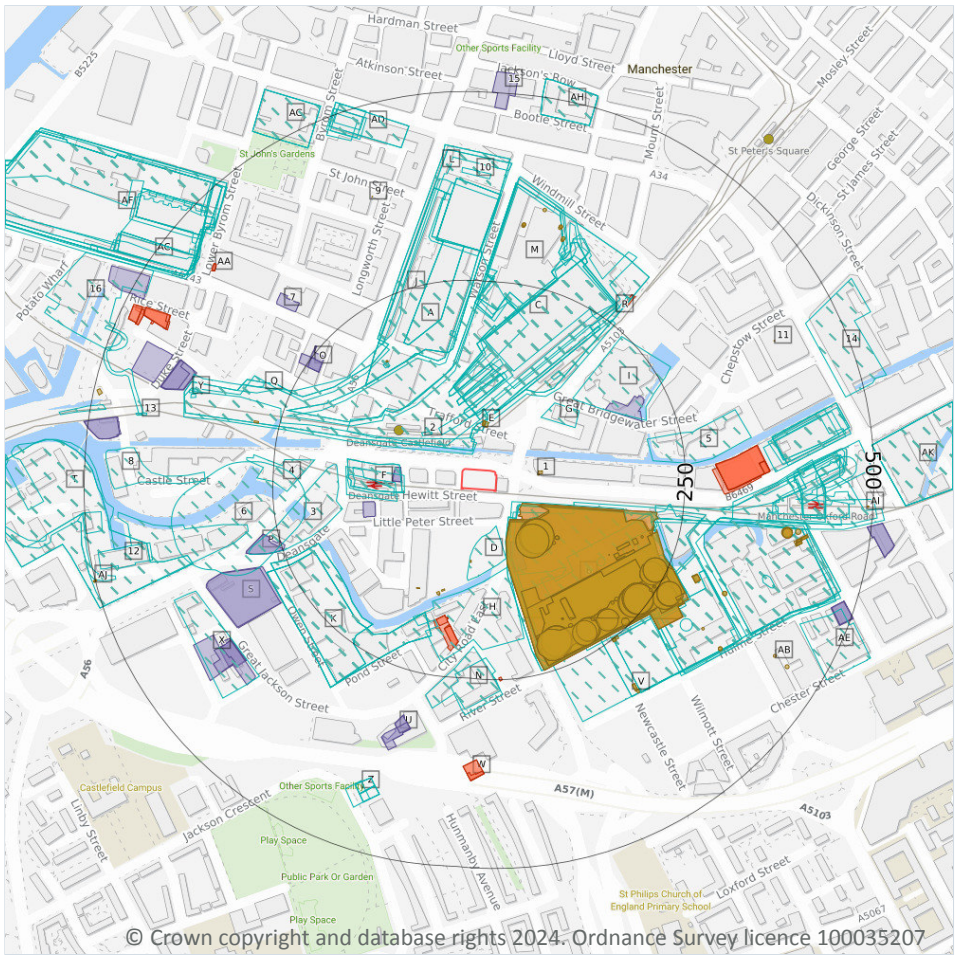
Site Area: 0.11ha

OS MasterMap site plan



Site Area: 0.11ha

1 Past land use



Site Outline

Search buffers in metres (m)

- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

1.1 Historical industrial land uses

Records within 500m	184

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
A	20m N	Railway Sidings	1923	961415

ID	Location	Land use	Dates present	Group ID
A	25m N	Railway Sidings	1905 - 1916	979135
A	25m N	Railway Sidings	1932 - 1938	996911
B	26m SE	Unspecified Commercial/Industrial	1848 - 1896	983292
B	35m SE	Unspecified Works	1972	881829
B	36m SE	Unspecified Commercial/Industrial	1932 - 1938	924691
B	36m SE	Gas Works	1905 - 1923	968250
B	37m SE	Unspecified Commercial/Industrial	1956	1002925
A	39m NW	Railway Sidings	1956	938222
C	41m N	Railway Sidings	1896	1005691
D	46m S	Cotton Mill	1848	806913
C	54m NW	Disused Station	1980	987897
D	56m SE	Unspecified Tank	1956	947850
D	61m SE	Unspecified Tank	1932 - 1938	942139
D	61m SE	Gasometer	1905 - 1923	1008259
D	62m SE	Unspecified Tank	1896	984138
2	64m NW	Railway Building	1905 - 1938	933452
D	64m SE	Unspecified Tank	1972	861982
D	64m SE	Unspecified Tank	1980 - 1985	979125
C	67m N	Railway Station	1956	946401
C	68m N	Railway Station	1932 - 1938	887773
C	68m N	Railway Station	1905 - 1916	905658
C	68m N	Railway Station	1923	910657
C	72m N	Railway Station	1896	948108
F	76m W	Railway Station	1985 - 1994	986222
F	79m W	Railway Station	1956 - 1972	941476
F	79m W	Railway Station	1980	998002
F	86m W	Railway Station	1905 - 1938	897469
F	89m W	Railway Station	1896	1007364

ID	Location	Land use	Dates present	Group ID
G	95m NE	Bus Station	1980	856994
H	102m S	Brewery	1848	808324
D	114m S	Railway Sidings	1896	857570
B	129m SE	Unspecified Works	1980	957915
C	136m N	Disused Station	1985	917245
I	142m NE	Cotton Mills	1848	825898
G	145m NE	Railway Building	1905 - 1938	932943
J	156m N	Railway Sidings	1972	888823
J	156m N	Railway Sidings	1985	965779
J	156m N	Railway Sidings	1980	994576
3	160m W	Unspecified Commercial/Industrial	1848	822314
B	163m SE	Unspecified Tank	1848	849454
B	167m SE	Gas Works	1980	888421
B	167m SE	Gas Works	1985	923545
A	169m NW	Railway Building	1923	854221
K	171m S	Unspecified Commercial/Industrial	1905	901731
K	171m S	Unspecified Mill	1916	940511
K	171m S	Unspecified Commercial/Industrial	1923	946710
K	171m S	Unspecified Mill	1932 - 1938	947543
A	176m N	Railway Building	1923	854222
B	184m SE	Unspecified Tank	1848	849453
B	191m SE	Unspecified Tanks	1956	993648
B	193m SE	Unspecified Tank	1972	871635
B	193m SE	Gasometer	1980	936391
4	196m W	Unspecified Commercial/Industrial	1848	822320
L	197m NW	Railway Buildings	1923	810636
K	197m SW	Automobile Works	1956	858949
K	197m SW	Unspecified Works	1980	901928

ID	Location	Land use	Dates present	Group ID
K	197m SW	Unspecified Works	1972	933496
B	197m SE	Unspecified Tanks	1896	958691
M	198m N	Goods Station	1923	958822
B	200m SE	Unspecified Tank	1932 - 1938	876704
B	200m SE	Gasometer	1905 - 1923	922201
M	202m N	Goods Station	1932 - 1938	967290
M	202m N	Goods Station	1905 - 1916	974221
5	205m E	Corporation Yard	1905 - 1938	940902
B	206m SE	Unspecified Tank	1932 - 1938	887495
B	206m SE	Gasometer	1905 - 1923	961359
6	207m W	Quay	1905 - 1938	975316
N	208m S	Unspecified Works	1972	835214
B	210m SE	Gasometer	1905 - 1923	939619
B	210m SE	Unspecified Tank	1932 - 1938	1009278
B	210m E	Unspecified Commercial/Industrial	1905	879196
B	210m E	Rubber Works	1923	965876
B	210m E	Rubber Works	1932 - 1938	994093
B	213m E	Railway Sidings	1905 - 1938	859983
M	213m N	Goods Station	1956	963807
B	214m SE	Unspecified Tank	1932 - 1938	921791
B	214m SE	Gasometer	1905 - 1923	924805
B	214m SE	Unspecified Tanks	1956	1009741
B	215m SE	Gasometer	1985	897602
B	215m SE	Unspecified Tank	1972	913097
B	215m SE	Gasometer	1980	917421
B	216m E	Rubber Works	1916	922757
B	219m SE	Unspecified Tank	1932 - 1938	991708
B	219m SE	Gasometer	1905 - 1923	1001145

ID	Location	Land use	Dates present	Group ID
N	221m S	Glass Works	1848	821947
B	236m SE	Rubber Works	1956	973654
Q	248m NW	Railway Buildings	1905 - 1938	863965
B	249m SE	Unspecified Tank	1932 - 1938	937983
B	249m SE	Gasometer	1905 - 1923	946404
R	250m NE	Railway Building	1932 - 1938	889705
B	251m SE	Unspecified Works	1985 - 1994	928815
B	251m SE	Unspecified Works	1980	976327
B	256m SE	Unspecified Tank	1848	996644
B	274m E	Unspecified Commercial/Industrial	1896	1008574
B	282m E	Unspecified Works	1985 - 1994	892981
B	282m E	Unspecified Works	1980	946286
L	283m N	Goods Station	1905 - 1938	953299
T	288m W	Quay	1848	960465
L	290m N	Disused Goods Station	1980	817824
L	290m N	Goods Station	1956	917923
L	290m N	Goods Station	1972	947488
B	300m E	Railway Sidings	1896	993937
B	301m SE	Unspecified Tank	1848	849452
B	315m E	Railway Sidings	1985 - 1994	879821
8	340m W	Slate Wharf	1848	857272
B	351m E	Railway Station	1905 - 1938	935895
B	356m E	Hospital	1923	984126
B	362m E	Hospital	1932 - 1938	964142
X	363m SW	Unspecified Depot	1972	821167
Y	366m W	Railway Building	1916	960031
Y	367m W	Railway Building	1923	854220
B	367m E	Railway Station	1896	957144

ID	Location	Land use	Dates present	Group ID
B	368m E	Railway Station	1956	999761
B	368m E	Coal Wharf	1848	806616
B	369m E	Hospital	1956 - 1972	938949
B	369m E	Hospital	1980	997388
T	369m W	Unspecified Depot	1985 - 1994	866652
T	369m W	Unspecified Depot	1980	986151
Y	371m W	Railway Building	1932 - 1938	932961
B	372m E	Unspecified Tanks	1848	819192
B	372m E	Hospital	1916	923488
B	384m E	Gas Works	1848	852813
B	385m E	Unspecified Tank	1896	849969
10	386m N	Railway Buildings	1923	810635
B	394m E	Railway Station	1988 - 1994	991843
B	395m E	Railway Station	1972	903819
B	395m E	Railway Station	1980	931454
B	395m E	Railway Station	1985	982166
B	398m E	Railway Building	1956	854219
Z	401m S	Police Station	1972	937951
Z	401m S	Police Station	1985	986465
Z	401m S	Police Station	1980	987579
Z	409m S	Fire Station	1938	958741
Z	410m S	Fire Station	1972	879366
Z	410m S	Fire Station	1985	913222
Z	410m S	Fire Station	1980	1003634
12	419m W	Warehouse	1848	852230
B	423m E	Tanks	1848	827416
13	425m W	Railway Building	1905 - 1923	944816
Y	430m W	Unspecified Ground Workings	1848	814699

ID	Location	Land use	Dates present	Group ID
AD	434m N	Hospital	1956 - 1972	879488
AD	434m N	Hospital	1980	992702
AE	440m SE	Unspecified Mills	1916 - 1923	920381
AF	443m NW	Railway Sidings	1916 - 1938	923062
AF	443m NW	Railway Sidings	1894	942068
AF	444m NW	Railway Sidings	1923	978214
AC	447m NW	Railway Sidings	1956	927260
AC	447m NW	Railway Building	1972	933625
AC	447m NW	Railway Building	1985	937253
AC	447m NW	Railway Building	1980	968055
AF	447m NW	Railway Sidings	1956	881875
AF	447m NW	Goods Depot	1972	969057
AF	447m NW	Goods Depot	1980	982780
AC	448m NW	Goods Sheds	1905 - 1938	871028
AF	448m NW	Railway Sidings	1905	871411
AF	448m NW	Railway Sidings	1932	1009972
AF	449m NW	Railway Sidings	1988 - 1994	916623
AC	449m NW	Railway Buildings	1896	810649
AF	449m NW	Railway Sidings	1896	990314
14	456m NE	Unspecified Commercial/Industrial	1923	822321
AD	458m N	Hospital	1916	875319
AD	460m N	Hospital	1923	994712
AD	462m N	Hospital	1932 - 1938	869533
AC	462m NW	Goods Station	1956	810453
AC	464m NW	Goods Sheds	1905 - 1938	891142
AC	465m NW	Railway Building	1985	964774
AC	465m NW	Railway Building	1980	984510
AC	465m NW	Railway Building	1972	1002551

ID	Location	Land use	Dates present	Group ID
AD	470m N	Hospital	1985 - 1988	985880
T	473m W	Unspecified Ground Workings	1848	814700
AG	473m NW	Unspecified Commercial/Industrial	1923	872303
AG	473m NW	Unspecified Commercial/Industrial	1905	934160
AG	473m NW	Unspecified Works	1932 - 1938	967713
AH	475m N	Police Station	1980	914364
AH	475m N	Police Station	1956 - 1972	952220
AH	475m N	Police Station	1985 - 1994	996946
T	478m W	Unspecified Warehouses	1972	856272
Y	479m W	Railway Buildings	1905	810633
16	481m NW	Unspecified Depot	1985 - 1988	885508
AK	499m E	Unspecified Commercial/Industrial	1923	910139
AK	499m E	Unspecified Commercial/Industrial	1905	951830
AK	499m E	Unspecified Mills	1932 - 1938	992472
AK	499m E	Unspecified Mills	1916	993089

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**134**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
B	39m SE	Gas Works	1893 - 1908	129043
B	43m SE	Gas Works	1891	146932
B	45m SE	Gas Works	1922	138279

ID	Location	Land use	Dates present	Group ID
1	55m E	Tanks	1891	108717
E	57m N	Tanks	1949	152322
D	57m SE	Unspecified Tank	1969	130499
D	57m SE	Unspecified Tank	1953	154985
D	58m SE	Unspecified Tank	1957 - 1965	128947
D	58m SE	Unspecified Tank	1949	143876
E	59m N	Tanks	1951 - 1965	130425
D	59m SE	Unspecified Tank	1980 - 1985	137448
E	59m N	Tanks	1948	143858
D	60m SE	Unspecified Tank	1932	134199
D	60m SE	Gasometer	1908 - 1922	142772
D	95m S	Unspecified Tank	1891	115291
D	100m SE	Unspecified Tank	1969 - 1985	153577
D	100m SE	Unspecified Tank	1953	153919
D	100m SE	Unspecified Tank	1957	128256
D	102m SE	Unspecified Tank	1908 - 1932	152429
H	135m S	Tanks	1949	108714
G	136m NE	Unspecified Tank	1891	115293
B	137m SE	Gas Works	1949	128464
H	139m S	Tanks	1949	108715
H	143m SW	Unspecified Tank	1891	115294
B	158m SE	Unspecified Tank	1969	142299
B	159m SE	Disused Gas Holder Station	1985	126184
B	159m SE	Gas Holder Station	1980	155526
B	168m SE	Tanks	1893	151285
B	168m SE	Tanks	1891	126769
B	172m SE	Unspecified Tank	1891	115292
A	175m NW	Unspecified Tank	1957	156070

ID	Location	Land use	Dates present	Group ID
A	175m NW	Unspecified Tank	1955	149684
B	177m SE	Tanks	1949 - 1957	131406
B	177m SE	Tanks	1969	142141
B	178m SE	Tanks	1969	131205
B	178m SE	Tanks	1953	148910
B	183m SE	Unspecified Tank	1957	115290
B	183m SE	Tanks	1949	127220
B	190m SE	Unspecified Tank	1957	138206
B	190m SE	Unspecified Tank	1949	151860
B	192m E	Tanks	1957	108596
B	194m SE	Gasometer	1949	140020
B	194m SE	Unspecified Tank	1957 - 1965	143015
B	195m SE	Unspecified Tank	1953	131493
B	195m SE	Gasometer	1893 - 1969	150127
B	196m SE	Tanks	1932	108716
B	196m SE	Gasometers	1908 - 1922	153355
B	201m SE	Unspecified Tank	1953 - 1969	143010
B	202m E	Unspecified Tank	1949 - 1969	148917
B	205m SE	Unspecified Tank	1957 - 1965	134264
B	205m SE	Gasometer	1949	136972
B	205m SE	Unspecified Tank	1953	137941
B	206m SE	Gasometer	1893	144817
B	210m SE	Unspecified Tank	1953 - 1965	130539
B	211m SE	Unspecified Tank	1893	147641
B	212m SE	Gasometer	1893	139247
B	212m E	Unspecified Tank	1891	114954
B	212m SE	Unspecified Tank	1891 - 1893	129472
B	212m SE	Unspecified Tank	1953 - 1985	142137

ID	Location	Land use	Dates present	Group ID
B	212m SE	Gasometer	1891	141539
B	214m E	Unspecified Tank	1891	140833
B	215m SE	Gasometer	1893 - 1969	149968
B	216m SE	Gasometer	1891	152905
B	216m SE	Unspecified Tank	1957 - 1965	141299
B	216m SE	Gasometer	1949	142179
B	216m SE	Unspecified Tank	1953	138289
B	217m SE	Gas Holder	1980 - 1985	137601
B	218m SE	Gasometer	1891 - 1893	130887
B	220m SE	Unspecified Tank	1957 - 1965	127332
B	220m SE	Gasometer	1949	135711
B	220m SE	Unspecified Tank	1953	131749
B	239m SE	Unspecified Tank	1893	149484
B	239m SE	Gasometer	1891	114291
B	242m SE	Unspecified Tank	1893	154854
B	243m SE	Gasometer	1969	114290
B	243m SE	Unspecified Tank	1953 - 1965	145295
B	244m SE	Unspecified Tank	1980 - 1985	151024
B	249m SE	Gasometer	1891 - 1893	156214
B	249m SE	Unspecified Tank	1949 - 1957	137028
B	249m SE	Unspecified Tank	1969 - 1990	140651
B	250m SE	Unspecified Tank	1998	153520
B	251m SE	Unspecified Tank	1957 - 1965	133065
B	251m SE	Gasometer	1949	136042
B	251m SE	Unspecified Tank	1953	138538
B	277m SE	Unspecified Tank	1987 - 1990	144190
Q	278m W	Unspecified Tank	1932	115026
B	282m SE	Unspecified Tank	1891 - 1893	145005

ID	Location	Land use	Dates present	Group ID
B	284m SE	Unspecified Tank	1998	149018
B	284m SE	Unspecified Tank	1969	154747
B	285m SE	Unspecified Tank	1980 - 1990	126732
V	314m SE	Unspecified Tank	1949 - 1957	139489
V	314m SE	Unspecified Tank	1969	154955
M	318m N	Unspecified Tank	1986	145853
M	319m N	Unspecified Tank	1988 - 1999	148102
V	323m SE	Unspecified Tank	1980 - 1985	141556
M	325m N	Unspecified Tank	1986	130493
M	327m N	Unspecified Tank	1988	132824
M	327m N	Unspecified Tank	1994 - 1999	147875
B	328m SE	Unspecified Tank	1908	114953
B	330m SE	Unspecified Tank	1922	135180
B	330m SE	Unspecified Tank	1893	145665
M	332m N	Unspecified Tank	1986	132999
M	334m N	Unspecified Tank	1988	139530
M	334m N	Unspecified Tank	1994 - 1999	126977
M	351m N	Unspecified Tank	1988 - 1999	148866
B	361m SE	Unspecified Tank	1893	129815
B	361m SE	Unspecified Tank	1922	131267
9	381m N	Unspecified Tank	1891	115172
B	383m E	Unspecified Tank	1893	115711
B	384m E	Gasometer	1891	135547
B	384m E	Gasometer	1908	148893
B	401m E	Tanks	1953	108483
B	401m E	Unspecified Tank	1922	115713
B	404m E	Unspecified Tank	1953	140978
B	404m E	Unspecified Tank	1948	143136

ID	Location	Land use	Dates present	Group ID
B	404m E	Tanks	1950	108894
B	404m E	Unspecified Tank	1955	155695
B	404m E	Unspecified Tank	1948	142178
B	405m E	Unspecified Tank	1953	156072
B	405m E	Unspecified Tank	1955	152417
11	408m NE	Unspecified Tank	1891	115174
B	409m E	Unspecified Tank	1948	133077
B	410m E	Unspecified Tank	1953	149069
B	410m E	Unspecified Tank	1955	153467
AB	428m SE	Unspecified Tank	1922	115714
AB	448m SE	Unspecified Tank	1949 - 1985	151969
Y	488m W	Unspecified Tank	1922	115025
AI	493m E	Unspecified Tank	1953	140936
AI	493m E	Unspecified Tank	1955	142095
AJ	498m W	Unspecified Tank	1980	134057
AJ	498m W	Unspecified Tank	1980	154190
AJ	499m W	Unspecified Tank	1965	149868
AJ	499m W	Unspecified Tank	1969	139198
AJ	499m W	Unspecified Tank	1960	147256

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**53**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
B	39m SE	Gas Works	1893 - 1908	86780
B	43m SE	Gas Works	1891	73990
B	45m SE	Gas Works	1922	84456
D	60m SE	Gasometer	1908 - 1922	88154
B	137m SE	Gas Works	1949	79857
B	159m SE	Disused Gas Holder Station	1985	68843
B	159m SE	Gas Holder Station	1980	74476
H	169m S	Electricity Substation	1998	92277
H	169m S	Electricity Transformers	1969 - 1985	73429
H	181m S	Electricity Substation	1949 - 1957	70856
H	182m S	Electricity Substation	1969 - 1990	90707
B	194m SE	Gasometer	1949	87070
B	195m SE	Gasometer	1893 - 1969	81639
B	196m SE	Gasometers	1908 - 1922	79709
B	205m SE	Gasometer	1949	74834
B	206m SE	Gasometer	1893	91928
B	212m SE	Gasometer	1893	84792
B	212m SE	Gasometer	1891	77434
B	215m SE	Gasometer	1893 - 1969	79524
B	216m SE	Gasometer	1891	77969
B	216m SE	Gasometer	1949	88747
B	217m SE	Gas Holder	1980 - 1985	90352
B	218m SE	Gasometer	1891 - 1893	86689
B	220m SE	Gasometer	1949	76936
B	225m SE	Electricity Substation	1998	65849
B	239m SE	Gasometer	1891	68520
B	243m SE	Gasometer	1969	68519
N	247m S	Electricity Substation	1998	66826

ID	Location	Land use	Dates present	Group ID
B	249m SE	Gasometer	1891 - 1893	73168
B	251m SE	Gasometer	1949	90192
R	281m NE	Electricity Substation	1948 - 1985	85241
B	286m E	Hydraulic Power Station	1932	87405
B	291m E	Hydraulic Power Station	1951 - 1973	77593
B	291m E	Hydraulic Power Station	1948	88074
B	291m E	Hydraulic Power Station	1949	73635
B	291m E	Hydraulic Power Station	1957	83124
B	348m E	Electricity Substation	1948 - 1985	77026
B	349m E	Electricity Substation	1988 - 1999	70454
W	357m S	Electricity Substation	1949	70165
W	357m S	Electricity Substation	1957	80045
W	371m S	Electricity Substation	1953	69203
B	384m E	Gasometer	1891	77992
B	384m E	Gasometer	1908	91082
AA	422m NW	Electricity Substation	1948 - 1957	87242
AA	422m NW	Electricity Substation	1981 - 1995	80836
AC	433m NW	Electricity Substation	1957	76855
AC	435m NW	Electricity Substation	1995	69187
AC	436m NW	Electricity Substation	1949 - 1955	72632
AC	454m NW	Electricity Substation	1948	84176
AC	470m NW	Electricity Substation	1986	81033
AC	470m NW	Electricity Substation	1990	90860
AC	475m NW	Electricity Substation	1994 - 1995	71919
AC	475m NW	Electricity Substation	1981	75511

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	37

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
D	71m SE	Garage	1953 - 1965	24325
F	79m W	Garage	1955 - 1981	30682
F	80m W	Garage	1986 - 1990	27623
F	116m W	Garage	1960 - 1969	28379
I	168m NE	Garage	1973	22727
O	231m NW	Garage	1994 - 1995	27975
O	231m NW	Garage	1995	25530
O	231m NW	Garage	1981 - 1990	28188
P	246m W	Garage	1980	30971
P	249m W	Garage	1969	28889
S	280m SW	Garage	1980 - 1990	28779
S	283m SW	Garage	1995 - 1997	26716
7	306m NW	Garage	1981	22730
U	309m S	Garage	1960 - 1965	24793

ID	Location	Land use	Dates present	Group ID
U	310m S	Garage	1957	27182
U	318m S	Garage	1954	29208
X	364m SW	Garage	1980	30605
X	365m SW	Garage	1965	24027
X	365m SW	Garage	1980 - 1990	26797
X	365m SW	Garage	1957	29417
X	365m SW	Garage	1969	28842
X	365m SW	Garage	1960	29338
X	366m SW	Garage	1995 - 1997	23312
Y	375m W	Garage	1981 - 1986	30488
Y	377m W	Garage	1963	25233
X	378m SW	Garage	1954	27153
Y	384m W	Garage	1965	29108
Y	413m W	Garage	1981	22731
Y	455m W	Garage	1963 - 1981	27617
Y	457m W	Garage	1986	25384
AE	471m E	Garage	1962 - 1969	26876
AE	471m E	Garage	1985 - 1987	25586
AE	471m E	Garage	1970	24700
15	478m N	Garage	1948	22733
AC	480m NW	Garage	1981 - 1990	23619
AI	495m E	Garage	1969 - 1998	31003
AI	495m E	Garage	1948 - 1962	23262

This data is sourced from Ordnance Survey / Groundsure.

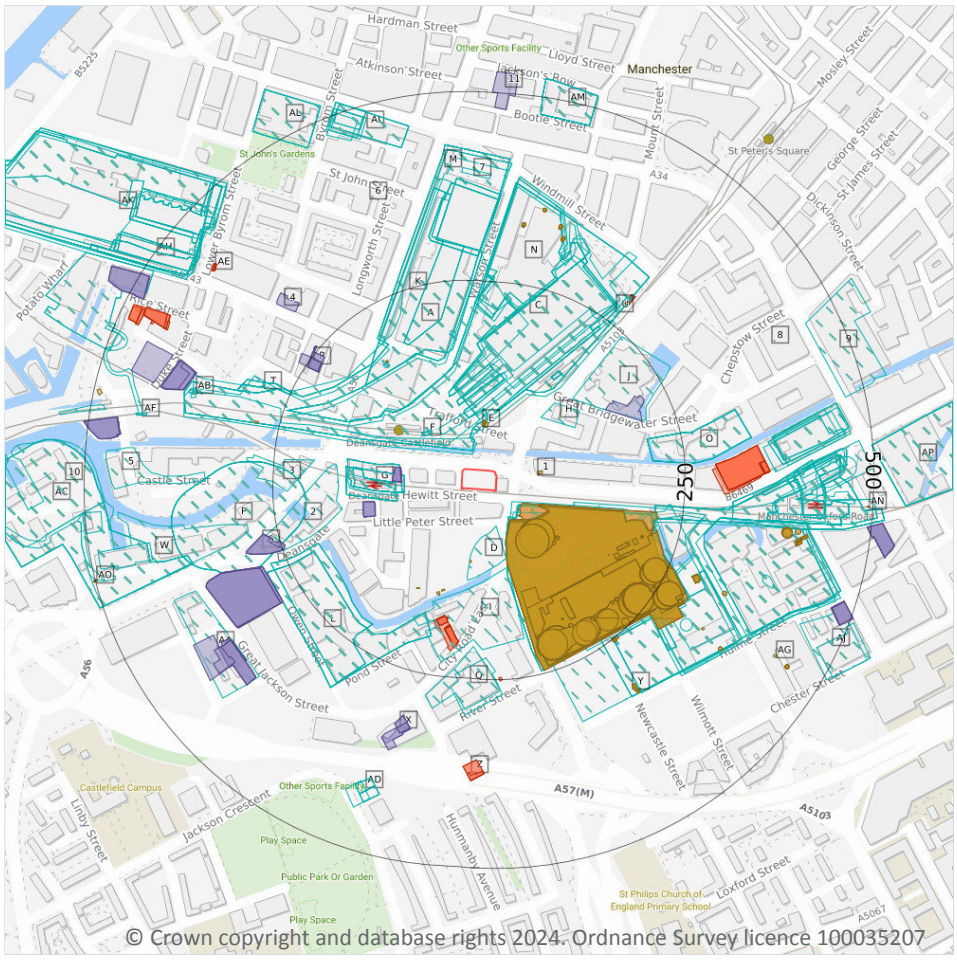
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



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Site Outline

Search buffers in metres (m)

- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m	292

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 33 >**

ID	Location	Land Use	Date	Group ID
A	20m N	Railway Sidings	1923	961415
A	25m N	Railway Sidings	1938	996911
A	25m N	Railway Sidings	1932	996911

ID	Location	Land Use	Date	Group ID
A	25m N	Railway Sidings	1916	979135
A	25m N	Railway Sidings	1905	979135
B	26m SE	Unspecified Commercial/Industrial	1896	983292
B	35m SE	Unspecified Works	1972	881829
B	36m SE	Unspecified Commercial/Industrial	1938	924691
B	36m SE	Unspecified Commercial/Industrial	1932	924691
B	36m SE	Gas Works	1916	968250
B	36m SE	Gas Works	1905	968250
B	36m SE	Gas Works	1923	968250
B	37m SE	Unspecified Commercial/Industrial	1956	1002925
A	39m NW	Railway Sidings	1956	938222
C	41m N	Railway Sidings	1896	1005691
D	46m S	Cotton Mill	1848	806913
C	54m NW	Disused Station	1980	987897
D	56m SE	Unspecified Tank	1956	947850
D	61m SE	Gasometer	1916	1008259
D	61m SE	Gasometer	1905	1008259
D	61m SE	Unspecified Tank	1938	942139
D	61m SE	Unspecified Tank	1932	942139
D	61m SE	Gasometer	1923	1008259
D	62m SE	Unspecified Tank	1896	984138
F	64m NW	Railway Building	1938	933452
F	64m NW	Railway Building	1932	933452
F	64m NW	Railway Building	1916	933452
F	64m NW	Railway Building	1905	933452
F	64m NW	Railway Building	1923	933452
D	64m SE	Unspecified Tank	1972	861982
D	64m SE	Unspecified Tank	1980	979125

ID	Location	Land Use	Date	Group ID
D	64m SE	Unspecified Tank	1985	979125
C	67m N	Railway Station	1956	946401
C	68m N	Railway Station	1938	887773
C	68m N	Railway Station	1932	887773
C	68m N	Railway Station	1916	905658
C	68m N	Railway Station	1905	905658
C	68m N	Railway Station	1923	910657
C	72m N	Railway Station	1896	948108
G	76m W	Railway Station	1988	986222
G	76m W	Railway Station	1985	986222
G	76m W	Railway Station	1994	986222
G	79m W	Railway Station	1972	941476
G	79m W	Railway Station	1956	941476
G	79m W	Railway Station	1980	998002
G	86m W	Railway Station	1938	897469
G	86m W	Railway Station	1932	897469
G	86m W	Railway Station	1916	897469
G	86m W	Railway Station	1905	897469
G	86m W	Railway Station	1923	897469
G	89m W	Railway Station	1896	1007364
H	95m NE	Bus Station	1980	856994
I	102m S	Brewery	1848	808324
D	114m S	Railway Sidings	1896	857570
B	129m SE	Unspecified Works	1980	957915
C	136m N	Disused Station	1985	917245
J	142m NE	Cotton Mills	1848	825898
H	145m NE	Railway Building	1938	932943
H	145m NE	Railway Building	1932	932943

ID	Location	Land Use	Date	Group ID
H	145m NE	Railway Building	1916	932943
H	145m NE	Railway Building	1905	932943
H	145m NE	Railway Building	1923	932943
B	155m SE	Unspecified Commercial/Industrial	1848	983292
K	156m N	Railway Sidings	1972	888823
K	156m N	Railway Sidings	1980	994576
K	156m N	Railway Sidings	1985	965779
2	160m W	Unspecified Commercial/Industrial	1848	822314
B	163m SE	Unspecified Tank	1848	849454
B	167m SE	Gas Works	1980	888421
B	167m SE	Gas Works	1985	923545
A	169m NW	Railway Building	1923	854221
L	171m S	Unspecified Mill	1938	947543
L	171m S	Unspecified Mill	1932	947543
L	171m S	Unspecified Mill	1916	940511
L	171m S	Unspecified Commercial/Industrial	1905	901731
L	171m S	Unspecified Commercial/Industrial	1923	946710
A	176m N	Railway Building	1923	854222
B	184m SE	Unspecified Tank	1848	849453
B	191m SE	Unspecified Tanks	1956	993648
B	193m SE	Unspecified Tank	1972	871635
B	193m SE	Gasometer	1980	936391
3	196m W	Unspecified Commercial/Industrial	1848	822320
M	197m NW	Railway Buildings	1923	810636
L	197m SW	Unspecified Works	1972	933496
L	197m SW	Automobile Works	1956	858949
L	197m SW	Unspecified Works	1980	901928
B	197m SE	Unspecified Tanks	1896	958691

ID	Location	Land Use	Date	Group ID
N	198m N	Goods Station	1923	958822
B	200m SE	Gasometer	1916	922201
B	200m SE	Gasometer	1905	922201
B	200m SE	Unspecified Tank	1938	876704
B	200m SE	Unspecified Tank	1932	876704
B	200m SE	Gasometer	1923	922201
N	202m N	Goods Station	1938	967290
N	202m N	Goods Station	1932	967290
N	202m N	Goods Station	1916	974221
N	202m N	Goods Station	1905	974221
O	205m E	Corporation Yard	1938	940902
O	205m E	Corporation Yard	1932	940902
O	205m E	Corporation Yard	1916	940902
O	205m E	Corporation Yard	1905	940902
O	205m E	Corporation Yard	1923	940902
B	206m SE	Gasometer	1916	961359
B	206m SE	Gasometer	1905	961359
B	206m SE	Unspecified Tank	1938	887495
B	206m SE	Unspecified Tank	1932	887495
B	206m SE	Gasometer	1923	961359
P	207m W	Quay	1938	975316
P	207m W	Quay	1932	975316
P	207m W	Quay	1916	975316
P	207m W	Quay	1905	975316
P	207m W	Quay	1923	975316
Q	208m S	Unspecified Works	1972	835214
B	210m SE	Gasometer	1916	939619
B	210m SE	Gasometer	1905	939619

ID	Location	Land Use	Date	Group ID
B	210m SE	Unspecified Tank	1938	1009278
B	210m SE	Unspecified Tank	1932	1009278
B	210m SE	Gasometer	1923	939619
B	210m E	Rubber Works	1938	994093
B	210m E	Rubber Works	1932	994093
B	210m E	Unspecified Commercial/Industrial	1905	879196
B	210m E	Rubber Works	1923	965876
B	213m E	Railway Sidings	1938	859983
B	213m E	Railway Sidings	1932	859983
B	213m E	Railway Sidings	1916	859983
B	213m E	Railway Sidings	1905	859983
B	213m E	Railway Sidings	1923	859983
N	213m N	Goods Station	1956	963807
B	214m SE	Gasometer	1916	924805
B	214m SE	Gasometer	1905	924805
B	214m SE	Unspecified Tank	1938	921791
B	214m SE	Unspecified Tank	1932	921791
B	214m SE	Gasometer	1923	924805
B	214m SE	Unspecified Tanks	1956	1009741
B	215m SE	Unspecified Tank	1972	913097
B	215m SE	Gasometer	1980	917421
B	215m SE	Gasometer	1985	897602
B	216m E	Rubber Works	1916	922757
B	219m SE	Gasometer	1916	1001145
B	219m SE	Gasometer	1905	1001145
B	219m SE	Unspecified Tank	1938	991708
B	219m SE	Unspecified Tank	1932	991708
B	219m SE	Gasometer	1923	1001145

ID	Location	Land Use	Date	Group ID
Q	221m S	Glass Works	1848	821947
B	236m SE	Rubber Works	1956	973654
T	248m NW	Railway Buildings	1938	863965
T	248m NW	Railway Buildings	1932	863965
T	248m NW	Railway Buildings	1916	863965
T	248m NW	Railway Buildings	1905	863965
T	248m NW	Railway Buildings	1923	863965
B	249m SE	Gasometer	1916	946404
B	249m SE	Gasometer	1905	946404
B	249m SE	Unspecified Tank	1938	937983
B	249m SE	Unspecified Tank	1932	937983
B	249m SE	Gasometer	1923	946404
U	250m NE	Railway Building	1938	889705
U	250m NE	Railway Building	1932	889705
B	251m SE	Unspecified Works	1988	928815
B	251m SE	Unspecified Works	1980	976327
B	251m SE	Unspecified Works	1985	928815
B	251m SE	Unspecified Works	1994	928815
B	256m SE	Unspecified Tank	1848	996644
B	274m E	Unspecified Commercial/Industrial	1896	1008574
B	282m E	Unspecified Works	1988	892981
B	282m E	Unspecified Works	1980	946286
B	282m E	Unspecified Works	1985	892981
B	282m E	Unspecified Works	1994	892981
M	283m N	Goods Station	1938	953299
M	283m N	Goods Station	1932	953299
M	283m N	Goods Station	1916	953299
M	283m N	Goods Station	1905	953299

ID	Location	Land Use	Date	Group ID
M	283m N	Goods Station	1923	953299
W	288m W	Quay	1848	960465
M	290m N	Goods Station	1972	947488
M	290m N	Goods Station	1956	917923
M	290m N	Disused Goods Station	1980	817824
B	300m E	Railway Sidings	1896	993937
B	301m SE	Unspecified Tank	1848	849452
B	315m E	Railway Sidings	1988	879821
B	315m E	Railway Sidings	1985	879821
B	315m E	Railway Sidings	1994	879821
5	340m W	Slate Wharf	1848	857272
B	351m E	Railway Station	1938	935895
B	351m E	Railway Station	1932	935895
B	351m E	Railway Station	1916	935895
B	351m E	Railway Station	1905	935895
B	351m E	Railway Station	1923	935895
B	356m E	Hospital	1923	984126
B	362m E	Hospital	1938	964142
B	362m E	Hospital	1932	964142
AA	363m SW	Unspecified Depot	1972	821167
AB	366m W	Railway Building	1916	960031
AB	367m W	Railway Building	1923	854220
B	367m E	Railway Station	1896	957144
B	368m E	Railway Station	1956	999761
B	368m E	Coal Wharf	1848	806616
B	369m E	Hospital	1972	938949
B	369m E	Hospital	1956	938949
B	369m E	Hospital	1980	997388

ID	Location	Land Use	Date	Group ID
AC	369m W	Unspecified Depot	1988	866652
AC	369m W	Unspecified Depot	1980	986151
AC	369m W	Unspecified Depot	1985	866652
AC	369m W	Unspecified Depot	1994	866652
AB	371m W	Railway Building	1938	932961
AB	371m W	Railway Building	1932	932961
B	372m E	Unspecified Tanks	1848	819192
B	372m E	Hospital	1916	923488
B	384m E	Gas Works	1848	852813
B	385m E	Unspecified Tank	1896	849969
7	386m N	Railway Buildings	1923	810635
B	394m E	Railway Station	1988	991843
B	394m E	Railway Station	1994	991843
B	395m E	Railway Station	1972	903819
B	395m E	Railway Station	1980	931454
B	395m E	Railway Station	1985	982166
B	398m E	Railway Building	1956	854219
AD	401m S	Police Station	1972	937951
AD	401m S	Police Station	1980	987579
AD	401m S	Police Station	1985	986465
AD	409m S	Fire Station	1938	958741
AD	410m S	Fire Station	1972	879366
AD	410m S	Fire Station	1980	1003634
AD	410m S	Fire Station	1985	913222
W	419m W	Warehouse	1848	852230
B	423m E	Tanks	1848	827416
AF	425m W	Railway Building	1916	944816
AF	425m W	Railway Building	1905	944816

ID	Location	Land Use	Date	Group ID
AF	425m W	Railway Building	1923	944816
AB	430m W	Unspecified Ground Workings	1848	814699
AI	434m N	Hospital	1972	879488
AI	434m N	Hospital	1956	879488
AI	434m N	Hospital	1980	992702
AJ	440m SE	Unspecified Mills	1923	920381
AK	443m NW	Railway Sidings	1916	923062
AK	444m NW	Railway Sidings	1923	978214
AH	447m NW	Railway Building	1972	933625
AH	447m NW	Railway Sidings	1956	927260
AH	447m NW	Railway Building	1980	968055
AH	447m NW	Railway Building	1985	937253
AK	447m NW	Goods Depot	1972	969057
AK	447m NW	Railway Sidings	1956	881875
AK	447m NW	Goods Depot	1980	982780
AH	448m NW	Goods Sheds	1938	871028
AH	448m NW	Goods Sheds	1932	871028
AH	448m NW	Goods Sheds	1916	871028
AH	448m NW	Goods Sheds	1905	871028
AH	448m NW	Goods Sheds	1923	871028
AK	448m NW	Railway Sidings	1938	923062
AK	448m NW	Railway Sidings	1932	1009972
AK	448m NW	Railway Sidings	1905	871411
AK	449m NW	Railway Sidings	1988	916623
AK	449m NW	Railway Sidings	1994	916623
AH	449m NW	Railway Buildings	1896	810649
AK	449m NW	Railway Sidings	1896	990314
9	456m NE	Unspecified Commercial/Industrial	1923	822321

ID	Location	Land Use	Date	Group ID
AI	458m N	Hospital	1916	875319
AI	460m N	Hospital	1923	994712
AI	462m N	Hospital	1938	869533
AI	462m N	Hospital	1932	869533
AH	462m NW	Goods Station	1956	810453
AH	464m NW	Goods Sheds	1938	891142
AH	464m NW	Goods Sheds	1932	891142
AH	464m NW	Goods Sheds	1916	891142
AH	464m NW	Goods Sheds	1905	891142
AH	464m NW	Goods Sheds	1923	891142
AH	465m NW	Railway Building	1972	1002551
AH	465m NW	Railway Building	1980	984510
AH	465m NW	Railway Building	1985	964774
AI	470m N	Hospital	1988	985880
AI	470m N	Hospital	1985	985880
10	472m W	Quay	1848	960465
AC	473m W	Unspecified Ground Workings	1848	814700
AL	473m NW	Unspecified Works	1938	967713
AL	473m NW	Unspecified Works	1932	967713
AL	473m NW	Unspecified Commercial/Industrial	1905	934160
AL	473m NW	Unspecified Commercial/Industrial	1923	872303
AJ	473m SE	Unspecified Mills	1916	920381
AM	475m N	Police Station	1972	952220
AM	475m N	Police Station	1956	952220
AM	475m N	Police Station	1988	996946
AM	475m N	Police Station	1980	914364
AM	475m N	Police Station	1985	996946
AM	475m N	Police Station	1994	996946

ID	Location	Land Use	Date	Group ID
AC	478m W	Unspecified Warehouses	1972	856272
AB	479m W	Railway Buildings	1905	810633
AH	481m NW	Unspecified Depot	1988	885508
AH	481m NW	Unspecified Depot	1985	885508
AP	499m E	Unspecified Mills	1938	992472
AP	499m E	Unspecified Mills	1932	992472
AP	499m E	Unspecified Mills	1916	993089
AP	499m E	Unspecified Commercial/Industrial	1905	951830
AP	499m E	Unspecified Commercial/Industrial	1923	910139

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**221**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 33 >**

ID	Location	Land Use	Date	Group ID
B	39m SE	Gas Works	1908	129043
B	42m SE	Gas Works	1893	129043
B	43m SE	Gas Works	1891	146932
B	45m SE	Gas Works	1922	138279
1	55m E	Tanks	1891	108717
E	57m N	Tanks	1949	152322
D	57m SE	Unspecified Tank	1969	130499
D	57m SE	Unspecified Tank	1953	154985
D	58m SE	Unspecified Tank	1957	128947
D	58m SE	Unspecified Tank	1965	128947
D	58m SE	Unspecified Tank	1949	143876

ID	Location	Land Use	Date	Group ID
E	59m N	Tanks	1957	130425
E	59m N	Tanks	1965	130425
D	59m SE	Unspecified Tank	1980	137448
D	59m SE	Unspecified Tank	1980	137448
D	59m SE	Unspecified Tank	1985	137448
E	59m N	Tanks	1951	130425
E	59m N	Tanks	1948	143858
D	60m SE	Gasometer	1908	142772
D	60m SE	Gasometer	1922	142772
D	60m SE	Unspecified Tank	1932	134199
D	95m S	Unspecified Tank	1891	115291
D	100m SE	Unspecified Tank	1969	153577
D	100m SE	Unspecified Tank	1953	153919
D	100m SE	Unspecified Tank	1957	128256
D	101m SE	Unspecified Tank	1980	153577
D	101m SE	Unspecified Tank	1980	153577
D	101m SE	Unspecified Tank	1985	153577
D	102m SE	Unspecified Tank	1908	152429
D	102m SE	Unspecified Tank	1922	152429
D	102m SE	Unspecified Tank	1932	152429
I	135m S	Tanks	1949	108714
H	136m NE	Unspecified Tank	1891	115293
B	137m SE	Gas Works	1949	128464
I	139m S	Tanks	1949	108715
I	143m SW	Unspecified Tank	1891	115294
B	158m SE	Unspecified Tank	1969	142299
B	159m SE	Gas Holder Station	1980	155526
B	159m SE	Gas Holder Station	1980	155526

ID	Location	Land Use	Date	Group ID
B	159m SE	Disused Gas Holder Station	1985	126184
B	168m SE	Tanks	1893	151285
B	168m SE	Tanks	1891	126769
B	172m SE	Unspecified Tank	1891	115292
A	175m NW	Unspecified Tank	1957	156070
A	175m NW	Unspecified Tank	1955	149684
B	177m SE	Tanks	1969	142141
B	177m SE	Tanks	1953	131406
B	177m SE	Tanks	1957	131406
B	177m SE	Tanks	1949	131406
B	178m SE	Tanks	1969	131205
B	178m SE	Tanks	1953	148910
B	183m SE	Unspecified Tank	1957	115290
B	183m SE	Tanks	1949	127220
B	190m SE	Unspecified Tank	1957	138206
B	190m SE	Unspecified Tank	1949	151860
B	192m E	Tanks	1957	108596
B	194m SE	Unspecified Tank	1957	143015
B	194m SE	Unspecified Tank	1965	143015
B	194m SE	Gasometer	1949	140020
B	195m SE	Gasometer	1969	150127
B	195m SE	Unspecified Tank	1953	131493
B	196m SE	Gasometers	1908	153355
B	196m SE	Gasometers	1922	153355
B	196m SE	Tanks	1932	108716
B	197m SE	Gasometer	1893	150127
B	201m SE	Unspecified Tank	1957	143010
B	201m SE	Unspecified Tank	1965	143010

ID	Location	Land Use	Date	Group ID
B	202m SE	Unspecified Tank	1969	143010
B	202m SE	Unspecified Tank	1953	143010
B	202m E	Unspecified Tank	1969	148917
B	202m E	Unspecified Tank	1953	148917
B	202m E	Unspecified Tank	1957	148917
B	202m E	Unspecified Tank	1965	148917
B	202m E	Unspecified Tank	1949	148917
B	205m SE	Unspecified Tank	1957	134264
B	205m SE	Unspecified Tank	1965	134264
B	205m SE	Gasometer	1949	136972
B	205m SE	Unspecified Tank	1953	137941
B	206m SE	Gasometer	1893	144817
B	210m SE	Unspecified Tank	1953	130539
B	210m SE	Unspecified Tank	1957	130539
B	210m SE	Unspecified Tank	1965	130539
B	211m SE	Unspecified Tank	1893	147641
B	212m SE	Gasometer	1893	139247
B	212m E	Unspecified Tank	1891	114954
B	212m SE	Unspecified Tank	1893	129472
B	212m SE	Unspecified Tank	1969	142137
B	212m SE	Unspecified Tank	1953	142137
B	212m SE	Gasometer	1891	141539
B	213m SE	Unspecified Tank	1957	142137
B	213m SE	Unspecified Tank	1965	142137
B	213m SE	Unspecified Tank	1891	129472
B	214m SE	Unspecified Tank	1980	142137
B	214m SE	Unspecified Tank	1980	142137
B	214m SE	Unspecified Tank	1985	142137

ID	Location	Land Use	Date	Group ID
B	214m E	Unspecified Tank	1891	140833
B	215m SE	Gasometer	1893	149968
B	216m SE	Gasometer	1891	152905
B	216m SE	Unspecified Tank	1957	141299
B	216m SE	Unspecified Tank	1965	141299
B	216m SE	Gasometer	1949	142179
B	216m SE	Gasometer	1969	149968
B	216m SE	Unspecified Tank	1953	138289
B	217m SE	Gas Holder	1980	137601
B	217m SE	Gas Holder	1980	137601
B	217m SE	Gas Holder	1985	137601
B	218m SE	Gasometer	1893	130887
B	219m SE	Gasometer	1891	130887
B	220m SE	Unspecified Tank	1957	127332
B	220m SE	Unspecified Tank	1965	127332
B	220m SE	Gasometer	1949	135711
B	220m SE	Unspecified Tank	1953	131749
B	239m SE	Unspecified Tank	1893	149484
B	239m SE	Gasometer	1891	114291
B	242m SE	Unspecified Tank	1893	154854
B	243m SE	Gasometer	1969	114290
B	243m SE	Unspecified Tank	1953	145295
B	244m SE	Unspecified Tank	1957	145295
B	244m SE	Unspecified Tank	1965	145295
B	244m SE	Unspecified Tank	1980	151024
B	244m SE	Unspecified Tank	1985	151024
B	249m SE	Gasometer	1893	156214
B	249m SE	Unspecified Tank	1969	140651

ID	Location	Land Use	Date	Group ID
B	249m SE	Unspecified Tank	1953	137028
B	249m SE	Unspecified Tank	1957	137028
B	249m SE	Unspecified Tank	1949	137028
B	249m SE	Unspecified Tank	1980	140651
B	249m SE	Unspecified Tank	1985	140651
B	249m SE	Unspecified Tank	1987	140651
B	249m SE	Unspecified Tank	1987	140651
B	249m SE	Unspecified Tank	1990	140651
B	250m SE	Unspecified Tank	1998	153520
B	250m SE	Gasometer	1891	156214
B	251m SE	Unspecified Tank	1957	133065
B	251m SE	Unspecified Tank	1965	133065
B	251m SE	Gasometer	1949	136042
B	251m SE	Unspecified Tank	1953	138538
B	277m SE	Unspecified Tank	1987	144190
B	277m SE	Unspecified Tank	1987	144190
B	277m SE	Unspecified Tank	1990	144190
T	278m W	Unspecified Tank	1932	115026
B	282m SE	Unspecified Tank	1893	145005
B	283m SE	Unspecified Tank	1891	145005
B	284m SE	Unspecified Tank	1998	149018
B	284m SE	Unspecified Tank	1969	154747
B	285m SE	Unspecified Tank	1980	126732
B	285m SE	Unspecified Tank	1980	126732
B	285m SE	Unspecified Tank	1985	126732
B	285m SE	Unspecified Tank	1987	126732
B	285m SE	Unspecified Tank	1987	126732
B	285m SE	Unspecified Tank	1990	126732

ID	Location	Land Use	Date	Group ID
Y	314m SE	Unspecified Tank	1969	154955
Y	314m SE	Unspecified Tank	1953	139489
Y	314m SE	Unspecified Tank	1957	139489
Y	314m SE	Unspecified Tank	1949	139489
N	318m N	Unspecified Tank	1986	145853
N	319m N	Unspecified Tank	1988	148102
N	320m N	Unspecified Tank	1996	148102
N	320m N	Unspecified Tank	1995	148102
N	320m N	Unspecified Tank	1994	148102
N	320m N	Unspecified Tank	1999	148102
Y	323m SE	Unspecified Tank	1980	141556
Y	323m SE	Unspecified Tank	1980	141556
Y	323m SE	Unspecified Tank	1985	141556
N	325m N	Unspecified Tank	1986	130493
N	327m N	Unspecified Tank	1988	132824
N	327m N	Unspecified Tank	1996	147875
N	327m N	Unspecified Tank	1995	147875
N	327m N	Unspecified Tank	1994	147875
N	327m N	Unspecified Tank	1999	147875
B	328m SE	Unspecified Tank	1908	114953
B	330m SE	Unspecified Tank	1893	145665
B	330m SE	Unspecified Tank	1922	135180
N	332m N	Unspecified Tank	1986	132999
N	334m N	Unspecified Tank	1988	139530
N	334m N	Unspecified Tank	1996	126977
N	334m N	Unspecified Tank	1995	126977
N	334m N	Unspecified Tank	1994	126977
N	334m N	Unspecified Tank	1999	126977

ID	Location	Land Use	Date	Group ID
N	351m N	Unspecified Tank	1988	148866
N	351m N	Unspecified Tank	1996	148866
N	351m N	Unspecified Tank	1995	148866
N	351m N	Unspecified Tank	1994	148866
N	351m N	Unspecified Tank	1999	148866
B	361m SE	Unspecified Tank	1893	129815
B	361m SE	Unspecified Tank	1922	131267
6	381m N	Unspecified Tank	1891	115172
B	383m E	Unspecified Tank	1893	115711
B	384m E	Gasometer	1891	135547
B	384m E	Gasometer	1908	148893
B	401m E	Tanks	1953	108483
B	401m E	Unspecified Tank	1922	115713
B	404m E	Unspecified Tank	1953	140978
B	404m E	Unspecified Tank	1948	143136
B	404m E	Tanks	1950	108894
B	404m E	Unspecified Tank	1955	155695
B	404m E	Unspecified Tank	1955	155695
B	404m E	Unspecified Tank	1948	142178
B	405m E	Unspecified Tank	1953	156072
B	405m E	Unspecified Tank	1955	152417
8	408m NE	Unspecified Tank	1891	115174
B	409m E	Unspecified Tank	1948	133077
B	410m E	Unspecified Tank	1953	149069
B	410m E	Unspecified Tank	1955	153467
AG	428m SE	Unspecified Tank	1922	115714
AG	448m SE	Unspecified Tank	1980	151969
AG	448m SE	Unspecified Tank	1980	151969

ID	Location	Land Use	Date	Group ID
AG	448m SE	Unspecified Tank	1985	151969
AG	448m SE	Unspecified Tank	1969	151969
AG	448m SE	Unspecified Tank	1953	151969
AG	448m SE	Unspecified Tank	1957	151969
AG	448m SE	Unspecified Tank	1965	151969
AG	448m SE	Unspecified Tank	1949	151969
AB	488m W	Unspecified Tank	1922	115025
AN	493m E	Unspecified Tank	1953	140936
AN	493m E	Unspecified Tank	1955	142095
AO	498m W	Unspecified Tank	1980	134057
AO	498m W	Unspecified Tank	1980	154190
AO	499m W	Unspecified Tank	1965	149868
AO	499m W	Unspecified Tank	1960	147256
AO	499m W	Unspecified Tank	1969	139198

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**99**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 33 >**

ID	Location	Land Use	Date	Group ID
B	39m SE	Gas Works	1908	86780
B	42m SE	Gas Works	1893	86780
B	43m SE	Gas Works	1891	73990
B	45m SE	Gas Works	1922	84456
D	60m SE	Gasometer	1908	88154
D	60m SE	Gasometer	1922	88154

ID	Location	Land Use	Date	Group ID
B	137m SE	Gas Works	1949	79857
B	159m SE	Gas Holder Station	1980	74476
B	159m SE	Gas Holder Station	1980	74476
B	159m SE	Disused Gas Holder Station	1985	68843
I	169m S	Electricity Substation	1998	92277
I	169m S	Electricity Transformers	1969	73429
I	170m S	Electricity Transformers	1980	73429
I	170m S	Electricity Transformers	1980	73429
I	170m S	Electricity Transformers	1985	73429
I	181m S	Electricity Substation	1953	70856
I	181m S	Electricity Substation	1957	70856
I	181m S	Electricity Substation	1949	70856
I	182m S	Electricity Substation	1969	90707
I	183m S	Electricity Substation	1980	90707
I	183m S	Electricity Substation	1980	90707
I	183m S	Electricity Substation	1985	90707
I	183m S	Electricity Substation	1987	90707
I	183m S	Electricity Substation	1987	90707
I	183m S	Electricity Substation	1990	90707
B	194m SE	Gasometer	1949	87070
B	195m SE	Gasometer	1969	81639
B	196m SE	Gasometers	1908	79709
B	196m SE	Gasometers	1922	79709
B	197m SE	Gasometer	1893	81639
B	205m SE	Gasometer	1949	74834
B	206m SE	Gasometer	1893	91928
B	212m SE	Gasometer	1893	84792
B	212m SE	Gasometer	1891	77434

ID	Location	Land Use	Date	Group ID
B	215m SE	Gasometer	1893	79524
B	216m SE	Gasometer	1891	77969
B	216m SE	Gasometer	1949	88747
B	216m SE	Gasometer	1969	79524
B	217m SE	Gas Holder	1980	90352
B	217m SE	Gas Holder	1980	90352
B	217m SE	Gas Holder	1985	90352
B	218m SE	Gasometer	1893	86689
B	219m SE	Gasometer	1891	86689
B	220m SE	Gasometer	1949	76936
B	225m SE	Electricity Substation	1998	65849
B	239m SE	Gasometer	1891	68520
B	243m SE	Gasometer	1969	68519
Q	247m S	Electricity Substation	1998	66826
B	249m SE	Gasometer	1893	73168
B	250m SE	Gasometer	1891	73168
B	251m SE	Gasometer	1949	90192
U	281m NE	Electricity Substation	1951	85241
U	281m NE	Electricity Substation	1973	85241
U	281m NE	Electricity Substation	1948	85241
U	281m NE	Electricity Substation	1957	85241
U	281m NE	Electricity Substation	1965	85241
U	281m NE	Electricity Substation	1949	85241
U	282m NE	Electricity Substation	1985	85241
B	286m E	Hydraulic Power Station	1932	87405
B	291m E	Hydraulic Power Station	1951	77593
B	291m E	Hydraulic Power Station	1973	77593
B	291m E	Hydraulic Power Station	1948	88074

ID	Location	Land Use	Date	Group ID
B	291m E	Hydraulic Power Station	1957	83124
B	291m E	Hydraulic Power Station	1949	73635
B	348m E	Electricity Substation	1985	77026
B	349m E	Electricity Substation	1996	70454
B	349m E	Electricity Substation	1995	70454
B	349m E	Electricity Substation	1994	70454
B	349m E	Electricity Substation	1999	70454
B	349m E	Electricity Substation	1951	77026
B	349m E	Electricity Substation	1988	70454
B	349m E	Electricity Substation	1973	77026
B	349m E	Electricity Substation	1948	77026
B	350m E	Electricity Substation	1957	77026
Z	357m S	Electricity Substation	1957	80045
Z	357m S	Electricity Substation	1949	70165
Z	371m S	Electricity Substation	1953	69203
B	384m E	Gasometer	1891	77992
B	384m E	Gasometer	1908	91082
AE	422m NW	Electricity Substation	1957	87242
AE	422m NW	Electricity Substation	1949	87242
AE	422m NW	Electricity Substation	1995	80836
AE	422m NW	Electricity Substation	1994	80836
AE	422m NW	Electricity Substation	1995	80836
AE	422m NW	Electricity Substation	1948	87242
AE	422m NW	Electricity Substation	1981	80836
AE	422m NW	Electricity Substation	1955	87242
AE	423m NW	Electricity Substation	1986	80836
AE	423m NW	Electricity Substation	1990	80836
AH	433m NW	Electricity Substation	1957	76855

ID	Location	Land Use	Date	Group ID
AH	435m NW	Electricity Substation	1995	69187
AH	436m NW	Electricity Substation	1955	72632
AH	439m NW	Electricity Substation	1949	72632
AH	454m NW	Electricity Substation	1948	84176
AH	470m NW	Electricity Substation	1986	81033
AH	470m NW	Electricity Substation	1990	90860
AH	475m NW	Electricity Substation	1995	71919
AH	475m NW	Electricity Substation	1994	71919
AH	475m NW	Electricity Substation	1981	75511

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**74**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 33 >**

ID	Location	Land Use	Date	Group ID
D	71m SE	Garage	1957	24325
D	71m SE	Garage	1965	24325
D	71m SE	Garage	1953	24325
G	79m W	Garage	1965	30682

ID	Location	Land Use	Date	Group ID
G	79m W	Garage	1957	30682
G	80m W	Garage	1963	30682
G	80m W	Garage	1981	30682
G	80m W	Garage	1955	30682
G	80m W	Garage	1986	27623
G	80m W	Garage	1990	27623
G	116m W	Garage	1965	28379
G	116m W	Garage	1960	28379
G	116m W	Garage	1969	28379
J	168m NE	Garage	1973	22727
R	231m NW	Garage	1995	27975
R	231m NW	Garage	1994	27975
R	231m NW	Garage	1995	25530
R	231m NW	Garage	1981	28188
R	233m NW	Garage	1986	28188
R	233m NW	Garage	1990	28188
S	246m W	Garage	1980	30971
S	246m W	Garage	1980	30971
S	249m W	Garage	1969	28889
V	280m SW	Garage	1980	28779
V	280m SW	Garage	1980	28779
V	280m SW	Garage	1990	28779
V	283m SW	Garage	1995	26716
V	283m SW	Garage	1997	26716
V	283m SW	Garage	1995	26716
V	283m SW	Garage	1997	26716
4	306m NW	Garage	1981	22730
X	309m S	Garage	1965	24793

ID	Location	Land Use	Date	Group ID
X	310m S	Garage	1957	27182
X	318m S	Garage	1960	24793
X	318m S	Garage	1954	29208
AA	364m SW	Garage	1980	30605
AA	365m SW	Garage	1965	24027
AA	365m SW	Garage	1980	26797
AA	365m SW	Garage	1990	26797
AA	365m SW	Garage	1957	29417
AA	365m SW	Garage	1960	29338
AA	365m SW	Garage	1969	28842
AA	366m SW	Garage	1995	23312
AA	366m SW	Garage	1997	23312
AA	366m SW	Garage	1995	23312
AA	366m SW	Garage	1997	23312
AB	375m W	Garage	1981	30488
AB	376m W	Garage	1986	30488
AB	377m W	Garage	1963	25233
AA	378m SW	Garage	1954	27153
AB	384m W	Garage	1965	29108
AB	413m W	Garage	1981	22731
AB	455m W	Garage	1965	27617
AB	456m W	Garage	1963	27617
AB	456m W	Garage	1981	27617
AB	457m W	Garage	1986	25384
AJ	471m E	Garage	1965	26876
AJ	471m E	Garage	1965	26876
AJ	471m E	Garage	1987	25586
AJ	471m E	Garage	1969	26876

ID	Location	Land Use	Date	Group ID
AJ	471m E	Garage	1962	26876
AJ	471m E	Garage	1970	24700
AJ	472m E	Garage	1985	25586
11	478m N	Garage	1948	22733
AH	480m NW	Garage	1981	23619
AH	480m NW	Garage	1986	23619
AH	480m NW	Garage	1990	23619
AN	495m E	Garage	1995	31003
AN	495m E	Garage	1998	31003
AN	495m E	Garage	1987	31003
AN	495m E	Garage	1969	31003
AN	495m E	Garage	1948	23262
AN	495m E	Garage	1953	23262
AN	495m E	Garage	1962	23262

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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Site Outline

Search buffers in metres (m)

Historical waste sites

Licensed waste sites

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	16

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 60 >**

ID	Location	Address	Further Details	Date
B	149m S	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1987
B	149m S	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1987
B	149m S	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1990

ID	Location	Address	Further Details	Date
B	174m SW	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1990
B	175m SW	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1997
B	175m SW	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1995
B	175m SW	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1995
E	266m NE	Site Address: Manchester Central Convention, Windmill Street, Manchester, Greater Manchester, M2 3GX	Type of Site: Recycling Centre Planning application reference: 103313/FO/2013/C1 Description: Scheme comprises relocation of waste storage facility to allow creation of a business recycling centre and construction of screening. Data source: Historic Planning Application Data Type: Point	12/11/2013
6	347m W	Site Address: N/A	Type of Site: Refuse Destructor Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1948
H	429m W	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1981
H	429m W	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1986

ID	Location	Address	Further Details	Date
J	437m SE	Site Address: N/A	Type of Site: Waste Paper Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1932
J	440m SE	Site Address: N/A	Type of Site: Waste Paper Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1953
J	440m SE	Site Address: N/A	Type of Site: Waste Paper Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1932
J	440m SE	Site Address: N/A	Type of Site: Waste Paper Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1955
J	448m E	Site Address: N/A	Type of Site: Waste Paper Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1948

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	**1**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 60 >**

ID	Location	Details		
8	417m E	Site Name: Terra Vac (uk) Ltd Site Address: Little Ireland Phase B, Great Marlborough Street, Manchester, M1 5NN Correspondence Address: Unit 7a, Whitwood Enterprise Park, Castleford, WF10 5PX	Type of Site: Mobile Plant Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TER003 EPR reference: - Operator: Terra Vac (uk) Ltd Waste Management licence No: 50191 Annual Tonnage: 0	Issue Date: 17/06/2002 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m **69**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 60 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	8m SE	Axis Tower, Albion Street, Manchester, M1 5nz	WEX074989	Using waste exemption	Not on a farm	Use of waste in construction
2	82m N	Axis Tower, Albion Street, Manchester, M1 5nz	WEX220537	Using waste exemption	Not on a farm	Use of waste in construction
3	82m SE	Bam Project Office, First Street Plot 9a, Hulme Street, Manchester, M15 4rp	WEX338383	Using waste exemption	Not on a farm	Use of waste in construction
A	134m SW	1, Alpha Place, Manchester, M15 4pp	WEX017965	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	134m SW	1, Alpha Place, Manchester, M15 4pp	WEX017965	Storing waste exemption	Not on a farm	Storage of waste in a secure place
C	166m E	Eversheds House 70 Great Bridgewater Street Manchester M1 5es	EPR/QE5657AK/A001	Using waste exemption	Non-agricultural waste only	Spreading waste on non-agricultural land to confer benefit
C	166m E	Eversheds House 70 Great Bridgewater Street Manchester M1 5es	EPR/QE5657AK/A001	Treating waste exemption	Non-agricultural waste only	Treatment of kitchen waste in a wormery

ID	Location	Site	Reference	Category	Sub-Category	Description
C	166m E	Eversheds House 70 Great Bridgewater Street Manchester M1 5es	EPR/QE5657AK/A001	Using waste exemption	Non-agricultural waste only	Use of mulch
D	216m N	-	WEX346897	Treating waste exemption	Not on a farm	Screening and blending of waste
D	216m N	-	WEX346897	Treating waste exemption	Not on a farm	Recovery of scrap metal
D	216m N	-	WEX346897	Treating waste exemption	Not on a farm	Sorting mixed waste
D	216m N	-	WEX346897	Treating waste exemption	Not on a farm	Treatment of waste food
D	216m N	-	WEX346897	Treating waste exemption	Not on a farm	Treatment of kitchen waste in a wormery
D	216m N	-	WEX346897	Using waste exemption	Not on a farm	Use of waste in construction
D	216m N	-	WEX346897	Using waste exemption	Not on a farm	Use of waste in the construction of entertainment or educational installations etc
D	216m N	-	WEX346897	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
D	216m N	-	WEX346897	Storing waste exemption	Not on a farm	Storage of waste in secure containers
D	216m N	-	WEX346897	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX217816	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX063339	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Using waste exemption	Not on a farm	Use of waste in construction
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Storing waste exemption	Not on a farm	Storage of waste in secure containers
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)

ID	Location	Site	Reference	Category	Sub-Category	Description
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Using waste exemption	Not on a farm	Use of waste in the construction of entertainment or educational installations etc
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Sorting mixed waste
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Manual treatment of waste
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Treatment of waste food
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Treatment of kitchen waste in a wormery
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Screening and blending of waste
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Recovery of scrap metal
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Storing waste exemption	Not on a farm	Storage of waste in secure containers
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Using waste exemption	Not on a farm	Use of waste in construction
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Using waste exemption	Not on a farm	Use of waste in the construction of entertainment or educational installations etc
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Treatment of kitchen waste in a wormery
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Treatment of waste food
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Manual treatment of waste
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Sorting mixed waste
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Recovery of scrap metal

ID	Location	Site	Reference	Category	Sub-Category	Description
D	235m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Screening and blending of waste
4	243m NW	6, Southern Street, Manchester, M3 4nj	WEX384675	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
5	285m N	The Mews, Great Northern Warehouse 235 Deansgate Manchester M3 4en	EPR/BF0603EU/A001	Using waste exemption	Non-agricultural waste only	Use of waste in the construction of entertainment or educational installations etc
E	292m NE	-	WEX210229	Storing waste exemption	Not on a farm	Storage of waste in a secure place
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in secure containers
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in a secure place
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Treating waste exemption	Non-agricultural waste only	Preparatory treatments (baling, sorting, shredding etc)
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Using waste exemption	Non-agricultural waste only	Use of waste in construction
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Using waste exemption	Non-agricultural waste only	Use of waste in the construction of entertainment or educational installations etc
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Treating waste exemption	Non-agricultural waste only	Sorting mixed waste
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Treating waste exemption	Non-agricultural waste only	Manual treatment of waste

ID	Location	Site	Reference	Category	Sub-Category	Description
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Treating waste exemption	Non-agricultural waste only	Treatment of waste food
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Treating waste exemption	Non-agricultural waste only	Treatment of kitchen waste in a wormery
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Treating waste exemption	Non-agricultural waste only	Screening and blending of waste
E	292m NE	Manchester Central Convention Co Petersfield Manchester Greater Manchester M2 3gx	EPR/ZF0434NE/A001	Treating waste exemption	Non-agricultural waste only	Recovery of scrap metal
E	295m NE	Manchester Central Convention Complex Petersfield Manchester M2 3gx	EPR/KE5983NV/A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in a secure place
F	369m W	Bestway Panacea Holdings Limited, Bulk Registration For Bestway Panacea Holdings Limited For 108 Sites, M34lz	NRW-WME005755	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
F	370m W	Bestway National Chemists Ltd, Bestway National Chemists Ltd, Merchants Warehouse, 21 Castle Street, Manchester, M3 4lz	NRW-WME074524	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
F	370m W	Bestway National Chemists Ltd, Bulk Registration For Bestway National Chemists Ltd (107 Sites), M34lz	NRW-WME036650	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
7	381m NE	Windmill Green, 24 Mount Street, Manchester, M2 3nn	WEX105155	Using waste exemption	Not on a farm	Use of waste in construction
G	389m W	-	WEX347217	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	389m W	-	WEX347217	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment

ID	Location	Site	Reference	Category	Sub-Category	Description
I	430m NW	25 St. John Street Manchester M3 4dt	EPR/DE5245SP/A001	Treating waste exemption	Non-agricultural waste only	Sorting and de-naturing of controlled drugs for disposal
I	431m NW	25, St. John Street, Manchester, M3 4dt	WEX243303	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
I	431m NW	98, Harley Street, London, W1g 7hz	WEX099367	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
I	433m NW	25 St John Street M34dt	EPR/FE5081QV/A001	Treating waste exemption	Non-agricultural waste only	Sorting and de-naturing of controlled drugs for disposal
9	442m NE	Oxford House, 16, Oxford Street, Manchester, M1 5ae	WEX331634	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
10	461m NE	Brazennose House M2 5pb	EPR/ZE5544KA/A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in a secure place

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



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Site Outline

Search buffers in metres (m)

- Recent industrial land uses
- Current or recent petrol stations
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	24

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 70 >**

ID	Location	Company	Address	Activity	Category
1	6m SW	Mancoco	Arch 84, Hewitt Street, Manchester, Greater Manchester, M15 4GB	Food and Beverage Industry Machinery	Industrial Products
A	48m SW	Integra Consulting	14-32, Hewitt Street, Manchester, Greater Manchester, M15 4GB	Structural Engineers	Engineering Services
A	57m W	G T Autos	Arch 88, Hewitt Street, Manchester, Greater Manchester, M15 4GB	Vehicle Repair, Testing and Servicing	Repair and Servicing

ID	Location	Company	Address	Activity	Category
2	75m NE	My P C Fix	Albion Wharf 19, Albion Street, Manchester, Greater Manchester, M1 5LN	Electrical Equipment Repair and Servicing	Repair and Servicing
3	99m NW	Deansgate-Castlefield (Manchester Metrolink)	Greater Manchester, M1	Tram, Metro and Light Railway Stations and Stops	Public Transport, Stations and Infrastructure
4	119m W	Deansgate Rail Station	Greater Manchester, M15	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
C	128m NE	Electricity Sub Station	Greater Manchester, M1	Electrical Features	Infrastructure and Facilities
B	132m E	Corner House Publications	2, Tony Wilson Place, Manchester, Greater Manchester, M15 4FN	Distribution and Haulage	Transport, Storage and Delivery
D	149m SW	Pest Control Manchester	14, Commercial Street, Manchester, Greater Manchester, M15 4PZ	Pest and Vermin Control	Contract Services
D	149m SW	Adeptus Consulting	14, Commercial Street, Manchester, Greater Manchester, M15 4PZ	Car Ports and Steel Buildings	Industrial Products
5	153m S	Electricity Sub Station	Greater Manchester, M15	Electrical Features	Infrastructure and Facilities
6	163m E	Curtins	17-19, Whitworth Street West, Manchester, Greater Manchester, M1 5WG	Structural Engineers	Engineering Services
E	166m SE	W S P	8, First Street, Manchester, Greater Manchester, M15 4RP	Civil Engineers	Engineering Services
E	166m SE	Gazprom Marketing & Energy	8, First Street, Manchester, Greater Manchester, M15 4RP	Fuel Distributors and Suppliers	Household, Office, Leisure and Garden
F	171m W	Hulley & Kirkwood	2, Commercial Street, Manchester, Greater Manchester, M15 4RQ	Civil Engineers	Engineering Services
7	176m SE	Autotrader	Fourth Floor 1, Tony Wilson Place, Manchester, Greater Manchester, M15 4FN	Secondhand Vehicles	Motoring
G	178m SW	R O C Consulting	Commercial Wharf, 6, Commercial Street, Manchester, Greater Manchester, M15 4PZ	Industrial Engineers	Engineering Services
8	186m N	Duffy Motors Manchester Ltd	Arches 16 and 17, Watson Street, Manchester, Greater Manchester, M3 4LP	Vehicle Repair, Testing and Servicing	Repair and Servicing
G	187m SW	Commercial Wharf	Greater Manchester, M15	Moorings and Unloading Facilities	Water

ID	Location	Company	Address	Activity	Category
10	207m NW	Handpicked Accountants	340, Deansgate, Manchester, Greater Manchester, M3 4LY	Published Goods	Industrial Products
I	212m E	Electricity Sub Station	Greater Manchester, M15	Electrical Features	Infrastructure and Facilities
11	216m NW	Feather & Black Ltd	289-291, Deansgate, Manchester, Greater Manchester, M3 4EW	Beds and Bedding	Consumer Products
J	235m SE	Gas Valve Compound	Greater Manchester, M15	Gas Features	Infrastructure and Facilities
12	250m S	Electricity Sub Station	Greater Manchester, M15	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	**1**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 70 >**

ID	Location	Company	Address	LPG	Status
16	361m SW	OBSOLETE	14, Great Jackson Street, Castlefield, Manchester, Greater Manchester, M15 4NG	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	2

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 70 >**

ID	Location	Details	
H	179m NE	Operator: MANCHESTER HEAT NETWORK TRADECO LIMITED Installation Name: Manchester Civic Quarter Energy Centre EPR/JP3700BU Process: TRANCHE A SG PERMITTING DATE 1ST OCTOBER 2019 Permit Number: JP3700BU Original Permit Number: JP3700BU	EPR Reference: EPR/JP3700BU Issue Date: 20/08/2020 Effective Date: 20/08/2020 Last date noted as effective: 06/08/2024 Status: Effective
H	179m NE	Operator: MANCHESTER HEAT NETWORK TRADECO LIMITED Installation Name: Manchester Civic Quarter Energy Centre EPR/JP3700BU Process: NEW MEDIUM COMBUSTION PLANT Permit Number: JP3700BU Original Permit Number: JP3700BU	EPR Reference: EPR/JP3700BU Issue Date: 20/08/2020 Effective Date: 20/08/2020 Last date noted as effective: 06/08/2024 Status: Effective

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	4

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 70 >**

ID	Location	Address	Details	
14	319m S	Jessop & Baird Ltd, Hulme St, M15 6AL	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
15	341m SW	Tom Garner Motors, A Branch of Robins & Day Ltd, Chester Rd, Manchester, M15 4GA	Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

ID	Location	Address	Details	
17	361m SE	Dunlop Ltd, Cambridge St, M60 1PD	Process: Rubber Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
18	443m NE	The Laundry Shop, Unit 5, Peter House, Oxford Street, Manchester	Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	**26**

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 70 >**

ID	Location	Address	Details	
B	104m E	ALBION STREET/HEWITT ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982706 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 30/09/1994 Revocation Date: 13/11/2019
B	104m E	ALBION STREET/HEWITT ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0251 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/01/1995

ID	Location	Address	Details	
C	120m E	TRUMPET STREET, SSO, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 01MAN0168 Permit Version: 1 Receiving Water: RIVER TIB CULVERT-MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 15/09/1993 Revocation Date: 15/09/1993
F	195m W	DEANSGATE, L. PETER ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0157 Permit Version: 2 Receiving Water: TUNNEL TO MEDLOCK	Status: SURRENDERED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03/09/2010 Revocation Date: 18/07/2014
F	195m W	DEANSGATE, L. PETER ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0157 Permit Version: 1 Receiving Water: TUNNEL TO MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 02/09/2010
9	206m NE	GREAT BRIDGEWATER ST CSO (281WI), 80 GREAT BRIDGEWATER STREET, GREAT ANCOATS, MANCHESTER, GREATER MANCHESTER, M1 5JG	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 01MAN0163 Permit Version: 1 Receiving Water: RIVER TIB CULVERT	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 15/09/1993 Revocation Date: 15/09/1993
F	206m W	CHESTER ROAD/GREAT JACKSON ROAD CSO, 371 DEANSGATE, MANCHESTER, GREATER MANCHESTER, M15 4UP	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982719 Permit Version: 3 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 29/03/2021 Effective Date: 29/03/2021 Revocation Date: -
F	211m W	CHESTER ROAD/GREAT JACKSON ROAD CSO, 371 DEANSGATE, MANCHESTER, GREATER MANCHESTER, M15 4UP	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0276 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/12/1999
F	211m W	CHESTER ROAD/GREAT JACKSON ROAD CSO, 371 DEANSGATE, MANCHESTER, GREATER MANCHESTER, M15 4UP	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982719 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: - Effective Date: 01/12/1999 Revocation Date: 28/03/2021

ID	Location	Address	Details	
I	213m E	GREAT BRIDGEWATER ST CSO (281WI), 80 GREAT BRIDGEWATER STREET, GREAT ANCOATS, MANCHESTER, GREATER MANCHESTER, M1 5JG	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982707 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 30/09/1994 Revocation Date: 19/10/2020
I	213m E	GREAT BRIDGEWATER ST CSO (281WI), 80 GREAT BRIDGEWATER STREET, GREAT ANCOATS, MANCHESTER, GREATER MANCHESTER, M1 5JG	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0252 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/01/1995
G	219m SW	OWEN STREET, OWEN STREET, MANCHESTER, M15 4PZ	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPRFB3091RH Permit Version: 1 Receiving Water: THE RIVER MEDLOCK	Status: SURRENDERED UNDER EPR 2010 Issue date: 04/10/2016 Effective Date: 04/10/2016 Revocation Date: 02/07/2018
I	222m E	GREAT BRIDGEWATER ST CSO (281WI), 80 GREAT BRIDGEWATER STREET, GREAT ANCOATS, MANCHESTER, GREATER MANCHESTER, M1 5JG	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982707 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 20/10/2020 Effective Date: 20/10/2020 Revocation Date: -
J	251m SE	WILMOTT ST AT RIVER ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0184 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 18/10/1999
J	251m SE	LOWER CAMBRIDGE ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0285 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 15/11/1999
J	251m SE	CAMBRIDGE STREET CSO 282D9, 1 CAMBRIDGE STREET, MANCHESTER, GREATER MANCHESTER, M1 5BW	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982721 Permit Version: 3 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 11/04/2018 Effective Date: 11/04/2018 Revocation Date: -

ID	Location	Address	Details	
K	256m W	POTATO WHARF, OFF LIVERPOOL RD, MANCHESTER, GREATER MANCHESTER, M3 4LA	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 0175/5 Permit Version: 2 Receiving Water: CROWTON BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/04/1991 Revocation Date: 31/12/1994
K	256m W	POTATO WHARF, OFF LIVERPOOL RD, MANCHESTER, GREATER MANCHESTER, M3 4LA	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 0175/5 Permit Version: 3 Receiving Water: CROWTON BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1995 Revocation Date: 30/06/1995
K	256m W	POTATO WHARF, OFF LIVERPOOL RD, MANCHESTER, GREATER MANCHESTER, M3 4LA	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 0175/5 Permit Version: 4 Receiving Water: CROWTON BROOK	Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 01/07/1995 Revocation Date: 08/03/2016
K	256m W	POTATO WHARF, OFF LIVERPOOL RD, MANCHESTER, GREATER MANCHESTER, M3 4LA	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 0175/5 Permit Version: 1 Receiving Water: CROWTON BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 20/01/1975 Revocation Date: 31/03/1991
K	256m W	POTATO WHARF, OFF LIVERPOOL RD, MANCHESTER, GREATER MANCHESTER, M3 4LA	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 0175/5 Permit Version: 1 Receiving Water: CROWTON BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 20/01/1975 Revocation Date: 31/03/1991
J	265m E	CAMBRIDGE STREET CSO 282D9, 1 CAMBRIDGE STREET, MANCHESTER, GREATER MANCHESTER, M1 5BW	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982721 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: - Effective Date: 15/11/1999 Revocation Date: 10/04/2018

ID	Location	Address	Details	
13	302m SE	NEWCASTLE ST/CHESTER ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0361 Permit Version: 1 Receiving Water: -	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: -
19	466m W	RICE ST NEAR CASTLE ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 01MAN0171 Permit Version: 1 Receiving Water: BRIDGEWATER CANAL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 15/09/1993 Revocation Date: 15/09/1993
L	490m E	LOWER ORMOMD ST/HULME ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0282 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 09/08/2019
L	490m E	CHESTER STREET CSO, JUNCTION OF CHESTER STREET/, LOWER OSMOND STREET, MANCHESTER, M1 5QF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016983278 Permit Version: 2 Receiving Water: THE RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 09/07/2018 Effective Date: 09/07/2018 Revocation Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	**0**

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	**0**

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	1

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 70 >**

ID	Location	Details	
20	498m E	Incident Date: 12/07/2001 Incident Identification: 15886 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

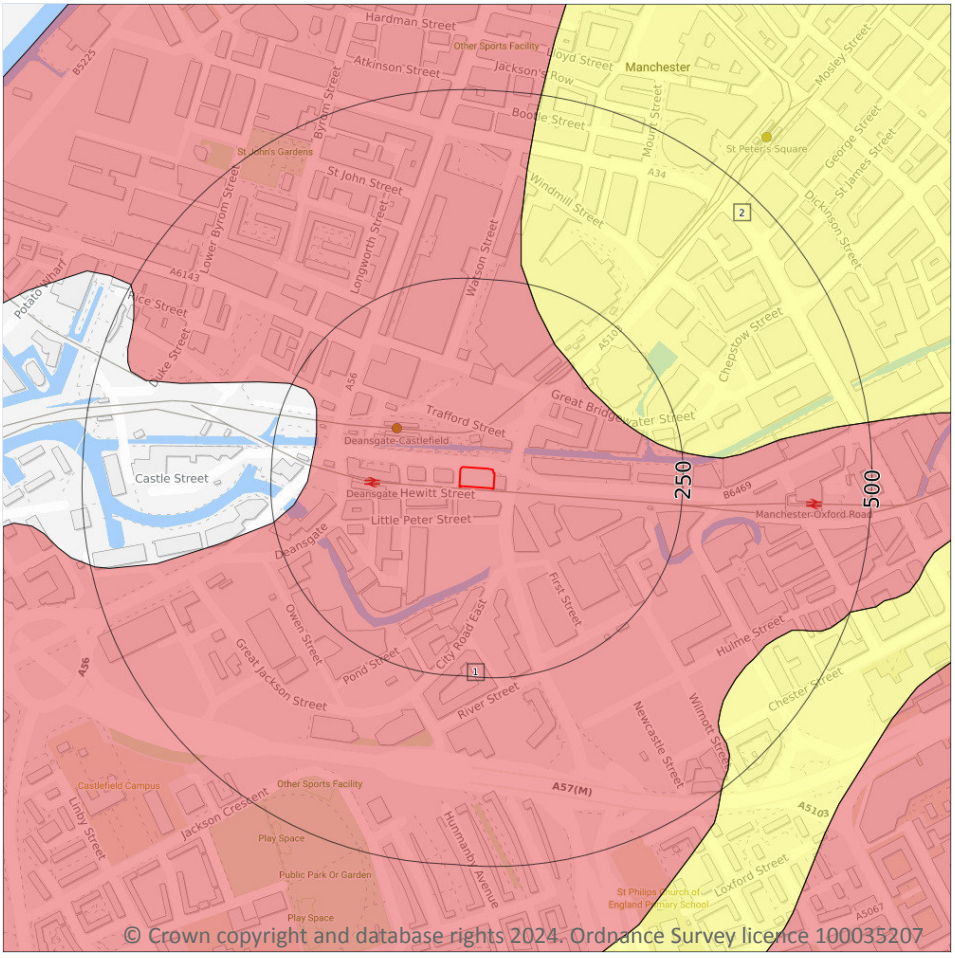
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	2

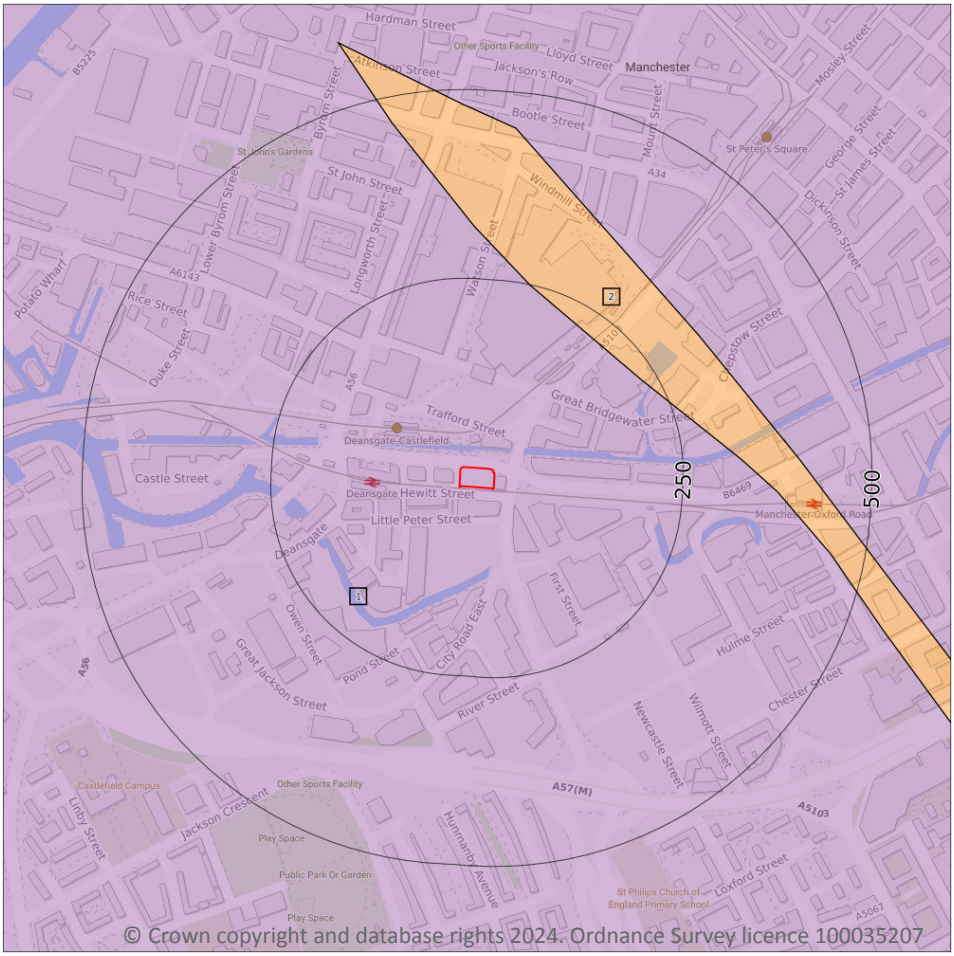
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 82 >**

ID	Location	Designation	Description
1	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
2	167m NE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	2

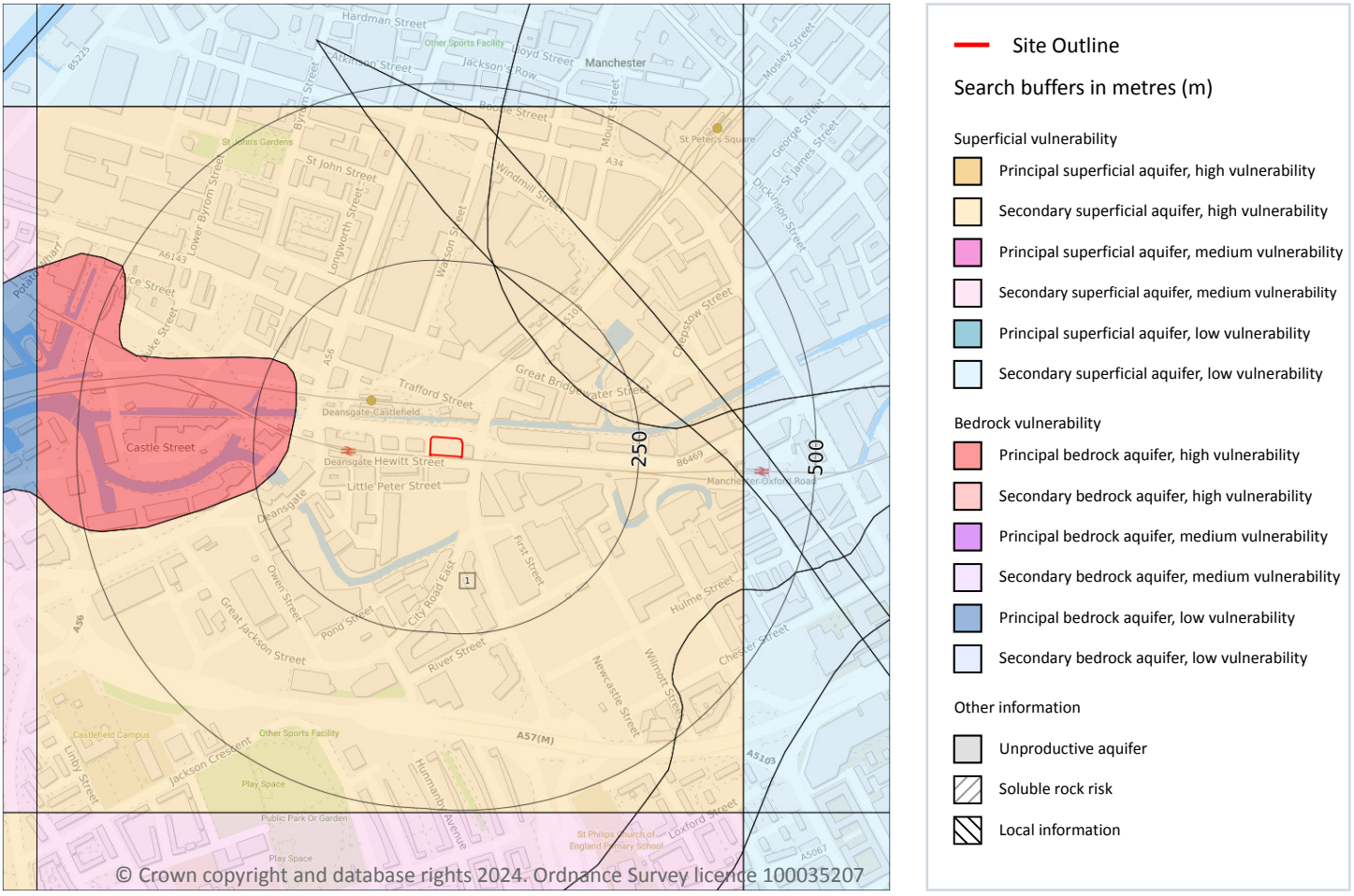
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 84 >**

ID	Location	Designation	Description
1	**On site**	**Principal**	**Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers**
2	219m NE	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	1

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 86 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	**Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: High**	**Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures**

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

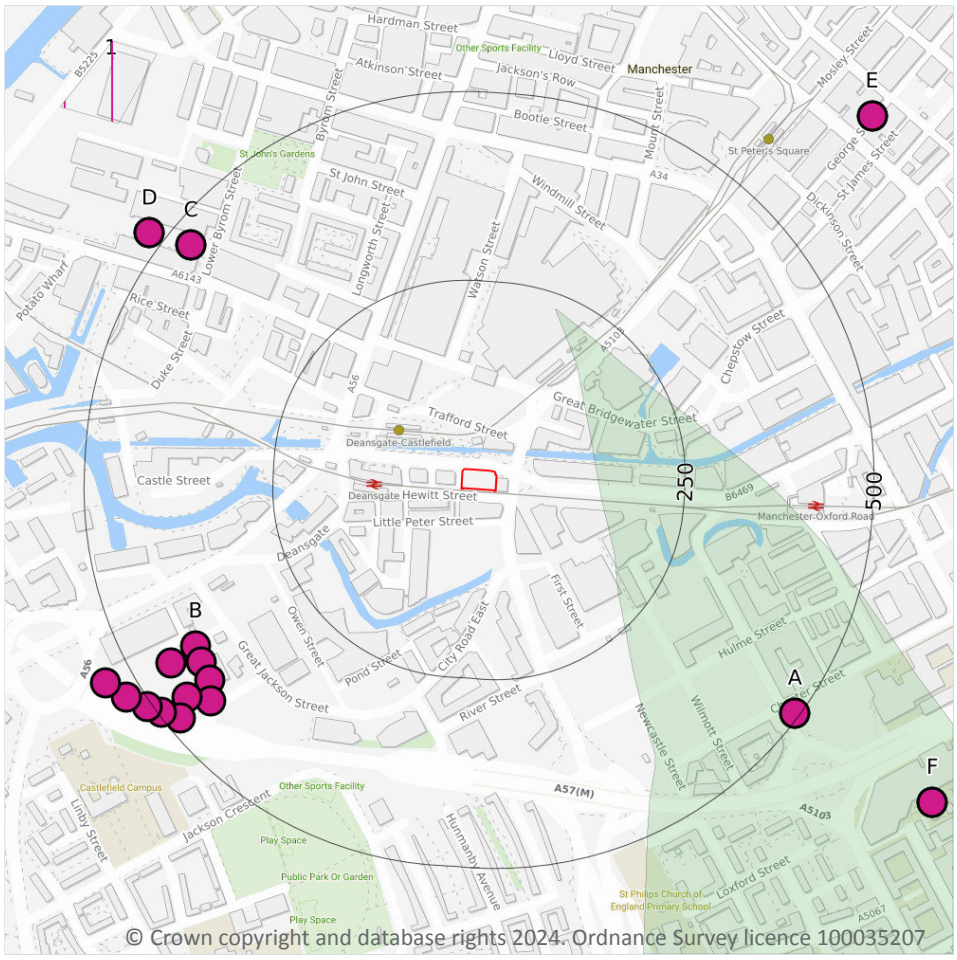
5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



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Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	65

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 88 >**

ID	Location	Details	
B	409m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW11 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383204 Northing: 397298	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
B	415m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW10 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383211 Northing: 397276	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
B	419m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW9 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383223 Northing: 397253	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
B	435m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW8 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383224 Northing: 397225	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -

ID	Location	Details	
B	449m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW6 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383171 Northing: 397275	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
B	456m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW5 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383193 Northing: 397230	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
C	468m NW	Status: Historical Licence No: NW/069/0004/021 Details: Heat Pump Direct Source: Ground Water - North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (A) Data Type: Point Name: Science Museum Group Easting: 383198 Northing: 397829	Annual Volume (m^3): 346000 Max Daily Volume (m^3): 1728 Original Application No: NPS/WR/035329 Original Start Date: 31/03/2023 Expiry Date: 31/03/2024 Issue No: 1 Version Start Date: 31/03/2023 Version End Date: -
C	468m NW	Status: Active Licence No: NW/069/0004/021/R01 Details: Heat Pump Direct Source: Ground Water - North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (A) Data Type: Point Name: Science Museum Group Easting: 383198 Northing: 397829	Annual Volume (m^3): 346000 Max Daily Volume (m^3): 1728 Original Application No: NPS/WR/040753 Original Start Date: 04/04/2024 Expiry Date: 31/03/2026 Issue No: 1 Version Start Date: 04/04/2024 Version End Date: -
B	480m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW7 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383184 Northing: 397203	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -

ID	Location	Details	
A	494m SE	Status: Active Licence No: NW/069/0006/009 Details: Heat Pump Direct Source: Ground Water - North West Region Point: BH1, SCIENCE AND ENGINEERING BUILDING Data Type: Point Name: Manchester Metropolitan University Easting: 383998 Northing: 397209	Annual Volume (m^3): 176000 Max Daily Volume (m^3): 908 Original Application No: NPS/WR/033653 Original Start Date: 22/05/2024 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 22/05/2024 Version End Date: -
A	494m SE	Status: Active Licence No: NW/069/0006/009 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BH1, SCIENCE AND ENGINEERING BUILDING Data Type: Point Name: Manchester Metropolitan University Easting: 383998 Northing: 397209	Annual Volume (m^3): 176000 Max Daily Volume (m^3): 908 Original Application No: NPS/WR/033653 Original Start Date: 22/05/2024 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 22/05/2024 Version End Date: -
B	496m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW4 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383159 Northing: 397210	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
B	507m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW3 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383140 Northing: 397217	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
D	521m NW	Status: Historical Licence No: NW/069/0004/021 Details: Heat Pump Direct Source: Ground Water - North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (B) Data Type: Point Name: Science Museum Group Easting: 383143 Northing: 397845	Annual Volume (m^3): 346000 Max Daily Volume (m^3): 1728 Original Application No: NPS/WR/035329 Original Start Date: 31/03/2023 Expiry Date: 31/03/2024 Issue No: 1 Version Start Date: 31/03/2023 Version End Date: -

ID	Location	Details	
D	521m NW	Status: Active Licence No: NW/069/0004/021/R01 Details: Heat Pump Direct Source: Ground Water - North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (B) Data Type: Point Name: Science Museum Group Easting: 383143 Northing: 397845	Annual Volume (m^3): 346000 Max Daily Volume (m^3): 1728 Original Application No: NPS/WR/040753 Original Start Date: 04/04/2024 Expiry Date: 31/03/2026 Issue No: 1 Version Start Date: 04/04/2024 Version End Date: -
B	522m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW2 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383113 Northing: 397230	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
B	537m SW	Status: Historical Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW1 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383085 Northing: 397249	Annual Volume (m^3): 260172 Max Daily Volume (m^3): 712.8 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
1	648m NW	Status: Historical Licence No: NW/069/0004/019 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: Ground Water - North West Region Point: ST JOHNS MANCHESTER Data Type: Poly4 Name: Manchester Quays Development (MGY) Ltd Easting: 383094 Northing: 398099	Annual Volume (m^3): 543120 Max Daily Volume (m^3): 1488 Original Application No: - Original Start Date: 13/09/2019 Expiry Date: 31/12/2020 Issue No: 1 Version Start Date: 13/09/2019 Version End Date: -

ID	Location	Details	
E	687m NE	Status: Historical Licence No: 2569007069 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT GEORGE ST, MANCHESTER" Data Type: Point Name: BRITISH TELECOM Easting: 384100 Northing: 398000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 100 Version Start Date: 27/01/1971 Version End Date: -
E	687m NE	Status: Historical Licence No: 2569007069 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT GEORGE ST, MANCHESTER Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC Easting: 384100 Northing: 398000	Annual Volume (m^3): 1100 Max Daily Volume (m^3): 860 Original Application No: - Original Start Date: 01/04/1984 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2007 Version End Date: -
-	693m NW	Status: Historical Licence No: 2569007089 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: 2 BOREHOLES AT GARTSIDE STREET MANCHESTER Data Type: Line Name: HER MAJESTY'S COURT SERVICE Easting: 383335 Northing: 398310	Annual Volume (m^3): 200000 Max Daily Volume (m^3): 1179 Original Application No: - Original Start Date: 26/01/2005 Expiry Date: 31/03/2011 Issue No: 2 Version Start Date: 10/07/2008 Version End Date: -
F	710m SE	Status: Active Licence No: NW/069/0006/003 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE 1 AT LOWER CHATHAM STREET Data Type: Point Name: Manchester Metropolitan University Easting: 384180 Northing: 397091	Annual Volume (m^3): 283240 Max Daily Volume (m^3): 1532 Original Application No: NPS/WR/015264 Original Start Date: 04/04/2014 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 04/04/2014 Version End Date: -

ID	Location	Details	
F	710m SE	Status: Active Licence No: NW/069/0006/003 Details: Heat Pump Direct Source: Ground Water - North West Region Point: BOREHOLE 1 AT LOWER CHATHAM STREET Data Type: Point Name: Manchester Metropolitan University Easting: 384180 Northing: 397091	Annual Volume (m^3): 283240 Max Daily Volume (m^3): 1532 Original Application No: NPS/WR/015264 Original Start Date: 04/04/2014 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 04/04/2014 Version End Date: -
-	766m S	Status: Active Licence No: NW/069/0004/003 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT MANCHESTER METROPOLITAN UNIVERSITY Data Type: Point Name: Manchester Metropolitan University Easting: 383715 Northing: 396746	Annual Volume (m^3): 274115 Max Daily Volume (m^3): 751 Original Application No: NPS/WR/008077 Original Start Date: 20/09/2013 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/01/2015 Version End Date: -
-	766m S	Status: Active Licence No: NW/069/0004/003 Details: Heat Pump Direct Source: Ground Water - North West Region Point: BOREHOLE AT MANCHESTER METROPOLITAN UNIVERSITY Data Type: Point Name: Manchester Metropolitan University Easting: 383715 Northing: 396746	Annual Volume (m^3): 274115 Max Daily Volume (m^3): 751 Original Application No: NPS/WR/008077 Original Start Date: 20/09/2013 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/01/2015 Version End Date: -
-	803m E	Status: Historical Licence No: NW0690006001 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: BOREHOLES AT ORIGIN DEVELOPMENTS, MANCHESTER Data Type: Point Name: West Contracting Easting: 384378 Northing: 397733	Annual Volume (m^3): 139128 Max Daily Volume (m^3): 1010 Original Application No: - Original Start Date: 19/01/2009 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 19/01/2009 Version End Date: -

ID	Location	Details	
-	803m E	Status: Historical Licence No: NW/069/0006/001 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: BOREHOLES AT ORIGIN DEVELOPMENTS, MANCHESTER Data Type: Point Name: West Contracting Easting: 384378 Northing: 397733	Annual Volume (m^3): 139128 Max Daily Volume (m^3): 1010 Original Application No: - Original Start Date: 19/01/2009 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 19/01/2009 Version End Date: -
-	840m W	Status: Active Licence No: NW/069/0004/022 Details: Dewatering Direct Source: Ground Water - North West Region Point: ABSTRACTION AREA AT TRINITY ISLANDS, MANCHESTER Data Type: Poly4 Name: Renaker Build Ltd Easting: 382705 Northing: 397822	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: NPS/WR/036441 Original Start Date: 05/09/2023 Expiry Date: 31/10/2024 Issue No: 1 Version Start Date: 05/09/2023 Version End Date: -
-	1175m N	Status: Active Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIAL HOUSE CHAPEL STREET SALFORD Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC Easting: 383700 Northing: 398700	Annual Volume (m^3): 45 Max Daily Volume (m^3): 30 Original Application No: 2333 Original Start Date: 27/01/1971 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2007 Version End Date: -
-	1175m N	Status: Historical Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT DIAL HOUSE, CHAPEL ST, SALFORD" Data Type: Point Name: BRITISH TELECOM Easting: 383700 Northing: 398700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 100 Version Start Date: 27/01/1971 Version End Date: -

ID	Location	Details	
-	1175m N	Status: Historical Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIAL HOUSE, CHAPEL ST, SALFORD Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC Easting: 383700 Northing: 398700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 101 Version Start Date: 01/04/1984 Version End Date: -
-	1585m NW	Status: Active Licence No: 2569007085 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT HOPE STREET, SALFORD, MANCHESTER Data Type: Point Name: CEMEX UK MATERIALS LTD Easting: 382190 Northing: 398330	Annual Volume (m^3): 23000 Max Daily Volume (m^3): 115 Original Application No: NPS/WR/030716 Original Start Date: 01/11/2000 Expiry Date: - Issue No: 4 Version Start Date: 21/12/2018 Version End Date: -
-	1585m NW	Status: Historical Licence No: 2569007085 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT HOPE STREET, SALFORD, MANCHESTER" Data Type: Point Name: READY MIXED CONCRETE (NORTH WEST) LIMITED Easting: 382190 Northing: 398330	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/11/2000 Expiry Date: - Issue No: 1 Version Start Date: 01/11/2000 Version End Date: -
-	1616m S	Status: Active Licence No: 2569007007 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES MOSS SIDE MANCHESTER Data Type: Point Name: Heineken UK Ltd Easting: 383865 Northing: 395909	Annual Volume (m^3): 227000 Max Daily Volume (m^3): 900 Original Application No: NPS/WR/015793 Original Start Date: 15/02/1966 Expiry Date: - Issue No: 103 Version Start Date: 08/05/2014 Version End Date: -

ID	Location	Details	
-	1616m S	Status: Active Licence No: 2569007007 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES MOSS SIDE MANCHESTER Data Type: Point Name: Heineken UK Ltd Easting: 383865 Northing: 395909	Annual Volume (m^3): 227000 Max Daily Volume (m^3): 900 Original Application No: NPS/WR/015793 Original Start Date: 15/02/1966 Expiry Date: - Issue No: 103 Version Start Date: 08/05/2014 Version End Date: -
-	1631m S	Status: Historical Licence No: 2569007007 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, MOSS SIDE, MANCHESTER" Data Type: Point Name: SCOTTISH COURAGE BREWING LTD Easting: 383900 Northing: 395900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/08/1995 Version End Date: -
-	1631m S	Status: Historical Licence No: 2569007007 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, MOSS SIDE, MANCHESTER" Data Type: Point Name: SCOTTISH COURAGE BREWING LTD Easting: 383900 Northing: 395900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/08/1995 Version End Date: -
-	1631m S	Status: Historical Licence No: 2569007007 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, MOSS SIDE, MANCHESTER Data Type: Point Name: SCOTTISH COURAGE BREWING LTD Easting: 383900 Northing: 395900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 31/12/2003 Version End Date: -

ID	Location	Details	
-	1631m S	Status: Historical Licence No: 2569007007 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, MOSS SIDE, MANCHESTER Data Type: Point Name: SCOTTISH COURAGE BREWING LTD Easting: 383900 Northing: 395900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 31/12/2003 Version End Date: -
-	1631m S	Status: Historical Licence No: 2569007007 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES MOSS SIDE MANCHESTER Data Type: Point Name: Heineken UK Ltd Easting: 383900 Northing: 395900	Annual Volume (m^3): 227000 Max Daily Volume (m^3): 900 Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 23/11/2009 Version End Date: -
-	1631m S	Status: Historical Licence No: 2569007007 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES MOSS SIDE MANCHESTER Data Type: Point Name: Heineken UK Ltd Easting: 383900 Northing: 395900	Annual Volume (m^3): 227000 Max Daily Volume (m^3): 900 Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 23/11/2009 Version End Date: -
-	1637m E	Status: Historical Licence No: 2569006001 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, BROADIE ST, ARDWICK, MANCHESTER" Data Type: Point Name: MOSELEY RUBBER CO LTD Easting: 385240 Northing: 397540	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 08/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 08/02/1966 Version End Date: -

ID	Location	Details	
-	1637m E	Status: Historical Licence No: 2569006001 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, BROADIE ST, ARDWICK, MANCHESTER Data Type: Point Name: MOSELEY RUBBER CO LTD Easting: 385240 Northing: 397540	Annual Volume (m^3): 331858 Max Daily Volume (m^3): 909.2 Original Application No: - Original Start Date: 08/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 08/02/1966 Version End Date: -
-	1675m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1675m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1675m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1675m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1675m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1675m N	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1690m S	Status: Historical Licence No: 2569007009 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, MOSS LANE WEST MANCHESTER" Data Type: Point Name: HYDES BREWERY LTD Easting: 383220 Northing: 395850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 07/10/2000 Version End Date: -

ID	Location	Details	
-	1690m S	Status: Historical Licence No: 2569007009 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, MOSS LANE WEST MANCHESTER" Data Type: Point Name: HYDES BREWERY LTD Easting: 383220 Northing: 395850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 07/10/2000 Version End Date: -
-	1690m S	Status: Historical Licence No: 2569007009 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, MOSS LANE WEST MANCHESTER Data Type: Point Name: HYDES BREWERY LTD Easting: 383220 Northing: 395850	Annual Volume (m^3): 66826.2 Max Daily Volume (m^3): 372.772 Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 07/10/2000 Version End Date: -
-	1690m S	Status: Historical Licence No: 2569007009 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, MOSS LANE WEST MANCHESTER Data Type: Point Name: HYDES BREWERY LTD Easting: 383220 Northing: 395850	Annual Volume (m^3): 66826.2 Max Daily Volume (m^3): 372.772 Original Application No: - Original Start Date: 21/02/1966 Expiry Date: - Issue No: 103 Version Start Date: 19/07/2018 Version End Date: -
-	1706m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -

ID	Location	Details	
-	1706m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1706m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1706m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1706m N	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1706m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1739m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1739m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1739m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1739m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1739m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1739m N	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**2**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 88 >**

ID	Location	Details	
-	1062m W	Status: Historical Licence No: 2569007053 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT IRWELL WORKS, ORDSALL LANE, SALFORD" Data Type: Point Name: CDS COMPUTER DESIGN SYSTEMS LTD Easting: 382500 Northing: 397400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/11/1987 Version End Date: -
-	1062m W	Status: Historical Licence No: 2569007053 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT IRWELL WORKS, ORDSALL LANE, SALFORD Data Type: Point Name: CDS COMPUTER DESIGN SYSTEMS LTD Easting: 382500 Northing: 397400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/11/1987 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m **9**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 88 >**

ID	Location	Details	
-	1675m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -

ID	Location	Details	
-	1675m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1675m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1706m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1706m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1706m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1739m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1739m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1739m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	1

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on **page 88 >**

ID	Location	Type	Description
A	132m E	3	Total catchment

This data is sourced from the Environment Agency and Natural Resources Wales.

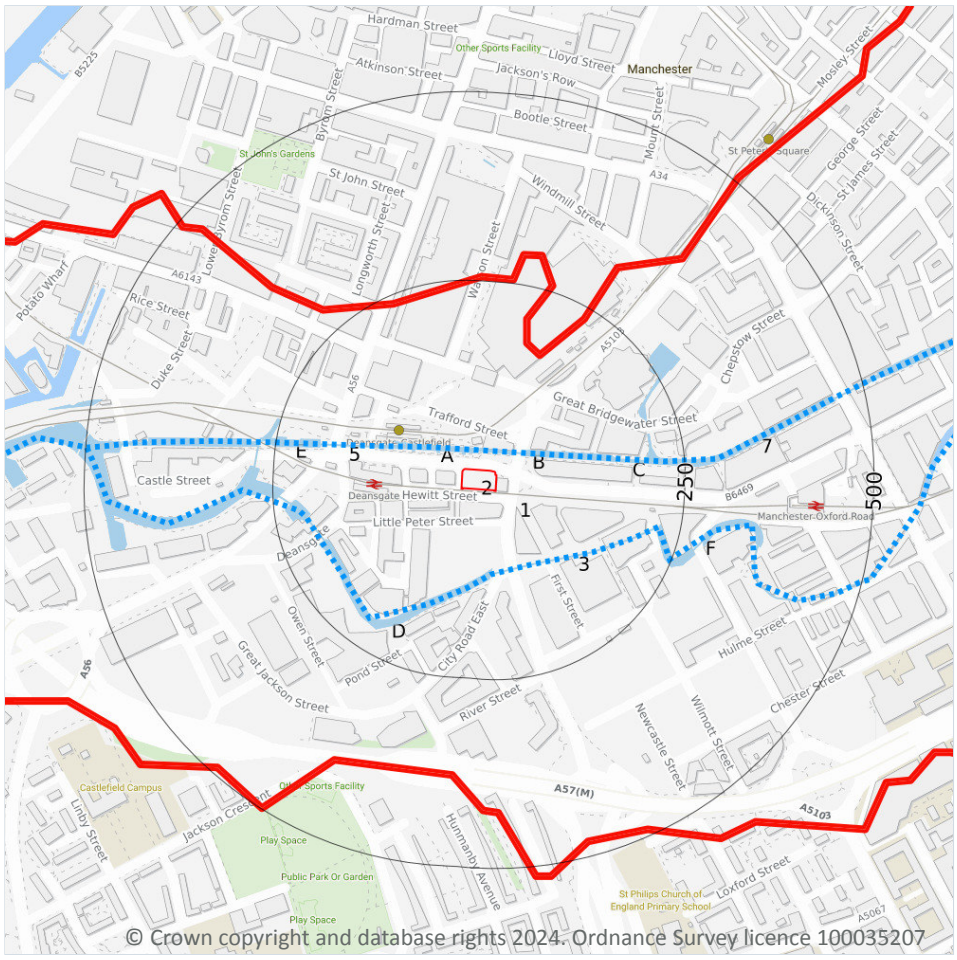
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



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Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	18

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 109 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
B	25m N	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal

ID	Location	Type of water feature	Ground level	Permanence	Name
A	42m NW	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
A	46m NW	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
A	84m NW	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
A	84m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
3	106m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
D	110m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
5	123m W	Canal. A manmade watercourse for inland navigation.	Underground	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
C	166m E	Lock or flight of locks. An enclosure in a canal or navigable river with gates and sluices at either end.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
C	191m E	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
E	191m W	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
E	194m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
7	206m E	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
C	206m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
E	209m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
F	221m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
E	226m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	River Medlock
E	242m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**8**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 109 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 109 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Medlock (Lumb Brook to Irwell)**	**GB112069061152**	**Roch Irk Medlock**	**Irwell**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	2

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 109 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
B	26m N	Canal	Rochdale Canal, western section	GB71210517 ↗	Moderate	Fail	Moderate	2019
4	106m S	River	Medlock (Lumb Brook to Irwell)	GB112069061152 ↗	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 109 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	**On site**	**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	GB41201G101100 ↗	**Poor**	**Poor**	**Poor**	**2019**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

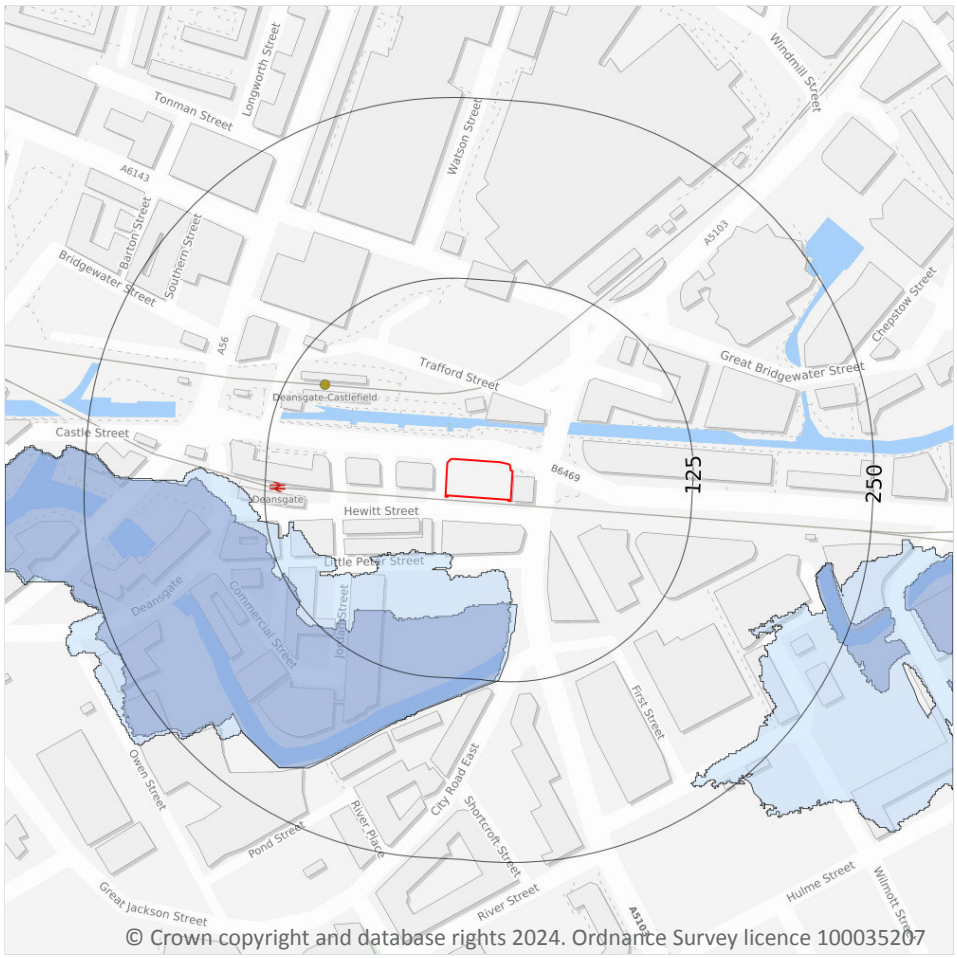
7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones



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7.6 Flood Zone 2

Records within 50m	1

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

Features are displayed on the River and coastal flooding map on **page 113 >**

Location	Type
39m SW	Zone 2 - (Fluvial /Tidal Models)

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**Negligible**
Highest risk within 50m	**1 in 250 year, 0.1m - 0.3m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 117 >**

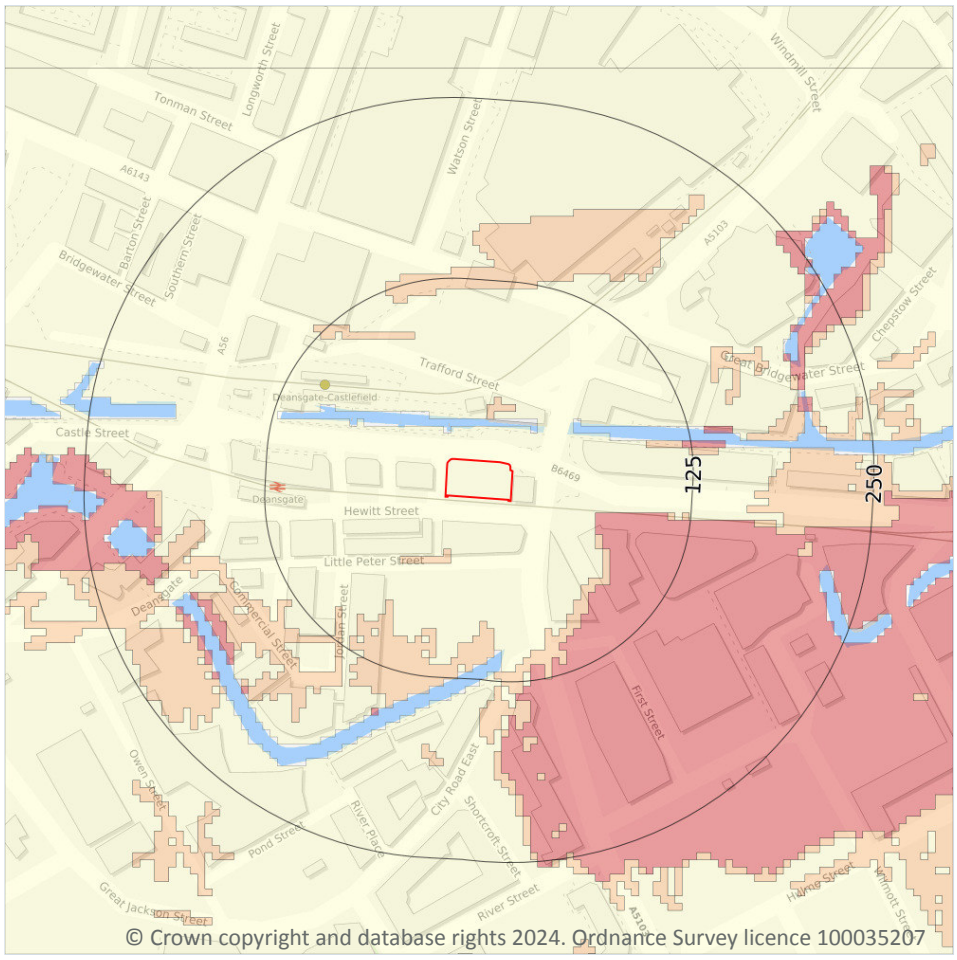
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

Highest risk on site	**Moderate**
Highest risk within 50m	**Moderate-High**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 119 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	3

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
1118m NE	River Irk (Moston Brook to River Irwell) NVZ	Surface Water	638	Existing
1162m NE	River Irk (Moston Brook to River Irwell) NVZ	Surface Water	638	Existing
1222m NW	Irwell / Man. Ship Canal (Kearsley to Irlam Locks) NVZ	Surface Water	643	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



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Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 124 >**

ID	Location	Type of developments requiring consultation
1	On site	**Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m². Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**

This data is sourced from Natural England.

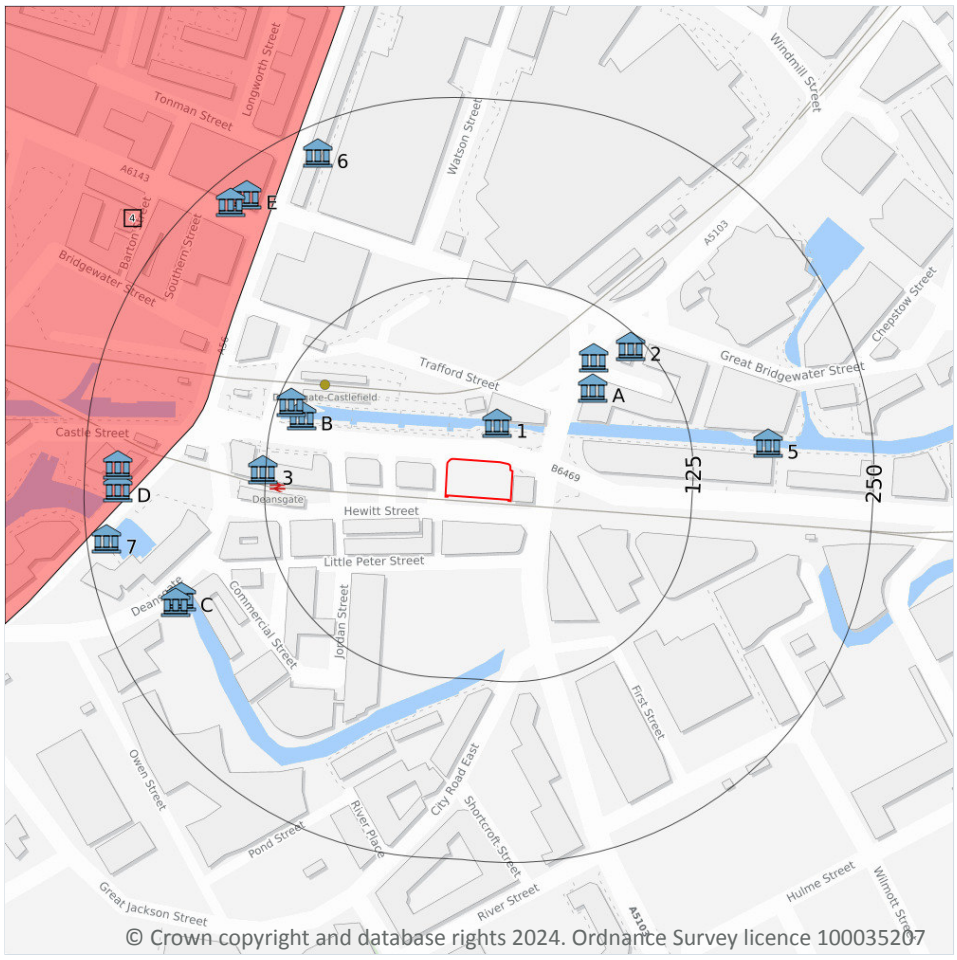
10.18 SSSI Units

Records within 2000m	0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	16

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 126 >**

ID	Location	Name	Grade	Reference Number	Listed date
1	27m N	Rochdale Canal Lock Number 90, Approximately 30 Metres West Of Albion Bridge	II	1247482	06/06/1994
A	79m NE	13-17, Albion Street	II	1279694	03/10/1974
A	94m NE	Manchester South Junction And Altrincham Railway Viaduct	II	1200837	06/06/1994
B	106m W	Rochdale Canal Lock Number 91 At East End Of Gaythorn Tunnel	II	1247483	29/01/1986

ID	Location	Name	Grade	Reference Number	Listed date
B	116m W	Rochdale Canal Lock Keepers Cottage At Lock Number 91, Next To Gaythorn Tunnel	II	1247597	29/01/1986
2	117m NE	The Britons Protection Ph The Britons Protection Public House	II	1292050	16/03/1990
3	127m W	Deansgate Station	II	1376146	20/08/1998
5	178m E	Rochdale Canal Lock Number 89 (Tib Lock), On South Side Of Havelock Mills	II	1247596	06/06/1994
C	195m W	Boundary Stone On Knott Mill Bridge	II	1282975	06/06/1994
C	200m W	Floodgate On East Side Of Knott Mill Bridge	II	1210156	06/06/1994
D	227m W	Electricity Junction Box In Castlefield Canal Basin, Manchester	II	1475255	29/09/2021
D	227m W	Former Congregational Chapel	II	1292311	20/06/1988
6	231m NW	235-291, Deansgate	II	1210103	28/02/1989
E	231m NW	Castlefield Information Centre	II	1200853	17/05/1974
E	234m NW	K6 Telephone Kiosk Beside South West Corner Of Number 330 Deansgate	II	1219441	29/10/1987
7	236m W	Electricity Junction Box In Castlefield Canal Basin, Manchester	II	1475459	29/09/2021

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	**1**

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 126 >**

ID	Location	Name	District	Date of designation
4	172m W	Castlefield	Manchester	13/10/1979

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 130 >**

ID	Location	Classification	Description
1	**On site**	**Urban**	**Non-agricultural/no quality assigned**

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m	0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	1

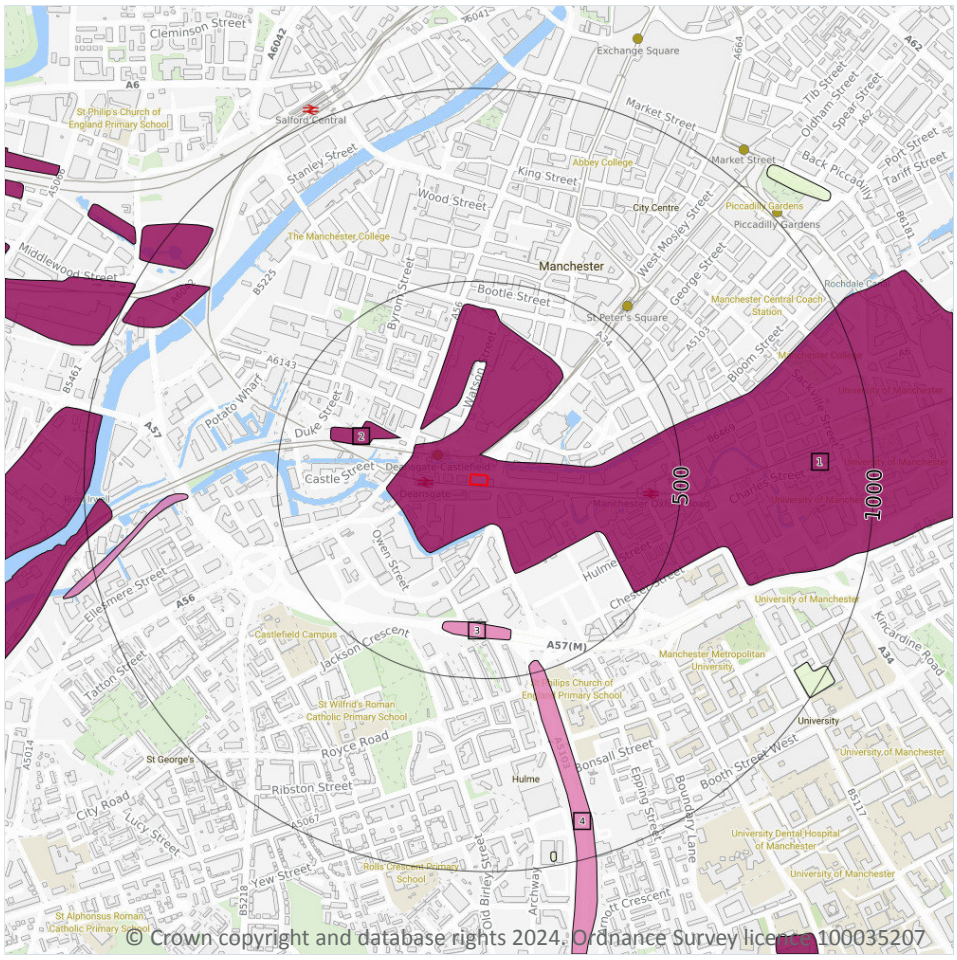
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 133 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SJ89NW**

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground



14.2 Artificial and made ground (10k)

Records within 500m	4

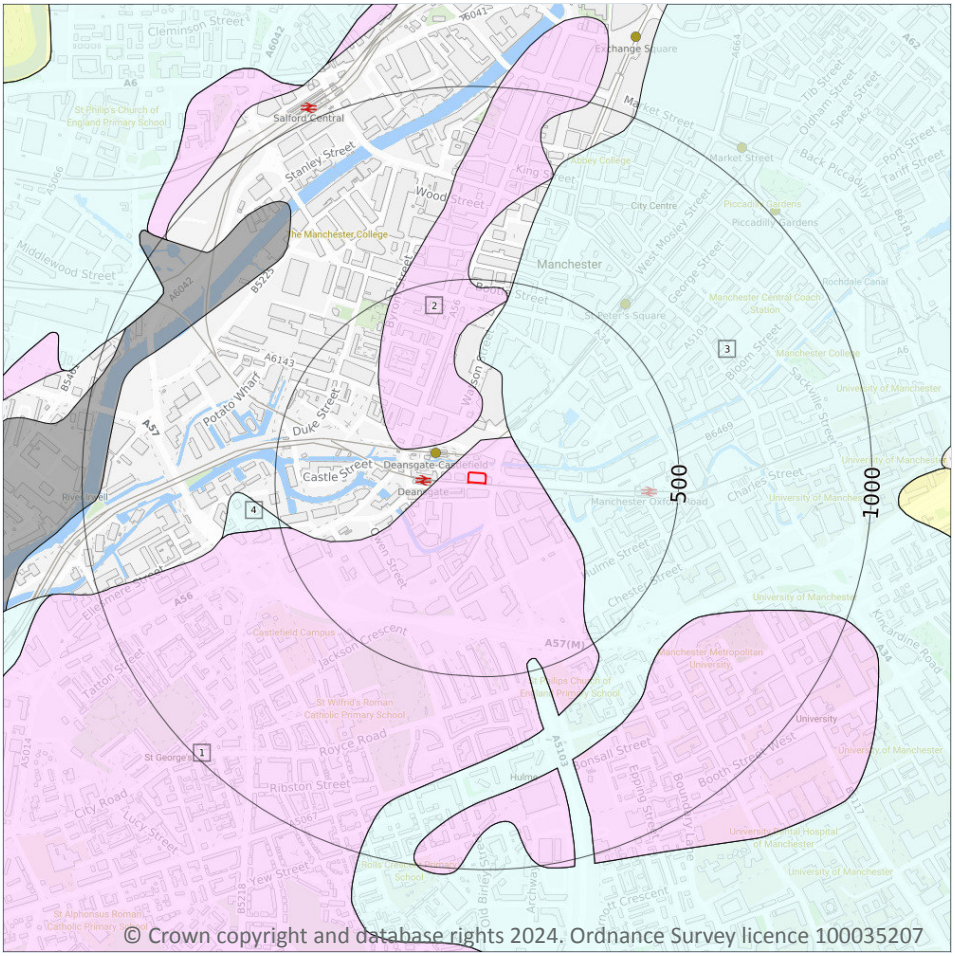
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 134 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**
2	207m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	356m S	WGR-VOID	Worked Ground (Undivided)	Void
4	469m S	WGR-VOID	Worked Ground (Undivided)	Void

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



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Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m	4

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 136 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFSDD-XSV**	**Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel**	**Sand And Gravel**
2	96m NW	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
3	107m NE	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
4	472m W	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton

This data is sourced from the British Geological Survey.

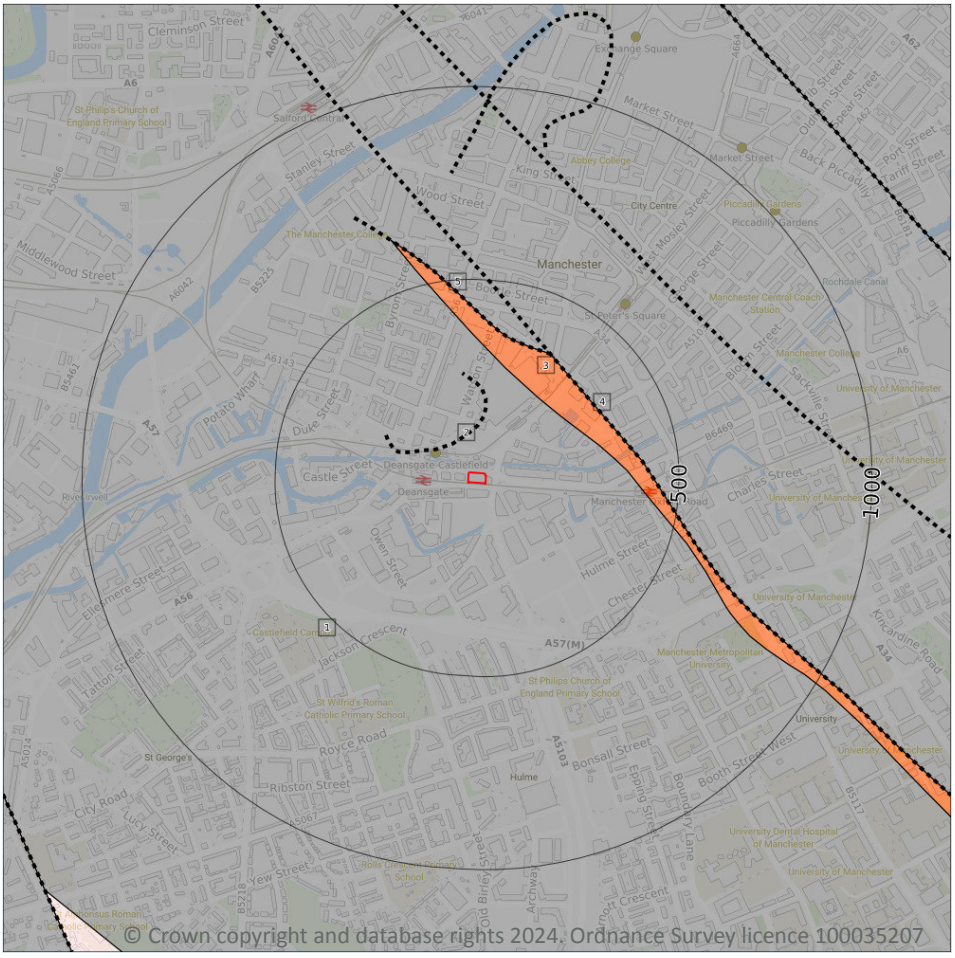
14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m **2**

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 138 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CPB-SDST**	**Chester Pebble Beds Formation - Sandstone**	**Early Triassic Epoch**
3	240m NE	MM-MDST	Manchester Marls Formation - Mudstone	Late Permian Epoch [Obsolete name]

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	3

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 138 >**

ID	Location	Category	Description
2	86m NW	LANDFORM	Buried channel or valley margin
4	330m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
5	348m N	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

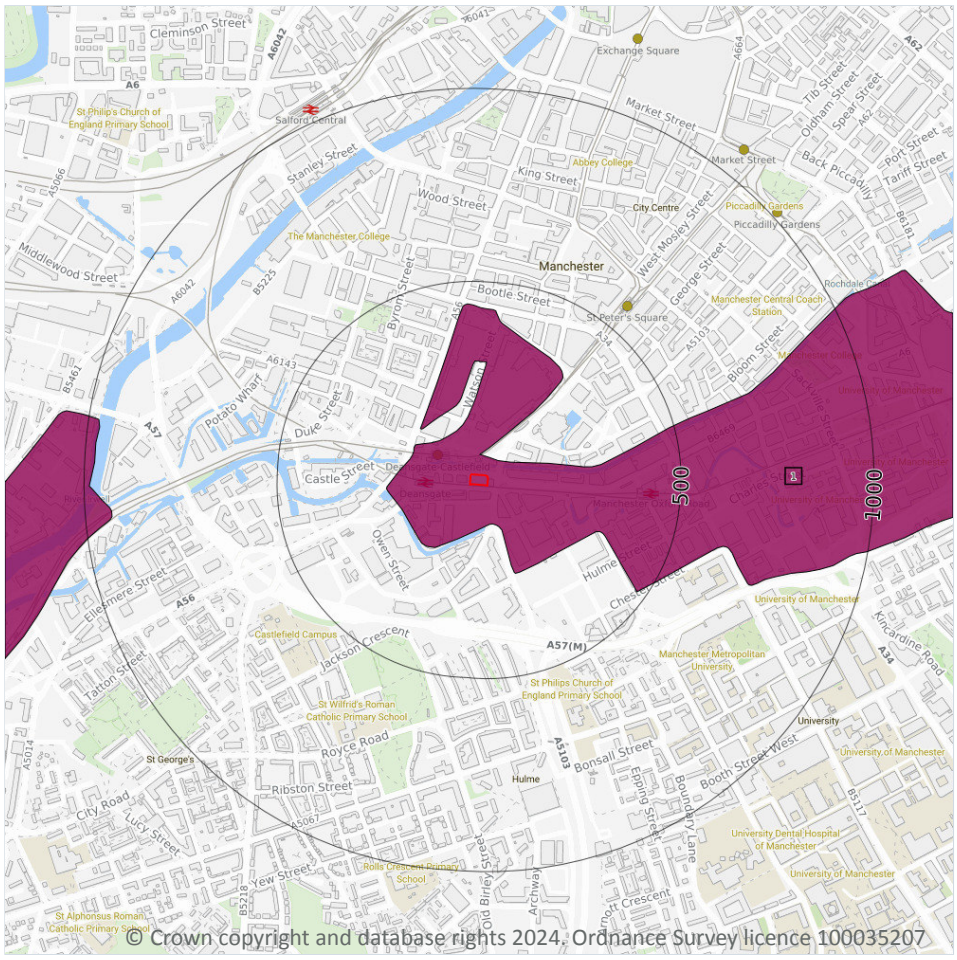
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 140 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**No coverage**	**EW085_manchester_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



15.2 Artificial and made ground (50k)

Records within 500m	1

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 141 >**

ID	Location	LEX Code	Description	Rock description
1	On site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

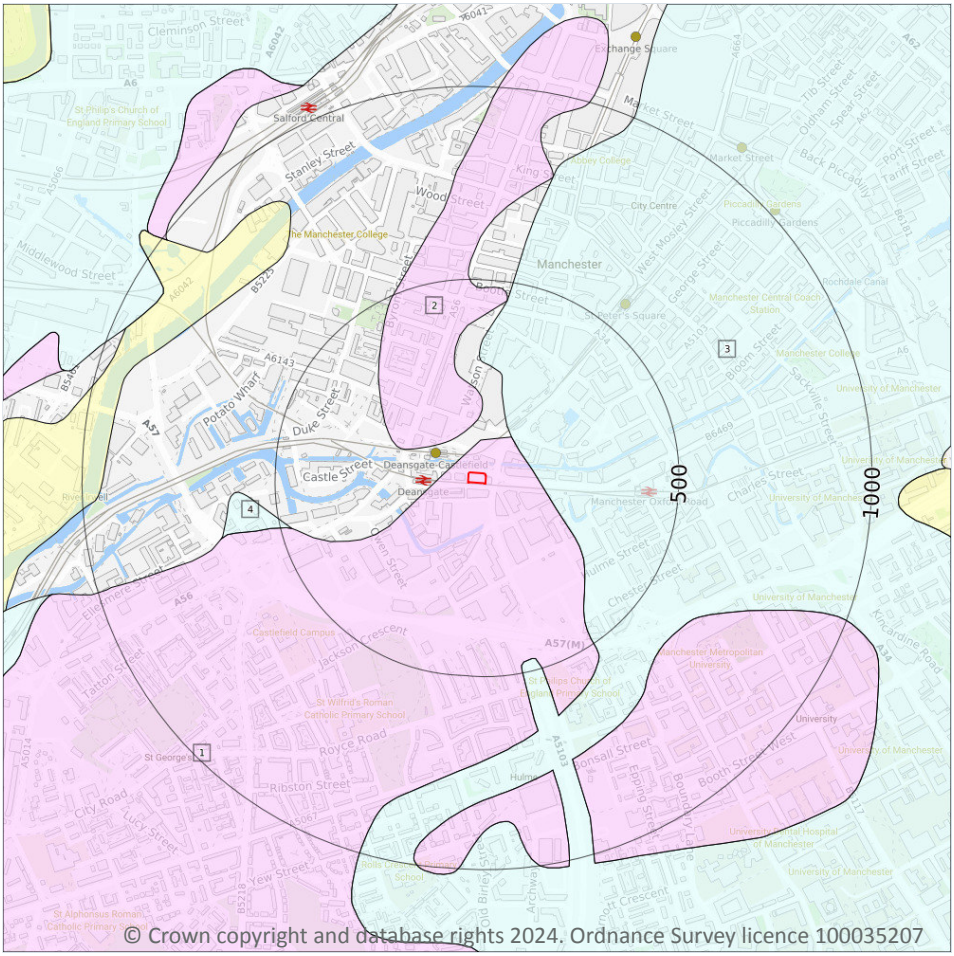
Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Very High**	**Low**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m **4**

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 143 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFSDD-XSV**	**GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN**	**SAND AND GRAVEL**
2	96m NW	GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN	SAND AND GRAVEL
3	107m NE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
4	472m W	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**Very High**	**High**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

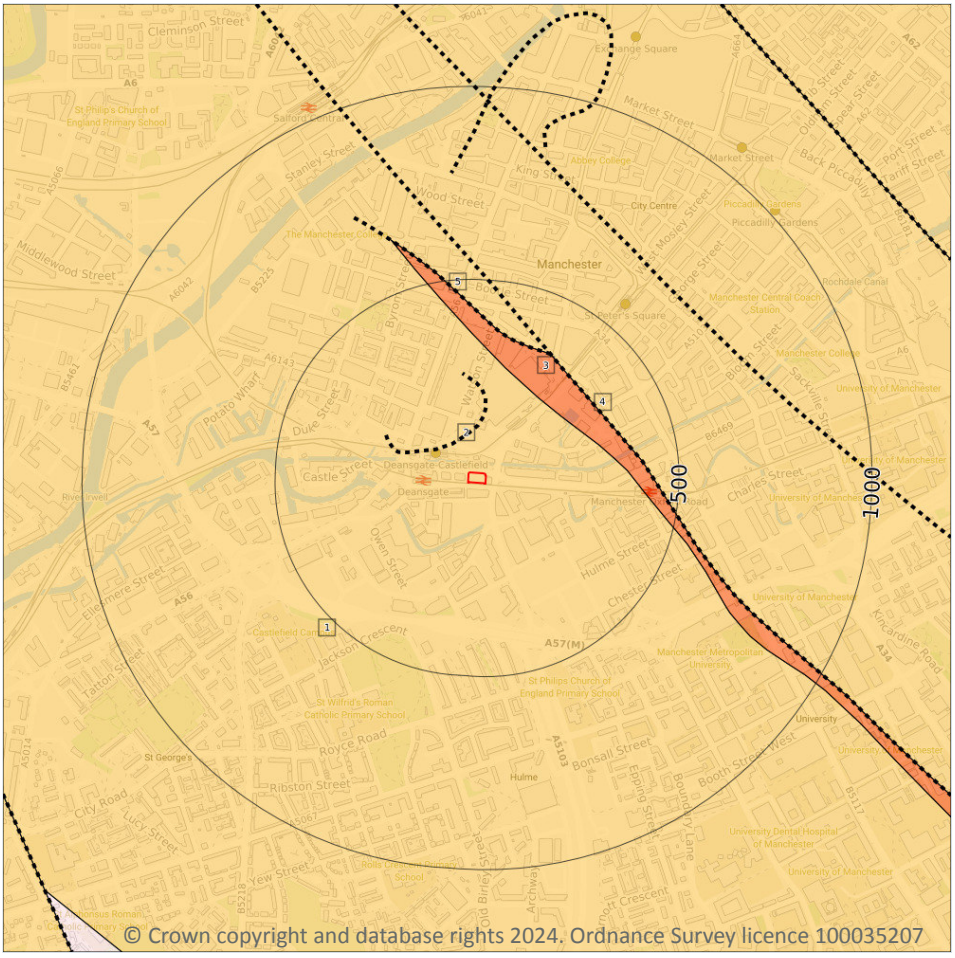
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m **2**

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 145 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CHES-SDST**	**CHESTER FORMATION - SANDSTONE**	**OLENEKIAN**
3	240m NE	MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Moderate**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	3

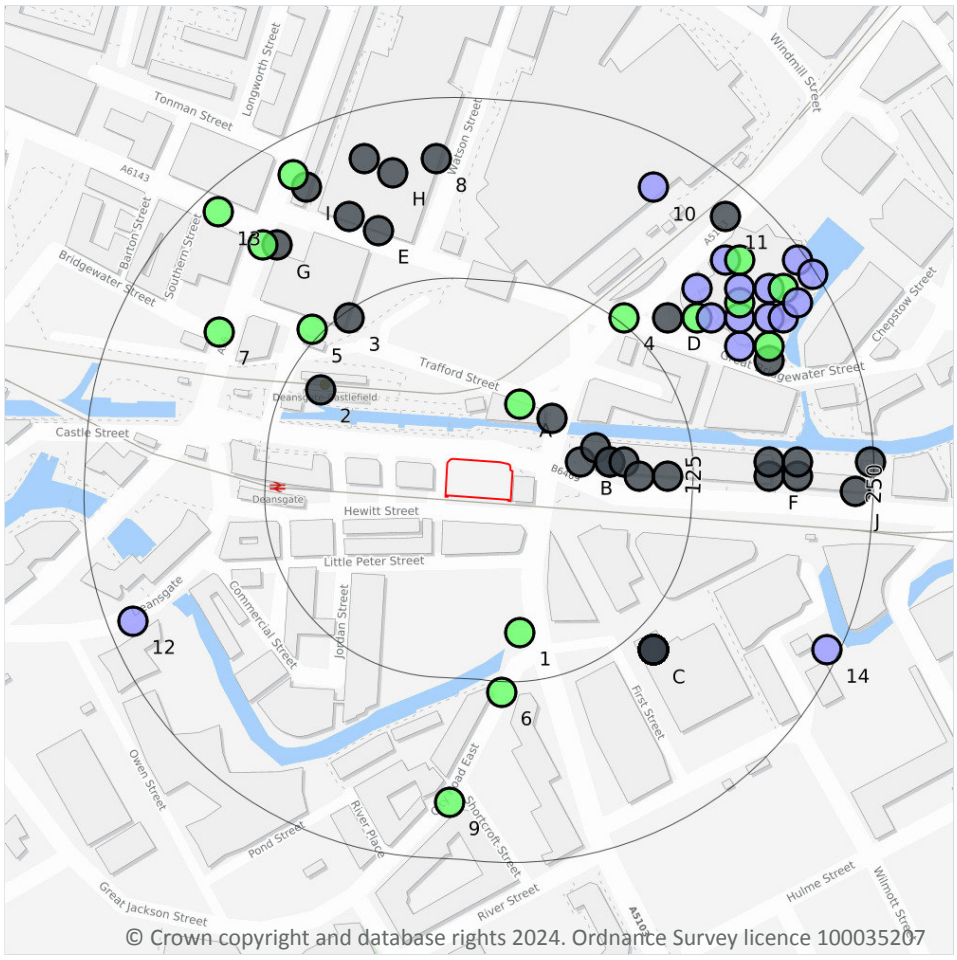
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 145 >**

ID	Location	Category	Description
2	87m NW	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley
4	331m NE	FAULT	Fault, inferred
5	348m N	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



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16.1 BGS Boreholes

Records within 250m	80

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 147 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	42m NE	383608 397570	MANCHESTER CORP. B.SEWER	14.02	N	1042261 ↗
A	43m NE	383630 397560	GREAT BRIDGEWATER STREET 1	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
B	48m E	383650 397530	HACIENDA SITE WHITWORTH STREET MANCHESTER WS01	-	Y	N/A
B	60m E	383660 397540	HACIENDA SITE WHITWORTH STREET MANCHESTER WS02	-	Y	N/A
B	68m E	383670 397530	HACIENDA SITE WHITWORTH STREET MANCHESTER WS03	-	Y	N/A
B	68m E	383670 397530	HACIENDA SITE WHITWORTH STREET MANCHESTER WS04	-	Y	N/A
B	78m E	383680 397530	HACIENDA SITE WHITWORTH STREET MANCHESTER WS05	-	Y	N/A
B	87m E	383690 397520	HACIENDA SITE WHITWORTH STREET MANCHESTER WS06	-	Y	N/A
1	91m S	383608 397412	MANCHESTER CORP. B.SEWER	11.28	N	1042260 ↗
2	101m NW	383470 397580	FESTIVAL MARKETPLACE 3/1	-	Y	N/A
B	107m E	383710 397520	HACIENDA SITE WHITWORTH STREET MANCHESTER WS07	-	Y	N/A
3	121m NW	383490 397630	FESTIVAL MARKETPLACE 3/2	-	Y	N/A
4	129m NE	383680 397630	LOWER MOSLEY STREET PHASE 2 A	14.5	N	13469181 ↗
5	132m NW	383464 397622	MANCHESTER CORP. B.SEWER	12.5	N	1042262 ↗
6	132m S	383595 397371	MANCHESTER CORP. B.SEWER	11.28	N	1042259 ↗
C	143m SE	383700 397400	GAYTHORN GASWORKS M16	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M18	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M2	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M5	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS R2	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS R2	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M15	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M1	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M7	-	Y	N/A

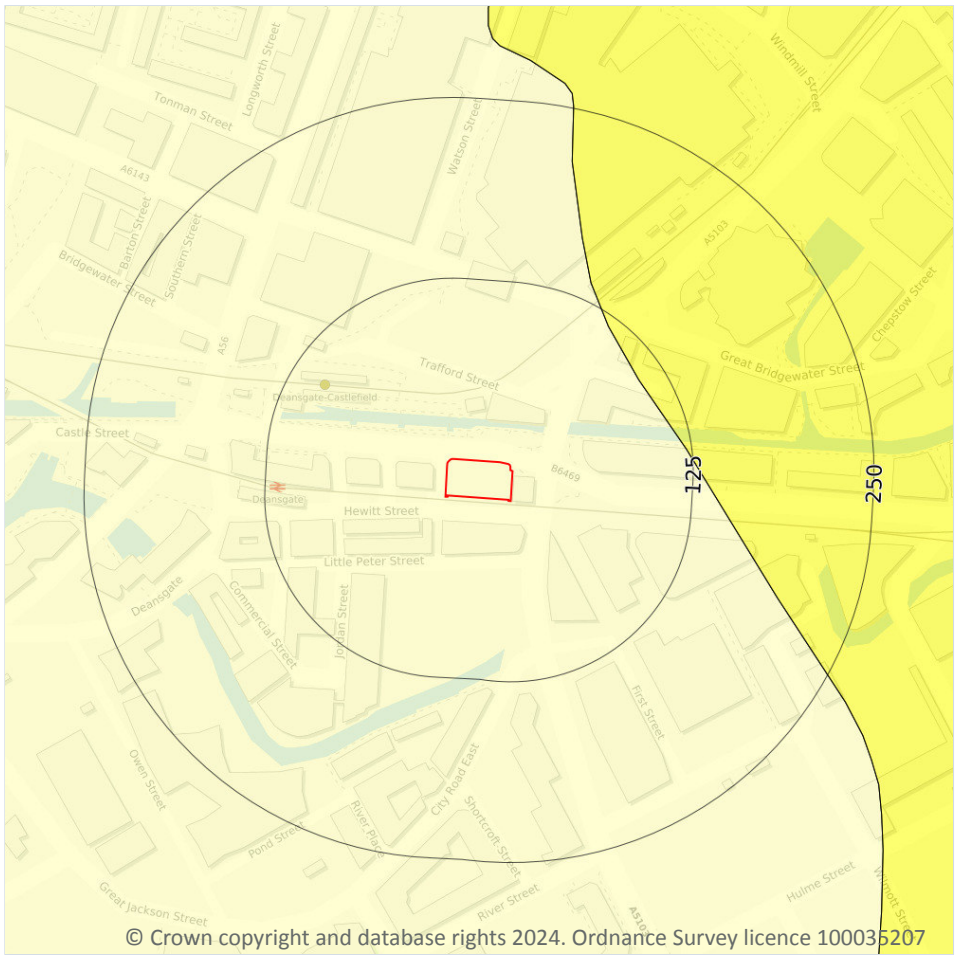
ID	Location	Grid reference	Name	Length	Confidential	Web link
C	143m SE	383700 397400	GAYTHORN GASWORKS M6	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M11	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M12A	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M13	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M14	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M3	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M7A	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M8	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M9	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M17	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS R1	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M4	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M10	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS R1	-	Y	N/A
C	143m SE	383700 397400	GAYTHORN GASWORKS M12	-	Y	N/A
D	149m NE	383710 397630	GREAT BRIDGEWATER STREET 2	-	Y	N/A
D	165m NE	383730 397630	GT BRIDGEWATER ST 109	30.0	N	1042749 ↗
E	166m N	383510 397690	FESTIVAL MARKETPLACE 1/8	-	Y	N/A
D	173m NE	383740 397630	GT BRIDGEWATER ST TP 103	2.0	N	1042758 ↗
F	177m E	383780 397520	WHITWORTH STREET WEST MANCHESTER 1	-	Y	N/A
F	177m E	383780 397530	WHITWORTH STREET WEST MANCHESTER 2	-	Y	N/A
D	178m NE	383730 397650	GT BRIDGEWATER ST TP 101	2.0	N	1042756 ↗
D	179m NE	383760 397610	GT BRIDGEWATER ST TP 106	3.0	N	1042761 ↗
7	182m NW	383400 397620	BRIDGEWATER STREET / RICE STREET MAIN DRAINAGE 1	12.0	N	1045617 ↗
E	182m NW	383490 397700	FESTIVAL MARKETPLACE TP 1/8	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
D	189m NE	383760 397630	GT BRIDGEWATER ST TP 105	3.0	N	1042760 ↗
G	191m NW	383440 397680	FESTIVAL MARKETPLACE TP 3/1	-	Y	N/A
D	193m E	383780 397600	GREAT BRIDGEWATER STREET 4/4A	-	Y	N/A
D	195m NE	383760 397640	GT BRIDGEWATER ST 108	30.0	N	1042748 ↗
D	197m NE	383780 397610	GT BRIDGEWATER ST 111	21.0	N	1042751 ↗
G	197m NW	383430 397680	CITY CENTRE - PHASE 2 29	12.5	N	1043527 ↗
F	197m E	383800 397520	WHITWORTH STREET WEST MANCHESTER 4	-	Y	N/A
F	197m E	383800 397530	WHITWORTH STREET WEST MANCHESTER 3	-	Y	N/A
D	201m NE	383760 397650	GT BRIDGEWATER ST TP 104	3.0	N	1042759 ↗
H	202m N	383520 397730	FESTIVAL MARKETPLACE TP 1/6	-	Y	N/A
D	206m NE	383750 397670	GT BRIDGEWATER ST TP 102	2.0	N	1042757 ↗
D	206m NE	383780 397630	GT BRIDGEWATER ST TP 107	4.0	N	1042762 ↗
8	208m N	383550 397740	FESTIVAL MARKETPLACE 1/6	-	Y	N/A
9	211m S	383559 397295	MANCHESTER CORP. B.SEWER	11.28	N	1042258 ↗
I	213m NW	383460 397720	FESTIVAL MARKETPLACE 1/7	-	Y	N/A
D	213m NE	383760 397670	GT BRIDGEWATER ST 106	30.0	N	1042746 ↗
D	215m NE	383790 397630	GT BRIDGEWATER ST TP 125	3.0	N	1042780 ↗
10	216m NE	383700 397720	LOWER MOSLEY STREET PHASE 2 B	5.0	N	13469182 ↗
H	217m N	383500 397740	FESTIVAL MARKETPLACE TP 1/7	-	Y	N/A
D	217m NE	383780 397650	GT BRIDGEWATER ST TP 108	4.0	N	1042763 ↗
D	225m NE	383790 397650	GT BRIDGEWATER ST 107	30.0	N	1042747 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
I	225m NW	383451 397729	MANCHESTER CORP. DEANSGATE	10.67	N	1042210 ↗
11	228m NE	383750 397700	GREAT BRIDGEWATER STREET 3	-	Y	N/A
D	229m NE	383800 397640	GT BRIDGEWATER ST TP 109	3.0	N	1042764 ↗
12	233m W	383340 397420	LOWER MEDLOCK UCSO'S CONTRACT 1 MAN 0276 304	9.1	N	1043415 ↗
13	235m NW	383399 397703	MANCHESTER CORP. E.SEWER	12.5	N	1042233 ↗
J	238m E	383840 397510	WHITWORTH STREET WEST MANCHESTER 5	-	Y	N/A
14	242m SE	383820 397400	LOWER MEDLOCK UCSO'S CONTRACT 1 MAN 0285 503/503A	8.0	N	1043423 ↗
D	245m NE	383800 397670	GT BRIDGEWATER ST TP 110	2.0	N	1042765 ↗
D	247m NE	383810 397660	GT BRIDGEWATER ST TP 111	3.0	N	1042766 ↗
J	247m E	383850 397530	WHITWORTH STREET WEST MANCHESTER 6	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

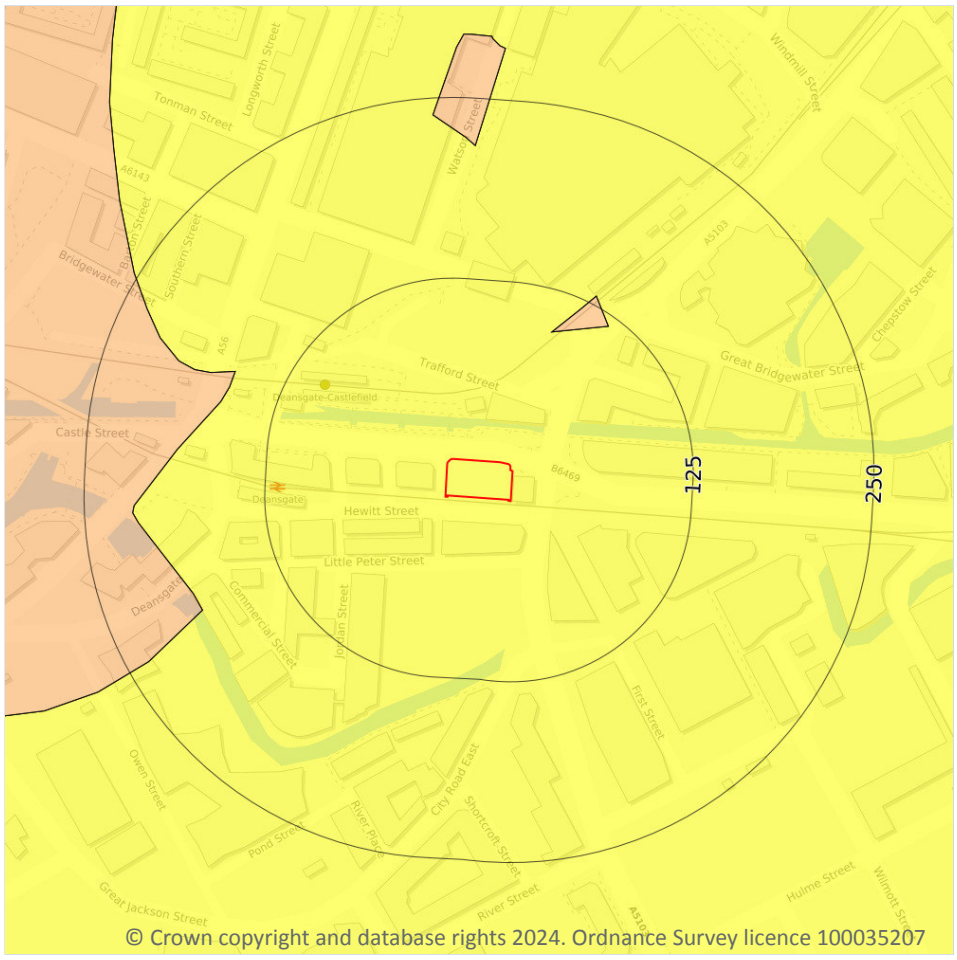
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 152 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

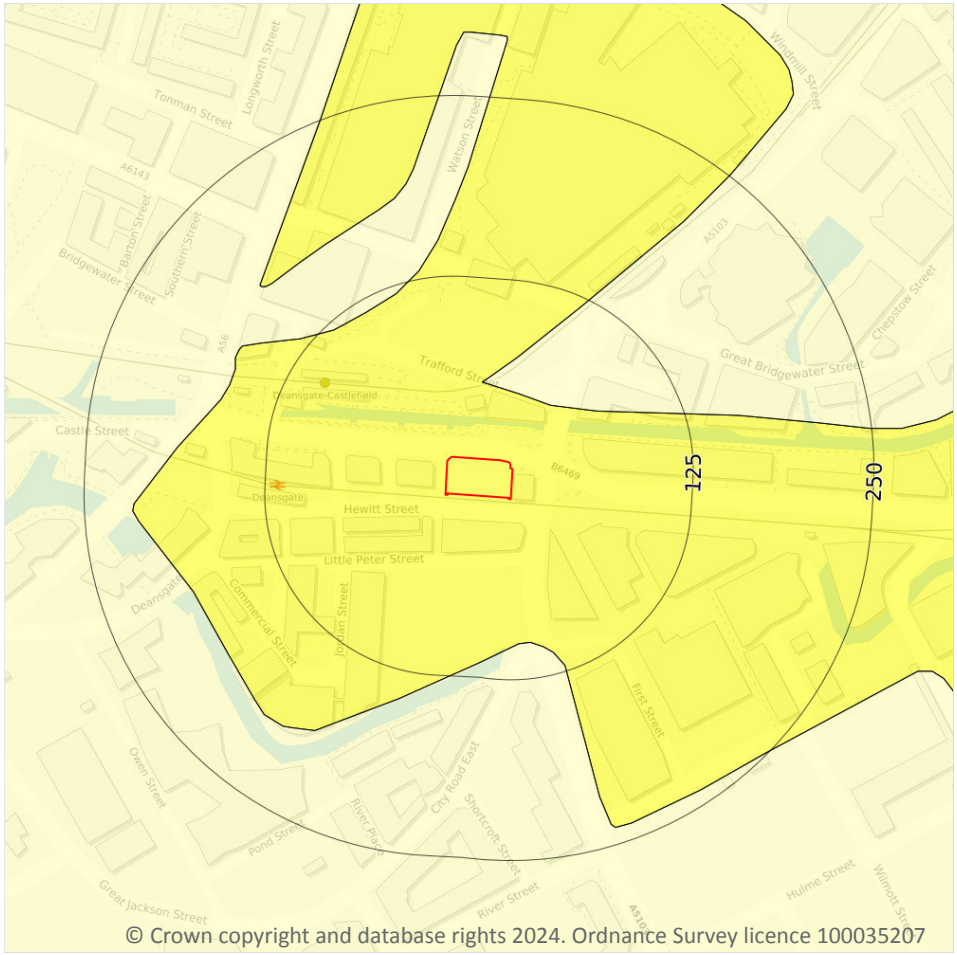
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 153 >**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	2

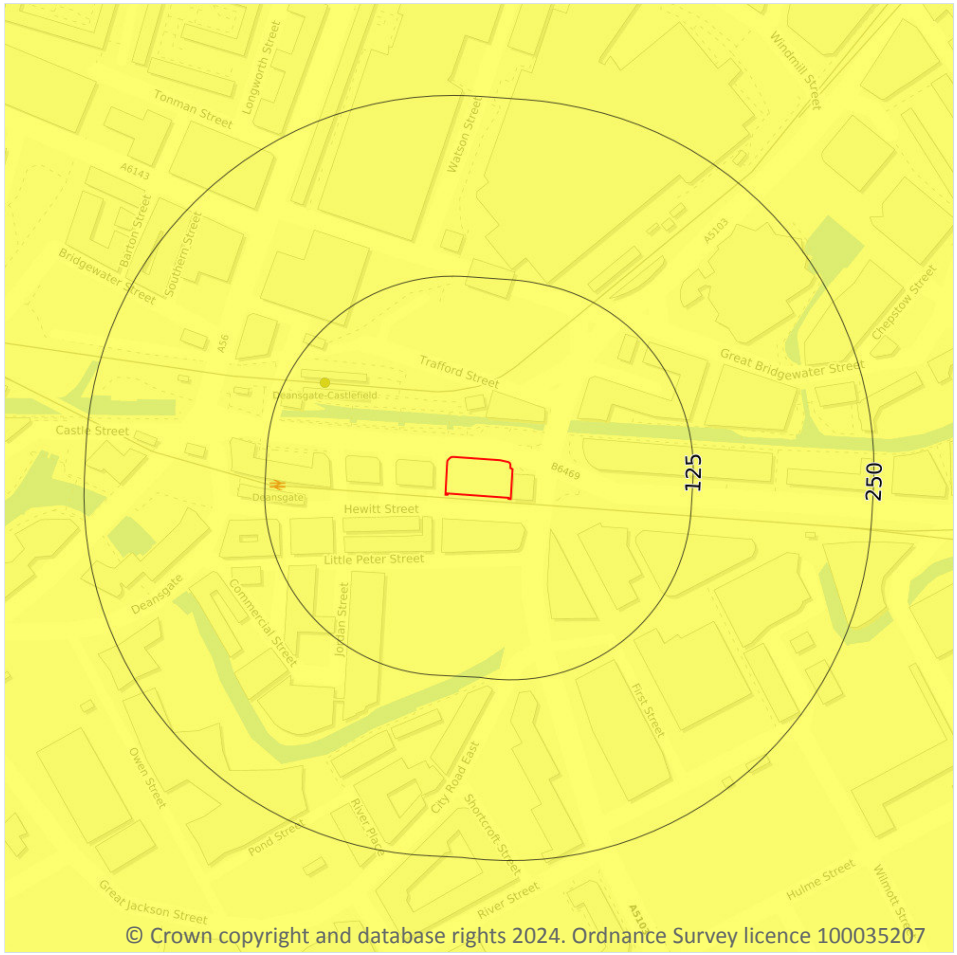
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 154 >**

Location	Hazard rating	Details
On site	**Very low**	**Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.**
47m NE	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

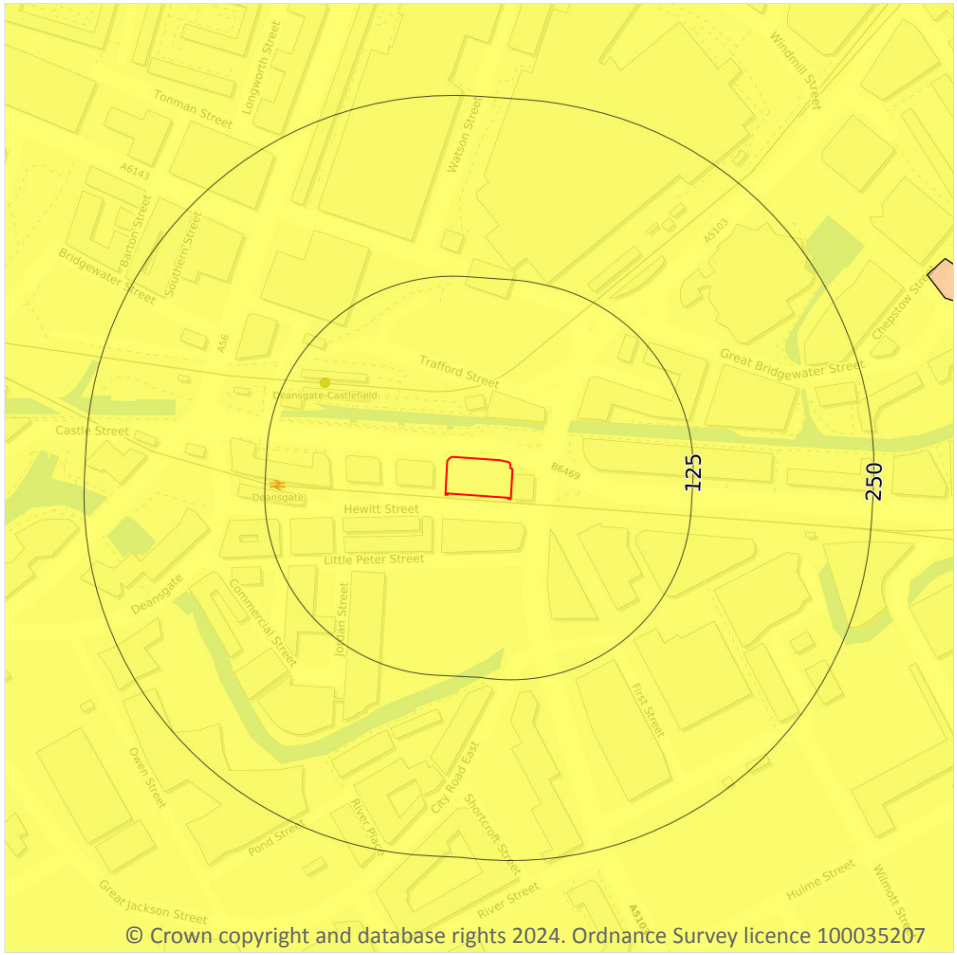
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 156 >**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 157 >**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 158 >**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining and ground workings



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Site Outline

Search buffers in metres (m)

- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	20

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on **page 160 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	13m NW	Canal	1938	1:10560
A	13m NW	Canal	1932	1:10560
A	13m NW	Canal	1916	1:10560
A	13m NW	Canal	1905	1:10560
A	13m NW	Canal	1923	1:10560
1	16m NW	Canal	1988	1:10000
A	18m NW	Canal	1896	1:10560
2	21m NW	Canal	1956	1:10560
B	102m S	Canal	1972	1:10000
B	102m S	Canal	1980	1:10000
B	102m S	Canal	1985	1:10000
B	102m S	Canal	1994	1:10000
3	158m E	Pond	1848	1:10560
4	205m S	Pond	1848	1:10560
B	207m W	Quay	1938	1:10560
B	207m W	Quay	1932	1:10560
B	207m W	Quay	1916	1:10560
B	207m W	Quay	1905	1:10560
B	207m W	Quay	1923	1:10560
5	213m SW	Pond	1848	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	1

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

Location	Details
On site	**In addition to being located inside an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property which may supplement this information. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk ↗.**

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	**0**

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	**0**

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	**0**

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	1

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	**The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.**

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



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Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

20.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 168 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	2

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**
3m SE	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	4

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
On site	**16**	**2.8**	**53**	**36**	**0.3**	**63**	**28**	**23**	**6**
On site	**16**	**2.8**	**61**	**42**	**0.5**	**66**	**26**	**22**	**5**
3m SE	18	3.2	67	46	0.5	75	29	24	5
3m SE	18	3.2	47	32	0.3	70	29	24	6

This data is sourced from the British Geological Survey.

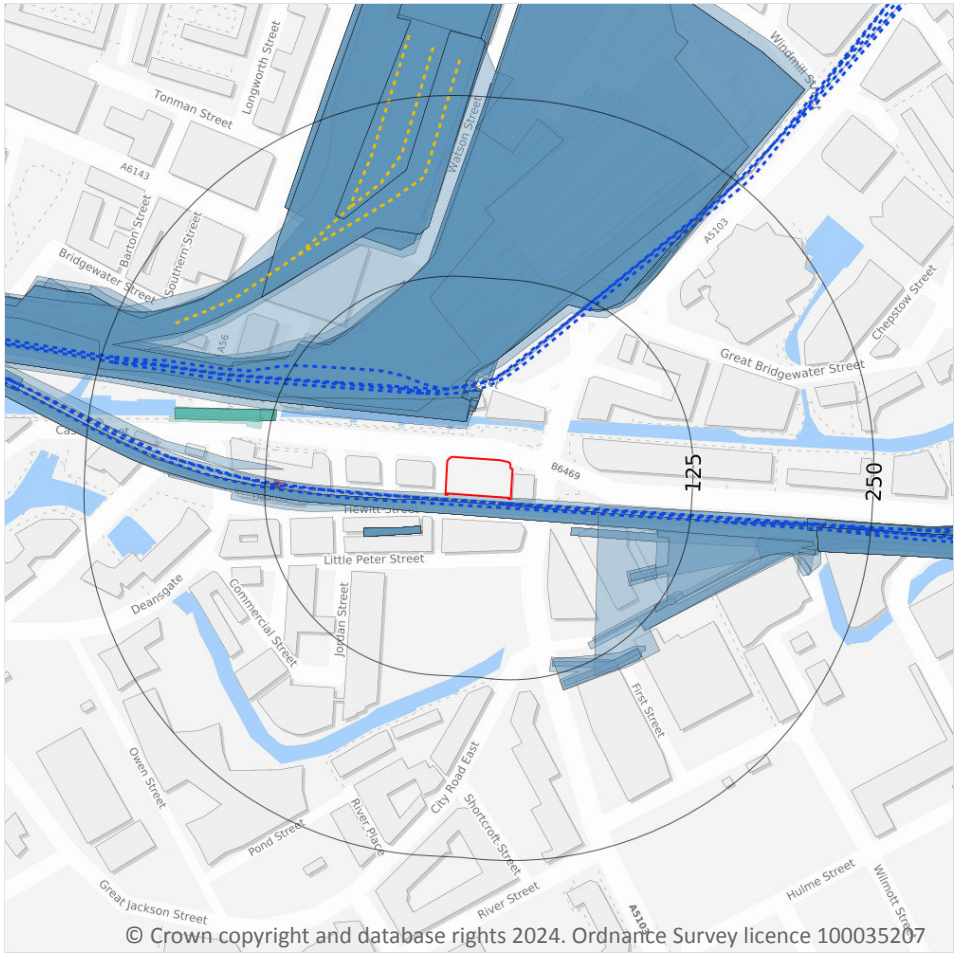
21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

22.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	87

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 172 >**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway**	**1932**	**-**
2m SE	Railway	1922	-
4m SW	Railway Sidings	1893	2500
4m SW	Railway Sidings	1908	2500
4m SW	Railway Sidings	1922	2500
4m SW	Railway Sidings	1932	2500
20m N	Railway Sidings	1923	10560
25m N	Railway Sidings	1938	10560
25m N	Railway Sidings	1932	10560
25m N	Railway Sidings	1916	10560
25m N	Railway Sidings	1905	10560
28m SW	Railway Sidings	1980	1250
28m SW	Railway Sidings	1985	1250
28m SW	Railway Sidings	1987	1250
28m SW	Railway Sidings	1990	1250
32m N	Railway Sidings	1949	2500
32m N	Railway Sidings	1957	2500

Location	Land Use	Year of mapping	Mapping scale
32m N	Railway Sidings	1965	2500
34m NW	Railway Sidings	1891	500
35m N	Railway Sidings	1951	1250
35m N	Railway Sidings	1948	1250
39m NW	Railway Sidings	1956	10560
41m N	Railway Sidings	1896	10560
54m NW	Railways	1893	-
61m E	Railways	1893	-
63m NW	Railway Sidings	1891	500
71m NW	Railway Sidings	1955	-
72m NW	Railway Sidings	1891	500
87m NW	Railway Sidings	1891	500
95m SE	Railway Sidings	1893	2500
97m SE	Railway Sidings	1891	500
106m NW	Railway Sidings	1948	1250
107m NW	Railway Sidings	1955	1250
108m NW	Railway Sidings	1955	-
113m S	Railway Sidings	1893	2500
114m S	Railway Sidings	1896	10560
116m S	Railway Sidings	1891	500
121m NE	Railway Sidings	1891	500
122m W	Tunnel	1949	2500
122m W	Tunnel	1957	2500
122m W	Tunnel	1965	2500
122m W	Tunnel	1995	1250
122m W	Tunnel	1994	1250
122m W	Tunnel	1955	-
123m W	Tunnel	1932	-

Location	Land Use	Year of mapping	Mapping scale
123m W	Tunnel	1948	1250
123m W	Tunnel	1963	1250
123m W	Tunnel	1955	1250
123m W	Tunnel	1981	1250
124m N	Railway Sidings	1891	500
126m N	Railway Sidings	1891	500
127m N	Railway Sidings	1891	500
128m N	Railway Sidings	1891	500
130m NE	Railway Sidings	1951	1250
130m NE	Railway Sidings	1948	1250
131m W	Tunnel	1932	2500
131m NE	Railway Sidings	1965	2500
132m W	Tunnel	1986	1250
132m W	Tunnel	1990	1250
136m NE	Railway Sidings	1891	500
156m N	Railway Sidings	1972	10000
156m N	Railway Sidings	1980	10000
156m N	Railway Sidings	1985	10000
158m N	Railway Sidings	1965	2500
159m N	Railway Sidings	1951	1250
159m N	Railway Sidings	1948	1250
166m NW	Railway Sidings	1948	1250
176m NW	Railway Sidings	1963	1250
177m N	Railway	1933	-
178m NW	Railway Sidings	1955	1250
178m NW	Railway Sidings	1955	-
188m N	Railway Sidings	1973	1250
206m E	Railway Sidings	1949	2500

Location	Land Use	Year of mapping	Mapping scale
206m E	Railway Sidings	1957	2500
213m E	Railway Sidings	1938	10560
213m E	Railway Sidings	1932	10560
213m E	Railway Sidings	1916	10560
213m E	Railway Sidings	1905	10560
213m E	Railway Sidings	1923	10560
218m E	Railway Sidings	1965	2500
224m E	Railway Sidings	1969	1250
224m E	Railway Sidings	1953	1250
225m E	Railway Sidings	1980	1250
227m N	Railway	1893	-
230m NW	Railway Sidings	1955	-
238m N	Railway Sidings	1973	1250
248m NW	Railway Sidings	1955	1250

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	3

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 172 >**

Location	Description
174m NW	Dismantled
175m NW	Dismantled
186m NW	Dismantled

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	**26**

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 172 >**

Location	Name	Type
3m SE	Manchester and Ordsall Lane Junction Branch	rail
3m SE		rail
4m SW	Not given	Multi Track
4m SW	Not given	Multi Track
6m SE	Manchester and Ordsall Lane Junction Branch	rail
44m N		light_rail
46m NW	Not given	Multi Track
48m N		light_rail
48m N		light_rail
48m N		light_rail
48m NW		light_rail
56m N	Not given	Multi Track
63m NW		light_rail
92m NW		light_rail
149m E		rail
166m W	Not given	Multi Track
192m W	Not given	Multi Track
207m W	Metrolink	light_rail

Location	Name	Type
207m W	Metrolink	light_rail
227m E	Manchester and Ordsall Lane Junction Branch	rail
228m E		rail
233m NE	Not given	Multi Track
235m E	Not given	Multi Track
235m E	Not given	Multi Track
241m W		light_rail
241m W		light_rail

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.

APPENDIX D

BGS Exploratory Hole Records

British Geological Survey

BGS ID: 1042261 : BGS Reference: SJ89NW119
British National Grid (27700) : 383608,397570

62 G.S.M. Nos. 122-126

SJ89NW 121-125

(B11857) Wt. 17852—S154—5,000 12/26 Gp. 180. O.A.

SECTION OF Bores & Shafts at Irwell Storm Relief Overflow Sewer, Cornbrook, Manchester.

Maps: One-inch 85. Six-inch 104 S.W.E. County Lancs.

Height above O.D. Latitude Longitude

SJ89NW 116-120

) Wt. 5990—S.33 2000 6/22 Gp. 147 [illegible]

SECTION OF Manholes in B. Sewer at Manchester contd.

Maps: One-inch Six-inch 104 S.W.E. County

Height above O.D. Latitude Longitude

Communicated by Date of sinking

Made by Dip of Strata

	Thickness.			Depth from Surface.		
	M	ft		M	ft	
No. 110 No. 113 Junction of City Road & Shot St.						
Stone, clay & sand	3·66	12	–	3·66	12	–
Sand & ballast	3·05	10	–	6·71	22	–
Sandstone.	4·57	15	–	11·28	37	–
No. 114 No. 117 South side of Medlock Bridge, City Road.						
Sand, clay, & stones	3·66	12	–	3·66	12	–
Sand & ballast.	3·35	11	–	7·01	23	–
Sandstone.	4·27	14	–	11·28	37	–
No. 117 No. 119 North side of Medlock Bridge, City Road.						
Sand, clay & stones	3·66	12	–	3·66	12	–
Sand & ballast	3·35	11	–	7·01	23	–
Sandstone.	4·27	14	–	11·28	37	–
No. 117 No. 119 Traff. Street, off Albion St.						
Clay, sand & stones	4·57	15	–	4·57	15	–
Sand & ballast	4·88	16	–	9·45	31	–
Sandstone.	4·57	15	–	14·02	46	–
No. 119 No. 120 Trafford St. off Deansgate.						
Sand, clay & stones	4·57	15	–	4·57	15	–
Ballast & sand.	4·57	15	–	9·14	30	–
Sandstone.	3·35	11	–	12·50	41	–

Contact BGS: ngdc@bgs.ac.uk

APPENDIX E

Mining Search Report

Groundsure
LOCATION INTELLIGENCE

CON29M
OFFICIAL COAL MINING SEARCH

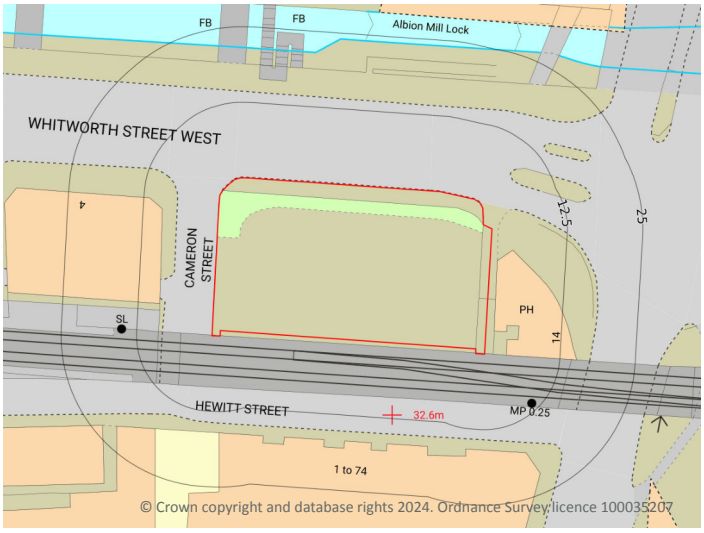
Whitworth Street West, Manchester, M1 5NZ

Professional opinion

Inc. integrated mine entry interpretive assessment

PASS

Site plan



Search results

1. Past underground coal mining
Not identified

2. Present underground coal mining
Not identified

3. Future underground coal mining
Not identified

4. Mine entries
Not identified

5. Coal mining geology
Not identified

6. Past opencast coal mining
Not identified

7. Present opencast coal mining
Not identified

8. Future opencast coal mining
Not identified

9. Coal mining subsidence claims
Not identified

10. Mine gas emissions
Not identified

11. Emergency Call Out incidents
Not identified

12. Withdrawal of support
Not identified

13. Working facilities orders
Not identified

14. Payments to copyhold owners
Not identified

Cheshire Brine
Not identified

Contact us with any questions at:
info@groundsure.com
01273 257 755

Ref: BRO-LL5-39B-N6L-JW3
Your ref: C5504-5783-SD
Grid ref: 383579 397518
Date: 21 October 2024

Certified B Corporation

Coal mining (CON29M) assessment

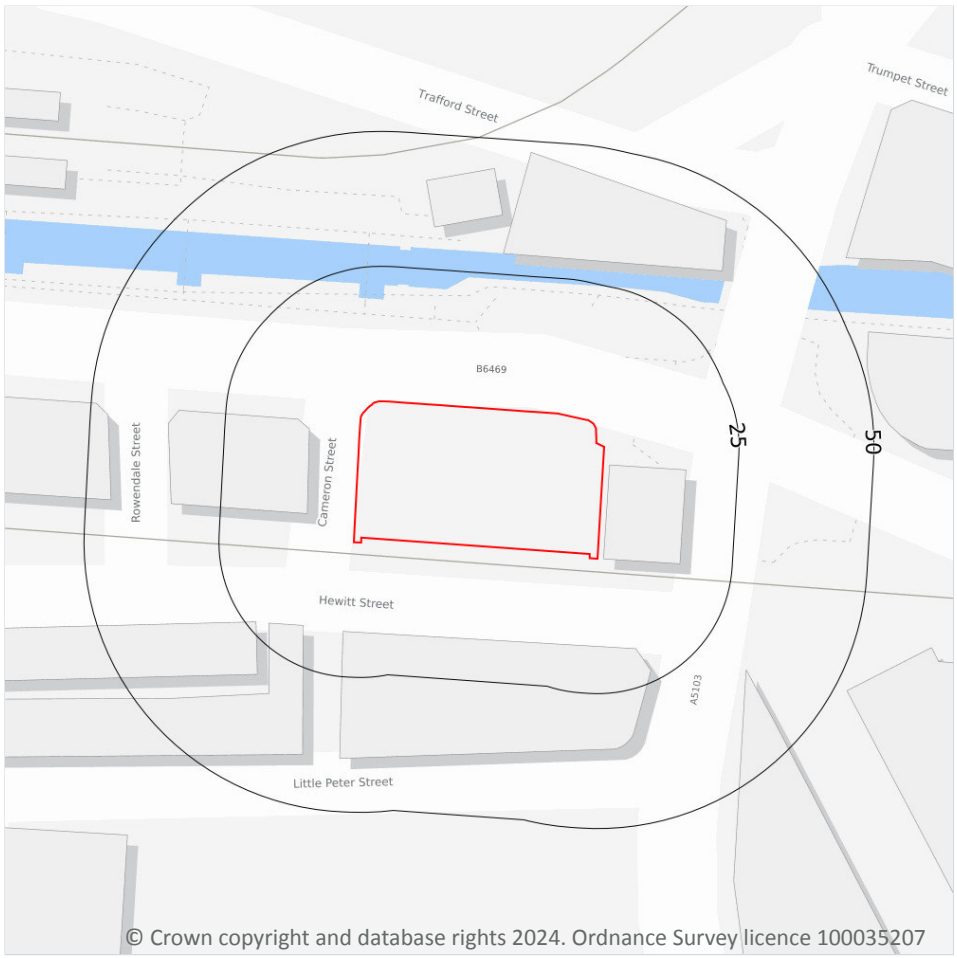
We consider the property to be acceptably free from coal mining related risk. No further action is required with regards to past coal mining.

Coal mining

CON29M reports are a requirement for conveyancing and are recommended throughout the official Coal Mining Reporting Area. This is the area within which it is deemed prudent to clarify the risk presented by coal mining, using the questions laid out in the Law Society's CON29M form. The need for a CON29M does not always translate to an identification of risk, and reports will often be assessed as free from risk or 'Passed' even though they are within the official Coal Mining Reporting Area.

Contact us with any questions at:
info@groundsure.com
01273 257 755

Coal mining (CON29M)



Site Outline

Search buffers in metres (m)

Mine entries

- Adits
- Shafts
- Calculated 'zone of influence'

Subsidence claims

- Awaiting decision
- Rejected
- Admitted
- Deferred
- Settled
- Withdrawn

- Probable shallow coal mine workings
- Coal outcrops
- Past shallow coal mine workings

Coal mining (CON29M)

The map above shows relevant, mappable hazards identified that could constitute a risk to the property. It does not necessarily show all features or potential issues identified in this report. Further details of any features shown indicating the location of Mine Entries or Subsidence Claims can be found in the relevant sections of this report (4 and 9 respectively).

Responses to the Law Society CON29M Coal Mining search enquiries are produced using official Coal Authority data and the expert interpretation of Groundsure. This report is prepared in accordance with The Law Society CON29M (2018) Guidance Notes. Additional interpretation and calculation of mine entry zones of influence has also been carried out by Groundsure using Coal Authority and British Geological Survey data.

Please read this report carefully, and in particular any sections flagged with an amber 'i'.

Contact us with any questions at:
info@groundsure.com
01273 257 755

The Law Society

These enquiries are The Law Society CON29M (2018) Coal Mining search enquiries and are used with permission of The Law Society. The Law Society CON29M Coal Mining search enquiries are protected by copyright owned by The Law Society of 113 Chancery Lane, London WC2A 1PL. The Law Society has no responsibility for information provided in response to CON29M (2018) Coal Mining search enquiries within this report or otherwise.

1. Past underground coal mining

Is the property within the zone of likely physical influence on the surface of past underground coal workings?

- **The property does not lie within the potential zone of influence of any recorded underground coal workings.**

2. Present underground coal mining

Is the property within the zone of likely physical influence on the surface of present underground coal workings?

- **The property does not lie within the boundary of an underground site from which coal is being removed by underground methods.**

3. Future underground coal mining

(a) Is the property within any geographical area for which the Coal Authority is determining whether to grant a licence to remove coal by underground methods?

- **The property does not lie within the boundary of an underground site for which the Coal Authority is determining whether to grant a licence to remove coal by underground methods.**

(b) Is the property within any geographical area for which a licence to remove coal by underground methods has been granted?

- **The property does not lie within the boundary of an underground site for which a licence to remove coal by underground methods has been granted.**

(c) Is the property within the zone of likely physical influence on the surface of planned future underground coal workings?

- **The property does not lie within the zone of likely physical influence on the surface of planned future underground workings.**

(d) Has any notice of proposals relating to underground coal mining operations been given under section 46 of

the Coal Mining Subsidence Act 1991?

- **No notices have been given under Section 46 of the Coal Mining Subsidence Act 1991 stating that the land is at risk of subsidence.**

4. Mine entries

Are there any shafts and adits or other entries to underground coal mine workings within the property or within 20 metres of the boundary of the property?

- **No coal mine entries are recorded to lie within 20 metres of the property.**

5. Coal mining geology

Is there any record of any fault or other line of weakness due to coal mining at the surface within the boundary of the property that has made the property unstable?

- **No damage arising from geological faults or other lines of weakness activated by coal mining are recorded within the property.**

6. Past opencast coal mining

Is the property situated within the geographical boundary of an opencast site from which coal has been removed in the past by opencast methods?

- **The property does not lie within the boundary of an opencast site from which coal was removed by opencast methods.**

7. Present opencast coal mining

Is the property within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods?

- **The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.**

8. Future opencast coal mining

(a) Is the property within 800 metres of the boundary of an opencast site for which the Coal Authority are determining whether to grant a licence to remove coal by opencast methods?

- **The property does not lie within 800 metres of the boundary of an opencast site for which the Coal Authority are determining whether to grant a licence to remove coal by opencast methods.**

(b) Is the property within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted?

- **The property does not lie within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.**

9. Coal mining subsidence claims

(a) Has any damage notice or claim for alleged coal mining subsidence damage to the property been given, made or pursued since 31st October 1994?

- **We have no evidence of a damage notice or subsidence claim for the property or within 50m of the property since 31st October 1994.**

(b) In respect of any such notice or claim has the responsible person given notice agreeing that there is a remedial obligation or otherwise accepted that a claim would lie against them?

- **Not applicable.**

(c) In respect of any such notice or acceptance has the remedial obligation or claim been discharged?

- **Not applicable.**

(d) Does any current "Stop Notice" delaying the start of remedial works or repairs affect the property?

- **There are no current Stop Notices delaying the start of remedial works or repairs to the property.**

(e) Has any request been made under Section 33 of the 1991 Act to execute preventive works before coal is worked, which would prevent the occurrence or reduce the extent of subsidence damage to any buildings, structures or works and, if yes, has any person withheld consent or failed to comply with any such request to execute preventive works?

- **There is no record of a request that has been made to carry out preventive works before coal is worked under Section 33 of the Coal Mining Subsidence Act 1991.**

NB. Records of damage notices or subsidence claims before 31st October 1994 are excluded from The Coal Authority data from which this search is compiled.

10. Mine gas emissions

Does the Coal Authority have record of any mine gas emission within the boundary of the property being reported that subsequently required action by the Authority to mitigate the effects of the mine gas emission?

- **No mine gas emissions are recorded within the boundary of the property.**

11. Emergency Surface Hazard Call Out incidents

Have the Coal Authority carried out any work on or within the boundaries of the property following a report of an alleged hazard related to coal mining under the Authority's Emergency Surface Hazard Call Out procedures?

- **No Emergency Surface Hazard Call Out procedures are recorded against the property.**

12. Withdrawal of support

(a) Does the land lie within a geographical area in respect of which a notice of entitlement to withdraw support has been published?

- **The property does not lie in an area where the right to withdraw support has been granted.**

(b) Does the land lie within a geographical area in respect of which a revocation notice has been given under section 41 of the Coal Industry Act 1994?

- **The property does not lie within a geographical area in which a revocation notice has been given under section 41 of the Coal Industry Act 1994.**

13. Working facilities orders

Is the property within a geographical area subject to an order in respect of the working of coal under the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof?

- **The property is not in an area where a court order has been issued.**

14. Payments to owners of former copyhold land

(a) Has any relevant notice, which may affect the property, been given?

- **The property does not lie within former copyholder land.**

(b) If yes, has any notice of retained interests in coal and coal mines been given?

- **No notices of retained interests in coal and coal mines been given.**

(c) If yes, has any acceptance notice or rejection notice been served?

- **No acceptance or rejection notices have been served.**

(d) If any such acceptance notice has been served, has any compensation been paid to a claimant?

- **No compensation has been paid to a claimant.**

Methodologies and limitations

Groundsure's methodologies and limitations are available here: knowledge.groundsure.com/methodologies-and-limitations ↗.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information in your report. To find out who they are and their areas of expertise see www.groundsure.com/sources-reference ↗.

Conveyancing Information Executive and our terms & conditions

IMPORTANT CONSUMER PROTECTION INFORMATION

This search has been produced by Groundsure Ltd. Groundsure adheres to the Conveyancing Information Executive Standards.

In addition to The Property Ombudsman (TPO) redress scheme covering consumers, TPO will also provide redress to small businesses (including Charities and Trusts) and where the customer meets the following criteria:

- a small business (or group of companies) with an annual turnover of less than £3 million;
- a charity with an annual income of less than £3 million;
- a Trust with a net asset value of less than £3 million.

Complaints Advice

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure.

If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Standards.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs.

COMPLAINTS PROCEDURE: If you want to make a complaint, we will:

- acknowledge it within 5 working days of receipt
- normally deal with it fully and provide a final response, in writing, within 20 working days of receipt
- liaise, at your request, with anyone acting formally on your behalf

Complaints should be sent to:
Operations Director, Groundsure Ltd, Nile House, Nile Street, Brighton, BN1 1HW. Tel: 01273 257 755. Email: info@groundsure.com ↗ If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk ↗ We will co-operate fully with the Ombudsman during an investigation and comply with their final decision.

Groundsure's Terms and Conditions can be viewed here: www.groundsure.com/terms-and-conditions-april-2023/ ↗

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Coal Mining Report Insurance Policy

ZURICH

Coal Mining Report Insurance Policy

The Schedule

Policy Number: The Reference contained in the **Coal Mining Search Report**

Premium: £1.20 inclusive of Insurance Premium Tax at 12%

Property: The property which is the subject of the **Coal Mining Search Report**

Limit of Indemnity: £100,000 increasing by 10% compound per annum on each anniversary of and for the first 10 years following the **Commencement Date**

Commencement Date: The date of the **Coal Mining Search Report**

You/Your:
1. A purchaser of the **Property**
2. A lender providing a **Mortgage** in connection with a purchase of the **Property**
3. A lender providing a **Mortgage** by way of a re-mortgage of the **Property**

Definitions

Where a word is defined below or in the schedule it shall carry the same meaning wherever it appears in bold text in this policy

Insured Use: The continued use of the **Property** as a single house or flat or a single commercial premises

Market Value: The value as determined by a surveyor appointed by agreement between **You** and **Us** or (in default of agreement) the President for the time being of the Royal Institution of Chartered Surveyors

Mortgage: A mortgage or charge secured on the **Property** by an institutional mortgage lender

Coal Mining Search Report: The coal mining search report attached to this policy

Search: An official search comprising a search in form CON29M (2018) being mining searches relating to coal and brine in the area in which the **Property** is situated

We/Our/Us:
Zurich Insurance plc. A public limited company incorporated in Ireland. Registration No. 13460. Registered Office: Zurich House, Ballsbridge Park, Dublin 4, Ireland. UK Branch registered in England and Wales Registration No. BR7985. UK Branch Head Office: The Zurich Centre, 3000 Parkway, Whiteley, Fareham, Hampshire PO15 7JZ.

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Your Policy

This is a legal document and should be kept in a safe place.

This policy is an agreement between **You** and **Us** and cover is provided subject to the payment of the **Premium**.

You must read this policy and its conditions, exclusions, schedule and any endorsements as one contract. Please read all of them to make sure that they provide the cover **You** require. If they do not, please contact **Us** or **Your** insurance adviser who arranged the policy for **You**.

When **You** take out and make changes to the cover provided by this policy, **You** must take reasonable care to ensure that **You** accurately answer any questions which **We** ask of **You** and that any information **You** give **Us** is accurate. If **You** are taking out this policy for purposes which are mainly related to **Your** trade, business or profession, **You** must also let **Us** know about all facts which are material to **Our** decision to provide **You** with insurance. Failure to meet these obligations could result in this policy being invalidated, a claim not being paid, or an additional premium being charged.

Fair presentation of the risk

a) At inception of this policy and also whenever changes are made to it at **Your** request You must:

i) where **You** have taken out this policy for purposes which are wholly or mainly related to **Your** trade, business or profession, disclose to **Us** all material facts in a clear and accessible manner and not misrepresent any material facts, and
ii) where **You** have taken out this policy for purposes which are wholly or mainly unrelated to **Your** trade, business or profession, take reasonable care not to misrepresent any material facts.

b) If **You** do not comply with clause a) of this condition **We** may:

i) avoid this policy which means that **We** will treat it as if it had never existed and refuse all claims where any non-disclosure or misrepresentation by **You** is proven by **Us** to be deliberate or reckless in which case **We** will not return the premium paid by **You**; and
ii) recover from **You** any amount **We** have already paid for any claims including costs or expenses **We** have incurred.

c) If You do not comply with clause a) of this condition and the non-disclosure or misrepresentation is not deliberate or reckless this policy may be affected in one or more of the following ways depending on what **We** would have done if **We** had known about the facts which **You** failed to disclose or misrepresented:

i) if **We** would not have provided **You** with any cover **We** will have the option to:
1. avoid the policy which means that **We** will treat it as if it had never existed and repay the premium paid; and
2. recover from **You** any amount **We** have already paid for any claims including costs or expenses **We** have incurred
ii) if **We** would have applied different terms to the cover **We** will have the option to treat this policy as if those different terms apply. **We** may recover any payments made by **Us** on claims which have already been paid to the extent that such claims would not have been payable had such additional terms been applied
iii) if **We** would have charged **You** a higher premium for providing the cover **We** will charge **You** the additional premium which **You** must pay in full.

d) If any insured person, other than **You**, is responsible for a misrepresentation or failure to make a fair presentation of the risk, **We** will invoke the remedies available to **Us** under this condition as against that particular person as if a separate insurance contract had been issued to them leaving the remainder of the policy unaffected.

NB: For the purposes of the duty of disclosure stated in paragraphs a) i) and ii) above the content of the **Coal Mining Search Report** will be deemed to satisfy **Your** disclosure obligations.

Cover

1. **You** are in the process of purchasing the **Property** relying on the **Coal Mining Search Report** and/or
2. **You** (being a lender) have agreed to provide a **Mortgage** in connection with **Your** borrower's purchase or re-mortgage of the **Property** relying on the **Coal Mining Search Report**.

We will pay the following losses sustained by **You** arising out of the **Property** being affected by any matter which would have been revealed by a **Search** had one been carried out on the date of the **Coal Mining Search Report** but which was not revealed by the **Coal Mining Search Report**:

1. any reduction in **Market Value** of the **Property** calculated at the date **You** become aware of the matter(s) and/or loss in connection with a **Mortgage** as a result of such reduction.
2. all other costs and expenses including out of court settlement costs incurred by **Us** or by **You** with **Our** prior written agreement.

Waiver of Breach of Policy Condition

We will not exercise **Our** right to avoid **Our** liability to **You** in respect of loss where **You** have inadvertently breached any term or condition of the policy provided that such breach does not prejudice **Our** rights and remedies under the policy or otherwise directly or indirectly result in or increase the amount of any loss.

Protection for Mortgagees and Successors in Title

We will not avoid **Our** liability to make a payment to **You** solely because another person breaches the terms and conditions of this policy, provided such breach was not committed on **Your** behalf or with **Your** agreement, and **We** will invoke the remedies available to **Us** under the Policy as against that other person as if a separate insurance contract had been issued to them leaving the remainder of the policy unaffected.

Joint Insured

Any party insured under this policy standing in the relation of parent company, subsidiary company, associated company, branch office or joint venture partner to each other will be deemed to be joint insured for the purposes of this policy and jointly liable and responsible for any breach of any terms and conditions of this policy. If there is any inconsistency between this clause and any other term of this policy, this clause shall prevail.

Exclusions

We will not pay for any:

1. amount in excess of the **Limit of Indemnity**.
2. loss which would be recoverable under a household buildings insurance policy.
3. loss arising from any matter that **You** were aware of at the **Commencement Date**.
4. loss if the **Property** is used for any purpose other than the **Insured Use**.

Claims Conditions and How to Claim

1. **You** must:

i) give **Us** written notice as soon as possible of any potential or actual claim or any circumstances likely to result in a claim. Please provide the policy number, **Your** name, the full address of the **Property** and a brief description of the incident that has occurred. Notifications should be sent to: Speciality Lines Claims Team, Zurich Insurance, 8th Floor, 70 Mark Lane, London, EC3R 7NQ. Email: claims@uk.zurich.com ↗, Enquiry line: telephone 0207 648 3523
ii) pass all court documents and/or other communications to **Us** as soon as possible after receipt
iii) not deal with, make any admission of liability or attempt to settle a claim without **Our** prior written agreement.
iv) agree to and carry out at **Our** expense all things necessary to minimise any loss.
v) provide all information and assistance that **We** may require to help defend and settle the claim.

2. **We** are entitled to:

i) decide how to settle or defend a claim and may carry out proceedings in the name of any person insured under this policy, including proceedings for recovering any claim.
ii) pay to **You** at any time, an amount equal to the **Limit of Indemnity** or any lower amount for which the claim can be settled, after deduction of any sum already paid. **We** may then give up control of and have no further liability in connection with the claim.

3. If **We** admit liability for a claim but there is a dispute as to the amount to be paid the dispute will be referred to an arbitrator. The arbitrator will be appointed jointly by **You** and **Us** in accordance with the law at the time. **You** may not take any legal action against **Us** over the dispute before the arbitrator has reached a decision.

4. If **You** or anyone acting on Your behalf:

a) makes a fraudulent or exaggerated claim under this policy; or
b) uses fraudulent means or devices including the submission of false or forged documents in support of a claim whether or not the claim is itself genuine; or
c) makes a false statement in support of a claim whether or not the claim is itself genuine; or
d) submits a claim under this policy for loss or damage which **You** or anyone acting on **Your** behalf or in connivance with **You** deliberately caused; or
e) realises after submitting what **You** reasonably believed was a genuine claim under this policy and then fails to tell **Us** that **You** have not suffered any loss or damage; or
f) suppresses information which **You** know would otherwise enable **Us** to refuse to pay a claim under this policy

We will be entitled to refuse to pay the whole of the claim and recover any sums that **We** have already paid in respect of the claim.

If any fraud is perpetrated by or on behalf of an insured person and not on behalf of **You** this condition should be read as if it applies only to that insured person's claim and references to this policy should be read as if they were references to the cover effected for that person alone and not to the policy as a whole.

5. If any claim is covered by any other insurance, **We** will not pay for more than **Our** share of that claim.

6. The most **We** will pay for any loss (or all losses in the aggregate), including costs and expenses agreed by **Us** is the **Limit of Indemnity**. Once **We** have paid a loss or losses equal to the amount of the **Limit of Indemnity, We** will have no further liability under this policy.

General Conditions

1. Neither **You** (nor anyone acting on **Your** behalf) must disclose the existence of this policy to any other party except **Your** legal and other professional advisers, prospective purchasers, lessees and tenants of the **Property**, their respective mortgagees, legal and other professional advisers.

2. In the UK the law allows both **You** and **Us** to choose the law applicable to the contract. This contract will be subject to the relevant law of England and Wales, Scotland, Northern Ireland, the Isle of Man or the Channel Islands depending upon the Property address stated in the Schedule. If there is any dispute as to which law applies it will be English law. The parties agree to submit to the exclusive jurisdiction of the English courts.

3. Notwithstanding any other terms of this policy **We** will be deemed not to provide cover nor will **We** make any payment or provide any service or benefit to **You** or any other party to the extent that such cover, payment, service, benefit and/or any business or activity of **Yours** would violate any applicable trade or economic sanctions law or regulation.

Cancellation Clause

If **You** have taken out this policy for purposes which are wholly or mainly unrelated to **Your** trade, business or profession, **You** may cancel this policy within 14 days of receiving the policy by writing to **Us** and in such event **We** may, at **Our** discretion, charge **You** for the time that **You** have been on cover. Any refund will be made to the party who paid the premium. If **You** do cancel, **You** may be in breach of the terms of **Your** mortgage or the terms of the contract for the sale of **Your** property. If **You** are in doubt, **You** may wish to seek legal advice prior to cancellation.

Fair Processing and Complaints Procedure
Our Complaints Procedure

Our commitment to customer service

We are committed to providing a high level of customer service. If you feel we have not delivered this, we would welcome the opportunity to put things right for you.

Who to contact in the first instance

Many concerns can be resolved straight away. Therefore in the first instance, please get in touch with your usual contact at Zurich or your broker or insurance intermediary, as they will generally be able to provide you with a prompt response to your satisfaction.

Contact details will be provided on correspondence that we or our representatives have sent you.

Many complaints can be resolved within a few days of receipt

If we can resolve your complaint to your satisfaction within the first few days of receipt, we will do so. Otherwise, we will keep you

updated with progress and will provide you with our decision as quickly as possible.

Next steps if you are still unhappy

If you are not happy with the outcome of your complaint, you may be able to ask the Financial Ombudsman Service to review your case.

We will let you know if we believe the ombudsman service can consider your complaint when we provide you with our decision. The service they provide is free and impartial, but you would need to contact them within 6 months of the date of our decision.

More information about the ombudsman and the type of complaints they can review is available via their website www.financial-ombudsman.org.uk ↗.

You can also contact them as follows:

Post: Financial Ombudsman Service, Exchange Tower, London, E14 9SR
Telephone: 08000 234567 (free on mobile phones and landlines)
Email: complaint.info@financial-ombudsman.org.uk ↗

If the Financial Ombudsman Service is unable to consider your complaint, you may wish to obtain advice from the Citizens Advice Bureau or seek legal advice.

The Financial Services Compensation Scheme (FSCS)

We are covered by the Financial Services Compensation Scheme (FSCS) which means that you may be entitled to compensation if we are unable to meet our obligations to you. Further information is available on www.fscs.org.uk ↗ or by contacting the FSCS directly on 0800 678 1100.

How we use your information

Who controls your personal information

This notice tells you how Zurich Insurance plc ('Zurich'), as data controller, will deal with your personal information. Where Zurich introduces you to a company outside the group, that company will tell you how your personal information will be used.

You can ask for further information about our use of your personal information or complain about its use in the first instance, by contacting our Data Protection Officer at: Zurich Insurance Group, Tri-centre 1, Newbridge Square, Swindon, SN1 1HN or by emailing the Data Protection Officer at GBZ.General.Data.Protection@uk.zurich.com ↗.

If you have any concerns regarding our processing of your personal information, or are not satisfied with our handling of any request by you in relation to your rights, you also have the right to make a complaint to the Information Commissioner's Office. Their address is: First Contact Team, Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, SK9 5AF.

What personal information we collect about you

We will collect and process the personal information that you give us by phone, e-mail, filling in forms, including on our website, and when you report a problem with our website. We also collect personal information from your appointed agent such as your trustee, broker, intermediary or financial adviser in order to provide you with the services you have requested and from other sources, such as credit reference agencies and other insurance companies, for verification purposes. We will also collect information you have volunteered to be in the public domain and other industry-wide sources. We will only collect personal information that we require to fulfil our contractual or legal requirements unless you consent to provide additional information. The type of personal information we will collect includes; basic personal information (i.e. name, address and date of birth), occupation and financial details, health and family information, claims and convictions information and where you have requested other individuals be included in the arrangement, personal information about those individuals.

If you give us personal information on other individuals, this will be used to provide you with a quotation and/or contract of insurance and/or provision of financial services. You agree you have their permission to do so. Except where you are managing the contract on another's behalf, please ensure that the individual knows how their personal information will be used by Zurich. More information about this can be found in the 'How we use your personal information' section.

How we use your personal information

We and our selected third parties will only collect and use your personal information (i) where the processing is necessary in connection with providing you with a quotation and/or contract of insurance and/or provision of financial services that you have requested; (ii) to meet our legal or regulatory obligations; or (iii) for our 'legitimate interests'. It is in our legitimate interests to collect

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1. to provide you with a quotation and/or contract of insurance;
2. to identify you when you contact us;
3. to deal with administration and assess claims;
4. to make and receive payments;
5. to obtain feedback on the service we provide to you;
6. to administer our site and for internal operations including troubleshooting, data analysis, testing, research, statistical and survey purposes;
7. for fraud prevention and detection purposes.

We will contact you to obtain consent prior to processing your personal information for any other purpose, including for the purposes of targeted marketing unless we already have consent to do so.

Who we share your personal information with

Where necessary, we will share the personal information you gave us for the purposes of providing you with the goods and services you requested with the types of organisations described below:

associated companies including reinsurers, suppliers and service providers;
introducers and professional advisers;
regulatory and legal bodies;
survey and research organisations;
credit reference agencies;
healthcare professionals, social and welfare organisations; and
other insurance companies

Or, in order to meet our legal or regulatory requirements, with the types of organisations described below:

regulatory and legal bodies;
central government or local councils;
law enforcement bodies, including investigators;
credit reference agencies; and
other insurance companies

How we use your personal information for websites and email communications

When you visit one of our websites we may collect information from you such as your email address or IP address. This helps us to track unique visits and monitor patterns of customer website traffic, such as who visits and why they visit.

We use cookies and/or pixel tags on some pages of our website. A cookie is a small text file sent to your computer. A pixel tag is an invisible tag placed on certain pages of our website but not on your computer. Pixel tags usually work together with cookies to assist us to provide you with a more tailored service. This allows us to monitor and improve our email communications and website. Useful information about cookies, including how to remove them, can be found on our websites.

How we transfer your personal information to other countries

Where we transfer your personal information to countries that are outside of the UK and the European Union (EU) we will ensure that it is protected and that the transfer is lawful. We will do this by ensuring that the personal information is given adequate safeguards by using 'standard contractual clauses' which have been adopted or approved by the UK and the EU, or other solutions that are in line with the requirements of European data protection laws.

A copy of our security measures for personal information transfers can be obtained from our Data Protection Officer at: Zurich Insurance Group, Tri-centre 1, Newbridge Square, Swindon, SN1 1HN, or by emailing the Data Protection Officer at GBZ.General.Data.Protection@uk.zurich.com ↗.

How long we keep your personal information for

We will retain and process your personal information for as long as necessary to meet the purposes for which it was originally

collected. These periods of time are subject to legal, tax and regulatory requirements or to enable us to manage our business.

Your data protection rights

You have a number of rights under the data protection laws, namely:

to access your data (by way of a subject access request);
to have your data rectified if it is inaccurate or incomplete;
in certain circumstances, to have your data deleted or removed;
in certain circumstances, to restrict the processing of your data;
a right of data portability, namely to obtain and reuse your data for your own purposes across different services;
to object to direct marketing;
not to be subject to automated decision making (including profiling), where it produces a legal effect or a similarly significant effect on you;
to claim compensation for damages caused by a breach of the data protection legislation.
if we are processing your personal information with your consent, you have the right to withdraw your consent at any time.

We will, for the purposes of providing you with a contract of insurance, processing claims, reinsurance and targeted marketing, process your personal information by means of automated decision making and profiling where we have a legitimate interest or you have consented to this.

What happens if you fail to provide your personal information to us

If you do not provide us with your personal information, we will not be able to provide you with a contract or assess future claims for the service you have requested.

Fraud prevention and detection

In order to prevent and detect fraud we may at any time:

check your personal data against counter fraud systems
use your information to search against various publicly available and third party resources
use industry fraud tools including undertaking credit searches and to review your claims history
share information about you with other organisations including but not limited to the police, the Insurance Fraud Bureau (IFB), other insurers and other interested parties.

If you provide false or inaccurate information and fraud is identified, the matter will be investigated and appropriate action taken. This may result in your case being referred to the Insurance Fraud Enforcement Department (IFED) or other police forces and fraud prevention agencies. You may face fines or criminal prosecution. In addition, Zurich may register your name on the Insurance Fraud Register, an industry-wide fraud database.

Claims history

We may pass information relating to claims or potential claims to any relevant database. We and other insurers may search these databases when you apply for insurance, when claims or potential claims are notified to us or at time of renewal to validate your claims history or that of any other person or property likely to be involved in the policy or claim.

This helps to check information provided and prevent fraudulent claims.

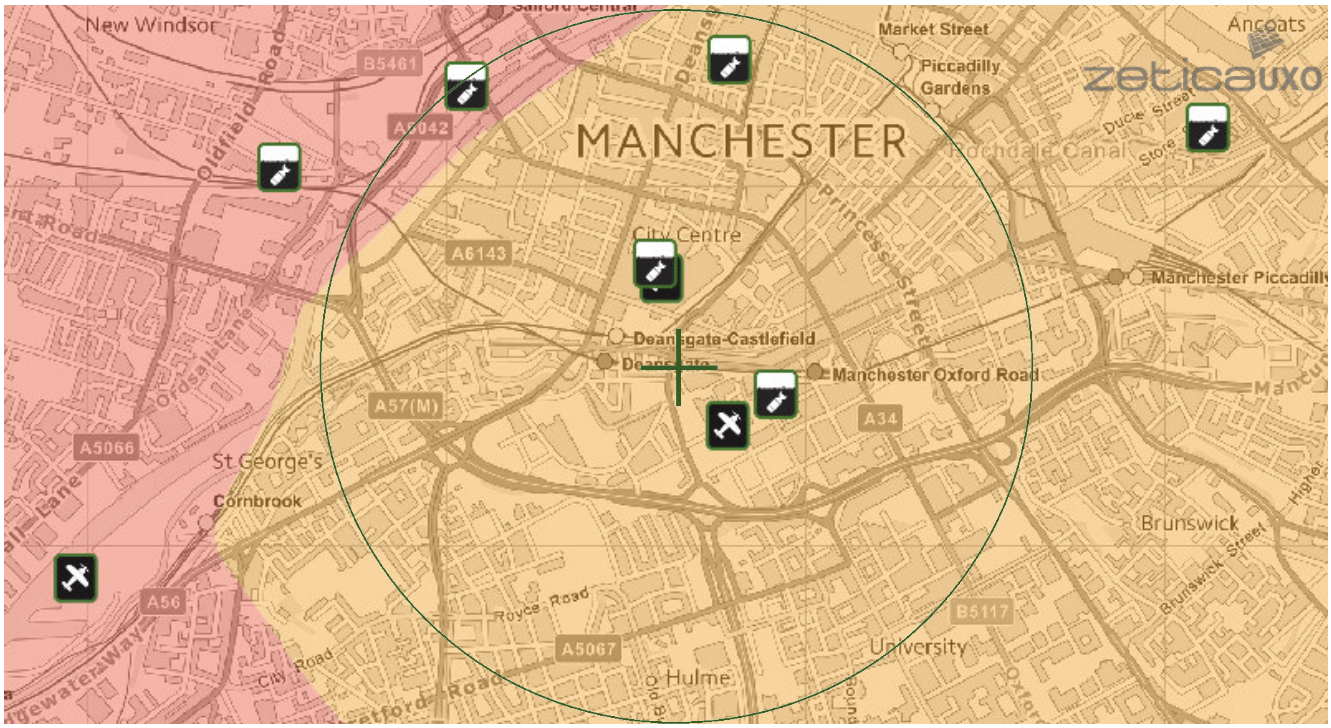
APPENDIX F

UXO Screening Map

UNEXPLODED BOMB RISK MAP

SITE LOCATION

Location: M1 5NZ,
Map Centre: 383610,397505



This map principally indicates a hazard from Unexploded Bombs (UXB) due to WWII bombardment. Other sources of Unexploded Ordnance (UXO) may be present. It should be noted that this map does not represent UXO risk and should not be reported as such when reproduced.

LEGEND

- **High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- **Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- **Low:** Areas indicated as having 15 bombs per 1000acre or less.

Miltary | **Industry** | **UXO find** | **Other**
Transport | **Docks** | **Luftwaffe targets**
Utilities | **Bombing decoy** | **Airfields**

How to use your Unexploded Bomb (UXB) risk map?

This map indicates the potential for UXBs to be present because of World War Two (WWII) bombing. It can be incorporated into a technical report, such as a Phase 1 Desk Study, or similar document as an indication of the potential for UXO encounter on a Site. Other sources of UXO may also be indicated, although note that these are not comprehensive and more detailed research is required to confirm their presence.

What if my Site is in a moderate or high density area?

We typically recommend that a detailed UXO desk study and risk assessment is undertaken for sites in an area with a moderate or high bombing density.
Additionally, if your site is in close proximity to a strategic target, military establishment, airfield or bombing decoy, then additional detailed research is recommended.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirm that there is a low potential for UXO to be present on your site, then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

If you are unsure whether other sources of UXO may be present, you can request one of our pre-desk study assessments (PDSA) by emailing a site boundary and location to pdsa@zetica.com.

You should never plan site work or undertake a risk assessment using these maps alone. More detail is required, to include an assessment of the likelihood of a source of UXO hazard from other military activity not reflected on these maps.

If I have any questions, who do I contact?

tel: +44 (0) 1993 886682 **email:** uxo@zetica.com **web:** www.zeticauxo.com

The information in this UXB risk map is derived from a range of sources and should be used with the accompanying notes on our website.

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgement. The copyright remains with Zetica Ltd.

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Appendix E

Phase II Geo-Environmental Assessment Report

BROWNFIELD SOLUTIONS LTD

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

ATRI7 6 LTD

Vision, Whitworth Street West, Manchester

Phase II Geo-Environmental Assessment Report

AH/C5504/13745

December 2024

EXECUTIVE SUMMARY	
Location and Brief Site Description	The site is located along Whitworth Street West, Manchester, M1 5NZ. The site comprises a parcel of land currently used for storage and parking surfaced in made ground across the majority of the site with concrete across the centre and an access road along the western part of the site.
Ground Conditions	Generalised ground conditions from the ground investigation comprise (top down): • Made ground encountered from ground level to between 0.90m and 3.70m bgl. • Natural strata encountered from 0.90m bgl to between 2.20m and 3.90m bgl. • Solid geology encountered from 3.60m bgl to 32.00m bgl. • Groundwater recorded between 9.02m and 9.27m bgl.
Human Health - Soils Contamination	• Two minor exceedances of PAHs were identified within one sample (TP208). • As no soft landscaping is proposed, the risk is considered to be low and no remedial measures in respect to human health are required.
Controlled Waters – Surface and Groundwater Contamination	• The risk to controlled waters is considered to be low.
Ground Gas	Based on the monitoring to date, the site is classified as CS1 – No protection is required. Ground gas monitoring is ongoing, and a full assessment will be undertaken on completion of the scheduled monitoring.
Outline Remedial Strategy	• No remedial actions required at this stage due to proposed development not including soft landscaping and POS.
Waste	Made ground – majority is classified as non-hazardous. Some soils acceptable at an inert landfill and some at a non-hazardous landfill. Natural – classified as non-hazardous.
Foundations and Floor Slabs	Piled foundations are considered the most suitable foundation option. A 350mm diameter, 9m long pile embedded 5m into bedrock have an allowable load of 2.4MN increasing to 4.1MN for a 19m long pile embedded 15m into bedrock. A 600mm diameter, 9m long pile embedded 5m into bedrock have an allowable load of 4.8MN increasing to 7.6MN for a 19m long pile embedded 15m into bedrock. A 750mm diameter, 9m long pile embedded 5m into bedrock have an allowable load of 6.4MN increasing to 9.9MN for a 19m long pile embedded 15m into bedrock. Pile supported floor slabs may be adopted.
Concrete Classification	DS-1 AC-1 conditions are indicated within the natural superficial and bedrock stratums, while DS-2 AC-1 conditions are indicated within the made ground strata.
Highways Design	Made Ground CBR – 20% Superficial Strata CBR – cohesive/fine soils– 4% Superficial Strata CBR – granular/coarse soils– 20% The above should be confirmed by in-situ testing at formation level by a specialist geotechnical engineer during construction.
Site Drainage	Drainage to soakaways is considered potentially suitable for this site. SuDS are indicated to be feasible with rates between $2.99x10^{-3}$ and $8.67x10^{-6}$.
Further Work	The following further works will be required to progress to the construction phase: • Completion of ground gas monitoring programme. • Update gas assessment within this report. Tree survey by qualified arboriculturist. • Detailed foundation design by a structural engineer. • Design of Remedial Strategy and confirmation with the Local Authority /EA / warranty provider (if required). • Production of Ground Gas Protection Measures Verification Plan (if required). • Production of Materials Management Plan (MMP) under the CL:AIRE DoWCo (if required). • Implementation of the Remedial Strategy and verification of the remedial works (if required).

This executive summary should be read in conjunction with the full report, reference AH/C5504/13745 and not as a standalone document. Report template version 4.5.

PROJECT QUALITY CONTROL DATA SHEET

Site Name:	Vision, Whitworth Street West, Manchester		
Document Name:	Phase II Geo-Environmental Assessment Report		
Reference:	AH/C5504/13745		
Status:	-	19/12/2024	Final.

Issued By:	**Client:**	**Engineer**
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Written by:	Checked by:	Approved by:
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CONTENTS

1.0 INTRODUCTION 1

1.1 Context 1
1.2 Proposed Development 1
1.3 Previous Reports 1
1.4 Objectives and Scope 1
1.5 Limitations 1

2.0 THE SITE 4

2.1 Location 4
2.2 Site Description 4

3.0 SUMMARY OF PREVIOUS REPORTS 5

4.0 METHOD OF INVESTIGATION 6

4.1 Objectives 6
4.2 Site Works 6
4.3 Sampling Strategy 7
4.4 Laboratory Testing 7
4.5 Monitoring 8

5.0 GROUND CONDITIONS 9

5.1 Summary 9
5.2 Made Ground 9
5.3 Natural Superficial Strata 9
5.4 Solid Geology 9
5.5 Groundwater 10
5.6 Observations 10

6.0 TEST RESULTS 12

6.1 Geotechnical Laboratory Testing 12
6.2 Aggressive Ground Conditions – Geotechnical Chemical Testing 12
6.3 In Situ Geotechnical Testing 12
6.4 Geo-Environmental Testing 13

7.0 GEOTECHNICAL ASSESSMENT 14

7.1 Ground Model 14
7.2 Design Soil Parameters 14
7.3 Foundations 16
7.4 Floor Slabs 18
7.5 Site Preparation and Construction 19
7.6 Concrete Classification 20
7.7 Highways 20
7.8 Site Drainage 20

8.0 GEO-ENVIRONMENTAL RISK ASSESSMENT 22

8.1 Introduction 22
8.2 Soils Test Results and Risk Assessment – Human Health 22
8.3 Summary – Human Health Risk Assessment 23
8.4 Soil, Water and Leachate Test Results – Controlled Waters 24
8.5 Controlled Waters Risk Assessment 24
8.6 Permanent Ground Gas and Vapours Results 24
8.7 Ground Gas Risk Assessment 24
8.8 Qualitative Risk Assessment 25
8.9 Outline Remedial Measures 28

CONTENTS

8.10 HEALTH AND SAFETY ISSUES 28
9.0 WASTE SOIL CLASSIFICATION & ASSESSMENT 29
9.1 SUMMARY 29
9.2 SOILS WASTE CLASSIFICATION PROCEDURE 29
9.3 WASTE CLASSIFICATION AND WASTE ACCEPTANCE CRITERIA (WAC) 30
9.4 RE-USE OF SOILS 31
10.0 CONCLUSIONS 33
10.1 GEO-ENVIRONMENTAL 33
10.2 GEOTECHNICAL 33
10.3 FURTHER WORK 34
11.0 ABBREVIATIONS AND DEFINITIONS 35
12.0 REFERENCES 38

DRAWINGS

Drawing Number	Rev	Title
22987-2095-00	P01	Proposed Development Layout Plan
C5504/01	-	Site Location Plan
C5504/04	-	Site Features Plan
C5504/02	-	Exploratory Hole Location Plan
C5504/03		Foundation Pit Drawings

APPENDICIES

Appendix	Title
Appendix A	BSL Methodology and Guidance
Appendix B	Exploratory Hole Logs
Appendix C	Chemical Testing Results
Appendix D	Geotechnical Testing Results
Appendix E	Monitoring Results
Appendix F	Waste Assessment Report

1.0 INTRODUCTION

1.1 Context

This report describes a Phase II Geo-Environmental Assessment carried out by Brownfield Solutions Limited (BSL) for Atri7 6 Ltd on a site off Whitworth Street West, Manchester and has been completed in general accordance with the following guidance:

- Environment Agency guidance - Land Contamination: Risk Management (LCRM).
- BS 10175:2011+A2:2017 Investigation of Potentially Contaminated Sites.
- BS5930: 2015+A1:2020 Code of Practice for Ground Investigations.
- BS EN 1997-1:2004+A1:2013 Eurocode 7. Geotechnical design. General rules plus UK National Annex.
- BS EN 1997-2:2007 Eurocode 7 Geotechnical design. Ground investigation and testing plus UK National Annex.

Definitions of terms and acronyms used within this report are presented in Section 11.0.

1.2 Proposed Development

The proposed development is for a residential end use of a 38-storey residential apartment block with associated soft landscaping, drawing No. 22987-2095-00 P01 provided to BSL by the client.

1.3 Previous Reports

The following report, Desk Study completed by BSL (reference OH/C5504/13646), has been produced for the site and should be read in conjunction with this assessment.

1.4 Objectives and Scope

The objectives of this report are to determine the geo-environmental setting and ground conditions of the site, highlighting potential risks and areas of concern that may govern the development under the current planning regime.

The factual and interpretive Phase II sections of this report are produced in general accordance with the recommendations for a Tier 2 Generic Quantitative Risk Assessment as described in LCRM guidance. This assessment is also intended to fulfil the requirements of a Ground Investigation Report (GIR) as detailed in BS EN 1997-2:2007.

Following the Desk Study, an exploratory intrusive investigation was undertaken to confirm the findings of the preliminary CSM and risk assessment and meet any objectives that had not been satisfied. The exploratory investigation was undertaken using trial pitting, window sampling, cable percussive drilling, rotary drilling, ground gas and groundwater monitoring, laboratory chemical and geotechnical testing, with reporting on the findings.

1.5 Limitations

This assessment has been prepared in accordance with the relevant current legislative framework, guidance and risk assessment methodology as outlined in Appendix A. BSL is not liable for any subsequent changes in the guidance and legislation.

The findings and opinions conveyed via this report are based on information obtained from a number of sources as detailed within this report, BSL have assumed this information is correct and reliable.

Nevertheless, BSL cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

BSL have used reasonable skill, care and diligence for the investigation of the site and the production of this report. There may be other conditions prevailing on the site which are outside the scope of work and have not been highlighted by this assessment and therefore have not been considered by this report. Responsibility cannot be accepted for such site conditions not revealed by the assessment.

This report has been prepared for the sole use and reliance of the Client, Atri7 6 Ltd. No other third parties may rely upon or reproduce the contents of this report without the written permission of Brownfield Solutions Ltd (BSL). If any unauthorised third party comes into possession of this report, they rely on it at their own risk and BSL do not owe them any Duty of Care. This report may not be relied upon by the client or submitted to a third party for their reliance for the purposes of valuation, mortgage, insurance and regulatory approval, until all invoices have been settled in full.

The investigation carried out on the site has been conducted to provide the best information on the ground conditions within site access and budgetary constraints. The inherent variation of ground conditions allows only for definition of the actual conditions at the locations and depths of exploratory locations at the time of the investigation. Different ground conditions may exist that have not been identified within this investigation.

The recommendations in this report assume that ground levels will remain as existing, unless stated otherwise within the report. If there is to be any re-profiling (e.g. to create development platforms or flood defences) then the recommendations may not apply.

The groundwater results described are only representative of the dates on which they were recorded, and levels may vary seasonally (e.g. due to changes in weather).

This assessment has been based on the proposed planning layouts provided. Any subsequent change to the planning layout may have an impact on the validity of recommendations made within this report. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

Although every effort has been made to position exploratory holes in the least sensitive areas of the site, exploratory hole positions were located approximately as part of this investigation and no guarantee can be given as to their accuracy. Consideration should be given to the possibility that exploratory holes excavated as part of this investigation and indeed any previous ground investigation work by others may be encountered beneath or within the influence of individual foundations. BSL cannot be held responsible for structural failures caused by the location of foundations of any form of structure within the influence of exploratory holes.

Where it has not been possible to reasonably use an EC7 compliant investigation technique, a practical alternative has been adopted to obtain indicative soil parameters and any interpretation is based upon engineering experience, local precedent where applicable and relevant published information.

The chemical testing carried out for this report was not scoped to comply with the requirements of the water supply company and further work may be required, unless otherwise stated.

Notwithstanding site observations concerning the presence or otherwise of archaeological issues, asbestos-containing materials (ACM) or invasive weeds (e.g. Japanese knotweed), this report does not constitute a formal survey of these potential issues.

Asbestos in structures was not covered in this report. It should be noted that an asbestos demolition survey will be required prior to any demolition of structures. If asbestos is present in soils, these will need to be dealt with in accordance with the Control of Asbestos Regulations (CAR) 2012.

The site plans enclosed in this report should not be scaled off. Any site boundary line depicted on plans does not imply legal ownership of land.

Any recommendations made in this report should be confirmed with the Regulatory Authorities prior to implementation to ensure compliance.

2.0 THE SITE

2.1 Location

The site is located off Whitworth Street West, Manchester, M1 5NZ, centred on National Grid Reference 383579, 397518 as shown on the Site Location Plan, Drawing No. C5504/01.

2.2 Site Description

A site reconnaissance survey was carried out at the site on 4th November 2024. The main site features and potential issues identified are detailed below and are shown on the Site Features Plan, Drawing No. C5504/02.

Feature	Description
Site Area	0.11 hectares.
Site Access	Access to the site is gained off Whitworth Street West to the north.
Current Land Use and Site Features	Sparse vegetation comprising grasses and small bushes along the north, east and south border of the site.
Potential Sources of Gross Contamination	The site is generally flat with a slight slope to the west onto the access road.
Vegetation / Ecology	The site is bordered by wooden fencing to the north, commercial buildings to the east and west, and a railway viaduct bridge to the south.
Topography	The site is set within a commercial area with a tram station to the north of the site alongside a number of bars and bordered by a railway bridge to the south.
Site Boundaries	All services have been grubbed out and the made ground underlying the site is compacted due to previous use as a piling mat.
Surrounding Area	Sparse vegetation comprising grasses and small bushes along the north, east and south border of the site.

3.0 SUMMARY OF PREVIOUS REPORTS

A summary of the relevant points from the Desk Study completed by BSL (reference OH/C5504/13646) is presented below:

- The site has had previous development since 1851 for industrial end use including a warehouse.
- Several works, mills, warehouses and railway lines were in close proximity of the site.
- Geology comprises glaciofluvial sheet deposits (Secondary (A)) over Chester Pebble Beds Formation (Principal Aquifer).
- No faults are within an influencing distance of the site.
- The nearest watercourse is the Rochdale Canal circa 25m to the north of the site.
- The risk to human health is considered to be moderate to low.
- The risk from ground gas is considered to be moderate to low and the site is not located in an area requiring radon protection measures.
- The risk to controlled waters is low .
- The site is located in the UXO moderate risk zone. A Detailed UXO Desk Study concluded a low risk.
- Recommendations were for an appropriate Phase II ground investigation to be carried out to confirm the identified risks and obtain information for preliminary design.

4.0 METHOD OF INVESTIGATION

4.1 Objectives

To confirm the risks to the identified receptors and confirm the ground conditions in respect to the identified geotechnical and geo-environmental risks, an appropriate intrusive investigation was undertaken as per the recommendations of the Phase I Geo-Environmental Assessment.

The aim of the fieldwork was to:

- Investigate ground conditions on the site and the potential need for detailed investigation.
- Install standpipes to allow future monitoring.
- Assess the potential contamination on the site and obtain samples for contamination screening.
- Assess the potential impact of any contamination on controlled waters.
- Obtain geotechnical information on the ground conditions at the site for preliminary foundation design and preliminary pavement design purposes.
- Give an assessment of the geo-environmental risks associated with redevelopment of the site.

4.2 Site Works

The following site works have been undertaken as part of the intrusive investigation between the dates of 4th November and 8th November 2024.

Method	No.	Range Depths (m bgl)	Purpose
Trial pits – JCB 3CX	13	1.40 – 3.70	Establish general ground conditions and gain good coverage. Undertake hand shear vanes in cohesive strata to determine soil strengths for preliminary foundation design. SA201 to SA202A were undertaken for infiltration tests to be undertaken. TP201 to TP209 were undertaken to identify existing foundations.
Window sample boreholes – Tracked WS rig	27	0.30 – 4.29	Establish general ground conditions on site. Allow Standard Penetration Tests (SPTs) to be carried out and obtain samples for contamination and geotechnical and testing. Determine soil strengths/densities for preliminary foundation design. Installation of ground gas and water monitoring wells. BH201 and BH202 were rotary open holed and then rotary cored.
Rotary cored boreholes	2	30.00 – 32.00	Obtain rock core for geotechnical testing and parameters for preliminary foundation design. BH201 & BH202
Infiltration tests (in Trial Pits)	1	1.40	Obtain infiltration rates for drainage design. SA201A was the only suitable trial pit for an infiltration test.

TP207 and TP208 were undertaken 2.5m from the viaducts wall due to a drainage pipe identified within TP208 at 0.60m from the viaducts wall running parallel. 12No. window sample boreholes were proposed at the site, however due to obstructions a total of 27No. locations were attempted.

The approximate locations of the exploratory holes are indicated on the Exploratory Hole Location Plan, Drawing No C5504/02. The exploratory hole logs are presented in Appendix B.

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

- BS 5930:2015+A1:2020 Code of Practice for Site Investigations.

- BS EN 14688-1:2018 Geotechnical Investigation and Testing – Identification and classification of soil.
- BS EN ISO 14689:2018 Geotechnical investigation and testing – Identification and classification of rock.

4.3 Sampling Strategy

Representative samples were taken from exploratory holes at regular intervals to assist in the identification of the soils and to allow subsequent laboratory testing. They were stored and transported in general accordance with BS 10175:2011+A2:2017.

The type of sample was dependent upon the stratum and the purpose of analysis in accordance with current environmental and geotechnical guidance. The distribution of samples taken across the site is recorded on the exploratory logs.

Investigatory hole locations were determined by reference to the conditions identified in the preliminary risk assessment. No specific sampling statistics or grid were utilised in this instance.

4.4 Laboratory Testing

As part of the initial assessment for potential contamination of the site, selected samples were taken for the purpose of chemical contamination testing.

In the absence of particularly contaminative processes on site and the lack of visual evidence of potential hydrocarbon impaction representative soil samples were screened for the following general suite of determinands at a UKAS approved laboratory:

Determinand	No of Samples
BSL Default Soil Suite: Arsenic, Cadmium, Chromium (III), Chromium (VI), Copper, Nickel, Mercury, Lead, Zinc, Selenium, speciated polycyclic hydrocarbons (PAH 16), water soluble sulphate (2:1 Extract), soil organic matter (SOM) and pH.	6
Petroleum Hydrocarbons (TPH CWG) inc BTEX and MTBE.	2
Asbestos Screen.	6
Waste Acceptance Criteria (WAC).	2

The Chemical Laboratory Testing Results are presented in Appendix C.

Representative disturbed samples were obtained for all soil types encountered. Selected samples were scheduled for testing at an approved laboratory in accordance with BS 1377 'Method of Test for Soils for Civil Engineering Purposes' and BS EN ISO 17892- Parts 1-12:2018 'Geotechnical investigation and testing. Laboratory testing of soil'.

The following tests were scheduled for geotechnical purposes:

Description	No of Samples
pH Value.	8
Water Soluble Sulphate Contents.	8
SD1 BRE Full Suite.	2
Point Load Testing.	14
Unconfined Compressive Strength (UCS).	8

The Geotechnical Laboratory Testing Results are presented in Appendix D.

4.5 Monitoring

Ground gas and ground water monitoring standpipes were installed in a number of boreholes as detailed in the table further below.

A total of 3 monitoring visits were undertaken out of 6 proposed as part of the current scope, in line with the recommendations of BS8485.

All gas monitoring was undertaken using either a GA5000 or GFM436 infrared gas meter with integral electronic flow analyser.

Flow measurements on each standpipe (l/hr) were taken. Measurements of the percentage volume in air (%v/v) of oxygen (O_2), carbon dioxide (CO_2) and methane (CH_4) were recorded in addition to the percentage Lower Explosive Limit (%LEL) of methane (Note: 100% LEL equates to 5% by volume), the atmospheric pressure (mb) and average temperature during the visit (°C).

Standpipes were constructed in general accordance with the relevant guidance. A summary of the installation construction is presented in the table below:

Location	Internal Diameter Pipe	Response Zone (m bgl)	Targeted Strata	Purpose
BH201	50mm HDPE	6.00 – 13.00	Bedrock	Ground Gas & Groundwater
BH202	50mm HDPE	6.00 – 13.00	Bedrock	Ground Gas & Groundwater
WS202	35mm PVC	0.50 – 3.50	Made Ground	Ground Gas
WS207A	35mm PVC	0.50 – 3.50	Made Ground	Ground Gas
WS210	35mm PVC	0.50 – 1.50	Made Ground	Ground Gas

The gas monitoring visits recorded peak and steady state conditions. Peak results are those that occur on opening the valve on the borehole tap. Steady state conditions are those that occur a period of time afterwards when the initial (accumulated) gases have been purged from the borehole.

Ground gas monitoring results are presented in Appendix E of this report.

5.0 GROUND CONDITIONS

5.1 Summary

A brief summary of the ground conditions encountered is presented in the table below:

Stratum	Range Depths - Top (m bgl)	Range Depths - Base (m bgl)	Range Thickness' (m)	Brief Description
Made Ground	00.00 – 0.05	0.90 – 3.70	0.60 – 3.70	Gravelly clayey sand.
	2.40	3.00	0.60	Gravelly sandy clay.
Natural Superficial Strata	0.90 - 1.40	2.00 – 2.20	0.60 – 1.30	Firm to very stiff sandy CLAY.
	1.40 – 3.60	2.20 – 3.90	0.10 - 2.10	Clayey gravelly SAND.
Solid Geology	3.60 – 3.90	3.94 – 32.00	0.29 – 0.84	Very weak to weak SANDSTONE.
	7.77 - 27.61	7.85 - 27.68	0.07 – 0.30	Very weak MUDSTONE.

Details are provided in the logs in Appendix B and the individual strata are described in the sections below.

5.2 Made Ground

Made Ground – General
Made ground was encountered within all the exploratory holes across the site and was observed from ground level to depths between 0.90m and 3.70m bgl.

Hardstanding surfacing of concrete was present across the western parts of the site recorded at 0.05m thick.

The composition of the made ground was fairly consistent across the site and represented demolition material comprising gravelly clayey sand. Cobbles of brick and concrete ranged from low to medium content.

Existing Foundations
In TP201 – TP206 and TP208 existing foundations were observed.

For full details on existing foundations see Foundation Drawings reference C5504/03. Photographs are also provided in that drawing.

5.3 Natural Superficial Strata

The natural strata underlying the site was generally gravelly clayey sand with occasional firm to very stiff clay with varying amounts of sand and gravel as minor constituents. The natural strata was generally a very thin veneer across the site, with some exploratory hole locations encountering made ground straight onto solid geology.

Shear vane readings in the cohesive soils indicate the clays are generally medium and high strength.

5.4 Solid Geology

Very weak becoming weak sandstone bedrock was encountered from depths of between 3.60m and 3.90m. This was proven to a maximum depth of 32.00m bgl across the site and is interpreted to represent the Chester Pebble Beds Formation.

The discontinuities described generally ranged from being very closely to closely spaced, rough, being horizontal to slightly sub-horizontal in orientation.

The overall percentage of Total Core Recovery (TCR) in sandstone over each core run within an individual borehole varied from 0% to 100%, although averaged at 95%. Similarly, Solid Core Recovery (SCR) ranged between 0% to 100% and averaged 90%.

Rock Quality Designation (RQD) percentages ranged between 0% up to 80%, although considerable variation in the RQD was recorded with depth but generally averaged 45%.

5.5 Groundwater

The depths to groundwater and locations present during site works are shown in the table below:

Location	Depth During Site Works (m)	Comments
BH201-BH202	-	NGW
SA201-SA202A	-	NGW
TP201-TP209	-	NGW
WS201-WS210	-	NGW

NGW – No Groundwater Encountered

Post site works monitoring has revealed the following depths to groundwater:

Location	Depth During Monitoring Period (range) (m)	
	Min	Max
Overall min/max	8.02	9.27
BH201	8.02	9.27
BH202	9.25	9.25
WS202	2.40	NGW
WS207A	1.30	NGW
WS210	NGW	NGW

5.6 Observations

Contamination
During the works undertaken by BSL, observations for both visual and olfactory evidence of contamination were undertaken.

Stability of Excavations/Boreholes
The sides of the trial pits were generally stable however spalling of the natural strata was observed in TP01 and TP02 and collapsing of the made ground was observed in several trial pits.

The sides of the trial pits were generally unstable due to the presence of deep granular made ground across the site.

The borehole sidewalls were generally stable and window sampling progressed without the need to install casing.

Obstructions
There are numerous obstructions throughout the made ground on site. The obstructions identified are summarised in the table below:

Location	Depth (m bgl)	Comments
BH201	0.80	Concrete.
WS203, WS203A	0.30	Dense made ground.
WS203B	0.47	

Location	Depth (m bgl)	Comments
WS203C	0.35	
WS203D	0.40	
WS204	0.89	Concrete.
WS204A	0.30	Dense made ground.
WS204B	1.00	
WS205	0.50	
WS205A	0.40	
WS205B	0.45	
WS206, WS206A	0.50	
WS206B	0.40	
WS207	0.50	
WS209	0.50	
WS209A	1.35	
WS209B	0.40	
WS209C	0.50	

6.0 TEST RESULTS

6.1 Geotechnical Laboratory Testing

Unconfined Compressive Strength (UCS) and Point Load Index delete if not done
A summary of the information pertaining to the Unconfined Compressive Strength (UCS) of the intact rock material (not rock mass) related to sandstone bedrock at the site is shown in the table below. The point load index results have been used to derive the UCS using the relationship of UCS=24*IS50 for sandstone (ISRM).

Point Load Index (MPa) (range)		UCS Range (MPa)	Method	No. of results
Is	IS50			
0.05 – 0.20	0.07 – 0.26	-	Point load (Axial, Diametral and Irregular)	26
-		1.68 - 6.24	Point load correlation (ISRM)	14
-		11.9 – 20.2	UCS test	8

6.2 Aggressive Ground Conditions – Geotechnical Chemical Testing

The test results for the assessment of aggressive ground conditions are presented in Appendix D. The results are summarised and assessed within Section 7.6 of this report.

6.3 In Situ Geotechnical Testing

In Situ Hand Shear Vane Tests
Hand shear vane tests were carried out on suitable cohesive soils where possible. Each shear vane result recorded represents the mean value of three tests undertaken at the specified depth.

The results and distribution of the hand shear vane tests are recorded in kPa on the Exploratory Hole Logs which are presented in Appendix B.

In Situ Standard Penetration Tests
Standard Penetration Tests (SPTs) were carried out within the window sample boreholes at regular 1.0m intervals. The results of the individual blows and the N-values are recorded on the Exploratory Hole Logs in Appendix B.

All SPT N values are uncorrected. Density and strength descriptors are reported in accordance with the guidelines stated in BS 5930:2015+A1:2020, incorporating requirements of BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003.

Soil Infiltration Test Results
One soil infiltration test was undertaken within a trial pit, with a summary of the results presented in the table below. This was carried out in general accordance with BRE Digest 365 (BRE 2016) where infiltration rates allow three test runs during a working day (or where there is no infiltration), but where low infiltration rates were encountered the available time may not have been sufficient to fully comply with the BRE test method.

Where less than three tests were possible in a particular location the results provided should be considered as indicative only. Further discussion concerning the suitability of infiltration testing at the site is provided in Section 7.8.

Location	Stratum Type	Depth (m)	Infiltration Rate (m/sec)		
			Test 1	Test 2	Test 3
SA201A	Granular made ground	1.30	$8.67x10^{-6}$	-	-

The full test results are presented in Appendix D.

Permeability Test Results (Boreholes)
The results of permeability testing in boreholes using falling head methods are presented in the table below. These were carried out in general accordance with BS 5930 & BS 22282.

Location	Stratum Type	Response Zone (m)	Hydraulic Conductivity (m/sec)		
			Test 1	Test 2	Test 3
WS202	Granular made ground	0.50 – 3.50	$5.23x10^{-3}$	$6.54x10^{-3}$	$2.99x10^{-3}$
WS210	Granular made ground	0.50 – 1.50	$1.95x10^{-5}$	$1.76x10^{-5}$	-
BH201	Sandstone	6.00 – 13.00	$3.57x10^{-4}$	$3.92x10^{-4}$	$2.63x10^{-4}$

The full test results are presented in Appendix D.

6.4 Geo-Environmental Testing

Chemical Laboratory Testing
The chemical test results for soils are presented in Appendix C. The results are summarised and assessed within Section 8.2 of this report.

Ground Gas Monitoring
Ground gas monitoring results are presented in Appendix E and are summarised and assessed within Section 8.6 of this report.

7.0 GEOTECHNICAL ASSESSMENT

7.1 Ground Model

The site is currently used for storing building materials. There are known foundations associated with the previous uses at the site.

The ground conditions can be summarised as below (top down):

- Made ground generally comprising gravelly clayey sand from ground level to between 0.90m and 3.70m bgl.
- Natural superficial deposits comprising clayey gravelly sand proven to depths between 2.20m and 3.90m bgl. Fim to very stiff clay was also encountered in localised areas to depths between 2.00m bgl to 2.20m bgl.
- Solid geology comprising sandstone proven to depths ranging between 3.94m and 32.00m bgl.
- No groundwater encountered during site works.
- Post site works monitoring levels ranging between 8.02m and 9.27m bgl.

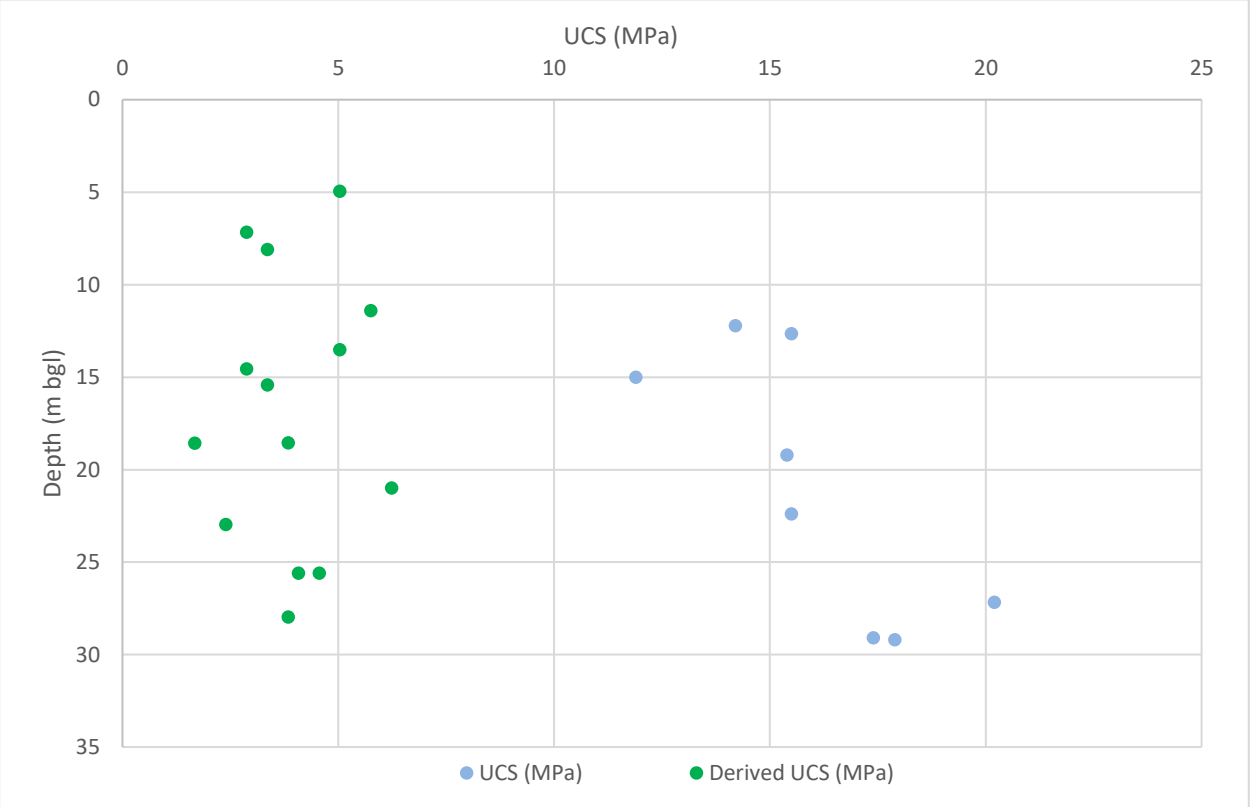
A large drain is indicated to run beneath the area parallel to the viaduct bridge. This will need to be taken into consideration for foundation design.

Numerous concrete and dense made ground obstructions throughout the made ground were identified across the site that will need removal during enabling works.

7.2 Design Soil Parameters

The relevant test results from the prior section have been evaluated to derive geotechnical soil parameters for the site.

The Unconfined Compressive Strength (UCS) was determined by laboratory testing and was also derived from laboratory point load testing using the relationship of UCS=24*IS50 for sandstone (ISRM). A graph showing the variation in UCS and derived UCS vs depth is presented below to provide a profile of the variation in UCS of the bedrock with depth.



The above graph shows a weak positive correlation between an increase in rock strength with depth. This trend is strengthened with the removal of the correlated Point Load Index results. There do not appear to be any significant or definitive lower strength zones, with the vast majority of results being above 4 MPa (weak rock) as can be expected of the Chester Formation, and all UCS testing data being above 10MPa. Note there is a tendency for bias within the UCS and point load data; UCS is typically undertaken on more intact samples, whereas lower strength area of rock tends to provide samples of rock unsuitable for UCS analysis, hence point load data is used as a proxy for UCS strengths. This should be considered during estimation of characteristic values.

Characteristic Values

Characterisation of the geotechnical parameters above has been undertaken to obtain characteristic values, which are a cautious estimate of the values affecting the occurrence of the limit state, taking into consideration typical minimum foundation depths for cohesive and granular soils.

Characteristic values for made ground are not presented due to the heterogeneity of the deposits and that they are not typically considered to be a suitable bearing stratum without some form of ground improvement. Characteristic values are also not presented for the natural superficial strata due to the thin veneer of deposits encountered and the lack of any skin friction that would be achieved through the minimum thickness of the strata, with some exploratory hole locations encountering no superficial deposits whatsoever.

Based on field strength descriptions, the laboratory testing and the above graph, the characteristic UCS values for the solid geology underlying the site has been derived and is summarised for a selection of depth in the table below:

Bedrock Strata	Depth (m)	Characteristic UCS values (MPa)	Characteristic RQD values (%)
Sandstone	14	6.6	47.5

Bedrock Strata	Depth (m)	Characteristic UCS values (MPa)	Characteristic RQD values (%)
	19	8.5	61.5
	24	9.4	45

7.3 Foundations

The development will comprise a thirty-eight storey residential building and is considered to be classed as Geotechnical Category 2 in accordance with Eurocode 7.

Preliminary design by calculation has been undertaken to determine the design resistance of the bearing strata in the following section. Note that the made ground, present to depths down to 3.70m bgl, is not considered to be a suitable bearing stratum.

No proposed structural loads were available at the time of writing, therefore the following recommendations are provisional and should be reviewed at the detailed design stage.

This assessment is based on the existing ground levels and does not take into consideration any cut/fill exercise, which should be considered at the detailed design stage.

Piles
In view of the variation in made ground thickness over the building footprint and the likely magnitude of the column loads expected to be imposed by the proposed development, shallow foundations will be unsuitable, and it is considered that piled foundations will be required.

Piles should be extended through the made ground and the superficial deposits. Depending on the structural loadings and design requirements, piles will likely utilise a combination of skin friction and end-bearing resistance, transferring the majority of the load to the underlying sandstone of the Chester Pebble Bed Formation .

Displacement piles such as driven pre-cast concrete or tubular steel piles, or replacement techniques such as bored piles with the use of casing or continuous flight auger (CFA) piles are all considered potentially suitable piling solutions for this site, with either pre-cast or cast in situ ground beams spanning between piles to support masonry walls.

It is understood that rotary bored piles with the use of casing are the preferred piling solution for this site. This method has the benefit of minimal ground disturbance and vibration where resulting risks to adjacent structures and property is. With this method there is also the ability to construct sockets into underlying rock.

However, the exact choice of piling system and the detailed design of piles are beyond the scope of this report and should be undertaken by a piling specialist. Preliminary calculations and recommendations are provided below as a guide at this stage. Appropriate modelling and settlement analysis will be required at the detailed design stage.

For piles socketed in bedrock, the ultimate shaft resistance for the portion of the pile embedded in the bedrock may be determined through the following equation:

$$q_s = k_1 p_{ref} \left(\frac{q_u}{p_{ref}} \right)^{k_2}$$

In this equation, q_s is the ultimate shaft resistance in kN/m^2, q_u is the UCS value of the bedrock, p_{ref} is a reference pressure of 100kPa and k_1 and k_2 are coefficients selected from the range presented in BS 8004 as 1.0 and 0.6 respectively.

The ultimate shaft resistance for the portion of the pile embedded in granular soil may be determined through the following equation:

$$q_s = K_s tan\delta \sigma'_v$$

In this equation, q_s is the ultimate shaft resistance in kN/m^2, K_s is an earth pressure coefficient conservatively assumed as 0.7 for preliminary design purposes, δ is the angle of interface friction 35°, and σ'_v is effective overburden pressure over the embedded length of the pile.

The frictional contribution of the made ground has been omitted from these calculations due to the variability and generally loose nature. Additionally, pile designs should be based on the final ground level, if any excavation is proposed, rather than the current ground elevations.

The ultimate end bearing resistance of the competent bedrock has been determined using the following equation:

$$q_b = k_3 p_{ref} \left(\frac{q_u}{p_{ref}}\right)^{k_4}$$

In this equation, q_b is the ultimate base resistance in kN/m^2, q_u is the UCS value of the bedrock, p_{ref} is a reference pressure of 100kPa and k_3 and k_4 are coefficients identified in BS 8004 as 15 and 0.5 respectively for cemented materials. The design base resistance may be limited by the compressive strength of the concrete used to construct the pile or the structural capacity of the pile itself.

Based on the available information and methodology outlined above, preliminary calculations were undertaken to provide estimated factored allowable loads for a singular circular concrete pile, to be socketed into xxx bedrock of variable lengths and a variety of diameters (based on standard rotary pile boring equipment). A global factor of safety of 3 has been used in this assessment. The preliminary allowable loads are shown in the table below. Note these recommendations are provisional and subject to review at the detailed design stage.

Pile Length (m)	Embedment into Rock (m)	Allowable Loads (MN) for Specified Pile Diameters		
		350mm	600mm	750mm
9	5	2.4	4.8	6.4
14	15	3.3	6.2	8.2
19	20	4.1	7.6	9.9

As stated above, these calculations are preliminary, should be used only as a guide and reviewed at the detailed design stage. Information gained from this ground investigation should be assessed by experienced piling contractors and suitably qualified structural engineers such that appropriate piles are selected and designed given the site conditions that have been encountered.

Information gained from this ground investigation should be assessed by an experienced piling contractor such that appropriate piles are selected and designed given the site conditions that have been encountered.

Whilst detailed design is beyond the scope of this report, the following should be taken into consideration during the detailed design stage by a suitably competent contractor/engineer:

- Piles should extend a minimum of five pile diameters into the bearing stratum to fully mobilise end-bearing resistance and shaft resistance.
- Higher allowable loads than those listed in the table above could be achieved by increasing the diameter of the piles or by using pile groups.
- Obstructions in the ground (e.g. relict foundations) could cause piles to stop shallower than their anticipated design depth, or deviate from the vertical, therefore reducing their capacity.
- As groundwater was observed during the boring of the intrusive holes and monitoring, temporary casing may be required for bored piles.
- Bored piles through coarse soils will likely result in loosening, with resultant reduced shaft friction.
- Discussions should be made with the pilling contractor regarding the suitability of driven piles due to the levels of disruption to the adjacent residential and commercial properties.
- CFA piles are likely to be a suitable alternative to driven piles to reduce noise levels, although there will be additional costs associated with disposal of excess soils.
- The construction of a basement structure should also be taken into account for foundation and pile design.
- Driven piling work should be undertaken in accordance with BS EN 12699:2015 'Execution of Special Geotechnical Work - Displacement piles', replacement piles should be carried out in accordance with BS EN 1536:2010(+A1:2015) 'Execution of Special Geotechnical Works - Bored Piles'.
- In accordance with Eurocode 7 it would be prudent to verify the compressive resistance of the strata and the pile design by static load testing on working piles to at least 1.5 times the characteristic load on more than 1% of working piles.

Working Platform

Prior to the commencement of penetrative works (piling/vibro), a working platform will be required for tracked plant. This should be designed and installed in accordance with BR470 (BRE 2004) based on the plant requirements, data and rig loadings.

Piling Risk Assessment

A risk assessment is likely to be necessary for piling and/or the installation of VSCs, as there is a possibility that this could lead to creation of new pathways for migration of contamination.

7.4 Floor Slabs

Given the thickness of made ground present (generally >600mm), suspended floor slabs should be adopted at the site in accordance with LABC standards.

Ground bearing slabs may also be adopted providing the following criteria are satisfied:

- Any other compressible or unsuitable materials (topsoil containing vegetation and organic matter, including tree roots, are excavated and either improved or removed and replaced with suitable materials.
- Any fill beneath the slab is suitable, well-compacted granular material placed in an appropriate thickness in accordance with a suitable specification (e.g. SHW Series 600) designed and supervised by an appropriately qualified engineer, with the end performance validated.
- The slab is adequately reinforced.
- Regular construction joints and ties are provided to allow for differential settlement.

The final floor slab design should be of sufficient thickness and sufficiently reinforced to accept the envisaged applied loads, without unacceptable total or differential movement.

Vertical elements within the structure, such as columns and walls will need to be isolated from the ground bearing slab in order to allow for the slab to expand against them without resulting in cracking.

Prior to the placement of the founding materials and the construction of a ground bearing floor slab, the sub-formation and formation will need to be inspected and checked by a geotechnical engineer to ensure the ground conditions are as expected. If soft spots or hard spots are identified at the formation level, they should be reported to the Geotechnical Engineer immediately and remedial actions agreed.

Incorporation of geogrid reinforcement at formation level, before granular material is placed and compacted, will likely minimise required excavation depths and help provide a suitable foundation for the ground bearing slab.

Ground floor slabs should also be designed to incorporate any ground gas protections measures, where required.

7.5 Site Preparation and Construction

The existing structures will need to be demolished and relict foundations/infrastructure grubbed out. Topsoil and subsoil should be removed from beneath all proposed buildings and hardstanding areas.

The majority of the services across the site have previously been grubbed out, however, a drain along the southern boundary of the site was observed during the site works. To allow remediation and construction, all services will need to be disconnected and any suspected dead services are confirmed as dead by testing.

Instability of excavations through natural soils is should be accounted for due to the granular nature of the deposits. Instability of the made ground should be allowed for. All excavations should be carried out in accordance with CIRIA Report 97 'Trenching Practice'.

Collapsing of the trial pit sides was observed in the natural strata and temporary shoring maybe required. Otherwise the foundation excavations will be significantly wider than anticipated and costs will be incurred for additional volumes of concrete.

Excavation depths should generally be readily achieved using conventional plant (JCB or similar) although high specification plant (tracked 360° or similar) is recommended to maintain the build programme. Breaking equipment may also be required locally to penetrate old foundations associated with former construction and intact rock quality strata.

The presence of substantial depths of made ground across the site may result in settlement of newly installed drainage. This should be taken into consideration during the design of drainage, which may include flexible joints to allow for some differential settlement.

It should be noted that undertaking treatment locally or using deepened foundations (i.e. focussing only on the footprint of structures) means that the surrounding areas (roads, gardens and landscaping) are likely to settle relative to the structures if disturbed. This risk can be mitigated by undertaking more widespread ground improvement through techniques such as dynamic compaction, surcharging or excavation and re-compaction.

Recorded post site works groundwater levels ranged between 9.24m and 9.27m bgl and therefore will be encountered within likely excavation depths. Based on the exploratory holes logs and monitoring, it is considered that methods such as sump pumping are likely to be sufficient to deal with anticipated flows. Further guidance is provided in CIRIA C750 "Groundwater Control: Design and Practice". It should be noted that groundwater levels will vary seasonally and the timing of construction may influence requirements.

7.6 Concrete Classification

The soluble sulphate and pH test results have been assessed in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005. The Design Sulphate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification are presented in the table below.

For the purposes of this assessment, the made ground and natural strata is considered to be relatively permeable, therefore the groundwater has been classed as mobile.

Stratum	No. Samples	Characteristic SO_4 (g/l)	Characteristic pH	DS Class	ACEC Class
Made Ground	6	1440	8.4	DS-2	AC-1
Natural Superficial Strata	3	138	7.7	DS-1	AC-1
Solid Geology - Sandstone	10	200	6.7	DS-1	AC-1

Based on the above, the results of laboratory pH and sulphate content, alongside the BRE full suite tests, indicate that sulphate class DS-1 and ACEC Class AC-1 conditions are required for natural superficial strata and bedrock rock strata and DS-2 and AC-1 conditions are required within the made ground in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005.

The specific concrete mixes (the Design Concrete Class) to be used on site will be determined by the site-specific concrete requirements in terms of the durability and structural performance. These are assessed in terms of the Structural Performance Level (SPL) and any need for Additional Protective Measures (APM) detailed in Part D of BRE Special Digest 1 with further guidance in Pt E and F.

7.7 Highways

Equilibrium CBR values are likely to be 2% within the made ground, which will be encountered at likely formation levels across the entirety of the site.

If natural strata is encountered at formation levels, based on Table 5.1 from DMRB IAN 73/06 Rev 1 equilibrium CBR values of 20% are likely to be achieved in undisturbed natural granular soils and 4% for natural clays soils for pavement design purposes, unless proven otherwise by in-situ testing at formation level by a specialist geotechnical engineer.

Where the CBR is found to be less than 2%, the sub-grade is unlikely to be suitable for both the trafficking of site plant and as a permanent highway foundation without improvement of the soils.

To achieve the required design CBR value, improvement works should be carried out in accordance with DMRB IAN 73/06 Rev 1 Chapter 5 and may include proof rolling, excavation and re-engineering / replacement of weaker soils, the inclusion of a geogrid or use of stabilisation techniques such as the addition of hydraulic binders (e.g. cement/lime).

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

Care should be taken to ensure the stratum at formation level is protected against inclement weather, as this is likely to lead to surface deterioration and a decrease in soils strengths.

7.8 Site Drainage

The tests undertaken across the site indicate good drainage conditions, particularly in the deeper made ground and bedrock stratums. Based on the infiltration rates obtained, predominantly on the order of 10^{-3} m/s to 10^{-6} m/s, it is likely that drainage to soakaways will be feasible at the site. We recommend the

design of soakaway drainage is carried out in accordance with BRE 365 and CIRIA C753. Consideration should also be given to future maintenance, where infiltration capacity can be reduced as a result of blinding through ingress of fines.

Note the base of any soakaway incorporated into the future development of the site is required to be at least 1m above the water table. Observed groundwater levels ranged between 8.02m and 9.27 mbgl in deep boreholes across the site. Shallow groundwater was recorded in WS207A and WS02 at 1.30m and 2.40m bgl respectively.

If drainage to soakaways is to be considered, it is suggested that this is discussed with the Local Authority at the earliest opportunity, to confirm the adequacy of proposed testing and to allow their inspection of any test results.

8.0 GEO-ENVIRONMENTAL RISK ASSESSMENT

8.1 Introduction

The samples were tested for an assessment of the chemical contamination that may pose a risk to human health. The results were examined with reference to a selection of guidance documents as detailed in Appendix A. In this case the LQM/CIEH S4ULs and DEFRA C4SLs for a residential end use without homegrown produce has been adopted as Tier 1 generic screening values.

The apparent exceedance of the relevant screening value is taken as indicating further detailed assessment or remedial action is required.

A summary assessment sheet is presented in Appendix C alongside the chemical test results. Results are discussed in detail in the sections below.

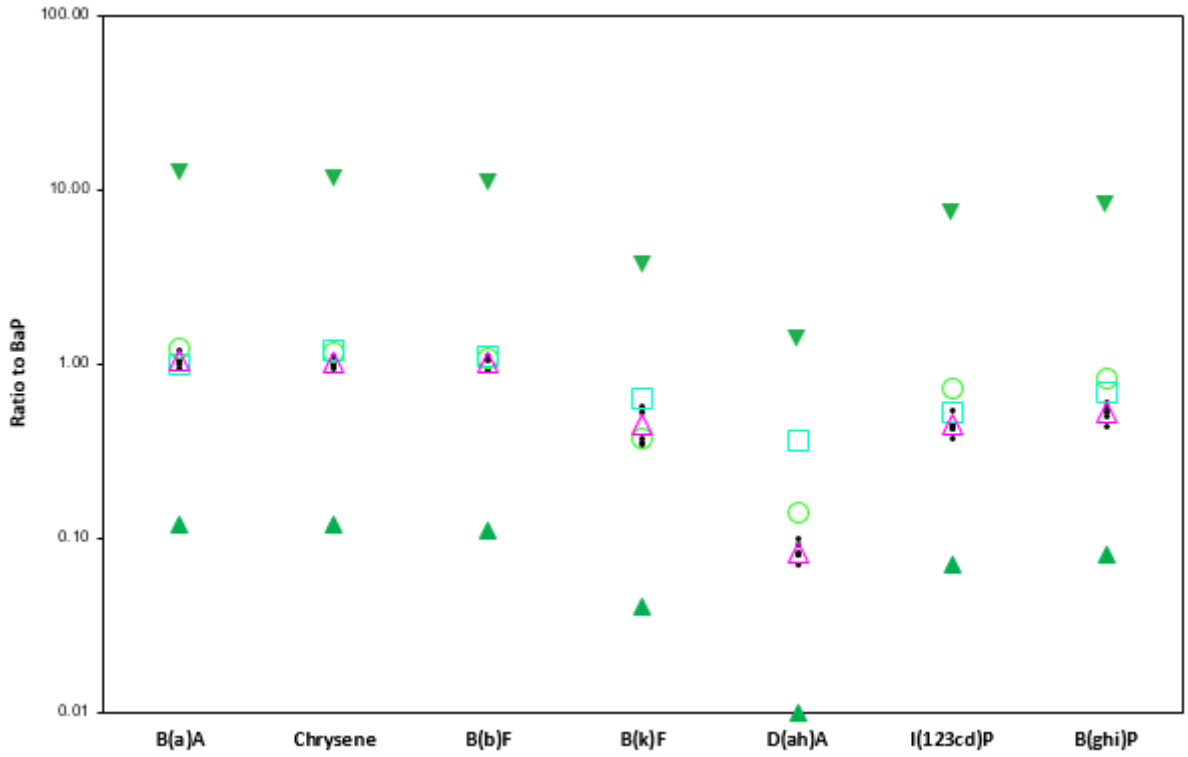
8.2 Soils Test Results and Risk Assessment – Human Health

Metals
No metals have been detected above the adopted screening criteria.

Asbestos
No asbestos fibres have been detected in any of the xx samples screened.

Poly Aromatic Hydrocarbons (PAHs)
BSL consider the main risk drivers for PAHs to be benzo(a)pyrene (B(a)P) and naphthalene. This is due to B(a)P being one of the most toxic of the PAHs, and naphthalene the most volatile and soluble. Category 4 Screening Levels (C4SLs) suggest the potential use of B(a)P as a surrogate marker for carcinogenic PAHs, if PAH mixtures fall within appropriate limits, since the risk from other non-carcinogenic PAHs are considered negligible. Given the difference in chemical properties between the two, naphthalene will be treated separately using the LQM S4ULs. Further guidance on this approach is presented in Appendix A.

PAHs and B(a)P as a Surrogate Marker
Based on the above approach, the graph below summarises the site data with respect to how the ratios of carcinogenic PAHs relate to B(a)P, within the confidence limits provided in the PHE documents.



Key:

- Ratio to B(a)P for all data
- Mean ratio to B(a)P from all data at the site
- Upper and Lower limits (order of magnitude from Culp data)
- Mean ratio to B(a)P for Culp data
- Mean ratio to B(a)P for UK data presented by PHE

All the data points that could be used to calculate ratios fall inside the upper or lower limits (order of magnitude above or below that of the study material). Based on this distribution of data it is considered that B(a)P can be used as a surrogate marker for carcinogenic PAHs and the C4SL criteria is suitable for this dataset.

Based on the above, elevated PAHs were recorded in one location to date. The location(s) and elevated species of PAH's are shown in the table below:

Exploratory Hole	Depth (m)	Stratum	Species	Concentration (mg/kg)	Adopted Screening Value (mg/kg)
TP208	0.00-1.00	Made Ground	B(a)P	9.10	5
			Naphthalene	7.10	5.6

* Based on Soil Organic Matter content

Total Petroleum Hydrocarbons (TPH CWG)
No petroleum hydrocarbons have been identified above the adopted screening criteria.

BTEX and MTBE
No BTEX or MTBE compounds have been identified above the adopted screening criteria.

8.3 Summary – Human Health Risk Assessment

Based on the testing and assessment undertaken it would appear that there is localised contamination within the made ground in the form of PAHs within the made ground strata.

The above pose a risk to human health and will require further consideration.

8.4 Soil, Water and Leachate Test Results – Controlled Waters

Soils

No significant contaminants were identified in soils as an indicator of potential impaction on groundwater.

8.5 Controlled Waters Risk Assessment

Groundwater/surface water testing has not been carried out based on the preliminary CSM risk assessment and the site is not considered to pose a significant risk to controlled water for the following reasons:

- No significant gross or mobile contamination has been identified on site in soils based on the results obtained as a potential indicator of groundwater contamination.
- There is no indication under present conditions of significant pollution of controlled waters and conditions following development of the site will not be any worse, indeed they may improve with increased hard cover and water retaining imported soft landscaping soils.
- For the made ground, the preparation of samples for leachability analysis has not been undertaken as this is an aggressive methodology and provides theoretical values which are unlikely to be representative of existing site conditions, real site leaching concentrations will be reduced significantly from that indicated by the laboratory testing, furthermore this would not be representative of post construction conditions, which will significantly reduce infiltration.
- There are no potable (sensitive) water abstractions within 2000m.

8.6 Permanent Ground Gas and Vapours Results

A total of 3 ground gas monitoring visits have been carried out between the dates of 19th November and 16th December 2024. A further 3 visits are scheduled. Results are summarised in the table below:

	CH_4 (%)		CO_2 (%)		O_2 (%)		CO (ppm)		H_2S (ppm)		TVOC (ppm)		Steady Flow (l/hr)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Peak	.0	0.0	0.0	1.0	7.2	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1
Steady	.0	0.0	0.0	0.5	8.0	20.0							0.0	0.0

Notes: CH_4 = Methane; CO_2= Carbon dioxide; O_2= Oxygen; CO= Carbon Monoxide; H_2S= Hydrogen Sulphide; TVOC (PID)= Total Volatile Organic Compounds (as measured with Photo Ionisation Detector); ppm= Parts Per Million.

The highest carbon dioxide concentrations were recorded in BH201 (1.0% v/v) on the third visit. The maximum flow of 3.1 l/hr was recorded in WS202 on the first visit.

The atmospheric pressure ranged between 996mb and 1023mb over the monitoring period, of which visits were conducted over a range of falling and rising pressure trends.

8.7 Ground Gas Risk Assessment

Basis of Assessment

In order to assess the ground gas situation and the requirement for ground gas precautionary measures at the site, guidance was taken from BS8485:2015+A1:2019 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' and CL:AIRE Technical Bulletin TB17 'Ground Gas Monitoring and 'Worst-Case' Conditions'.

Rationale and Suitability of Dataset
As per the Phase I Geo-Environmental Assessment report in accordance with BS8485 and as set out in Appendix A of this report, the ground gas generation potential is considered to be **very low** (sources as made ground). The sensitivity of the development is **moderate** on account of the proposed 38-storey apartment building.

In line with current guidance, it is recommended gas monitoring should comprise 6 visits over a 3-month period. Gas monitoring is ongoing therefore the below assessment is based on the data available at this stage.

Assessment of Data
Derivation of a Gas Screening Values (GSV) has been undertaken based on the guidance with BS8485 using the following equation: (max gas concentration / 100) x maximum steady flow.

A maximum steady flow of 0.1l/hr has been used to derive the worst credible GSVs. The GSV's for the site are presented below.

Ground Gas	Adopted Typical Steady Flow Rate (l/hr)	Max Concentration (% v/v)	Worst Credible GSV (l/h)	Classification based on GSV	Typical Threshold Concentration Exceeded
Methane	0.1	0.1	<0.7	CS1	No – CS1
Carbon Dioxide	0.1	1.0	<0.7	CS1	No – CS1

The GSVs place the site the site into Characteristic Situation 1 (CS1), however due to concentrations of carbon dioxide greater than 5% v/v being recorded at the site then guidance states ***consideration*** should be given to increasing the site classification as part of assessment; monitoring is ongoing at this stage therefore this should be considered during the final assessment.

Based on the data to date, the site should be preliminarily classified as CS1. However, monitoring is ongoing, and confirmation of the classification will be made following completion of the current monitoring period.

8.8 Qualitative Risk Assessment

The CSM has been revised based on the findings of the site investigation and laboratory testing results and these are presented overleaf. Unless stated otherwise, in respect to off-site sources, only risks that are assessed as moderate and above within the preliminary CSM have been carried forward to this section, or where a previously unidentified potential source, pathway and / or receptor has been identified from the recent site works.

Human Health						
Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk	Justification
On site Made ground associated with previous development and former warehouse PAHs.	Root uptake, ingestion, direct contact, inhalation of dusts	End-users/ Structure	Unlikely	Medium	Low	Given the Industrial heritage of the site, associated contaminants were tested. The test results identified two minor exceedances of PAHs within one sample (TP208). Given that this sample is taken of a made ground only observed in this location the contamination is indicated to be minimal and localised. However, no areas of soft landscaping or POS are indicated on the proposed development plan and therefore end users have a low likelihood of being in contact with these contaminants, this area of the site is external to the building footprint but will be surfaced in hardstanding, as such the risk is considered to be low and no remedial actions are required. .
Off site Factories, works, mills, warehouses Heavy metals, hydrocarbons, PAHs, asbestos, VOC, detergents, degreasers, inorganic compounds, organic solvents	Root uptake, ingestion, direct contact, inhalation of dusts	End users	Unlikely	Medium	Low	Testing has identified minor localised exceedances of PAHs, this is considered to be attributed to the previous onsite industrial uses. The proposed development also indicates no areas of soft landscaping or POS limiting the risk to end users. Therefore, a low risk is considered.
Off site Gas works Heavy metals, PAHs, petroleum hydrocarbons, BTEX, SVOCs, cyanides	Root uptake, ingestion, direct contact, inhalation of dusts	End users	Unlikely	Medium	Low	Testing has identified minor localised exceedances of PAHs, this is considered to be attributed to the previous onsite industrial uses. The proposed development also indicates no areas of soft landscaping or POS limiting the risk to end users. Therefore, a low risk is considered.

Controlled Waters						
Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk	Justification
Made Ground PAHs, Metals	Overland flow, / migration through saturated zone	Rochdale Canal 25m away (Surface waters)	Unlikely	Medium	Low	The Rochdale Canal is indicated to be located 25m from the site, it is considered contaminants associated with the made ground and other past industrial uses are unlikely to impact the Rochdale Canal due to the distance of the canal from the site and the associated contaminants are not considered to have significant mobility. Furthermore, canals are considered to be man made structures which are typically clay-lined and not in hydraulic continuity with the underlying aquifers. Therefore, a low risk is posed to the canal from the made ground.
	Leaching through unsaturated zone / Migration through saturated zone	Secondary A Aquifer (Groundwater)	Unlikely	Medium	Low	Chemical testing at the site did not reveal any exceedances of significantly mobile contamination that are considered to pose a potential risk to the underlying aquifers. The proposed development comprises building footprint in the majority with a new surface water drainage system installed which will further reduce the risk to controlled waters. The risk is considered to be low.
	Migration through saturated zone	Principal Aquifer (Groundwater)	Unlikely	Medium	Low	Chemical testing at the site did not reveal any exceedances of significantly mobile contamination that are considered to pose a potential risk to the underlying aquifers. There is a groundwater abstraction 468m north-west and a Source Protection Zone 132m east. The site is currently partially surfaced in hardstanding and will have building footprint or hard surfacing across the entirety of the site, with a new surface water drainage system installed which will reduce the risk to controlled waters. Therefore, a low risk is considered.

8.9 Outline Remedial Measures

No soft landscaping is proposed at this stage and therefore a cover system is not required. Should this change then this should be re-assessed and remedial measures may be required.

Ground Gas Protection Systems
Based on the ground gas monitoring results to date, no mitigation measures are required, subject to ongoing monitoring and no radon protection is required for new buildings at this location.

8.10 Health and Safety Issues

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

Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk
Made Ground (PAHs)	Ingestion, direct contact, inhalation of dusts.	Construction Workers	Likely	Mild	Moderate/low
Made Ground (Ground Gas)	Inhalation	Construction workers and end users	Likely	Mild	Moderate/low

The risk from made ground will be mitigated by standard PPE including gloves. Welfare facilities should be made available to wash before hand to mouth activities.

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

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

9.0 WASTE SOIL CLASSIFICATION & ASSESSMENT

9.1 Summary

BSL have undertaken a preliminary assessment of potential excavation waste to arise from the site during redevelopment to:

- Classify the excavation waste to arise as either hazardous or non-hazardous.
- Identify the most sustainable options for the wastes to arise in accordance with the waste hierarchy.
- Provide a written description of the waste required as part of the Duty of Care.
- Provide details of "hazardous properties" to complete hazardous waste consignment note (where applicable).
- Be able to provide a basic classification report to a landfill operator (where waste is destined for landfill disposal).

It should be noted that testing requirements for contaminated land risk assessment differ to those for waste classification purposes. Unless otherwise stated, the assessment in this section has been carried out to provide initial indications in respect to disposal of waste soils, however this may not be fully compliant with waste testing requirements or frequencies, with further testing potentially required.

9.2 Soils Waste Classification Procedure

As described in the 'Waste Duty of Care Code of Practice (2016)' any substance or object that the holder discards, intends to discard or is required to discard is a waste. It is the responsibility of the waste producer to classify this waste. The classification process is described in the 'Guidance on the classification and assessment of waste' WM3 and aims to determine whether the waste is Hazardous or Non-Hazardous to human health and the environment.

Waste classification should be based on soils analyses that are representative of the actual waste load. At the stage of ground investigation, the materials that will become waste have generally not been defined yet, however test data can provide a useful guide to the likely waste classification before it is generated.

Further guidance is provided in Appendix A.

The Landfill Directive (Directive 1999/31/EC on the landfilling of waste, Decision 2003/33/EC and Landfill Regulations 2005) led to the establishment of a methodology for classifying wastes. Wastes first need to be classified based on their total concentrations and classified as either hazardous or non-hazardous waste. WAC testing is only required if the end disposal route is a landfill and WAC analysis must not be used for waste classification.

Wastes can only be accepted at a landfill if they meet the relevant Waste Acceptance Criteria (WAC) for that type of landfill. A waste must comply with the WAC limits for the relevant landfill, otherwise the soil will need to be pre-treated. There are three different WAC criteria, these are:

- Inert waste.
- Stable Non-Reactive Hazardous Waste (SNRHW).
- Hazardous waste.

Details of how material should be classified for waste disposal are presented in the BSL Methodology and Guidance in Appendix A and are summarised in the table below:

	PRIOR TO LEAVING SITE			
Classification based on Total Concentrations[1]	**Non-Hazardous Waste**		**Hazardous Waste**	
	IF SOILS CANNOT BE RE-USED ELSEWHERE AND MUST GO TO LANDFILL			
WAC testing	Below inert WAC limit values	Above inert WAC limit values	Below hazardous WAC limit values[4]	> WAC limit values
Landfill requirements	INERT landfill	NON-HAZARDOUS landfill[2]	HAZARDOUS landfill	PRE-TREATMENT[3]

1 Total concentrations are defined as tests results on solids as opposed to leachate (i.e. a liquid).
2 Individual sites may have certain limit values pre-determined in their licence.
3 After pre-treatment the material characteristics may have changed to an extent that allow the soil to be re-classified.
4 Possibility that wastes could be classified as stable Nonreactive HAZARDOUS waste in non-hazardous Landfill (e.g. soils containing low concentrations of asbestos, gypsum or sulphate bearing soils).

Inert Waste
The possibility of automatic inert classification of the naturally occurring "clean" soils should be explored in accordance with Section 4.3 of the EA guidance document. See Appendix A for further guidance.

9.3 Waste Classification and Waste Acceptance Criteria (WAC)

We have reviewed the testing results and assessed them through a waste classification database (HazwasteOnline™) which allows users to code and classify waste as defined in the EWC (European Waste Catalogue) based on EC Regulation 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures (CLP) and latest Environment Agency guidance (WM3 "Guidance on the classification and assessment of waste -Technical Guidance").

The samples tested were screened against assessment criteria within WM3 using the HazWasteOnline tool to assess whether they contained any contaminants in the hazardous range.

The Waste Classification Report and WAC testing results are presented in Appendix F. Locations of hazardous soils are presented in the table below, alongside the WAC analysis test results.

Location	Depth (m)	Stratum	Waste Classification	WAC Analysis	Landfill	Commen
TP208	0.00-1.00	MADE GROUND	Non-hazardous	Exceeds Inert WAC	Non-Hazardous Landfill	
WS205D	0.00-1.00	MADE GROUND	Non-hazardous	Does Not Exceed Inert WAC	Inert Landfill	

Based on the waste classification database assessment, the majority of the made ground soils have been classified as **non-hazardous.**

Note that further testing of the soils (WAC testing) may be required on the actual arisings in order to satisfactorily categorise the soil for its suitability for disposal to landfill.

Waste Containing Asbestos
Should soils contain asbestos, the concentration and type of asbestos identified, in addition to the chemical composition (i.e. hazardous or non-hazardous detailed above), will determine which waste code is applicable to the soils and which landfill will accept it as summarised below:

Waste	Conc. by Weight (%)	EWC 2002 Catalogue Entry Code	Waste Disposal Route
Non-hazardous containing asbestos fibres	<0.001 - <0.1%	17 05 04 (soil and stones other than those mentioned in 17 05 03*)	Non-hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a stable non-reactive hazardous landfill site.
Hazardous containing asbestos fibres	<0.001 - <0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a hazardous landfill site.
Non-hazardous soils containing asbestos fibres	<0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill authorised to receive asbestos, or in a stable non-reactive hazardous waste cell at a non-hazardous landfill authorised to receive asbestos.
Non-hazardous Soils containing ACM (Mechanically separable)	>0.1%	17 06 05 (construction material containing asbestos) 17 05 04 (soil and stones other than those mentioned in 17 05 03*)	ACMs disposed of at a hazardous landfill authorised to receive asbestos, or in a stable non-reactive hazardous waste cell at a non-hazardous landfill authorised to receive asbestos. Soils should be disposed of at a non-hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a stable non-reactive hazardous landfill site.
Hazardous soils containing ACM	>0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a hazardous landfill site.

General
Following the classification of waste materials, the options available for the waste can be considered in the context of the waste hierarchy as below:

- Onsite re-use (with or without prior treatment) under suitable exceptions/permits.
- Offsite processing for recycling or recovery e.g. screening.
- Offsite disposal (with or without prior treatment) i.e. landfill.

Where feasible, efforts should be made to retain soils for onsite re-use to minimise costs and maximise the sustainability of projects.

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

Where it is necessary to dispose material off site it is recommended that materials are segregated and sufficient time is allowed to further classify the actual soil arisings that constitute the waste, including discussion with landfill sites and waste transfer stations to find the best disposal route. It is illegal to dilute and mix soils without a suitable permit.

Where possible, the option that the soils could be recycled at a suitable local waste treatment plant or transfer station rather than a landfill disposal route should be explored.

9.4 Re-use of Soils

By definition in law, any material excavated from the ground becomes waste at the moment of excavation. If that soil (now a “waste”) is then placed on another part of the development site (or used on another development site) without an appropriate materials management plan, permit or exemption being in place, by law this material is defined as “illegally deposited waste”.

In order to comply with UK legislation and avoid excessive costs, if the re-use of soils is proposed on site, this should be done in accordance with the relevant exemptions or permits in place.

Soils Re-use Under DoWCoP

One of the main industry mechanisms for allowing the re-use of soils in construction is the CL:AIRE "Development Industry Code of Practice for the Definition of Waste" (CL:AIRE DoWCoP) also known as a Materials Management Plan (MMP). Further guidance is provided in the BSL Methodology and Guidance in Appendix A.

In order to re-use soils under the DoWCoP, there are four key criteria that need to be met:

- The aims and objectives of the project meet the requirements of the Waste Framework Directive (does not harm human health or the environment).
- The soils can be demonstrated to be suitable for use (backed up by chemical/geotechnical testing and assessment).
- There is certainty of use (planning consents are in place alongside materials tracking, which should be in place as part of good site practice in any case).
- Quantity (the quantity of materials used should be known).

Information on existing site levels, proposed levels, volumes generated (e.g. foundation / drainage excavation arisings) would need to be known in order to complete the MMP.

If the DoWCoP is the chosen route, the MMP should be in place and declared by a Qualified Persons (QP) before works commence, otherwise excavated soils could constitute an illegal deposit of waste and enforcement action could be taken by the EA and HMRC.

Once the project is complete, a verification report detailing soils re-use/import will need to be produced and submitted to CL:AIRE, which may be subject to a random audit process. Sites found to be non-complaint with the CoP can be referred to the EA for further investigation.

Note that for re-use of landfilled materials or mining wastes, the DoWCoP may not apply and a Waste Recovery Permit (or others) may be required. Liaison with the Environment Agency would be needed on a case by case basis to determine the best option.

Re-use of soils containing asbestos should comply with the CL:AIRE publication 'Interpretation for Managing and working with Asbestos in Soil and Construction and Demolition Materials' (CAR-SOIL™) and CAR 2012.

In terms of the re-use of brick/concrete crush materials, the DoWCoP does cover aggregates, but only on the site of origin, and the EA WRAP aggregate Quality Protocol might best apply to ensure quality standards, which are discussed further below.

Soils Re-use under Exemptions and Permits

Other potentially suitable re-use mechanisms may include U1 Exemptions, WRAP quality protocols (for aggregates) or Waste Framework Directive (WFD) Exclusions, amongst other mechanisms. Further details are provided in Appendix A.

10.0 CONCLUSIONS

10.1 Geo-Environmental

Geo-Environmental – Human Health – Soils
Testing of the made ground at the site did not reveal any exceedances of heavy metals, petroleum hydrocarbons, BTEX or MTBE compounds.

However, minor exceedances of naphthalene and benzene (a) pyrene were identified within one sample positioned to the rear of the proposed building in an area of proposed hard surfacing.

As no soft landscaping is proposed, the risk is considered to be low and no remedial measures in respect to human health are required.

Geo-Environmental – Ground Gases and Vapours
Ground gas monitoring has revealed a maximum peak carbon dioxide concentration of 1.0%v/v and methane concentrations of <0.1%v/v. Based on the gas monitoring the site is classified as Characteristic Situation 1 and ground gas protection measures are not required. However, this should be re-assessed following completion of the gas monitoring programme.

Geo-Environmental – Controlled Waters
The overall risk to controlled waters is considered to be low and no further action is required.

Waste
Waste classification for the made ground at the site has revealed the majority of the soils to be non-hazardous with some soils suitable for disposal at an inert landfill and some at a non-hazardous landfill. Further testing of waste arisings is likely to be required to determine the most appropriate accepting landfill.

10.2 Geotechnical

Foundations
A 350mm diameter, 9m long pile embedded 5m into bedrock have an allowable load of 2.4MN increasing to 4.1MN for a 19m long pile embedded 15m into bedrock.

A 600mm diameter, 9m long pile embedded 5m into bedrock have an allowable load of 4.8MN increasing to 7.6MN for a 19m long pile embedded 15m into bedrock.

A 750mm diameter, 9m long pile embedded 5m into bedrock have an allowable load of 6.4MN increasing to 9.9MN for a 19m long pile embedded 15m into bedrock.

Floor slabs
Ground bearing slabs supported by piles may be adopted.

Concrete classification
DS-2 AC-1 within the made ground strata and DS-1 AC-1 within the natural superficial and bedrock stratums.

Highways
20% CBR values are indicated for granular superficial deposits, 4% CBR values are indicated within cohesive superficial deposits, and 20% CBR values are indicated within the made ground strata.

Drainage (SuDS)
SuDS are indicated to be feasible with rates between $2.99x10^{-3}$ and $8.67x10^{-6}$.

10.3 Further Work

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

- Completion of ground gas monitoring programme.
- Update gas assessment within this report. Tree survey by qualified arboriculturist.
- Detailed foundation design by a structural engineer.
- Design of Remedial Strategy and confirmation with the Local Authority /EA / warranty provider (if required).
- Production of Ground Gas Protection Measures Verification Plan (if required).
- Production of Materials Management Plan (MMP) under the CL:AIRE DoWCo (if required).
- Implementation of the Remedial Strategy and verification of the remedial works (if required).

11.0 ABBREVIATIONS AND DEFINITIONS

GLOSSARY	
Term / Abbreviation	**Definition**
AST	Above Ground Storage Tank.
B(a)P	Benzo (a) Pyrene.
BGS	British Geological Survey.
BRE	Building Research Establishment.
BS	British Standard.
BSL	Brownfield Solutions Ltd.
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes.
CBR	California Bearing Ratio (used in pavement/highways design).
CAR 2012	Control of Asbestos Regulations (2012).
CBCB	Cheshire Brine Compensation Board.
CBCD	Cheshire Brine Compensation District.
CBR	California Bearing Ratio.
CIEH	Chartered Institute of Environmental Health.
CIRIA	Construction Industry Research Association.
CL:AIRE	Contaminated Land: Applications in Real Environments.
CLEA	Contaminated Land Exposure Assessment.
CLO	Contaminated Land Officer.
COMAH	Control of Major Accident Hazards.
Contamination	Presence of a substance which is in, on or under land, and which has the potential to cause significant harm or to cause significant pollution of controlled water. There is no assumption in this definition that harm results from the presence of the contamination. Naturally enhanced concentrations of harmful substances can fall within this definition of contamination. Contamination may relate to soils, surface water, groundwater or ground gas.
Controlled Waters	Inland freshwater (any lake, pond or watercourse above the freshwater limit), water contained in underground strata and any coastal water between the limit of highest tide or the freshwater line to the three-mile limit of territorial waters.
CPT	Cone Penetration Test.
CSM	Conceptual Site Model. A schematic hypothesis of the nature and sources of contamination, potential migration pathways (including description of the ground and groundwater) and potential receptors, developed on the basis of the information from the preliminary investigation and refined during subsequent phases of investigation and which is an essential part of the risk assessment process. The conceptual site model is initially derived from the information obtained by the preliminary investigation (i.e. the Phase I Desk Study). This conceptual model is used to focus subsequent investigations, where these are considered to be necessary, in order to meet the objectives of the investigations and the risk assessment. The results of intrusive investigations can provide additional data that can be used to further refine the conceptual site model.
DCP	Dynamic Cone Penetrometer.
DNAPL	Dense Non-Aqueous Phase Liquid.
DoWCoP	Definition of Waste Code of Practice.
DWS	Drinking Water Standard.
EA	Environment Agency.
EHO	Environmental health Officer.
EQS	Environmental Quality Standard.

GLOSSARY	
Term / Abbreviation	**Definition**
GAC	Generic Assessment Criteria.
GDR	Geotechnical Design Report.
GFR	Geotechnical Feedback Report.
GIR	Ground Investigation Report.
GSV	Gas Screening Value.
Harm	Adverse effect on the health of living organisms, or other interference with ecological systems of which they form part, and, in the case of human health, including property/structures and water supply pipelines.
Hazard	Inherently dangerous quality of a substance, procedure or event.
HDPE	High Density Polyethylene.
HSV	Hand Shear Vane.
K	Modulus of Subgrade Reaction.
LCRM	Land Contamination: Risk Management (EA guidance).
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene).
LOD	Limit of Detection (for particular method adopted).
MMP	Materials Management Plan.
Mv	Modulus of Volume of Compressibility.
ND	Not Detected.
NHBC	National House Building Council.
NR	Not Recorded.
OS	Ordnance Survey.
PAH	Polycyclic Aromatic Hydrocarbon.
Pathway	Mechanism or route by which a contaminant comes into contact with, or otherwise affects, a receptor.
PCB	Poly-Chlorinated Biphenyl.
PCSM	Preliminary Conceptual Site Model.
pH	Scale used to specify how acidic or basic a water-based solution is.
PHC	Petroleum Hydrocarbons.
PID	Photo Ionisation Detector.
PNEC	Predicted No-Effect Concentration.
Precision	Level of agreement within a series of measurements of a parameter.
PSD	Particle Size Distribution.
PVC	Polyvinyl Chloride.
Receptor	Human health, living organisms, ecological systems, controlled waters (surface waters and groundwater within aquifers), atmosphere, structures and utilities that could potentially be adversely affected by contaminant(s).
Risk	Probability of the occurrence, magnitude and consequences of an unwanted adverse effect on a receptor.
Risk Assessment	Process of establishing, to the extent possible, the existence, nature and significance of risk.
Sampling	Methods and techniques used to obtain a representative sample of the material under investigation.
SOM	Soil Organic Matter.
Source	Location from which contamination is, or was, derived. This could possibly be the location of the highest soil, groundwater or gas concentration of the contaminant(s).
SPT	Standard Penetration Test.
SVOCs	Semi Volatile Organic Compounds.
TOC	Total Organic Carbon.

GLOSSARY	
Term / Abbreviation	**Definition**
TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group).
TVOCs	Total volatile organic compounds.
UCS	Unconfined Compressive Strength.
Uncertainty	Parameter, associated with the result of a measurement that characterises the dispersion of the values that could reasonably be attributed to the measurement.
UST	Underground Storage Tank.
UXO	Unexploded Ordnance.
VCCs	Vibro Concrete Columns.
VSCs	Vibro Stone Columns
VOCs	Volatile Organic Compounds.
WAC	Waste Assessment Criteria.
WFD (in waste context)	Waste Framework Directive.
WFD (in water context)	Water Framework Directive.
Units	**Definition**
°	Degrees
Φ	Phi angle (in degrees)
g/l	Grams per Litre
Km	Kilometres
kPa	Kilo Pascal (Equivalent to kN/m^2)
$KN/m^2/mm$	Kilo Newton per metered squared per millimeter
kN/m^2	Kilo Newtons per metre squared
kPa	Kilo Pascal (Equivalent to kN/m^2)
l/hr	Litres per hour
MJ/kg	Mega joule per kilogram
MN	Mega Newton
M^2/MN	Mega Newton per metre squared
M	Metres
m bgl	Metres Below Ground Level
m OD	Metres Ordnance Datum (sea level)
µg/l	Micrograms per Litre (parts per billion)
µm	Micrometre
mb	Millibars (atmospheric pressure)
mg/kg	Milligrams per kilogram (parts per million)
mg/m^3	Milligram per metre cubed
mm	Millimetre
ppb	Parts Per Billion
Ppm	Parts Per Million

12.0 REFERENCES

References used in the production of this report are listed below; note not all of the below are relevant to the subject site and may not have been utilised.

Association of Ground Investigation Specialists. 'Guidelines for Good Practice in Site Investigation'. Issue 2, March 2006.

Association of Ground Investigation Specialists. 'Description Of Anthropogenic Materials– A Practitioners' Guide'. 2018.

Black, W.P.M. & Lister, N.W. The strength of clay fill subgrades, its prediction in relation to road performance Report LR889, TRRL. 1979.

BRE Special Digest 1: 'Concrete in Aggressive Ground' 3rd Ed 2005.

BRE Report BR211, Scivyer, C. 'Radon – Guidance on protective measures for new buildings' 2023 Edition.

BRE Digest, vols. 240 and 241 'Low-rise buildings on shrinkable clay soils'. 1993.

BRE Digest 298 'The influence of trees on house foundations in clay soils'. 1999.

BRE Digest 365 'Soakaway Design'. 2016.

BRE Report 391 "Specifying vibro stone columns". 2000.

BRE Report 414. 'Protective measures for housing on gas contaminated land. Building Research Establishment Report'. 2011.

BRE Report 470 'Working platforms for tracked plant: good practice guide to the design, installation, maintenance and repair of ground-supported working platforms'. 2004.

British Geological Survey Technical Report WD/97/34. 312pp. Environment Agency R&D Publication 8. 'The physical properties of major aquifers in England and Wales'. 1997.

British Geological Survey Technical Report WD/00/04. 234pp. Environment Agency R&D Publication 68 'The physical properties of minor aquifers in England and Wales'.

British Geological Survey 'The advanced soil geochemical atlas of England and Wales'. 2012.

BS 1377 'Method of Test for Soils for Civil Engineering Purposes'. 1990.

BS EN 1997-1. 'Eurocode 7 – Geotechnical design - Part 1: General rules'. Plus associated UK National Annex. 2004.

BS EN 1997-2. 'Eurocode 7 – Geotechnical design - Part 2: 'Geotechnical investigation and testing'. Plus associated UK National Annex. 2007.

BS 3882: 'Specification for topsoil'. 2015.

BS 5837: 'Trees in relation to design, demolition and construction Recommendations'. 2012.

BS 5930+A1:2020: 'Code of Practice for Site Investigations'. 2020.

BS 6031: 'Code of practice for earthworks'. 2009.

BS 8004: 'Code of practice for foundations'. 2015.

BS 8485+A1: 'Code of practise for the design of protective measures for methane and carbon dioxide ground gases for new buildings'. 2019.

BS 8500-1 AMD 2. Concrete. Complementary BS to BS EN 206. Part 1. 'Method of specifying and guidance for the specifier'. 2018.

BS 8576 'Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)'. 2013.

BS 10175:2011+A2 'Investigation of Potentially Contaminated sites - code of practice'. 2017.

BS 10176:2020 'Taking soil samples for determination of volatile organic compounds (VOCs)'. 2020.

BS EN ISO 14688 'Geotechnical investigation and testing – Identification and classification of soil'. 2018.

BS EN ISO 14689 'Geotechnical investigation and testing – Identification and classification of rock'. 2018.

BS EN ISO 17892 'Geotechnical investigation and testing. Laboratory testing of soil.' Parts 1-12 :2018.

BULL ET AL. Promoting the Use of B(a)P as a Marker for PAH Exposure in UK Soils. February 2013.

CIRIA Special Publication SP32, PSA Civil Engineering Technical Guide 34, 'Construction over abandoned mine workings'. 1984.

CIRIA Special Publications 101-112, 'Remedial Treatment for Contaminated Land'. 1998.

CIRIA Special Publication 124, 'Barriers, liners and cover systems for containment and control of land contamination'. 1996.

CIRIA R143, 'The Standard Penetration Test (SPT): methods and use'. 1995.

CIRIA 149 'Protecting Development from Methane'. 1995.

CIRIA 150 'Methane Investigation Strategies'. 1995.

CIRIA 151 'Interpreting Measurements of Gas in the Ground'. 1995.

CIRIA 152 'Risk assessment for Methane and Other Gases from the Ground'. 1995.

CIRIA 552 'Contaminated Land Risk Assessment – A guide to good practice'. 2001.

CIRIA C574 'Engineering in Chalk'. 2002.

CIRIA C659 'Assessing risks posed by hazardous ground gases to buildings.' 2006.

CIRIA C665 'Assessing Risks Posed by Hazardous Ground Gases to Buildings'. 2007.

CIRIA C681 'Unexploded Ordnance (UXO) A guide for the construction industry'. 2009.

CIRIA C716 'Remediating and mitigating risks from volatile organic compound (VOC) vapours from land affected by contamination'. 2012.

CIRIA C733 'Asbestos in Soil And Made Ground: A Guide To Understanding And Managing Risks'. 2014.

CIRIA C735 'Good Practice on The Testing and Verification of Protection Systems for Buildings Against Hazardous Ground Gases'. 2014.

CIRIA C748 'Guidance on the Use of Plastic Membranes as VOC Vapour Barriers'. 2014.

CIRIA C750 'Groundwater control: design and practice, second edition". 2016.

CIRIA C753 'The SuDS Manual'. 2015.

CIRIA C758 'Abandoned Mine Workings Manual'. 2019.

CL:AIRE and CIEH. 'Guidance on Comparing Soil Contamination Data with a Critical Concentration'. May 2008.

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

CL:AIRE RB17 'A Pragmatic Approach to Ground Gas Risk Assessment'. 2012.

CL:AIRE TB17 'Ground Gas Monitoring and 'Worst-Case' Conditions'. 2018.

CL:AIRE TB18 'Continuous Ground-Gas Monitoring and the Lines of Evidence Approach to Risk Assessment'. 2019.

CL:AIRE TB19 'Managing Risks and Liabilities associated with Per and Polyfluoroalkyl Substances (PFASs)'. 2019.

CL:AIRE TB22 'An overview of the uses of PFAS to assist with identification of sites of concern'. 2023.

CL:AIRE SP1010 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination'. Rev 2 2014.

CL:AIRE 'Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials – CAR-SOILTM'. 2016.

CL:AIRE 'Petroleum Hydrocarbons in Groundwater: Guidance on assessing petroleum hydrocarbons using existing hydrogeological risk assessment methodologies' Version 1. March 2017.

CULP, S.J., ET AL., A comparison of the tumours induced by coal tar and benzo[a]pyrene in a 2-year bioassay. Carcinogenesis. 1998.

DEFRA and the Environment Agency, CLR10 'Soil Guideline Value Reports for Individual Soil Contaminants'. 2002-2004.

DEFRA and the Environment Agency, CLR Report No 11 'Model Procedures for the Management of Contaminated Land'. 2004. [Withdrawn 2019.]

Department of the Environment, CLR Report No 1 'A framework for assessing the impact of contaminated land on groundwater and surface water'. 1994.

Department of the Environment, CLR Report No 2 'Guidance on Preliminary Site Inspection of Contaminated Land'. 1994.

Department of the Environment, CLR Report No 3 'Documentary research on Industrial Sites'. 1994.

Department of the Environment, CLR Report No 4 'Sampling Strategies for Contaminated Land'. 1994.

Department of the Environment Waste Management Paper No. 27. 'Landfill Gas: A Technical Memorandum Providing Guidance on the Monitoring and Control of Landfill Gas'. 1992.

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

DETR. Circular: Contaminated Land. 2006.

EC Regulation 1272/2008 'The Classification, labelling and packaging of substances and mixtures (CLP)' 2008.

Environment Agency guidance - Land Contamination: Risk Management (LCRM). 2020.

Environment Agency 'Using Soil Guideline Values'. 2009.

Environment Agency, 'Updated Technical Background to the CLEA model'. 2009.

Environment Agency, 'Human health toxicological assessment of contaminants in soil'. 2009.

Environment Agency Hazardous Waste: 'Guidance on the classification and assessment of waste' WM3 ver 1.1 May 2018.

Environment Agency. 'Remedial Targets Methodology. Hydrogeological Risk Assessment for Land Contamination'. 2006.

Environment Agency & NHBC. R&D Publication 66. 'Guidance for the Safe Development of Housing on Land Affected by Contamination'. 2008.

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

Environment Agency Technical Guidance Note 01. Hydrogeological Risk Assessment for Landfills. [Withdrawn Feb 2016. Replaced with below].

Environment Agency and DEFRA 'Landfill developments: groundwater risk assessment for leachate'. 2016.

Environment Agency Petroleum Hydrocarbons in Groundwater 'Supplementary Guidance for Hydrogeological Risk Assessment'. 2009.

Environment Agency 'Groundwater protection: Principles and practice (GP3)'. 2013. [Superseded 2017 by www.gov.uk online guidance].

Environmental Permitting Guidance: version 3.1 'The Landfill Directive for the Environmental Permitting (England and Wales) Regulations'. 2010.

Environmental Quality Standards. 2008.

European Parliament Directive 2008/98/EC of the Council of 19 November 2008 on waste and repealing certain Directives. 2008.

European Parliament. Directive 2014/955/EU: Commission Decision of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC.

Ground Engineering. Wilson & Card 'Proposed method classifying gassing sites' /1999.

Hazardous Waste (England and Wales) Regulations. 2005.

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

Health and Safety Executive (HSE). Control of Asbestos Regulations (CAR). 2012.

Highways Agency. Design Guidance for Road Pavement Foundations (Draft HD25). Interim Advice Note 73/06. Rev 1. Highway Agency, London. 2009. [Withdrawn 30th May 2017].

ICE Thomas Telford 'Applications of Dynamic Cone Penetrometer testing in East Anglia'. 1989.

Land Quality Press, Nathanail, C. P., McCaffrey, C., Gillett, A., Ogden, R. C. and Nathanail, J.F. 'The LQM/CIEH S4ULs for Human Health Risk Assessment.' 2015.

Landfill Directive 'Directive 1999/31/EC on the landfilling of waste'. 1999.

Japanese Geotechnical Society. Hatanaka and Uchida 'Empirical correlation between penetration resistance and effective friction of sandy soil'. Soils & Foundations, 36 (4), 1-9. 1996.

Manual of Contract Documents for Highway Works, Specification for Highway Works: Volume 1, Amendment August 2014. [Withdrawn 30th May 2017].

Manual of Contract Documents for Highway Works, Specification for Highways Works – Series 600 Earthworks November 2006. [Withdrawn 30th May 2017, Replacement unknown].

National Planning Policy Framework (NPPF). 2023.

National Planning Policy Framework - Technical Guidance. March 2012.

NHBC Standards, Part 1 'Introduction and Technical Requirements.'

NHBC Standards, Part 4 'Foundations.'

NHBC Standards. Chapter 4.1: Land Quality - Managing Ground Conditions.

NHBC. 'Hazardous Ground Gas - An essential guide for housebuilders'. May 2023.

Public Health England (PHE). Contaminated land information sheet: risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs). September 2017.

Total Petroleum Hydrocarbon Criteria Working Group Volume 1 'Analysis of Petroleum Hydrocarbons in Environmental Media'. 1999.

Total Petroleum Hydrocarbon Criteria Working Group Volume 2 Composition of Petroleum Mixtures. May 1998.

Total Petroleum Hydrocarbon Criteria Working Group Volume 3 'Selection of Representative TPH Fractions Based on Fate and Transport Considerations'. July 1997.

Total Petroleum Hydrocarbon Criteria Working Group Volume 4 'Development of Fraction Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH)'. 1997

Total Petroleum Hydrocarbon Criteria Working Group Volume 5 'Human Health Risk-Based Evaluation of Petroleum Release Sites: Implementing the Working Group Approach' June 1999.

SEPA 'Land remediation and waste management guidelines' publication date unknown.

UK Drinking Water Standards: Water Supply (Water Quality) Regulations 1989 (SI 1989/1147) and Water Supply (Water Quality) Regulations 2000 (SI 2000/3184).

UKTAG. Updated recommendations on environmental standards. River Basin Management (2015-21). UK Technical Advisory Group on the Water Framework Directive. November 2013 (updated January 2018).

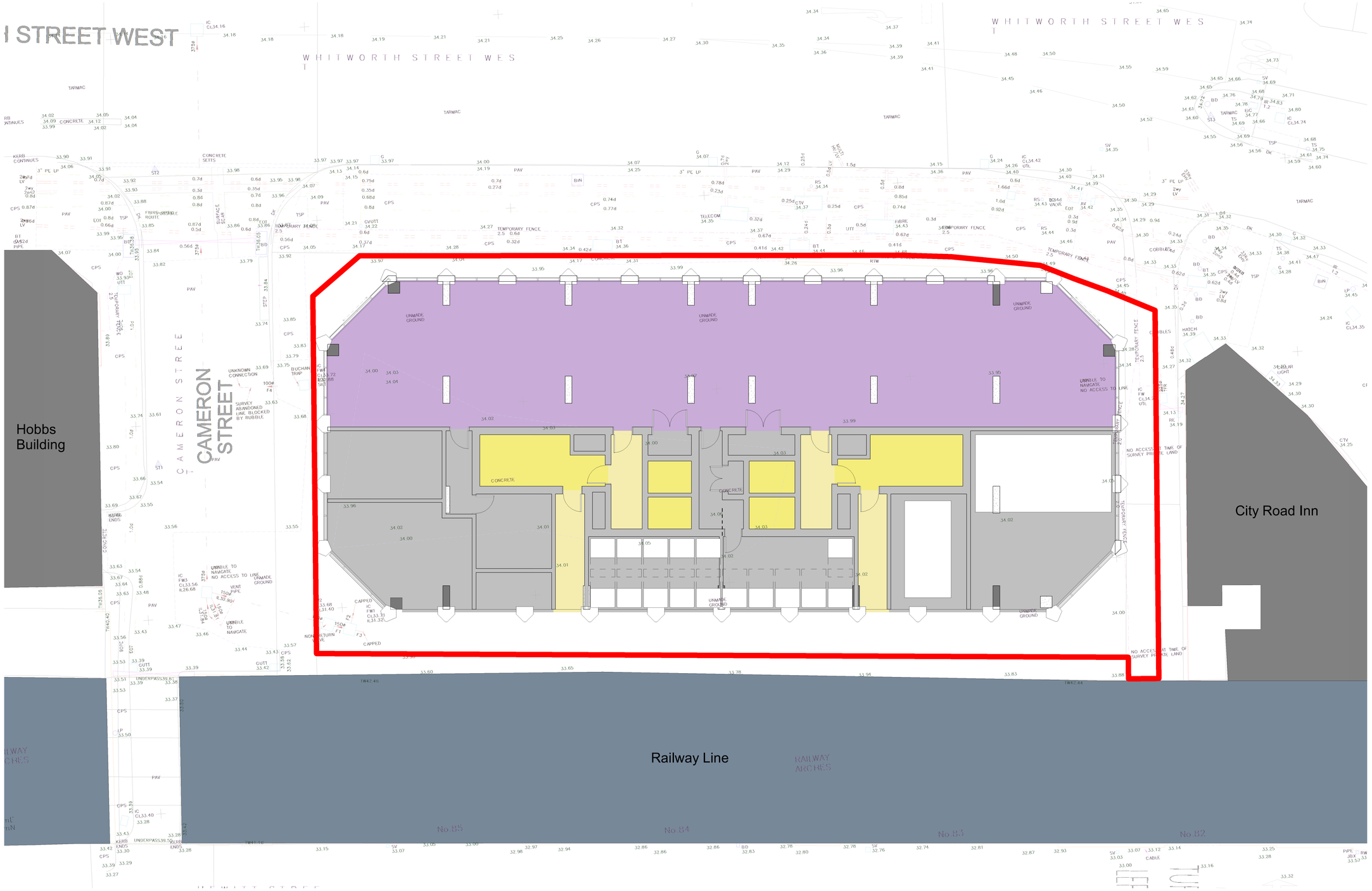
UKTAG-WFD. UKTAG River & Lake Assessment Method, Specific Pollutants (Metals), Metal Bioavailability Assessment Tool (M-BAT). Water Framework Directive – United Kingdom Technical Advisory Group. 2014.-

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

Water Framework Directive, 2000.

Water UK HBF. Contaminated Land Assessment Guidance. Water UK and the Home Builders Federation.

DRAWINGS



1 Level 0 - Site Plan Proposed
1 : 100

NORTH

0 1.0 2.0 3.0 4.0 5.0 10.0m

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Rev.	Description	Date	Drw.	Chk.
P01	FIRST ISSUE	10/12/2024	AR	AR

Client: Tri 7

Project: Whitworth Street, Manchester

Drawing Title: General Arrangement - Site Plan

Drawing Status: S1 - COORDINATION

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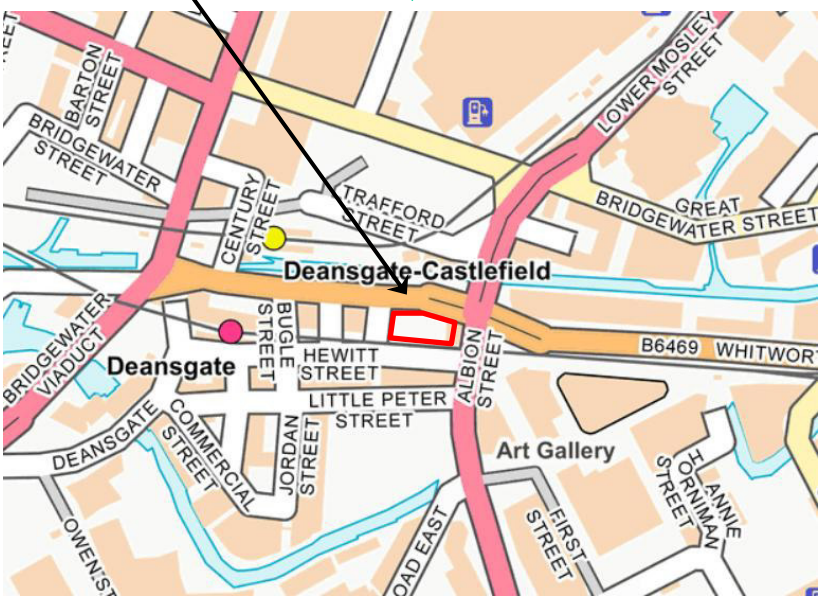
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SITE LOCATION

NEAREST POSTCODE: M1 5NZ

SITE ENTRANCE WHAT3WORDS: ///PROOF.BUTTER.POETIC



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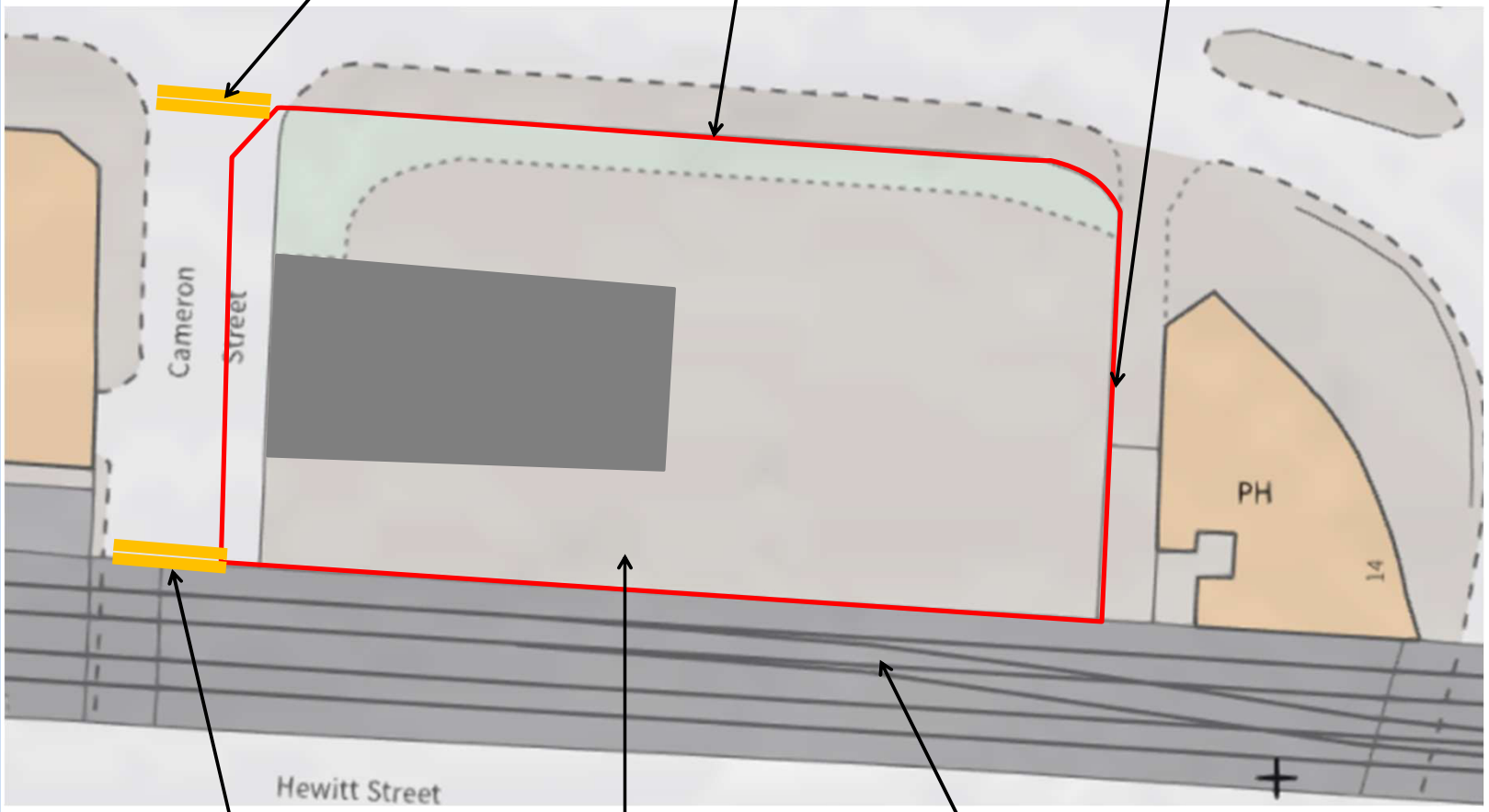
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KEY

- APPROXIMATE SITE BOUNDARY
- VEHICULAR SITE ACCESS
- CONCRETE HARDSTANDING

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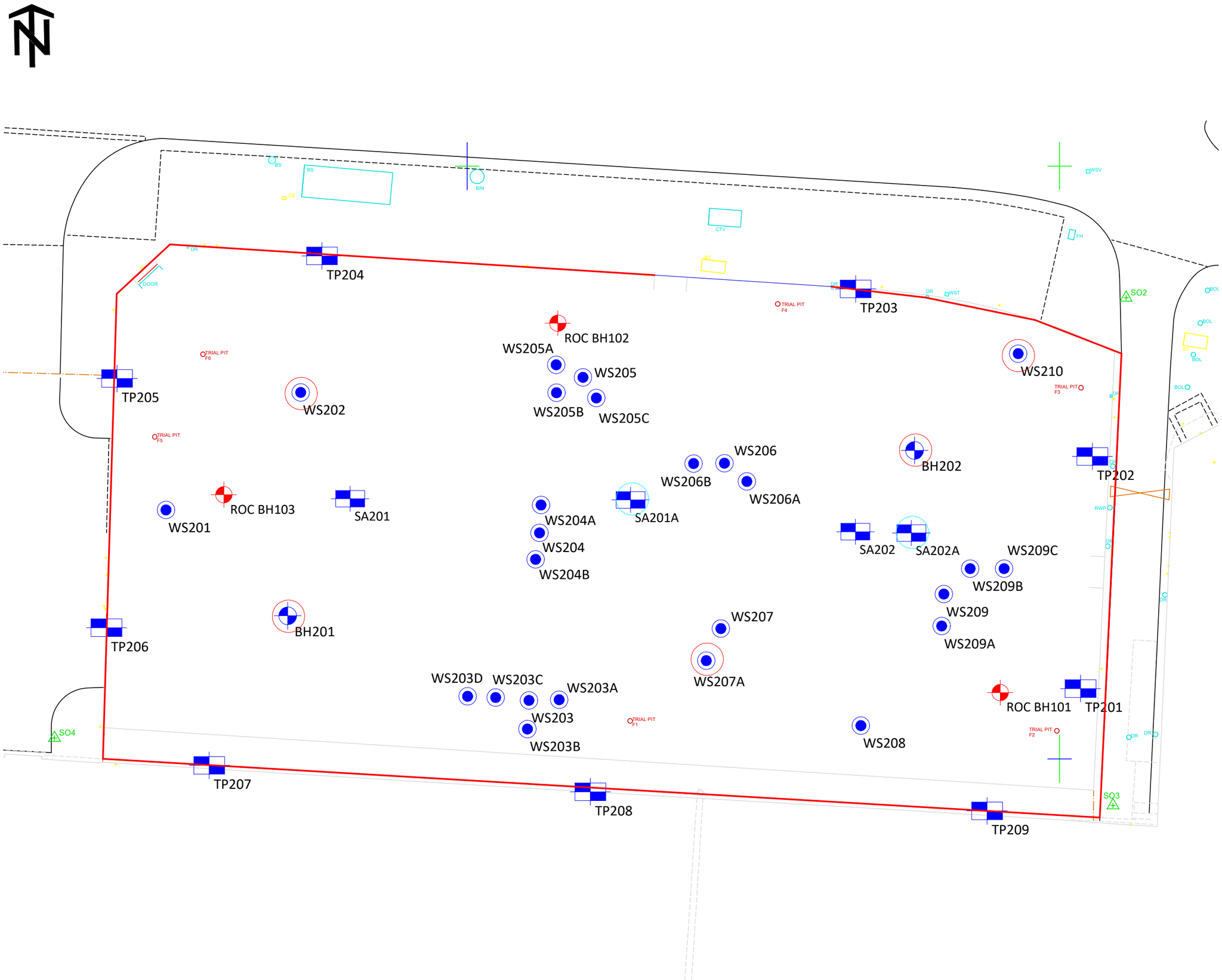
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SITE FEATURES PLAN

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KEY	
	APPROXIMATE SITE BOUNDARY
TPXX	TRIAL PIT
WSXX	WINDOW SAMPLE BOREHOLE
BHXX	ROTARY CORED BOREHOLE
	SOAKAWAY INFILTRATION TEST
	BOREHOLE INSTALLATION

RoC CONSULTING (2016)	
BHXX	ROTARY CORED BOREHOLE

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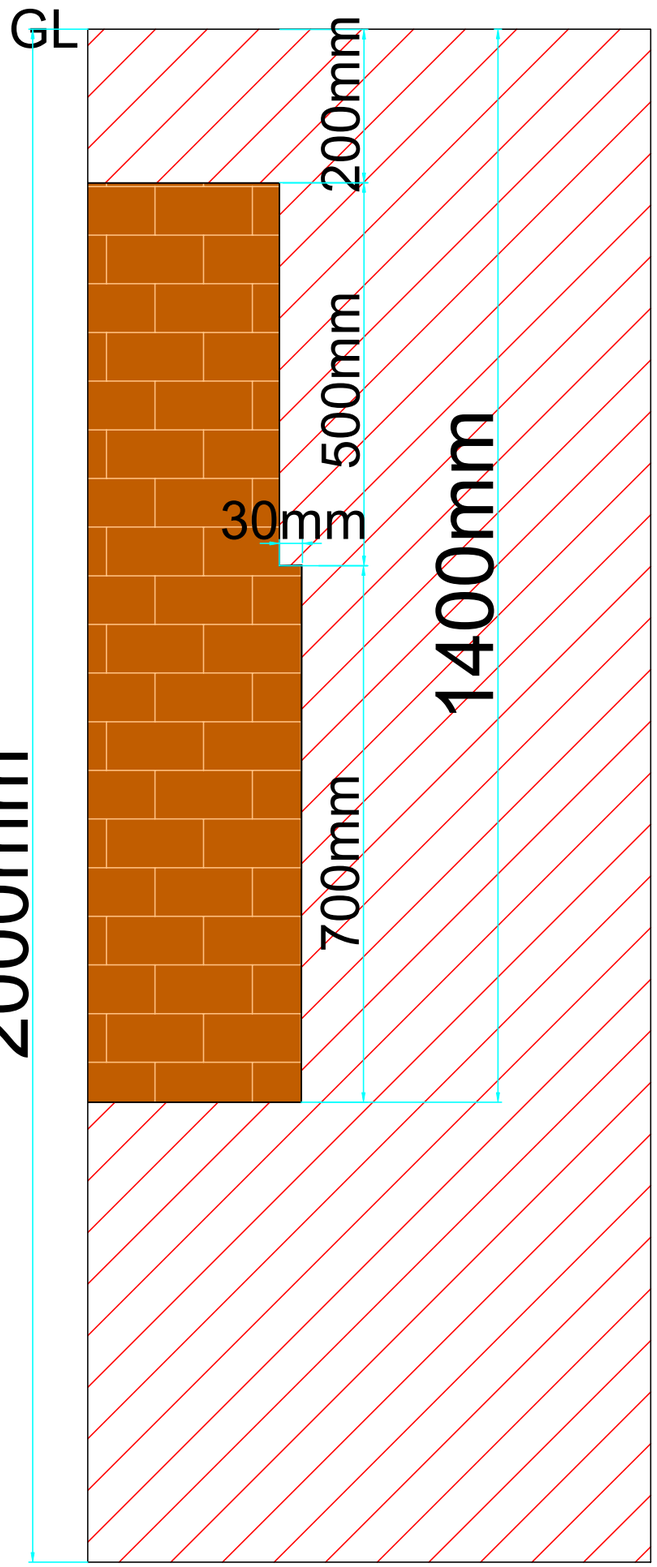
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EXPLORATORY HOLE LOCATION PLAN

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TP201









KEY	
	BRICK
	MADE GROUND

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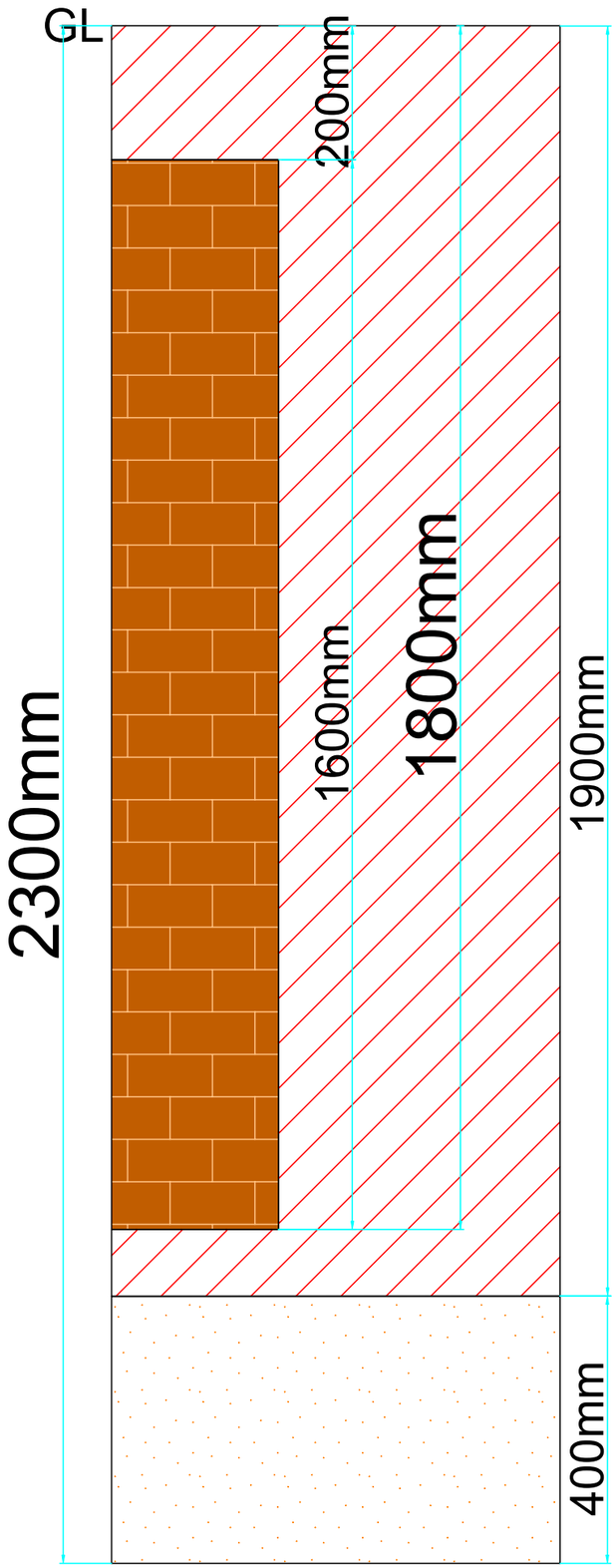
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TP202









KEY

	BRICK
	MADE GROUND
	SAND

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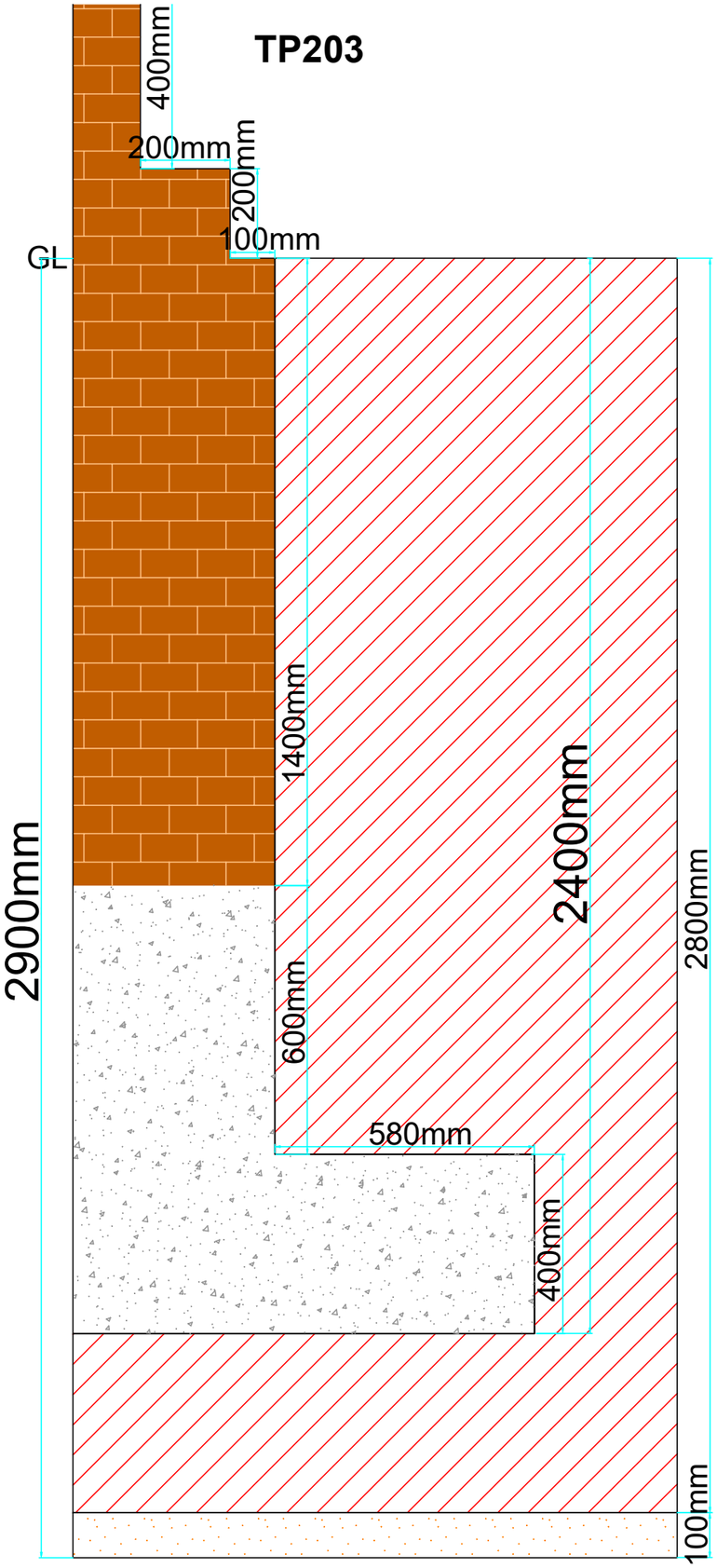
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TP203









KEY	
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	CONCRETE
	MADE GROUND
	SAND

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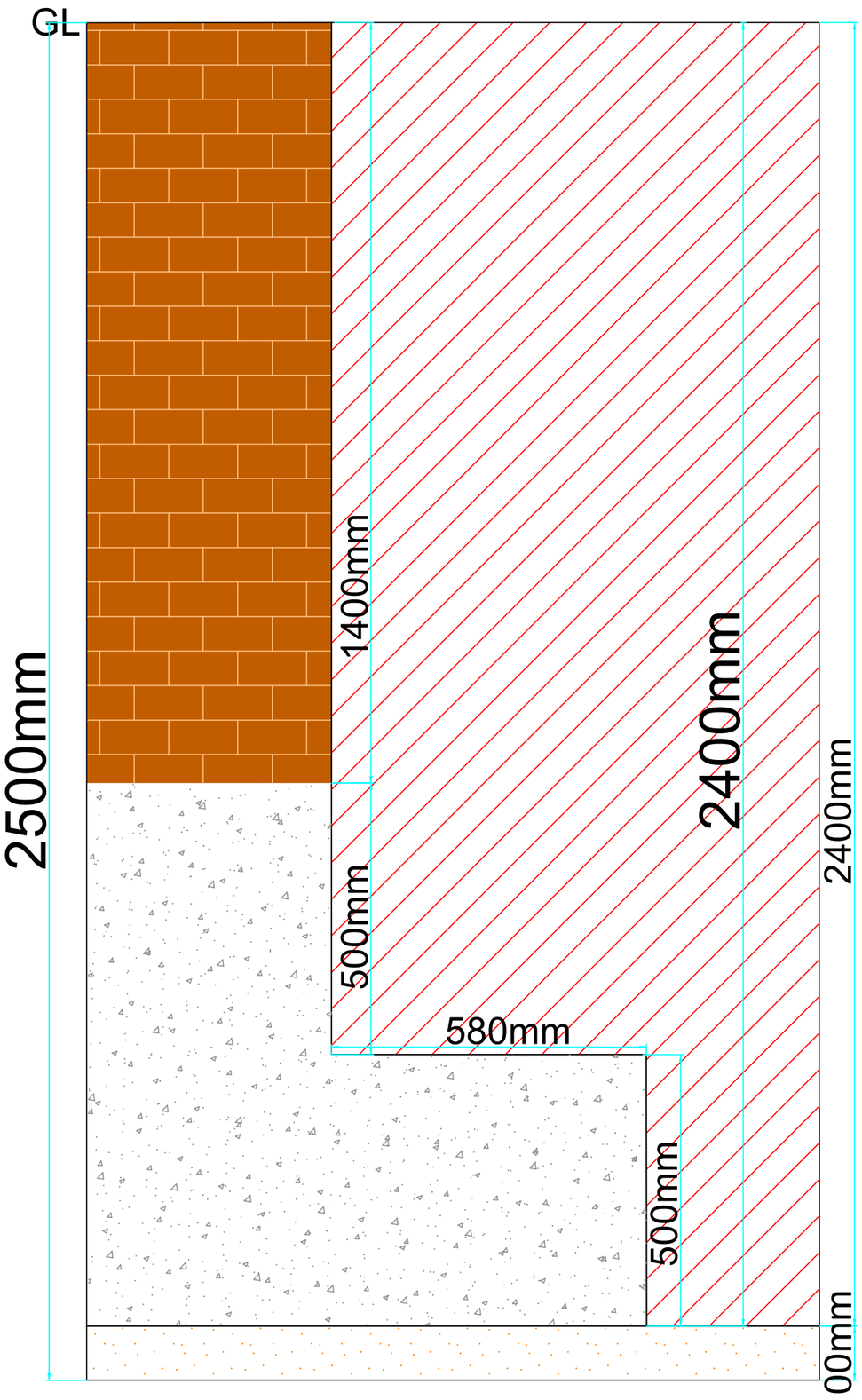
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TP204









KEY	
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	CONCRETE
	MADE GROUND
	SAND

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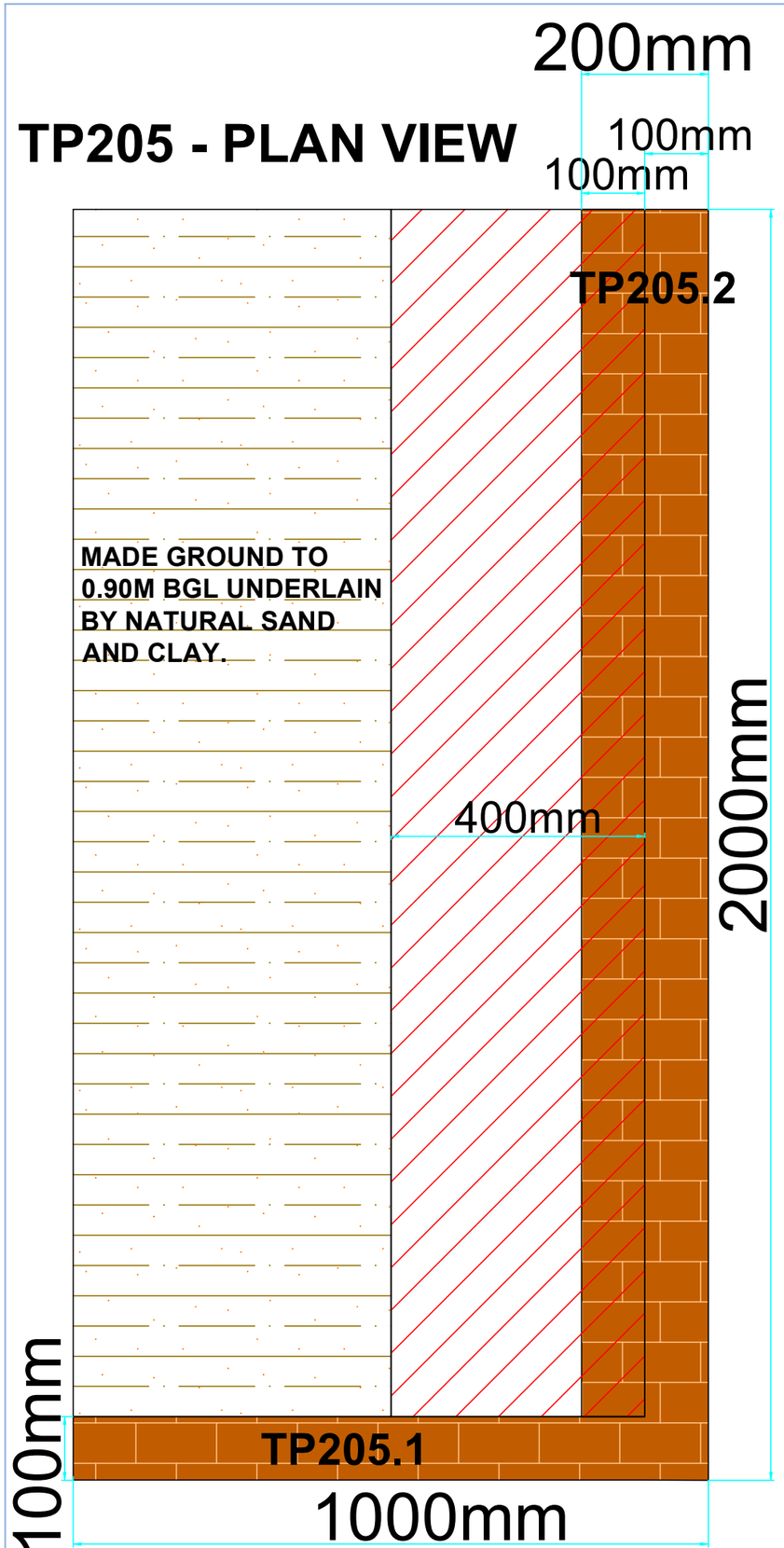
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TP205 - PLAN VIEW







KEY	
	BRICK
	MADE GROUND
	CLAY
	SAND

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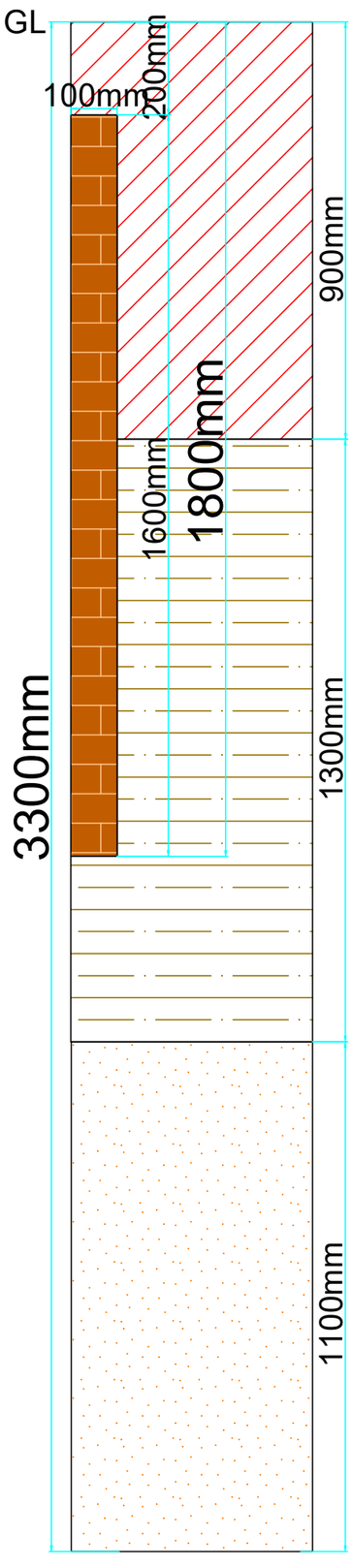
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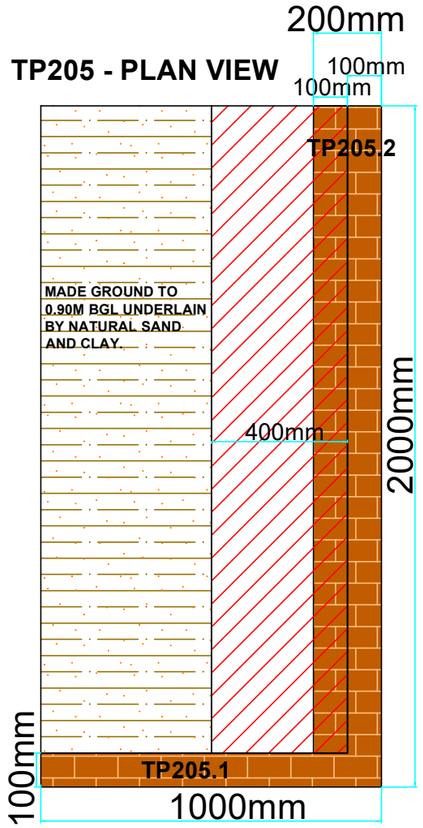
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TP205.1



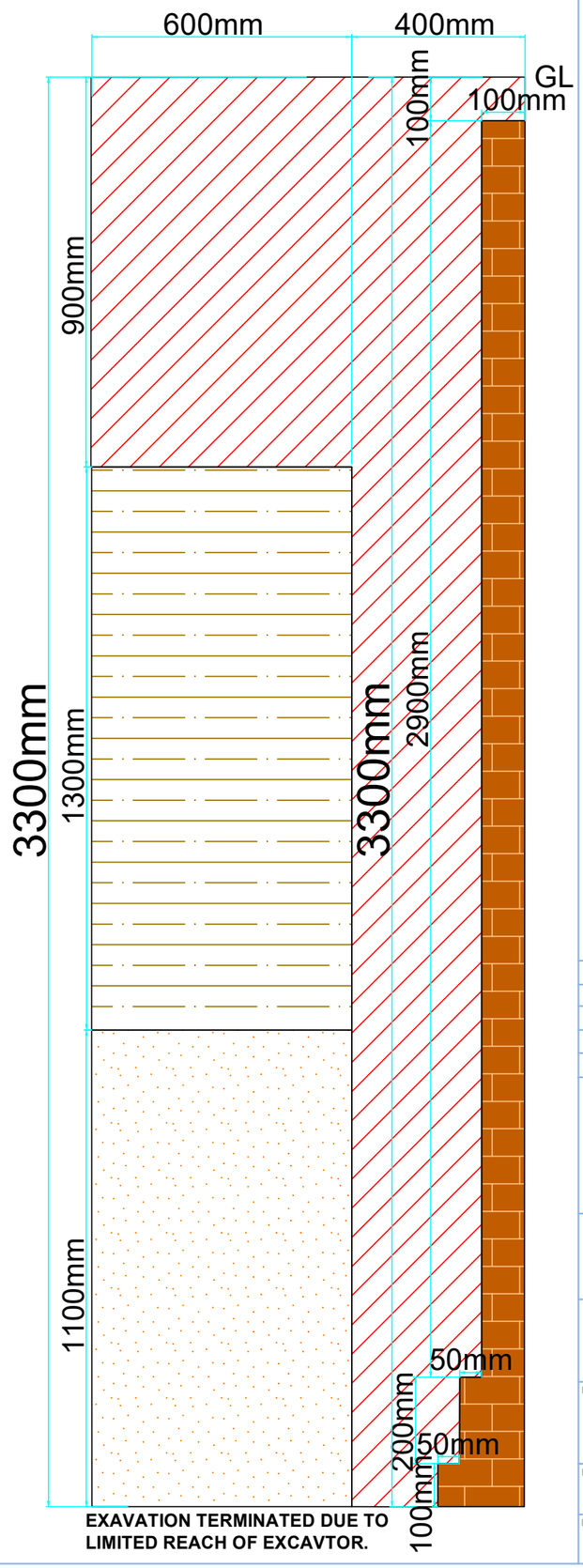
TP205 - PLAN VIEW







TP205.2



EXAVATION TERMINATED DUE TO LIMITED REACH OF EXCAVTOR.

KEY

	BRICK
	MADE GROUND
	CLAY
	SAND

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
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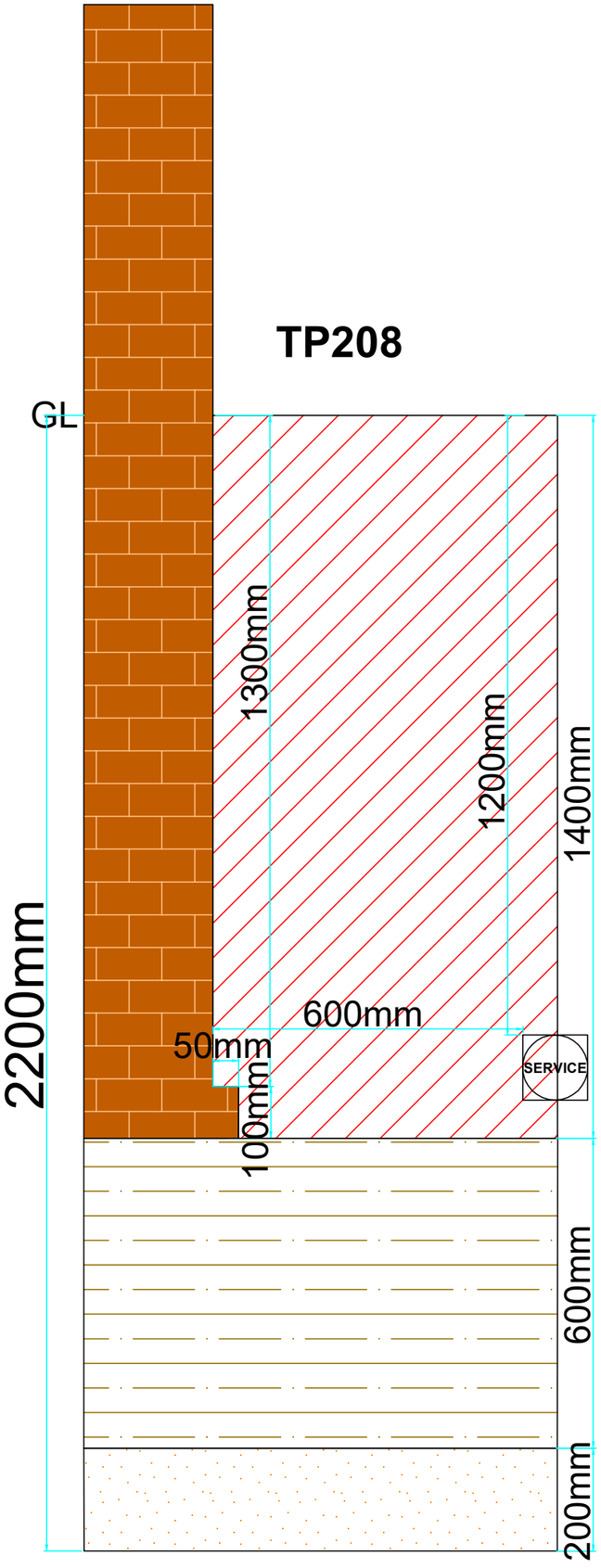
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C5504/03		NTS	14/11/2024

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TP208







KEY

- BRICK
- MADE GROUND
- CLAY
- SAND

NOTES

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DRAWING No.	REVISION	SCALE	DATE
C5504/03		NTS	19/11/2024

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APPENDIX A

BSL Methodology and Guidance

BSL Phase I & II Geo-Environmental Assessment Reports - Methodology and Guidance

Background

This Appendix provides information on the approaches, methods and guidance used by Brownfield Solutions Ltd in the preparation of this report.

The term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential soils and groundwater contamination). The term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements). It should be noted that this is an integrated investigation and these two main aspects are related, unless otherwise specified within the report.

Phase I reports are written in general accordance with the description of a Preliminary Investigation as defined in BS10175:2011+A2:2017 and are also produced in general accordance with the recommendations for a Tier 1 Preliminary Risk Assessment as described in LCRM guidance.

The first stage of the investigation and assessment of a site is the Preliminary Investigation/Tier 1 Preliminary Risk Assessment, often referred to as a Phase 1 Desk Study, comprising a desk study and walk-over survey and collation of desk-based searches, which culminates in the Preliminary Risk Assessment and the development of a preliminary/initial **Conceptual Site Model (CSM)**. From this are identified any potential geotechnical and geo-environmental hazards and the qualitative degree of risk associated with them. In the case of the geotechnical hazard identification, this is referred to as the **Ground Model.**

From the geo-environmental perspective, the hazard Identification process uses professional judgement to evaluate all the hazards in terms of possible contaminant linkages (of source-pathway-receptor). Possible contaminant linkages are potentially unacceptable risks in terms of the current contaminated land regime legal framework and require either remediation or further assessment. These are normally addressed via intrusive ground investigation and generic risk assessment as part of Phase II investigations and reports.

The second stage is the Ground Investigation, Generic Risk Assessment and Geotechnical Interpretation. This represents the further assessment mentioned above. The Ground Investigation comprises field work and laboratory testing based on the findings of the Preliminary Risk Assessment, to reduce uncertainty in the geotechnical and geo-environmental hazard identification. This may include an exploratory, a detailed or/and supplementary Investigations as described in BS 10175:2011+A2:2017. Phase II Assessments are produced in general accordance with the recommendations for a Tier 2 Generic Quantitative Risk Assessment as described in LCRM guidance and are also intended to fulfil the requirements of a Ground Investigation Report (GIR) as detailed in BS EN 1997-2:2007.

Contaminated Land - Legislative Background

Land contamination can be addressed in several ways, e.g. during planning, under Part 2A, following an incident, during an investigation into environmental damages, or during the application of an environmental permit, or its surrender.

For the planning process the key test is **as a minimum the site cannot be determined as contaminated land**, e.g. there is not significant harm, significant possibility of significant harm to human health or that there is not significant harm to, or the significant possibility that the pollution of controlled waters will occur.

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

- The 1995 Environment Act.
- The Contaminated Land Statutory Guidance, DEFRA – April 2012.
- The Contaminated Land (England) Regulations 2006.
- The Contaminated Land (England) Amendment Regulations 2012.
- Water Resources Act.
- Water Framework Directive.
- Environmental Damage Regulations.
- Environment Agency (EA) - Land Contamination Risk Management (LCRM) 2019.

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

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

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

Source - substances that are potential contaminants or pollutants that may cause harm.
Pathway - a potential route by which contaminants can move from the source to the receptor, and the impact of that migration on the source e.g. attenuation.
Receptor - a receptor that may be harmed, for example the water environment, humans and water, considering the sensitivity of the receptor.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused.



Where any one of the “pollution linkages” between the above is absent there is deemed to be no risk.

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

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

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

- DETR: Circular 02/2000: Environmental Protection Act 1990: Part IIA: Contaminated land. 2012.
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002.
- BS 10175:2011+A2:2017.
- Environment Agency (EA) - Land Contamination Risk Management (LCRM). 2019.
- Groundwater Protection https://www.gov.uk/government/collections/groundwater-protection
- UK Technical Advisory Group (UKTAG) - Water Framework Directive
- Incidents and their classification: the Common Incident Classification Scheme (CICS) – Used by the Environment Agency to classify pollution incidents.

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

- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012).
- The Environment Protection Act (1990).
- The Water Resources Act (1991).
- The Environment Act (1995).
- The Contaminated Land (England) Act (2000).
- The Pollution Prevention and Control (England and Wales) Regulations (2000).
- The Landfill Regulations (England and Wales) Regulations (2002).
- The Landfill (England and Wales) (Amendment) Regulations (2004).
- Contaminated Land (England) Regulations (2012).
- The Environmental Damage (Prevention and Remediation) Regulations (2009).
- Environmental Permitting Regulations (England and Wales) Regulations (2010).
- The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017).
- Health and Safety at Work Act.
- National Planning Policy Framework (NPPF) – latest version.

Contaminated Land Risk Assessment Approach

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



LCRM outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process. Under LCRM, three tiers of risk assessment exist – Stage/Tier Preliminary Risk Assessment, Stage 2 Generic Quantitative and Stage 3 Detailed Quantitative.

Further information can be found at the below site:
https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm

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

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

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

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552, with reference to Incidents and their classification: the Common Incident Classification Scheme (CICS), Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance 2012 and other guidance as appropriate which will be detailed within the main body of the report if applied.

The likelihood of a given receptor being impacted is related to a number of factors, e.g. the geology which could inhibit contaminant migration. For example, a site with a significant thickness of clay between it and a receptor may reduce migration of contamination via the subsurface, which will reduce the likelihood of a given receptor being impacted. The geology or drainage for example could offer a preferential pathway e.g. mines shafts/faults increasing the likelihood and potential magnitude of an impact. The depth of contamination will also affect the exposure pathway, for example petroleum hydrocarbons at depth are unlikely to reach a receptor via dermal contact but could via vapour pathways which will influence the likelihood of an impact being felt e.g. if there are no buildings on site.

The terms and definitions used for the assessment of the likelihood are provided below:

High likelihood: There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Examples - Extensive areas with concentrations above saturation limits for mobile contamination e.g. petroleum hydrocarbons within the water table.

Likely: There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term.
Examples – Localised areas of contaminants with concentrations above saturation limits for mobile contamination e.g. localised petroleum hydrocarbons within the water table; shallow contamination above relevant human health generic assessment criteria is present with little or no hardstanding,

Low likelihood: There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term.
Examples - A thickness/distance of low permeability deposits preventing contaminant migration to a receptor is present; a site is mostly covered hard standing preventing exposure to soil contamination.

Unlikely: There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.
Examples – A site is underlain by a substantial thickness of low permeability clays, between the source and potential receptors which will inhibit significantly, but not completely rule out migration to sensitive receptors.

The severity is also classified using a system based on CIRIA C552, with reference to Incidents and their classification: the Common Incident Classification Scheme (CICS), Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance 2012 and other guidance as appropriate which will be detailed within the main body of the report, if applied. The terms and definitions are:

Severe: Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);

Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse.

Medium: Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve.

Mild: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment.
Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.

Minor: harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.
Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

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

		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very Low	Very low
	Negligible	Negligible Risk / No Linkage			

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

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

High: Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the longer term.

Moderate: It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term.

Low: It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.

Very Low: There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

Some linkages may be identified which constitutes a theoretical connection between a source and a receptor, but professional judgement shows them not to be possible for some reason. These are labelled 'negligible risk' and 'no linkage' in the summary table, which give rise to an overall **negligible** risk category and no further action is required.

Contaminated Land Screening Values

In assessing the potential for contamination Brownfield Solutions Limited (BSL) follows UK guidance and current best practice.

General

The purpose of using generic Tier 1 screening levels is to have a simple means of assessing the potential contamination of a site and to inform decisions on whether further investigation is warranted or whether an option to undertake remedial action based on the data to hand is cost effective.

Human Health

Current UK guidance on risks to human health is provided by DEFRA and the Environment Agency (EA). Under the land use planning system where the aim is to demonstrate 'suitability for use' the key will usually be to confidently determine that the level of contamination of the land is low relative to some appropriate measure of risk at a particular critical connection.

Publications forming part of the guidance include the CLEA Model and toxicological reports collectively referred to as the CLEA Guidance. The CLEA Guidance has included a number of publications which have provided initial screening values or Generic Assessment Criteria (GACs) for soils contamination based on standard land uses and soil assumptions. The critical concentrations referred to above can be the relevant GAC.

CLEA guidance has gone through a number of revisions over time. Tier 1 generic S4UL values (or GACs) have been published using the CLEA 1.06 Model by CIEH/LQM. These are the third set of generic assessment criteria generated by CIEH and replace the previous two sets of GACs. The revised S4UL values are based on greater knowledge of relevant toxicology and further consideration of exposure frequencies.

C4SL values for six determinands including lead were published by DEFRA/CL:AIRE in December 2014. Additional determinands were added in 2021. They represent a low risk as opposed to minimal risk, however they are still strongly precautionary. These screening values were published by DEFRA for Part 2A use, although DEFRA have also confirmed acceptability for use under planning. However, S4ULs remain the first reference point for BSL due to the broader range of end uses scenarios and the availability of a wide array of determinands with various soil organic contents.

As part of Tier 1 assessments, the following data sources are used in the order of preference given below, unless further justification is provided to adopt less conservative criteria:

- CIEH S4UL values (derived by CIEH/LQM).
- DEFRA/CL:AIRE C4SL's https://www.claire.co.uk/projects-and-initiatives/category-4-screening-levels
- CL:AIRE GAC values.
- Guidance from other European countries.
- Guidance from the outside Europe.

Dependent on requirements, test results may be divided into representative data sets for assessment against the above referenced screening criteria, based on the conceptual model and taking into account such characteristics as variation in soil properties, historical, existing or proposed land uses. The soils in these areas are considered likely to form the ground cover in critical receptor areas (e.g. gardens, soft landscaping etc)

where pathways may exist. The critical part of the soil column is typically taken as the upper metre in terms of contact with end users of a development site for the purposes of initial assessment.

The screening criteria adopted by BSL are presented overleaf.

Further Assessment
When screening values are exceeded then further consideration is required. This could include further additional detailed investigation and assessment to further define the risk or to design appropriate remedial measures to either remove the source or break the pathway. In some cases, dependant on the Conceptual Site Model (CSM), no action may be required.

PAHs and B(a)P as a Surrogate Marker for Adoption of C4SLs
As stated above, S4ULs remain the first reference point as screening levels unless further justification is provided. In order to determine if the C4SL can be adopted, benzo(a)pyrene (B(a)P), the following guidance within SP1010 Appendix E for B(a)P and Public Heath England (PHE) may be adopted with our assessments where appropriate.

Guidance states that benzo(a)pyrene is considered to be one of the most potent PAHs, and it would be appropriate to assume the cancer risk in a mixture is proportional to the concentration of a surrogate marker PAH (benzo(a)pyrene) in the mixture. The ratio of PAHs within the mixture can be assessed to ensure that the profile is similar to that seen for the test material (coal tar mixtures) in the toxicological study by Culp et al. The International Programme on Chemical Safety (IPCS) considered that the PAH profile of the soil sample may deviate from the average profile by about an order of magnitude (up or down).

A more recent study by Bull et al (2013) which analysed PAH concentrations in soil samples from 274 sites, showed that the levels of PAH relative to B(a)P showed little variability and were similar to that recorded for the coal tar mix used in the Culp et al study. Given this, it was concluded that benzo(a)pyrene is a suitable surrogate marker to represent mixtures of PAH in soil.

In order to risk assess the PAH mixture for site specific soil samples using human health guideline values, notably the C4SLs, as detailed in SP10101 the ratio of the seven genotoxic PAHs as shown below, relative to B(a)P, should be calculated to ensure it is similar to the test material used in the Culp study (PHE 2010). To be considered sufficiently similar, the ratio relative to B(a)P should fit within the upper and lower limits (representing an order of magnitude above and below the mean ratio to B(a)P of test material used in the Culp et al study). In such cases B(a)P is considered an adequate surrogate marker and the Low Level of Toxicological concern (LLTC) for B(a)P (i.e., the C4SL) may be used in the risk assessment.

Statistical Analysis on Soils
Guidance on the use of statistics is taken from the CL:AIRE publication "Comparing Soil Contamination Data with a Critical Concentration" 2020, the basis of which in statistics is termed Central Limit Theorem (CLT), which says "*The distribution of sample means converges to a normal distribution as the sample size increases*".

If the critical concentrations have been exceeded, as part of a further assessment, statistical analysis may be undertaken on a dataset to demonstrate that the mean concentration on the site (or a particular area) is actually below the critical concentration. The true mean concentration of a contaminant is never known because all the site soil has not been tested. An estimation of the true mean can be obtained from the samples tested during the investigation. The greater the number of samples tested, the closer the mean of these values is to the true mean.

As discussed above, test results are typically divided into representative data sets for assessment and may be referred to as 'averaging areas' to which statistics can be applied, although several statements need to be satisfied before applying the guidance:

- Averaging areas have been defined based on the CSM.
- Sample locations – random/grid sampling adopted as opposed to targeted investigation.
- Samples are evenly spread and not clustered.

- Analysis do not suggest a hotspot/outlier or cluster established by histogram or other means.
- Samples are of same/similar depth and taken from one population (e.g. just topsoil).
- Analyses do not show a spatial trend or other spatial pattern across that zone.
- The number of samples has been shown to be sufficient for statistical analysis.

Once the above have been satisfied, when undertaking statistical analysis, the question "*are mean soil concentrations within the averaging area equal to, or greater than, the GAC*?" is being asked. Typically, outliers or "hotspots" are treated as separate zones or averaging areas. The sampling strategy and assessment should also take into account uncertainty (for example, spatial heterogeneity) in contaminant concentrations. There is the assumption that sampling was random or stratified and systematic (e.g. on a grid) and not targeted at specific sources; data from such targeted areas should be omitted from the statistical analysis. Data should be from one population (i.e. the same materials).

The statistical test that is carried out is used to demonstrate that there is a certain probability that the true mean falls below the critical concentration (typically the GAC in a screening exercise). The main tool used to draw conclusions based on the 2020 guidance is a comparison of a 2-way confidence interval with the critical concentration. A confidence interval consists of two sets of numbers; an interval i.e. a range of values plus a pre-determined level of confidence e.g. 80%. A common interpretation of a confidence interval of say 80% is that "*there is an 80% chance that the true mean concentration level of the contaminant in a sampling zone lies between X concentration and Y concentration*".

The current guidance for planning says that the site has to be "safe" which suggests we should use a large confidence interval such as 95% or higher to make a decision. This means that there is a 95% chance of the true mean concentration lying in this interval, there is also a 5% chance it lies outside this interval. One could then conclude that the requirements of planning have been met if the 95% confidence interval lies below the critical concentration.

The guidance recommends that at least two confidence levels are used such as 90% and 99% or 80% and 95%. By using two differing confidence intervals, we can use the smaller confidence interval (e.g. 80% confidence interval) to say "*we think the mean is most likely to be inside this range*" and the larger confidence interval (e.g. 95% confidence interval) to say "*we think the mean is most unlikely to be outside this range*".

If the confidence interval extends to above the critical concentration, then further action may be required.

Controlled Waters

The European Water Framework Directive (WFD) became UK law in December 2003. It was created to ensure that European countries manage their rivers, groundwater and lakes so that they stay healthy for people and for wildlife.

This is achieved by the use of chemical standards (Water Quality Targets – WQTs) for surface waters and groundwater. These values describe concentrations of chemicals that are not expected to cause harm to environmental organisms or human health, provided they are not exceeded. The same chemical may have several standards for different environmental regimes, and for different protection objectives.

Statutory Standards are set in legislation and if exceeded, this constitutes non-compliance with statutory obligations. European Directives are implemented in England and Wales by corresponding statutory instruments (i.e. regulations- The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 and The Private Water Supplies (England) Regulations 2016. SI 2016 / 618). In Scotland, the Public Water Supplies (Scotland) Regulations 2014 apply. The statutory instruments can be the exact same standards as they appear in the Directive or be more stringent.

A number of non-statutory standards also exist, these are set by various organisations (including the EA) for chemicals that are considered to be of concern, but are not covered by any specific legislation.

The chemical standards used in the UK to control impaction of contamination on controlled waters are Environmental Quality Standards (EQS). These cover a large number of compounds. EQS are available for inland surface waters (freshwater) and other surface waters (transitional and marine).

Several EQS are based on bioavailable metal proportions (i.e. copper, lead, manganese, nickel and zinc). A software tool (M-BAT) is available from the Water Framework Directive - UK TAG website for calculating the bioavailable fraction. Where this tool has been used, the bioavailability has been taken into account by calculating site-specific $PNEC_{dissolved}$ (Predicted No Effect Concentration) values. These enable the dissolved concentration data to be compared with the PNEC as if it were an EQS.

UK Drinking Water Standards (DWS) apply to waters abstracted for human consumption. Where no UK or EU drinking water standard exists, reference is made to the World Health Organisation criteria (2011).

The DWS apply to groundwater or to surface water used for abstraction and the EQS apply to surface water where the aquatic ecosystem is the receptor. Where the most appropriate water quality target cannot be determined with certainty, the lowest one is adopted in line with the precautionary principle.

In some instances, the laboratory detection limits (LODs) may be greater than the water quality target it is being screened against, but it should be noted that these comparisons are an initial screening assessment. It may be the case that lower LODs could be obtained using a more specialised technique, but it would be disproportionately expensive to adopt the more costly specialist technique for initial screening exercises.

The preference of BSL is to have testing carried out on actual samples of ground/surface water rather than theoretical values obtained from leachate testing, which is considered to often be highly conservative. Data from water samples obtained or from leachate analysis is then compared against the screening criteria adopted by BSL, which are presented overleaf.

When screening values are exceeded then further consideration is required. This could include further additional detailed investigation and detailed quantitative risk assessment (DQRA) to further define the risk or to design appropriate remedial measures to either remove the source or break the pathway.

Ground Gas Risk Assessment

BS8485:2015+A1:2019, BS 8576:2013, CL:AIRE RB17, and NHBC 'Hazardous Ground Gas - An essential guide for housebuilders' 2023, are the current guidance which gives up-to-date advice on all aspects of permanent ground gas risk. BS8576 alongside CIRIA C682 also provides guidance on assessment of hydrocarbon vapour intrusion.

The CL:AIRE publication 'Good Practice for Coal Mine Gas Emissions" 2021 provides guidance on the assessment of risks from mine gas sources.

The above all outline good practice in investigation, the collection of relevant data and monitoring programmes in a risk-based approach to ground gas contamination. The aim of the guidance is for a consistent approach to decision making, particularly relating to the scope of protective design measures on a site-specific basis.

Legislative Framework
BS8485:2015+A1:2019, BS 8576:2013 and CIRIA C665 provides technical guidance, however they also recognise the context into which the guidance has to be employed. Government policy is based upon a "suitable for use approach", which is relevant to both the current and proposed future use of land. When considering the current use of land, Part IIA of the Environment Protection Act 1990 provides the regulatory regime. The presence of hazardous ground gases could provide the "source" in a "pollutant linkage" which could lead the regulator to determine that considerable harm or there is a significant possibility of such harm being caused. Under such circumstances, the regulator would determine the land to be "contaminated land" under the provisions of the Act, setting out the process of remediation as described in the DETR Circular 02/2000 *Statutory guidance on contaminated land.*

Generation Potential of Sources

BS 8576:2013 Figure 6 provides a basis for assessing the generation potential from sources identified as part of the Phase I Assessment. These are summarised below:

Generation Potential	Typical Sources
Very Low	• Natural carbonate soil and strata, e.g. chalk and limestone. • Natural soil strata with a low degradable organic content, e.g. alluvium, peat. • In-filled pond less than 15 m diameter, in-filled before 1930s to 1940s. • Made ground with low degradable organic content (e.g. up to 5% organic material such as pieces of wood, pieces of paper, rags, etc. with a high proportion of ash and no food or other easily degradable waste). • Mine workings shallow or shaft (where there is clear evidence that they are flooded). • Inert landfill sites (and pre -1945 landfills).
Low	• Natural soil strata with a high degradable organic content (DOC). • Made ground with total organic carbon (TOC) up to 6% (e.g. dock silt, no food or other easily degradable waste). • Foundry sand (includes phenolic binders, rags and wood that decay, albeit at low rates). • Landfill 1945 to mid 1960s (see also Moderate below).
Moderate	• Sewage sludge. • Mine workings – unflooded, more than 50 years since last worked (gas is liberated from coal when mine workings are excavated; this continues for up to about 50 years). • Landfill 1945 to mid 1960s (this could also be “low” or, if disturbed, “high”).
High	• Landfill mid 1960s to early 1990s. • Mine workings – unflooded – less than 50 years since last worked.
Very High	• Municipal landfill sites. • Landfill early 1990s onward.

Frequency and Duration of Monitoring

BS8576 notes to determine where and how to monitor ground gases requires consideration of credible pathways of possible exposure of the receptors, taking into account what is known about the geology and hydrogeology, building construction and services layout, foreseeable events such as flooding, changes in groundwater level, climate change, extreme weather conditions, the closure of mines, and possible changes to the gas regime caused by future development.

The monitoring period for a specific site should cover the “worst case” scenario. A “worst case” scenario will typically occur during falling atmospheric pressure and, in particular, weather conditions such as rainfall, frost and dry weather.

The benefits of additional information and whether it is likely to change the scope of gas protection should be considered, as are the consequences of failing to characterise adequately pollutant linkages. Investigations concerned with ground gas are required to provide monitoring data sufficient to allow prediction of worst case conditions enabling the confident assessment of risk and subsequent design of appropriate gas protection schemes. Monitoring programmes should not be an academic exercise in data collection. CL:AIRE publication TB17 “Ground Gas Monitoring and ‘Worst-Case’ Conditions” provides further guidance.

Below are matrices that will aid in determining an appropriate number of gas monitoring visits and the length of monitoring period.

Typical/idealised periods of monitoring

		Generation of Potential Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	1 month	2 months	3 months	6 months	12 months
	Moderate (Apartments)	2 months	3 months	6 months	12 months	24 months
	High (Low rise Residential)	3 months	6 months	6 months	12 months	24 months

Typical/idealised frequency of monitoring/Number of Visits Required

		Gas Generation of Potential Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	4	6	6	12	12
	Moderate (Apartments)	6	6	9	12	24
	High (Low rise Residential)	6	9	12	24	24

Notes

1 Generation potential of sources based on descriptions within BS 8576:2013.

2 At least two sets of readings should be at low and falling atmospheric pressure (but not restricted to periods below <1000 mb) known as worst case conditions. Historical data can be used as part of the data set (Table 5.5b).

It is recommended that newly installed monitoring wells are left for 24 hours to allow the soil gas to reach equilibrium. It should be recognised, however, that some soil gas regimes could take considerably longer (up to seven days). Interpretation of any initial readings should take this equilibrium process into account.

Gas Risk Assessment

Within BS8485:2015+A1:2019 a semi-quantitative method is set out for the assessment of risk.

This method (Modified Wilson and Card) uses the concept of Gas Screening Values (GSVs) and typical threshold concentrations of carbon dioxide and methane to identify levels of risk. Sites are then classified into a 'Characteristic Situation' or 'CS' from CS1 where no mitigation is required and CS2 increasing up to CS6 where protection measures are required.

The NHBC guide 'Hazardous Ground Gas - An essential guide for housebuilders' 2023 provides further assessment tools for ground gas monitoring data, including the use of ternary plots to determine ground gas sources.

A separate approach to assessment without monitoring data is discussed under the RB17 header further below.

CIRIA C682 and BS 8576:2013 provide guidance on assessment of VOC intrusion risk.

Ground Gas Mitigation

Where a risk is determined to be present by assessment, BS8485:2015+A1:2019 provides guidance for the design of protection systems based on a points scoring system depending on the characteristic situation, structure type, structural barrier types, ventilation and a gas resistant membrane. Source removal can also be considered.

The design requires the structures to be categorised into one of four building types: Type A, Type B, Type C or Type D, related to the construction and end use of the building, together with the control of future structural changes and maintenance.

CIRIA C748 provides advice on the use of membranes as VOC vapour barriers.

CIRIA C735 sets out the approach for verification of installed mitigation measures. Note that if a membrane is installed it must be verified in accordance with CIRIA C735 or it will score zero points and assumed to not afford any protection.

RB17 Approach
CL:AIRE RB17 (Card et al 2012) is a pragmatic approach to ground gas risk assessment and was developed because gas concentration, pressure and flow rate measured in a well headspace may not be representative of the conditions in the surrounding formation.

In these low-risk situations, the approach is to use the conceptual site model and the estimation of the likely gas generation from a source to identify where or if gas monitoring is required to better define the risks.

Under this approach, for sites with natural soils only with no credible methane source, then no action is required (no monitoring or gas protection measures) as this represents Characteristic Situation 1 (CS1).

Radon
Advice on radon protection in England is provided by the UK Health Security Agency, https://www.ukradon.org/information/ukmaps and by the BRE (BR 211 (Scivyer 2023).

Areas of the country can be categorised according to the percentage of existing homes where radon is present above the Action Level:

- 0-1% lower probability.
- 1-3% and 3-10% intermediate probability.
- >10% higher probability.

Basic radon protection measures are required in new buildings and extensions in areas of England and Wales where 3-10% of properties exceed the Action Level and full radon protection measures where >10% exceed the Action Level.

Unexploded Ordnance (UXO) Guidance

Clients have a legal duty under the CDM 2015 Regulations to provide designers and contractors with project-specific health and safety information needed to identify hazards and risks. This includes the possibility of unexploded ordnance (UXO) being encountered on the site. Further details are given in CIRIA report C681.

BSL carry out non-specialist UXO screening exercises by considering any evidence of UK defence activities on or near the site evident from gathered desk study information and the unexploded aerial delivered bomb (UXB) online risk maps produced by Zetica. Other data sources are available, but as a first stage screening exercise the freely available online Zetica maps have been used. The level of risk stated is that determined by Zetica, a company experienced and considered competent in the assessment of UXO.

Geotechnical Guidance

A preliminary risk assessment of geotechnical hazards is carried out at the desk study stage and confirmed (or amended) at the ground investigation stage.

The CD 622 'Managing Geotechnical Risk' guidance document defines the technical approval and certification procedures to be used to ensure that the risk associated with the geotechnical activities are appropriately managed.

The desk-based stage may also include the requirements for a Coal Mining Risk Assessment (CMRA) which specifically assesses the risks from mining induced instability and related issues in high risk development areas: https://www.gov.uk/guidance/planning-applications-coal-mining-risk-assessments.

In order to establish the requirements of a project, the Geotechnical Category which is based on a consideration of project complexity, proposed geotechnical activities, presence of geo-hazards and severity of geotechnical risks, shall also be considered. These range from Category 1 (small/simple structures) to Category 3 (very large, unusual or complex activities/structures, such as tunnels). It is envisaged most projects typically fall into Category 2, including conventional types of geotechnical structures, earthworks and activities.

In the case of the geotechnical hazard identification at the intrusive investigation stage, this is referred to as the **ground model**.

The geotechnical sections of the report contain the factual information on the geology and relevant site data, including both in situ and laboratory testing, with a geotechnical evaluation of the information stating the assumptions made in the interpretation of the data.

Derived values of geotechnical parameters are obtained from test results by theory (book values), correlation or empiricism in general accordance with BS EN 1997-2:2007 (EC7).

Where derived geotechnical parameters are to be used in designs in accordance with EC7, the selection of characteristic values for geotechnical parameters using the derived values is carried out by well-established experience.

The characteristic value is a cautious estimate of the value affecting the occurrence of the limit state. For any particular material type there may be more than one characteristic value for each parameter because there may be more than one limit state.

The second stage is the selection of design values. The design values are either derived from the characteristic value by applying the relevant partial factors or assessed directly. Similarly, there can be several design values for the same material type.

In the event that geotechnical designs are included in this report, selection of the characteristic and design values is included. Otherwise, it is the duty of the geotechnical designer to determine these within a separate design report (a GDR).

Where it has not been possible to reasonably use an EC7 compliant technique, a practical alternative has been adopted to obtain indicative soil parameters and any interpretation is based upon engineering experience, local precedent where applicable and relevant published information.

In addition to the above:

- Assessments for highways designs are based on CD 622 Managing Geotechnical Risk.
- The assessment of sustainable drainage is based on BRE365 and CIRIA C753 'The SuDS Manual'.
- Earthworks Assessments are based on SHW Series 600 and BS6031.
- Risks from mining (both at the desk based and intrusive stages) are assessed adopting guidance from CIRIA C758.

Re-Use of Waste Soils Guidance

Definition of Waste
The Environment Agency considers waste to be "*...any material that is discarded, or intended to be discarded...*" this includes any soil from drainage trenches, foundation arisings, site strips etc. It is no longer required in its original location, therefore it is considered to be waste. Without an appropriate materials management plan, permit or exemption in place, by law this material is defined as "illegally deposited waste".

Landfill tax rules allow HM Revenue & Customs (HMRC) to recover landfill tax on illegally deposited waste on construction sites. This could lead to excessive costs without the correct documentation in place. In addition, a

person who makes, knowingly causes or knowingly facilitates a disposal to be made at an unauthorised site is also liable to pay Landfill Tax.

CL:AIRE: Code of Practice
Where materials are excavated for construction purposes, wherever possible these should be retained on site for engineering purposes if they are suitable for use. This can be implemented under the CL:AIRE "Development Industry Code of Practice for the Definition of Waste" (CL:AIRE DoWCoP), also commonly referred to as a "Materials Management Plan".

https://www.claire.co.uk/projects-and-initiatives/dow-cop

Developers and contractors are advised to complete all works under the DoWCoP where applicable.

To implement the DoWCoP (for Route A), there is a requirement to notify the Environment Agency and Local Authority of the intention to use the code of practice in principle, after which there is a 21-day notice period for their response.

In order to re-use soils under the DoWCoP, there are four key criteria that need to be met:

- The aims and objectives of the project meet the requirements of the Waste Framework Directive (does not harm human health or the environment).
- The soils can be demonstrated to be suitable for use (backed up by chemical/geotechnical testing and assessment).
- There is certainty of use (planning consents are in place alongside materials tracking, which should be in place as part of good site practice in any case).
- Quantity (the quantity of materials used should be known).

Potential scenarios where soils may be able to be re-used:

- Material capable of being used in another place on the same site without treatment.
- Material capable of being used in another place on the same site following ex-situ treatment on site.
- Material capable of being used in another development site without treatment (Direct Transfer).
- Material capable of being used in another development site following ex-situ treatment on another site e.g. Hub site.

In order to satisfy these requirements, the following are required:

i) Consultation/approval with Local Authority & Environment Agency to confirm they have no objections to the proposed re-use of waste soils, or the risk assessments for the site.
ii) Risk Assessments to demonstrate that the site does not present an Environmental Hazard.
iii) Remediation Strategy for contaminated sites (or Design Statement for non-contaminated sites).
iv) Materials Management Plan (MMP) which details material generated stockpiles and the end use.
v) Volume calculations.
vi) Planning permission for the development.
vii) Contractual details to be clear, regarding who steps in is a contractor goes into administration/liquidation.

The use of the CoP is effectively industry regulated, there is a requirement to appoint an independent Qualified Person (QP) who checks all the requirements have been met and registers the documentation with the Environment Agency. This person must not have had any involvement with the preparing of the risk assessments or remedial strategy on the site.

Soils which require treatment on site (e.g. bioremediation, stabilisation etc) may require an Environmental Permit for treatment, together with justification and validation to prove, once treated, this material is suitable for use.

Construction activities carried out on uncontaminated soils solely for the purpose of improving geotechnical properties are not generally regarded as waste treatment operations and do not require a permit.

Site management procedures need to be in place to ensure that material is tracked through from excavation stockpiling, treatment and remediation processes. Should the process of material tracking be considered non-robust, or not adhered to, this may fail the test whether excavated materials may be considered non-waste.

Any declared MMP should be amended as new import sources are added.

Regardless of implementing re-use under the code of practice or not, all sites should have some form of materials tracking in place in compliance with current legislation. Any re-use scheme should also be designed to minimise disposal costs. Note that for re-use of landfilled materials or mining wastes, the DoWCoP may not apply and a Waste Recovery Permit (or others) may be required. Liaison with the Environment Agency would be needed on a case by case basis to determine the best option.

Once the project is complete, a verification report detailing soils re-use/import will need to be produced and submitted to CL:AIRE, which may be subject to a random audit process. Sites found to be non-complaint with the CoP can be referred to the EA for further investigation.

Soils Re-use under Exemptions and Permits
Other potential options to allow the re-use and/or import of soils and aggregates on site are provided in the table below. Applies to England/Wales only – Scotland differs.

Re-use Mechanism	Description
U1 Exemption	Can be applied to re-use/import of soils and stones, but only up to 1000 tonnes or for brick and concrete up to 5000 tonnes. This is usually an efficient way to re-use small volumes of waste materials. However, only one U1 can be filled in per site in any 3-year period. Quick and free via online registration.
WRAP Quality Protocols	Describes how processed demolition arisings can be removed from regulatory waste regime. Requires a demonstration of appropriateness by: • Factory Production Control Manual. • Facility Permit (or Exemption). • Grading Analysis.
Waste Framework Directive (WFD) exclusion	In regard to "clean" naturally occurring soils only that are to be re-used on their site of origin, these are covered by a Waste Framework Directive (WFD) exclusion which is an EA regulatory position statement. So long as the project can prove the four criteria listed above for the DoWCoP, then permits or the DoWCoP are not required. However, many projects still use the CoP to ensure compliance.
T5 Screening and blending of waste	The T5 exemption allows you to temporarily treat waste on a small scale to produce aggregate or soil at a particular location, such as a construction or demolition site. The limit is 5,000 tonnes. This applies to: • Screening soil on a demolition site to remove wood and rubble. • Blending soil and compost that has been produced under an exemption on a construction site to produce better soil for landscaping on that site (e.g. peaty deposits). • Crushing waste (except bricks, tiles and concrete) before screening or blending • Grading waste concrete after it has been crushed to produce a certain type of aggregate.
T7 Exemption	The T7 allows treatment of waste bricks, tiles and concrete by crushing, grinding or reducing in size. This needs to be registered with the Local Authority.
Other Permitting Routes	Other options include use under an Environmental Permit (Standard or Bespoke Rules), however these may be a time consuming and costly route, where use of the other above options (if applicable) are likely to be more feasible in construction.

There are also potential non-enforcement positions for re-use e.g. a site has a large volume waste illegally deposited on it (not by landowner). The new owner is keen to re-use waste where possible to reprofile the site (planning condition granted). The DoWCoP could not be used as materials already excavated and deposited as a waste (illegally). The EA may agree that although the DoWCoP not applicable, they would take a non-enforcement position if the works were completed in accordance with the DoWCoP – this would need to be agreed in advance.

Waste Classification and Disposal Guidance for Soils

Introduction
As described in the 'Waste Duty of Care Code of Practice (2016)' any substance or object that the holder discards, intends to discard or is required to discard is a waste. Waste producers have a duty of care to classify the waste they are producing:

- Before it is collected, disposed of or recovered.
- To identify the controls that apply to the movement of the waste.
- To complete waste documents and records.
- To identify suitably authorised waste management options.
- To prevent harm to people and the environment.

The most sustainable and economic method of dealing with waste soil is usually the retention and re-use on site. Where this is not possible there are three main options for the disposal of soils:

1. Disposal to a permitted waste recycling facility.
2. Re-use on another site (subject to the suitability).
3. Disposal to a landfill site.

The disposal to a permitted facility will be subject to the **specific conditions of the permits for each individual facility** and will vary dependent on location and environmental sensitivity of the receiving site. Re-use on another site will also be subject to the acceptability criteria of that site.

The guidance below relates to disposal to **landfill sites only**.

Background for Landfill Disposal
The Landfill Directive places controls on waste disposal. These controls include requirements to follow the waste acceptance procedures and criteria that have been agreed by the Council of the European Union and are laid out in Council Decision 2003/33/EC.

Before a waste can be accepted at a landfill site, the landfill **operator** must be satisfied that the waste meets permit conditions, the waste acceptance procedures (WAP) and waste acceptance criteria (WAC).

If disposal to landfill is the best management option for the waste soils, these procedures **must** be followed or the operator may refuse to accept the waste.

Key Points:

- Not all waste can be landfilled.
- Landfills are classified according to whether they can accept hazardous, non-hazardous or inert wastes.
- Wastes can only be accepted at a landfill if they meet the waste acceptance criteria (WAC) for that class of landfill.
- Most wastes must be treated before you can send them to landfill.
- There are formal processes for identifying and checking wastes that must be followed before wastes can be accepted at a landfill site.

Classification

Wastes are listed in the European Waste Catalogue and grouped according to generic industry, process or waste types. Wastes within the EWC are either hazardous or non-hazardous. Some of these wastes are hazardous without further assessment (absolute entries) or are 'mirror' entries that require further assessment of their hazardous properties in order to determine whether they are hazardous waste.

Waste soil has mirror entries on the EWC and as such the first phase of the waste classification process is that of determining if the waste is hazardous or not i.e. the hazard assessment. The most common EWC waste codes related to soil are:

17 05	Soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 03*	soil and stones containing dangerous substances
17 05 04	soil and stones other than those mentioned in 17 05 03

Soils may contain certain contaminants (e.g. asbestos, oil,) which have prescribed concentration thresholds, that if breached will render the material hazardous waste. These are based on specific "hazardous properties" which include hazards such as carcinogenicity, flammability and toxicity.

In the first instance the concentrations of plausible contaminants within the soil should be identified and wastes should be **classified based on their total concentrations** and classified as either hazardous or non-hazardous waste. WAC analysis must not be used for waste classification.

Waste Definitions

Inert	• Will not undergo any significant physical, chemical or biological transformations. • Will not dissolve. • Will not burn. • Will not physically or chemically react. • Will not biodegrade. • Will not adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health. • Has insignificant total leachability and pollutant content. • Produces a leachate with an ecotoxicity that is insignificant (if it produces leachate).
Non-Hazardous	Is not inert (see above). Is not hazardous (see below).
Hazardous	Soil has hazardous properties as defined in WM3 (Guidance on the classification and assessment of waste (1st edition 2015)- Technical Guidance).
Stable Non-reactive hazardous waste#	Hazardous waste, the leaching behaviour of which will not change adversely in the long-term, under landfill design conditions or foreseeable accidents either: in the waste alone (for example, by biodegradation), under the impact of long-term ambient conditions (for example, water, air, temperature or mechanical constraints) or by the impact of other wastes (including waste products such as leachate and gas).

This option allows hazardous waste that is stable and thus has a low leaching potential to be deposited in cells with a standard of containment consistent with non-hazardous wastes.

WAC Testing

The purpose of WAC analysis is to confirm that the waste complies with the relevant WAC for the receiving landfill. If the waste has any disposal route other than a landfill site (e.g. recycling facility, incineration etc) then WAC is not relevant. Furthermore, the WAC limits **cannot** be used to make an assessment of whether a waste is hazardous. WAC testing does however define if a non-hazardous waste is suitable for an inert landfill.

Classification based on Total Concentrations[1]	Non-Hazardous Waste		Hazardous Waste	
WAC testing	Below inert WAC limit values:	Above inert WAC limit values:	Below hazardous WAC limit values	> WAC limit values

Landfill requirements	INERT landfill	NON-HAZARDOUS landfill[2]	HAZARDOUS landfill	PRE-TREATMENT[3]

1 Total concentrations are defined as tests results on solids as opposed to leachate (i.e. a liquid).
2 Individual sites may have certain limit values pre-determined in their licence.
3 After pre-treatment the material characteristics may have changed to an extent that allow the soil to be re-classified.
4 Possibility that wastes could be classified as stable Nonreactive HAZARDOUS waste in non-hazardous Landfill (e.g. soils containing low concentrations of asbestos, gypsum or sulphate bearing soils).

Waste classified as non-hazardous can be accepted into a non-hazardous landfill without having to pass any numerical WAC.

Soils above hazardous WAC limit values require pre-treatment prior to disposal. The effective pre-treatment, typically involving separation, sorting and screening, can offer cost savings through reducing the hazardous nature and volumes of soil. Costs for disposal of non-hazardous/hazardous soils are significant compared to the disposal of inert material.

Greenfield Sites and Inert Waste
The possibility of automatic inert classification naturally occurring "clean" soils should be explored in accordance with the requirements of paragraph 10 (wastes acceptable without testing at landfills for inert waste) of the Landfill (England and Wales) (Amendment) Regulations (2005). This is the case if:

- They are single stream waste of a single waste type (although different waste types from the list may be accepted together if they are from a single source); and
- There is no suspicion of material or substances such as metals, asbestos, plastics, chemicals, etc to an extent which increases the risk associated with the waste sufficiently to justify contamination and they do not contain other classes of landfill (e.g. the waste producer can characterise the waste based on visual assessment and written description with supporting evidence such as a desk study, subject to agreement by the landfill operator).

Hydrocarbons in Soils
WM3 uses the term Oil or Waste Oil to cover hydrocarbons products such as fuel oil, petrol or diesel. These are defined by WM3 as hazardous under an absolute entry in the List of Wastes. However, hydrocarbons in soils are a mixture rather than a pure product and are therefore not absolute entries.

Known Oils
The simplest scenario is where the identity of the contaminating oil is known or can be identified. If the oil is known the manufacturer's or supplier's REACH compliant safety data sheet for the specific oil can be obtained and the hazard statement codes on that Safety Data Sheet can be used for the hazardous waste assessment.

Where the identity of the oil can only be identified down to a petroleum group level (i.e. the contaminating oil is known to be diesel, but the specific type/brand is unknown), then the classification of that petroleum group should be used in the assessment. The marker compounds associated with that petroleum group may be used to confirm carcinogenicity.

Oils may contain a range of hydrocarbons, so the presence of for instance Diesel Range Organics (DRO) does not enable the assessor to conclude that diesel is present. These hydrocarbons may have arisen from other oils, the laboratory needs to provide an interpretation of the chromatograph to determine if it is consistent with diesel or weathered diesel as a whole.

The concentration of known oils should be determined using a method that as a minimum spans the range in which the carbon numbers for that known oil fall.

Unknown Oils
Where hydrocarbons are contaminating soils, it is likely that the oil will be unknown or cannot be determined.

WM3 states that:

> For contaminated land specific consideration must be given to the following before proceeding:
>
> - The presence of other organic contaminants, for example solvents or coal tar that could be detected as hydrocarbons. Coal Tar is not an oil and is considered separately in WM3 example 2. Where the site history or investigation indicates the presence of hydrocarbons from oil and other sources (e.g. coal tar), and the origin of the hydrocarbons cannot reliably be assigned to either, then a worst case approach of considering the hydrocarbons both as waste oil (in accordance with this example) and from other sources, for example coal tar should be taken.
> - The presence of diesel, or weathered diesel, should be specifically considered by the laboratory and where this is confirmed by the hydrocarbon profile the oil should be assessed as a known or identified oil (diesel).

The use of marker compounds is optional; however, it is recommended that where possible the marker compounds should be used. WM3 states:

> If the identity of the oil is unknown, and the petroleum group cannot be established, then the oil contaminating the waste can be classified as non-carcinogenic/mutagenic due to the presence of oil if all three of the following criteria are met:
>
> - The waste contains benzo[a]pyrene (BaP) at a concentration of less than 0.01% (1/10,000th) of the TPH concentration (This is the carcinogenic limit specified in table 3.1 of the CLP for BaP)
> - This has been determined by an appropriate and representative sampling approach in accordance with the principles set out in Appendix D of WM3, and
> - The analysis clearly demonstrates, for example by carbon bands or chromatograph, and the laboratory has reasonably concluded that the hydrocarbons present have not arisen from petrol or diesel.

For example:

TPH Concentration (mg/kg)	Petrol or Diesel	BaP (mg/kg)	Classification
10,000	No	0.9	Non- Hazardous
1,000	No	Not available	Hazardous
1,000	Yes	Not relevant	Hazardous

References

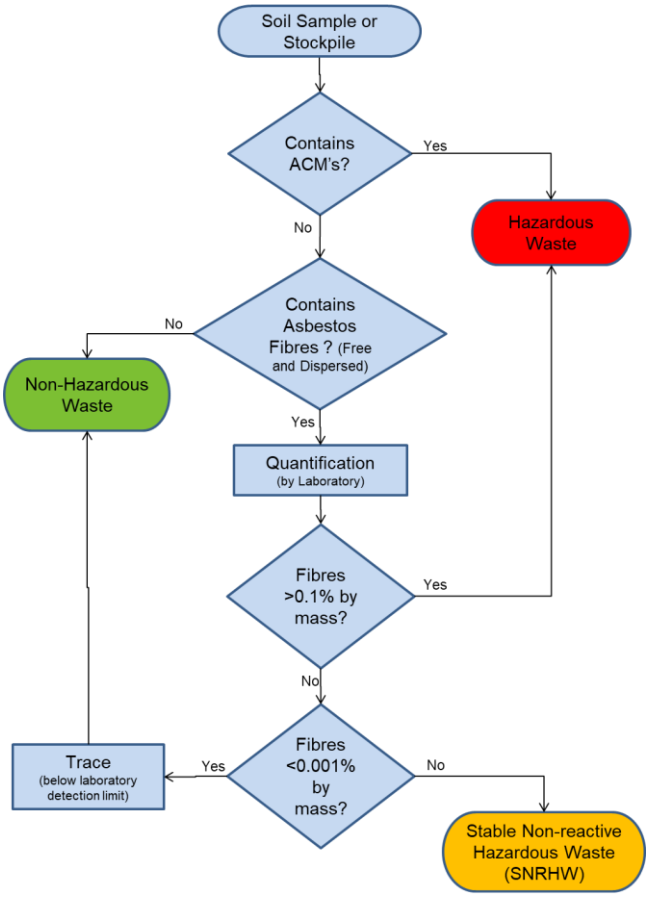
1. Environmental Permitting (England and Wales) Regulations 2010 (as amended) (EP Regulations), the Landfill Directive (1999/31/EC) and the subsequent Council Decisions.
2. Environment Agency Environmental Permitting Regulations: "Inert Waste Guidance- Standards and Measures for the Deposit of Inert Waste on Land" 2009.
3. Environment Agency "Waste acceptance at landfills - Guidance on waste acceptance procedures and criteria" Nov 2010.
4. Environment Agency "Guidance on the classification and assessment of waste (Technical Guidance WM3)".
5. Classification, Labelling and Packaging of Substances Regulation (EC 1272/2008) (CLP).
6. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
7. 2014/955/EU: Commission Decision of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament.
8. Environmental Permitting Guidance The Landfill Directive For the Environmental Permitting (England and Wales) Regulations 2010 Updated March 2010 Version 3.1.
9. Classification, Labelling and Packaging of Substances Regulation (EC 1272/2008) (CLP).

Waste Containing Asbestos

The assessment of asbestos containing waste is dependent on whether the asbestos is present as:

- Fibres that are free and dispersed, or
- Identifiable pieces of asbestos containing materials (ACM's).

Identifiable pieces of asbestos are any particle of a size that can be identified as potentially being asbestos by a competent person if examined by the naked eye. The result is that commonly soils with visible ACM's are sorted and the ACM's removed by hand picking and separate disposal.



Should soils contain asbestos, the concentration and type of asbestos identified, in addition to the chemical composition (i.e. hazardous or non-hazardous detailed above), will determine which waste code is applicable to the soils and which landfill will accept it as summarised below:

Waste	Conc. by Weight (%)	EWC 2002 Catalogue Entry Code	Waste Disposal Route
Non-hazardous containing asbestos fibres	<0.001 - <0.1%	17 05 04 (soil and stones other than those mentioned in 17 05 03*)	Non-hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a stable non-reactive hazardous landfill site.
Hazardous containing asbestos fibres	<0.001 - <0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a hazardous landfill site.
Non-hazardous soils containing asbestos fibres	>0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill authorised to receive asbestos, or in a stable non-reactive hazardous waste cell at a non-hazardous landfill authorised to receive asbestos.

Waste	Conc. by Weight (%)	EWC 2002 Catalogue Entry Code	Waste Disposal Route
Non-hazardous Soils containing ACM (Mechanically separable)	>0.1%	17 06 05 (construction material containing asbestos) 17 05 04 (soil and stones other than those mentioned in 17 05 03*)	ACMs disposed of at a hazardous landfill authorised to receive asbestos, or in a stable non-reactive hazardous waste cell at a non-hazardous landfill authorised to receive asbestos. Soils should be disposed of at a non-hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a stable non-reactive hazardous landfill site.
Hazardous soils containing ACM	>0.1%	17 05 03* (soil and stones containing dangerous substances)	Hazardous landfill subject to achieving Waste Acceptance Criteria (WAC) for a hazardous landfill site.

Asbestos concentrations below 0.001% by mass are below standard laboratory detection limits and are not currently regarded as containing asbestos for the purposes of disposal and may be disposed of to an inert landfill site[1]. These levels are often termed "trace" by laboratories.

Asbestos concentrations between 0.001% and 0.1% are stable non-reactive hazardous waste (SNRHW)[1]. Waste transfer stations where soil recycling takes place may be able to take SNRHW, but are unlikely to take soils containing asbestos above trace concentrations.

The following codes should be assigned to the asbestos waste as appropriate:

17 06	Insulation materials and asbestos-containing construction materials
17 06 01	Insulation materials containing asbestos
17 06 03	Other insulation materials consisting of or containing hazardous substances
17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05	Construction material containing asbestos

WM3 indicates that 17 06 05 would normally be used in preference to 17 06 01 for the asbestos in asbestos contaminated soil and stones.

Construction materials containing asbestos and "*other suitable materials*" may be landfilled at landfills for non-hazardous waste in accordance with the Landfill Directive without testing.

This means that wastes that are only hazardous because of their asbestos content can be disposed of at landfills for non-hazardous waste in separate landfill cells that only accept asbestos wastes and other suitable materials. The Landfill Directive requires that stable non-reactive hazardous waste shall not be deposited with biodegradable waste (for example organic material, household waste, paper etc..) and must meet the waste acceptance criteria set out in accordance with Annex II.

Construction

Health and Safety Executive (HSE) guidance on asbestos is not directly related to soil and much of the guidance focuses on the removal of asbestos from buildings. The overarching legislation is the Control of Asbestos Regulation (CAR 2012). However, where work involves (or is likely to involve) contact with asbestos then CAR 2012 requires a risk assessment including whether the work is licensed or notifiable non-licensed work and may require an Asbestos Management Plan. Work becomes notifiable if it is considered that the control limit could be exceeded.

Brownfield sites frequently have soils that contain asbestos and the presence of asbestos needs to be considered within the context of construction, particularly in relation to groundworks. The exposure of soils and the use of excavators and plant to move soil around increases the possibility of fibres becoming airborne. However, it is good site practice to not generate dusts and to employ dust suppression on all sites regardless of the presence of asbestos.

The legal control limit for asbestos is 0.1f/ml over a continuous four-hour period. The control limit is not a '*safe*' level and exposure from work activities involving asbestos must be reduced to as far below the control limit as possible.

Clearly the higher the concentrations in the soil the greater potential there is for fibres to be released, however IOM publication TM/88/14 "the release of dispersed asbestos fibres from soil" 1988 concludes that:

- Mixtures of asbestos in dry soils with asbestos content as low as 0.001% can produce airborne respirable asbestos concentrations greater than 0.1f/ml in dust clouds where the respirable dust concentrations are less than 5mg/m3.
- An action limit is recommended of no higher than 0.001% asbestos in soils above which steps should be taken to minimise exposure to airborne fibres (e.g. by wetting).
- The addition of relatively small quantities (10%) of water can reduce the airborne fibre concentrations by an order of magnitude.

Where asbestos has been identified at concentrations above 0.001% as free and dispersed fibres in the soil precautions need to be adopted. Concentrations below this are considered to be normal background, although good site practice dictates that the generation of dusts should be avoided and therefore any fugitive fibre release from minor concentrations should be kept to a practical minimum.

End Use
The use of materials containing asbestos and material containing asbestos is prohibited under EU legislation.

Asbestos containing materials can remain in situ under a suitable cover system which may be hard surfacing or soft landscaping (with or without hard dig layers and markers).

There is a risk that future maintenance may compromise such systems and details of the presence of asbestos should be kept in the Health and Safety File.

Publications from the JIWG provide guides for decision making in relation to construction.

The re-use of waste soils should be undertaken in accordance with the CL:AIRE Code of Practice and is subject to suitable risk assessments demonstrating low risk. There is nothing that specifically excludes the re-use of soils containing asbestos as fill to raise levels. However, the movement of materials increases the risk of fibres becoming airborne and suitable precautions will be required. Re-use of soils containing asbestos should be as per CARSOILS.

The re-use of soils containing asbestos at concentrations above hazardous waste levels may be met with regulatory opposition. Assuming a suitable strategy could be agreed this would take a considerable amount of time and is only likely to be feasible where there is a long program for implementation.

Asbestos in Soil as Free Fibres

Concentration (by weight)	Waste Disposal				Construction Issues	End Use	
	Recycle	Inert	SNR	Haz		Suitable for re-use on site	Precautions
Not detected	√	√			No precautions necessary, however on a brownfield site asbestos not previously identified may be found during works and a statement within the contractor's method statement for how they will deal with this unforeseen asbestos would be good practice to ensure compliance with CAR2012.	Yes.	None.
Trace (<0.001%)		√ [2]			Precautions are unlikely to be required, however a detailed method statement may be required to ensure compliance with CAR2012. Basic asbestos management good practice will be required. Typically precautions would include: • Ensuring soils do not dry out to become dusty. • Site personnel have the risk communicated at induction stage.	Yes Soils can be re-used under CL:AIRE CoP with the correct precautions in place.	Generally clean cover or hardstanding cover required.
0.001% – 0.099%			√		Contractor needs to produce an Asbestos Management Plan in accordance with CAR2012 as part of their method statement. Typical precautions would include: • Site personnel have the risk communicated at induction stage. • Ensuring personnel have suitable training. • Task monitoring to inform PPE requirements. • Ensuring soils do not dry out to become dusty and that misting is available during groundworks. • Separate stockpiling. • Clean haulage routes.	Possibly. Soils may be able to be re-used under CL:AIRE CoP, subject to a satisfactory Risk Assessment and regulatory agreement with the correct precautions in place.	Clean cover with hard dig/demarcation layer or hardstanding cover required.
0.1+%				√	Contractor needs to produce an Asbestos Management Plan in accordance with CAR2012 as part of their method statement. Typical precautions would include: • Site personnel have the risk communicated at induction stage. • Ensuring personnel have suitable training. • Task monitoring to inform PPE requirements. • Site wide and or perimeter monitoring. • Ensuring soils do not dry out to become dusty and that misting is available during groundworks. • Separate stockpiling.	Unlikely [3] Re-use of soils containing asbestos within an earthworks scheme will involve significant engineering and the risk for generating dusts will be significantly	Clean cover and a hard dig / demarcation layer. A plan should be in place for future excavations as part of the Health and Safety File.

Concentration (by weight)	Waste Disposal				Construction Issues	End Use	
	Recycle	Inert	SNR	Haz		Suitable for re-use on site	Precautions
					• Clean haulage routes. • Decontamination unit	increased with repeated handling and compaction.	

1. The standard laboratory detection limit is normally 0.001%. Below 0.001% is trace and currently regarded as not containing asbestos for the purposes of disposal off site. However the waste producer has a duty to fully classify the waste and the presence of trace asbestos should be declared. Consequently it is unlikely that a waste treatment site will take this soil and an inert landfill may make a commercial decision to only take it under some circumstances.

2 The re-use of soils containing asbestos at concentrations above hazardous waste is likely to meet with regulatory opposition. Assuming a suitable strategy could be agreed this would take a considerable amount of time and is only likely to be warranted where there a long program for implementation.

APPENDIX B

Exploratory Hole Logs

BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole with Rotary Core Follow-on No.

BH201

Sheet 1 of 3

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** RO+RC
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:51
CLIENT:	ATRI7 6 LTD	**DATES:**	05/11/24 - 07/11/24

Logged	Checked
AH	NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
		0.05-0.80	ES		0.05			MADE GROUND: Concrete.
					0.80			MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
					0.90			MADE GROUND: Concrete.
		1.20	SPT	N=10 (3,3/2,2,3,3)				MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
		1.30-1.70	D					
		2.00	SPT	N=12 (2,2/3,4,3,2)				
		2.30-2.70	D					
								Some angular fine to coarse gravels of clinker at 2.80m bgl.
		3.00	SPT	N=4 (1,1/1,1,1,1)				
					3.70			Very weak red fine to coarse grained moderately weathered SANDSTONE recovered as a gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		3.80-4.00	D					
		3.80	SPT	N≥50 (25 for 125mm/50 for 85mm)	4.01			Weak red fine to coarse grained moderately weathered SANDSTONE.
		4.50 - 6.00	NR	80 80 0				
			25					
		6.00 - 7.00	NR	50 40 0				
			3					
			NI					
			2					
		7.00 - 8.00	6	100 95 55				
			NI					
			2		7.77			Very weak unweathered red MUDSTONE.
		8.00 - 9.00	12	100 100 40	7.85			Weak red fine to coarse grained slightly weathered SANDSTONE.
								8.00-9.00m bgl: Discontinuities are extremely close to closely spaced rough undulating horizontal to 45 degrees sub-horizontal.
								8.38-8.50m bgl: Vertical fractures.
		9.00 - 10.00	NR	0 0 0				*9.00-10.00m bgl: No recovery, suspected sand lense.*
				100 80 20				
				TCR SCR RQD				

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater encountered from 12.00m bgl.
4. Borehole sides stable.
5. Window sample borehole to 4.01m bgl, redrilled with rotary open hole to widen borehole from ground level to 4.50m bgl with rotary cored follow on to 32.00m bgl.
6. Installation to 13.00m bgl: 6.00m plain 50mm PVC, 7.00m slotted PVC upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole with Rotary Core Follow-on No.

BH201

Sheet 2 of 3

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** RO+RC
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:51
CLIENT:	ATRI7 6 LTD	**DATES:**	05/11/2024 - 07/11/2024

Logged	Checked
AH	NS

Well	Water Strike	Depth (m)	Type / FI	Coring TCR (%)	Coring SCR (%)	Coring RQD (%)	Depth (m)	Level (m OD)	Legend	Stratum Description
		10.00 - 11.00	NI 9	100	95	60				*10.00-10.20m bgl: Not intact.* *10.00-11.00m bgl: Discontinuities are very close to medium spaced rough undulating horizontal to 15 degrees sub-horizontal.*
		11.00 - 12.00	7 NI 2	100	100	60				*10.80-10.85m bgl: Vertical fractures.* *11.00-12.00m bgl: Discontinuities are close to medium spaced rough undulating horizontal to 10 degrees sub-horizontal.*
		12.00 - 13.00	5	100	98	45				*11.68-11.73m bgl: Non intact.* *12.00-13.00m bgl: Discontinuities are close to medium spaced rough undulating horizontal to 45 degrees sub-horizontal.*
		13.00 - 14.00	6 1	100	90	50				*13.00-14.00m bgl: Discontinuities are very close to closely spaced rough undulating horizontal to 10 degrees sub-horizontal.*
		14.00 - 15.00	5 NI 2	100	100	65	14.78 14.88			*13.90-13.92m bgl: Not intact.* *14.00-15.00m bgl: Discontinuities are extremely close to medium spaced rough undulating horizontal to 30 degrees sub-horizontal.* Very weak unweathered red MUDSTONE. *14.78-14.88m bgl: Non intact.*
		15.00 - 16.00	6	100	100	60				Weak red fine to coarse grained slightly weathered SANDSTONE. *15.00-16.00m bgl: Discontinuities are extremely close to medium spaced rough undulating horizontal to 5 degrees sub-horizontal.*
		16.00 - 17.00	7	100	92	67	16.47 16.54			*16.00-17.00m bgl: Discontinuities are extremely close to medium spaced rough undulating horizontal to 30 degrees sub-horizontal.* Extremely weak unweathered red MUDSTONE. Weak red fine to coarse grained slightly weathered SANDSTONE.
		17.00 - 18.00	4 NI 3	93	88	53				*17.00-18.00m bgl: Discontinuities are extremely close to medium spaced rough undulating horizontal to 10 degrees sub-horizontal.* *17.72-17.80m bgl: Non intact.*
		18.00 - 19.50	NR 6 NI 5	100	87	33	18.77 18.84			*18.00-18.10m bgl: No recovery.* *18.10-19.50m bgl: Discontinuities are very close to closely spaced rough undulating horizontal to 5 degrees sub-horizontal.* *18.74-18.82m bgl: Non intact.* Extremely weak unweathered red MUDSTONE. Weak red fine to coarse grained slightly weathered SANDSTONE. *19.50-19.60m bgl: Vertical fractures.* *19.50-21.00m bgl: Discontinuities are extremely close to closely spaced rough undulating horizontal to 20 degrees sub-horizontal.* *19.74-19.75m bgl: Non intact.*
			1 2							

11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0 20.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater encountered from 12.00m bgl.
4. Borehole sides stable.
5. Window sample borehole to 4.01m bgl, redrilled with rotary open hole to widen borehole from ground level to 4.50m bgl with rotary cored follow on to 32.00m bgl.
6. Installation to 13.00m bgl: 6.00m plain 50mm PVC, 7.00m slotted PVC upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole with Rotary Core Follow-on No.

BH201

Sheet 3 of 3

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** RO+RC
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:51
CLIENT:	ATRI7 6 LTD	**DATES:**	05/11/2024 - 07/11/2024

Logged	Checked
AH	NS

Well	Water Strike	Depth (m)	Type / FI	Coring TCR (%)	Coring SCR (%)	Coring RQD (%)	Depth (m)	Level (m OD)	Legend	Stratum Description
		19.50 - 21.00	12	100	100	70				*20.54-20.60m bgl: Non intact.*
			NI 3							*20.83-20.91m bgl: Non intact.*
			NI 1							*21.00-22.50m bgl: Discontinuities are very close to medium spaced rough horizontal.*
		21.00 - 22.50	11							
		22.50 - 24.00	6	100	99	53				*22.50-24.00m bgl: Discontinuities are closely spaced rough undulating horizontal to 5 degrees sub-horizontal.*
			3							*23.31-23.34m bgl: Non intact.*
			2							*23.53-23.57m bgl: Non intact.*
			NR							*23.90-24.00m bgl: No recovery.*
		24.00 - 25.50	10	97	93	50				*24.00-25.50m bgl: Discontinuities are very close to closely spaced rough undulating horizontal to 5 degrees sub-horizontal.*
			NR							*25.20-25.30m bgl: No recovery.*
			1							
		25.50 - 27.00	13	97	97	37				*25.50-27.00m bgl: Discontinuities are very close to closely spaced partly rough undulating horizontal to 10 degrees sub-horizontal.*
			NR							*26.95-27.00m bgl: No recovery.*
		27.00 - 28.50	16	100	100	27				*27.00-27.94m bgl: Discontinuities are extremely close to very closely spaced rough undulating horizontal to 5 degrees sub-horizontal.*
			3							*27.94-28.50m bgl: Discontinuities are very close to closely spaced rough horizontal to 45 degrees sub-horizontal.*
		28.50 - 30.00	5	100	98	80				*28.50-29.09m bgl: Discontinuities are very close to closely spaced rough undulating horizontal to 45 degrees sub-horizontal.*
			4							*29.09-30.00m bgl: Non intact.*
										28.50-29.09m bgl: Discontinuities are close to medium spaced rough undulating horizontal to 10 degrees sub-horizontal.
							30.00			End of Borehole at 30.00m

21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater encountered from 12.00m bgl.
4. Borehole sides stable.
5. Window sample borehole to 4.01m bgl, redrilled with rotary open hole to widen borehole from ground level to 4.50m bgl with rotary cored follow on to 32.00m bgl.
6. Installation to 13.00m bgl: 6.00m plain 50mm PVC, 7.00m slotted PVC upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole with Rotary Core Follow-on No.

BH202

Sheet 1 of 4

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** RO+RC
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:51
CLIENT:	ATRI7 6 LTD	**DATES:**	04/11/24 - 06/11/24

Logged	Checked
	NS

Well	Water Strikes	Sample and In Situ Testing					Depth (m)	Level (m OD)	Legend	Stratum Description
		Depth (m)	Type	Results						
		0.00-1.00	ES							MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete and sandstone.
		1.20	SPT	N=16 (12,12/7,3,3,3)						
		1.30-1.70	D							
		2.00	SPT	N=16 (4,5/6,4,3,3)						
		2.80-3.40	D				2.50			Orangish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		3.00	SPT	N=12 (4,3/3,3,3,3)						
		3.90-4.10	D				3.90			Very weak red fine to coarse grained moderately weathered SANDSTONE recovered as a gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		4.00	SPT	N≥50 (25 for 100mm/50 for 140mm)			4.24			Weak red fine to coarse grained slightly weathered SANDSTONE.
		5.00 - 6.00	NR							
			NI							
			2 NI 2							
		6.00 - 7.00	4	30	10	0				
			8							
			4	100	93	0				
			5							
		7.00 - 8.00	10	90	90	20				
		8.00 - 9.00	4							
			NI							
			6	100	88	15				
			3							
		9.00 - 10.00	15	100	98	45				
				100	100	40				
				TCR	SCR	RQD				

1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater encountered from 12.00m bgl.
4. Borehole sides stable.
5. Window sample borehole to 4.24m bgl, redrilled with rotary open hole to widen borehole from ground level to 5.00m bgl with rotary cored follow on to 32.00m bgl.
6. Installation to 13.00m bgl: 6.00m plain 50mm PVC, 7.00m slotted PVC upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
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UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole with Rotary Core Follow-on No.

BH202

Sheet 2 of 4

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** RO+RC
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:51
CLIENT:	ATRI7 6 LTD	**DATES:**	04/11/2024 - 06/11/2024

Logged	Checked
	NS

Well	Water Strike	Depth (m)	Type / FI	Coring TCR (%)	Coring SCR (%)	Coring RQD (%)	Depth (m)	Level (m OD)	Legend	Stratum Description
		10.00 - 11.00	11	100	95	40	10.35			Interbedded very weak red unweathered MUDSTONE and fine to coarse grained unweathered SANDSTONE. Weak red fine to coarse grained slightly weathered SANDSTONE.
		11.00 - 12.00	10				10.65			*11.00-12.00m bgl: Discontinuities are very close to closely spaced partly open to open rough undulating horizontal to 5 degrees subhorizontal.*
		12.00 - 13.00	NI 1 2 3 4	100	93	60				*11.90-11.95m bgl: Non intact.* *12.00-13.00m bgl: Discontinuities are very close to closely spaced partly open to open rough undulating horizontal to 5 degrees subhorizontal.* *12.14-12.18m bgl: Non intact.* *12.24-12.27m bgl: Non intact.*
		13.00 - 14.00	NR 3 6	90	85	40				*13.00-13.10m bgl: No recovery.* *12.00-13.00m bgl: Discontinuities are very close to closely spaced tight to open rough undulating horizontal to 5 degrees subhorizontal.* *13.22-13.26m bgl: Non intact.*
		14.00 - 15.00	NI 7	100	75	45				*14.00-14.20m bgl: Non intact.* *14.00-15.00m bgl: Discontinuities are very close to closely spaced open rough undulating horizontal to 5 degrees subhorizontal.*
		15.00 - 16.00	NI 1 8 3	100	98	30				*14.80-14.85m bgl: Non intact.* *15.00-16.00m bgl: Discontinuities are very close to closely spaced rough undulating horizontal to 10 degrees sub-horizontal.*
		16.00 - 17.00	8	100	94	40				*15.73-15.75m bgl: Non intact.* *16.00-17.00m bgl: Discontinuities are very close to closely spaced rough undulating horizontal to 10 degrees sub-horizontal.* *16.43-16.49m bgl: Vertical fractures.*
		17.00 - 18.00	10	100	100	45				*17.00-18.00m bgl: Discontinuities are extremely close to closely spaced rough undulating horizontal to 5 degrees sub-horizontal.*
		18.00 - 19.00	5	100	100	70				*18.00-19.00m bgl: Discontinuities are very close to medium spaced spaced rough undulating horizontal to 5 degrees sub-horizontal.* *18.62-19.40m bgl: Fine to medium grained SANDSTONE.*
		19.00 - 20.00	7	100	100	80				*19.00-20.00m bgl: Discontinuities are extremely close to medium spaced partly open to open rough undulating horizontal to 20 degrees sub-horizontal.*
				90	90	40				

11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0 20.0

Remarks

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3. Groundwater encountered from 12.00m bgl.
4. Borehole sides stable.
5. Window sample borehole to 4.24m bgl, redrilled with rotary open hole to widen borehole from ground level to 5.00m bgl with rotary cored follow on to 32.00m bgl.
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ES = Environmental Sample
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BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole with Rotary Core Follow-on No.

BH202

Sheet 3 of 4

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** RO+RC
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:51
CLIENT:	ATRI7 6 LTD	**DATES:**	04/11/2024 - 06/11/2024

Logged	Checked
	NS

Well	Water Strike	Depth (m)	Type / FI	Coring TCR (%)	Coring SCR (%)	Coring RQD (%)	Depth (m)	Level (m OD)	Legend	Stratum Description
		20.00 - 21.00	NR 7	100	100	50				*20.00-20.10m bgl: No recovery.* *20.10-21.00m bgl: Discontinuities are very close to closely spaced rough undulating horizontal.* *20.60-20.95m bgl: Fine to medium grained SANDSTONE.*
		21.00 - 22.00	8	100	94	20				*21.00-22.00m bgl: Discontinuities are very close to closely spaced rough undulating horizontal to 15 degrees sub-horizontal.*
		22.00 - 23.00	2 NI 11	100	95	45				*22.00-23.00m bgl: Discontinuities are very closely spaced rough undulating horizontal to 10 degrees sub-horizontal.* *22.16-22.22m bgl: Non intact.*
		23.00 - 24.00	NI 13	100	85	40				*23.00-23.05m bgl: Non intact.* *23.00-24.00m bgl: Discontinuities are extremely close to closely spaced rough undulating horizontal to 15 degrees sub-horizontal.*
		24.00 - 25.00	NI 4 NI 5	90	89	55				*24.00-24.10m bgl: Non intact.* *24.00-25.00m bgl: Discontinuities are very close to closely spaced rough undulating horizontal to 20 degrees sub-horizontal.* *24.25-24.30m bgl: Non intact.*
		25.00 - 26.00	7	100	95	50				*25.00-26.00m bgl: Discontinuities are very close to medium spaced rough undulating horizontal to 45 degrees sub-horizontal.* *25.58-25.60m bgl: Vertical fractures.*
		26.00 - 27.00	6	100	93	65				*26.00-27.00m bgl: Discontinuities are close to medium spaced rough undulating horizontal.*
		27.00 - 28.00	4 NI 2	100	95	55	27.61 27.68			*26.95-27.00m bgl: Vertical fractures.* *27.00-28.00m bgl: Discontinuities are close to medium spaced rough undulating horizontal to 15 degrees sub-horizontal.* Very weak unweathered red MUDSTONE. *27.61-27.68m bgl: Non intact.*
		28.00 - 29.00	4 NI 3	100	100	75				Weak red fine to coarse grained slightly weathered SANDSTONE. *28.00-29.00m bgl: Discontinuities are close to medium spaced rough undulating horizontal to 5 degrees sub-horizontal.* *28.46-28.51m bgl: Non intact.*
		29.00 - 30.00	3	100	98	75				*29.00-30.00m bgl: Discontinuities are close to medium spaced rough undulating horizontal.* *29.11-29.35m bgl: Fine to medium grained SANDSTONE.*

21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0 30.0

Remarks

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2. Hand pit excavation to 1.20m bgl.
3. Groundwater encountered from 12.00m bgl.
4. Borehole sides stable.
5. Window sample borehole to 4.24m bgl, redrilled with rotary open hole to widen borehole from ground level to 5.00m bgl with rotary cored follow on to 32.00m bgl.
6. Installation to 13.00m bgl: 6.00m plain 50mm PVC, 7.00m slotted PVC upon completion.

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D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Rotary Open Hole with Rotary Core Follow-on No.

BH202

Sheet 4 of 4

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** RO+RC
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:51
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/2024 - 06/11/2024	**Logged** / **Checked** NS

Well	Water Strike	Depth (m)	Type / FI	Coring TCR (%)	Coring SCR (%)	Coring RQD (%)	Depth (m)	Level (m OD)	Legend	Stratum Description
[redacted]		30.00 - 31.00	2	100	100	70	32.00			*30.00-31.00m bgl: Discontinuities are close to medium spaced rough undulating horizontal to 15 degrees sub-horizontal.* *30.28-30.30m bgl: Non intact.*
			4							
		31.00 - 32.00	7							*30.00-31.00m bgl: Discontinuities are very close to medium spaced rough undulating horizontal to 10 degrees sub-horizontal.*
										End of Borehole at 32.00m

31.0
32.0
33.0
34.0
35.0
36.0
37.0
38.0
39.0
40.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. Groundwater encountered from 12.00m bgl.
4. Borehole sides stable.
5. Window sample borehole to 4.24m bgl, redrilled with rotary open hole to widen borehole from ground level to 5.00m bgl with rotary cored follow on to 32.00m bgl.
6. Installation to 13.00m bgl: 6.00m plain 50mm PVC, 7.00m slotted PVC upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
SA201
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 08/11/24	**Logged** AH / **Checked** NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.10-1.00	ES		0.05			MADE GROUND: Concrete.
	1.50-2.40	D					MADE GROUND: Brown slightly clayey very gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate, ceramics and metal. Cobbles of angular to sub-angular brick and concrete up to 250mm in diameter.
				2.40			End of Trial Pit at 2.40m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
SA201A
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type**: TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale**: 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 08/11/24	**Logged**: AH / **Checked**: NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown slightly clayey very gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate, ceramics and metal. Cobbles of angular to sub-angular brick and concrete up to 250mm in diameter.
				1.40			End of Trial Pit at 1.40m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
SA202
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 08/11/24	**Logged** AH / **Checked** NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown slightly clayey very gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate, ceramics and metal. Cobbles of angular to sub-angular brick and concrete up to 250mm in diameter.
	1.50-2.50	D					
	2.50-3.40	D					
				3.40			End of Trial Pit at 3.40m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
SA202A
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type**: TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale**: 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 08/11/24	**Logged**: AH / **Checked**: NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown slightly clayey very gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate, ceramics and metal. Cobbles of angular to sub-angular brick and concrete up to 250mm in diameter.
	1.50-2.50	D					
							Low cobble content from 2.00m bgl.
	2.50-3.50	D					
				3.70			End of Trial Pit at 3.70m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP201
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 07/11/24	**Logged** AH / **Checked** NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown slightly clayey gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate and plastic with occassional wood. Cobbles are angular to sub-angular of brick and concrete up to 170mm in diameter.
	1.00-2.00	ES					
				2.00			End of Trial Pit at 2.00m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP202
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type**: TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale**: 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 07/11/24	**Logged**: AH / **Checked**: NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-0.50	ES					MADE GROUND: Brown slightly clayey gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate, plastic and occasional wood. Cobbles are angular to sub-angular of brick and concrete up to 170mm in diameter.
				0.50			
	0.60-0.80	D					MADE GROUND: Orangish brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
				0.90			
	1.00-1.80	D					MADE GROUND: Brown slightly clayey gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate and plastic with occasional wood. Cobbles are angular to sub-angular of brick and concrete up to 170mm in diameter.
				1.90			
	2.00-2.20	D					Orangish brown gravelly SAND. Sand is fine to coarse. Gravel is sub-rounded to rounded fine to coarse of sandstone.
				2.30			End of Trial Pit at 2.30m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP203
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type**: TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale**: 1:25
CLIENT:	ATRI7 6 LTD	**DATES:**	07/11/24

Logged	Checked
AH	NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown slightly clayey gravelly sand with low cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone and slate with occasional plastic and metal. Cobbles are angular to sub-angular of brick and concrete up to 170mm in diameter.
	1.50-2.50	D					
				2.80			Orangish brown gravelly SAND. Sand is fine to coarse. Gravel is sub-rounded to rounded fine to coarse of sandstone.
				2.90			End of Trial Pit at 2.90m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP204
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type**: TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale**: 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 07/11/24	**Logged**: AH / **Checked**: NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown slightly clayey gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone and slate with occasional plastic and metal. Cobbles are angular to sub-angular of brick and concrete up to 400mm in diameter.
	1.00-2.00	D					
				2.40			Orangish brown clayey SAND. Sand is fine to coarse.
				2.50			End of Trial Pit at 2.50m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP205
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 07/11/24	**Logged** AH / **Checked** NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-0.90	ES					MADE GROUND: Brown slightly clayey gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone and slate with occasional plastic and metal. Cobbles are angular to sub-angular of brick and concrete up to 400mm in diameter.
	1.00-1.50 1.00	D HSV	88kPa	0.90			Soft orangish brown very sandy CLAY. Sand is fine to coarse.
	1.50-2.00 1.50	D HSV	107kPa				
	2.30-3.30	D		2.20			Orangish brown clayey gravelly SAND. Sand is fine to coarse. Gravel is sub-rounded to rounded fine to coarse of sandstone.
				3.30			End of Trial Pit at 3.30m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides stable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP206
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type**: TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale**: 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 07/11/24	**Logged**: AH / **Checked**: NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown slightly clayey gravelly sand with high cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone and slate with occasional plastic, wood and metal. Cobbles are angular to sub-angular of brick and concrete up to 200mm in diameter.
	1.50-2.50	D					
				3.10			End of Trial Pit at 3.10m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides unstable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP207
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 08/11/24	**Logged** AH / **Checked** NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.40	ES					MADE GROUND: Brown slightly clayey gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate and plastic with occasional wood. Cobbles are angular to sub-angular of brick and concrete up to 170mm in diameter.
				1.40			Orangish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is sub-rounded to rounded fine to coarse of sandstone.
				2.40			End of Trial Pit at 2.40m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides stable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP208
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type**: TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale**: 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 08/11/24	**Logged**: AH / **Checked**: NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown clayey gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, glass, plastic, wood and ceramics. Cobbles are angular to sub-angular of brick and concrete up to 200mm in diameter.
	1.50-1.70 1.50	D HSV	63kPa	1.40			Firm orangish brown sandy CLAY. Sand is fine to coarse.
				2.00			Orangish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is sub-rounded to rounded fine to coarse of sandstone.
				2.20			End of Trial Pit at 2.20m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides stable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Trial Pit Log

No.
TP209
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type**: TP
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale**: 1:25
CLIENT:	ATRI7 6 LTD	**DATES:** 08/11/24	**Logged**: AH / **Checked**: NS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.00-1.00	ES					MADE GROUND: Brown slightly clayey gravelly sand with moderate cobble content. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, sandstone, slate and plastic with occasional wood. Cobbles are angular to sub-angular of brick and concrete up to 170mm in diameter.
	1.50-2.00	D					
				2.30			Orangish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is sub-rounded to rounded fine to coarse of sandstone.
				2.50			End of Trial Pit at 2.50m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. No groundwater encountered.
3. Excavation sides stable.
4. Excavation backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS201
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
		0.05-1.00	ES		0.05			MADE GROUND: Concrete.
								MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
		1.20	SPT	N=9 (3,2/2,2,3,2)				
		1.30-1.70	D					
		2.00	SPT	N=5 (3,2/2,1,1,1)				
					2.40			MADE GROUND: Firm brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of sandstone, brick and coal.
		2.70-2.80	D					
		3.00	SPT	N=10 (3,3/2,3,2,3)	3.00			MADE GROUND: Brown very gravelly very clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone. *Becomes very clayey between 3.20m and 3.50m bgl.*
					3.60			Extremely weak moderately weathered red fine to coarse grained SANDSTONE recovered as a gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		3.70	SPT	N≥50 (25 for 125mm/50 for 115mm)	3.94			End of Borehole at 3.94m

1.0 2.0 3.0 4.0 5.0 6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 3.94m bgl within bedrock.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS202
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
		0.00-1.00	ES					MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
		1.20	SPT	N=9 (2,1/2,2,2,3)				
		1.30-1.70	D					
		2.00	SPT	N=8 (3,3/2,1,2,3)				
		2.30-2.70	D					
		3.00	SPT	N=20 (3,3/2,4,6,8)				
					3.60			Orangish brown slightly clayey very gravelly SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		3.80-4.00	D		3.70			Extremely weak partially weathered red fine to coarse grained SANDSTONE recovered as a gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		4.00	SPT	N≥50 (25 for 95mm/50 for 190mm)	4.29			End of Borehole at 4.28m

1.0 2.0 3.0 4.0 5.0 6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 4.28m bgl within bedrock.
6. Installation to 3.50m bgl: 0.50m plain 50mm, 3.00m slotted upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS203
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00-0.30	ES		0.30			MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.30m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.30m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.30m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS203A
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.30			MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.30m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.30m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.30m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS203B
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	SPT	N≥50 (60 for 145mm/15 for 20mm)	0.47			MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.46m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.35m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.47m bgl due to SPT refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS203C
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.35			MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.35m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.35m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.35m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS203D
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	SPT	N≥50 (25 for 85mm/50 for 20mm)	0.40			MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.40m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.30m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.40m bgl due to SPT refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS204
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
		0.00-0.80	ES		0.05			MADE GROUND: Concrete.
								MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
		0.80	SPT	N≥50 (75 for 90mm/0 for 0mm)	0.89			*Concrete obstruction observed at 0.89m bgl.*
								End of Borehole at 0.89m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.70m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.80m bgl due to concrete obstruction.
6. Borehole backfilled with araisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS204A
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.05			MADE GROUND: Concrete.
					0.30			MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.30m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.20m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.30m bgl due to sample casing refusal in very dense made ground. 6. Borehole backfilled with araisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS204B
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 05/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.80	SPT	N≥50 (25 for 95mm/50 for 105mm)	0.05			MADE GROUND: Concrete.
								MADE GROUND: Brown very gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
					1.00			End of Borehole at 1.00m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.80m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 1.00m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS205
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.50			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.50m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.50m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.50m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS205A
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.40			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.40m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.40m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.40m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS205B
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.45			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.45m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.45m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.45m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS205C
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
		0.00-1.00	ES					MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
		1.20	SPT	N=14 (3,3/3,3,4,4)				
		1.30-1.70	D					
		2.00	SPT	N=4 (3,1/1,1,1,1)				*No SPT recovery at 2.00m bgl.* *Poor recovery between 2.00m and 3.00m bgl.*
		2.40-2.60	D					*Becomes very clayey between 2.40m and 2.60m bgl.*
		3.00-3.60	D		3.00			Orangish brown slightly gravelly SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		3.00	SPT	N=17 (6,6/4,4,4,5)				
		3.80	SPT	N≥50 (25 for 145mm/50 for 145mm)	3.80			Extremely weak moderately weathered red fine to coarse grained SANDSTONE recovered as a gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
					4.09			End of Borehole at 4.09m

1.0 2.0 3.0 4.0 5.0 6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 4.09m bgl within bedrock.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS206
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00-0.50	ES		0.50			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.50m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.50m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.50m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS206A
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.50			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.50m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.50m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.50m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS206B
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.40			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
								End of Borehole at 0.40m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.40m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.50m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS207
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.50			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, coal, glass and sandstone.
								End of Borehole at 0.50m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.50m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.50m bgl within bedrock.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS207A
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
		0.00-1.00	ES					MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, coal, glass and sandstone.
		1.20	SPT	N=31 (10,8/7,9,8,7)				
		1.30-1.70	D					
		2.00	SPT	N=20 (4,4/5,6,5,4)				
		2.30-2.70	D					
		3.00	SPT	N=15 (6,6/5,4,3,3)				
					3.70			
		3.80-4.20	D					Extremely weak moderately weathered red fine to coarse grained SANDSTONE recovered as a gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		4.00	SPT	N≥50 (25 for 115mm/50 for 105mm)				
					4.22			End of Borehole at 4.22m

1.0 2.0 3.0 4.0 5.0 6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 4.22m bgl within bedrock.
6. Installation to 3.50m bgl: 0.50m plain 50mm PVC, 3.00m slotted PVC upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS208
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
		0.00-1.00	ES					MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete, slate, ceramics and sandstone.
		1.00-2.00	ES					
		1.20	SPT	N=17 (5,5/5,4,3,5)				
		2.00	SPT	N=5 (2,1/1,1,2,1)				
					2.40			
		2.50-3.00	D					Orangish brown slightly gravelly slightly clayey SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		3.00	SPT	N=15 (3,3/4,3,4,4)				
					3.60			
		3.70-7.10	D					Extremely weak moderately weathered red fine to coarse grained SANDSTONE recovered as a gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		4.00	SPT	N≥50 (25 for 125mm/50 for 115mm)				
					4.24			End of Borehole at 4.24m

1.0 2.0 3.0 4.0 5.0 6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 4.24m bgl within bedrock.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS209
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00-0.50	ES		0.50			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete and sandstone.
								End of Borehole at 0.50m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.50m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.50m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS209A
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00-1.00	ES					MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete and sandstone.
		1.20	SPT	N≥50 (25 for 125mm/50 for 20mm)	1.35			End of Borehole at 1.34m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 1.345m bgl due to SPT refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS209B
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.40			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete and sandstone.
								End of Borehole at 0.40m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.40m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.40m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS209C
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
					0.50			MADE GROUND: Brown slightly clayey very gravelly sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse brick, concrete and sandstone.
								End of Borehole at 0.50m

1.0
2.0
3.0
4.0
5.0
6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 0.50m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 0.50m bgl due to sample casing refusal in very dense made ground.
6. Borehole backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD

Borehole Log

Window Sampler No.
WS210
Sheet 1 of 1

PROJECT NO:	C5504	**CO-ORDS:**	**Hole Type** WS
PROJECT NAME:	VISION, MANCHESTER	**LEVEL:**	**Scale** 1:30
CLIENT:	ATRI7 6 LTD	**DATES:** 04/11/24	**Logged** AH / **Checked** NS

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m OD)	Legend	Stratum Description
		0.00-0.90	ES					MADE GROUND: Brown gravelly clayey sand. Sand is fine to coarse. Gravel is angular to sub-angular fine to coarse of brick, concrete, coal, slate and sandstone.
								Becomes very clayey between 0.90m and 1.50m bgl.
		1.00-1.50	ES					
		1.20	SPT	N=24 (6,6/5,6,6,7)				
		1.50-1.80	D		1.50			Orangish brown slightly clayey slightly gravelly SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
								Becomes very gravelly between 1.80m and 3.10m bgl.
		2.00	SPT	N=20 (4,4/6,4,4,6)				
		2.40-2.60	D					
		3.00	SPT	N=16 (4,5/5,3,4,4)				*No SPT recovery at 3.00m bgl.*
					3.60			Extremely weak moderately weathered red fine to coarse grained SANDSTONE recovered as a gravelly sand. Sand is fine to coarse. Gravel is sub-angular to sub-rounded fine to coarse of sandstone.
		3.70-4.00	D					
		3.90	SPT	N≥50 (25 for 125mm/50 for 145mm)				
					4.17			End of Borehole at 4.17m

1.0 2.0 3.0 4.0 5.0 6.0

Remarks

1. Service clearance undertaken by a BSL engineer using CAT & Genny and GPR.
2. Hand pit excavation to 1.20m bgl.
3. No groundwater encountered.
4. Borehole sides stable.
5. Borehole terminated at 4.17m bgl within bedrock.
6. Installation to 1.50m bgl: 0.50m plain 50mm PVC, 1.00m slotted PVC upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

APPENDIX C

Chemical Testing Results

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Analytical Report Number : 24-053869

Project / Site name:	Vision, Manchester	**Samples received on:**	14/11/2024
Your job number:	C5504	**Samples instructed on/ Analysis started on:**	14/11/2024
Your order number:	638	**Analysis completed by:**	21/11/2024
Report Issue Number:	1	**Report issued on:**	22/11/2024
Samples Analysed:	6 soil samples		

Signed:

Trevor Hill
Customer Service Advisor
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-053869
Project / Site name: Vision, Manchester
Your Order No: 638

Lab Sample Number				379526	379527	379528	379529	379530
Sample Reference				WS201	WS205d	TP201	TP208	BH201
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.05-1.00	0.00-1.00	0.00-1.00	0.00-1.00	0.05-0.80
Date Sampled				05/11/2024	04/11/2024	07/11/2024	08/11/2024	05/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	41.2	40.2	50.3	41.5	49.6
Moisture Content	%	0.01	NONE	7.9	9.8	9.6	17	13
Total mass of sample received	kg	0.1	NONE	1.2	0.8	0.8	0.8	0.9
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KWB	KWB	KWB	KWB	KWB
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	11	10.2	10.7	8.4	10.1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	660	780	760	170	3800
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	329	389	382	82.5	1890
Organic Matter (automated)	%	0.1	MCERTS	1.4	1.4	1.6	2.6	1.7
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.79	0.12	0.55	7.1	1.2
Acenaphthylene	mg/kg	0.05	MCERTS	0.15	< 0.05	0.14	0.23	0.17
Acenaphthene	mg/kg	0.05	MCERTS	0.58	0.17	0.38	6.7	1.7
Fluorene	mg/kg	0.05	MCERTS	0.61	0.15	0.44	5.4	1.5
Phenanthrene	mg/kg	0.05	MCERTS	4.8	1.4	3.6	32	11
Anthracene	mg/kg	0.05	MCERTS	0.96	0.32	0.71	7.9	2.7
Fluoranthene	mg/kg	0.05	MCERTS	5.4	2.3	4.2	21	10
Pyrene	mg/kg	0.05	MCERTS	5.2	2.3	4.1	22	10
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.6	1.1	2.1	11	4.6
Chrysene	mg/kg	0.05	MCERTS	2.5	1.1	2.1	10	4.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.3	1.2	1.9	9.8	4.8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.3	0.62	1.1	3.4	1.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.5	1.1	2	9.1	4.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.1	0.6	0.86	3.4	1.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.23	0.09	0.16	0.9	0.35
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.3	0.66	1.1	4	2.2
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	32.2	13.3	25.3	154	62.8
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.1	8.1	11	24	12
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.4	0.7	0.5
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	16	15	20	16	17
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	15	20	16	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	51	30	48	110	98
Lead (aqua regia extractable)	mg/kg	1	MCERTS	78	59	78	270	100
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	< 0.3	0.9	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	13	16	21	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	67	70	100	180	120

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-053869
Project / Site name: Vision, Manchester
Your Order No: 638

Lab Sample Number				379526	379527	379528	379529	379530
Sample Reference				WS201	WS205d	TP201	TP208	BH201
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.05-1.00	0.00-1.00	0.00-1.00	0.00-1.00	0.05-0.80
Date Sampled				05/11/2024	04/11/2024	07/11/2024	08/11/2024	05/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	< 0.010	-	< 0.010	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	< 0.010	-	< 0.010	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	< 0.010	-	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	< 2.0	-	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	< 8.0	-	< 8.0	-
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	-	20	-	< 10	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	20	-	< 8.0	-
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	-	< 10	-	< 10	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	20	-	< 10	-
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	20	-	< 10	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	< 0.010	-	< 0.010	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	< 0.010	-	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	< 0.020	-	< 0.020	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	< 1.0	-	4.6	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	4	-	21	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	10	-	73	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	37	-	88	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-	13	-	13	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	51	-	190	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	64	-	200	-
TPH (>EC5 - EC10) HS_1D_TOTAL	mg/kg	1	NONE	-	< 1.0	-	< 1.0	-
TPH (>EC16 - EC40) EH_CU_1D_TOTAL	mg/kg	10	NONE	-	89	-	170	-
TPH Total >EC5 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	84	-	200	-
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	MCERTS	-	< 0.005	-	< 0.005	-
Benzene	mg/kg	0.005	MCERTS	-	< 0.005	-	< 0.005	-
Toluene	mg/kg	0.005	MCERTS	-	< 0.005	-	< 0.005	-
Ethylbenzene	mg/kg	0.005	MCERTS	-	< 0.005	-	< 0.005	-
p & m-xylene	mg/kg	0.008	MCERTS	-	< 0.008	-	< 0.008	-
o-Xylene	mg/kg	0.005	MCERTS	-	< 0.005	-	< 0.005	-

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

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Analytical Report Number: 24-053869
Project / Site name: Vision, Manchester
Your Order No: 638

Lab Sample Number				379531
Sample Reference				BH202
Sample Number				None Supplied
Depth (m)				0.00-1.00
Date Sampled				04/11/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Stone Content	%	0.1	NONE	50.6
Moisture Content	%	0.01	NONE	8.8
Total mass of sample received	kg	0.1	NONE	1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KWB

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	11.1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2000
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	989
Organic Matter (automated)	%	0.1	MCERTS	1.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.39
Acenaphthylene	mg/kg	0.05	MCERTS	0.12
Acenaphthene	mg/kg	0.05	MCERTS	0.49
Fluorene	mg/kg	0.05	MCERTS	0.46
Phenanthrene	mg/kg	0.05	MCERTS	3.8
Anthracene	mg/kg	0.05	MCERTS	0.89
Fluoranthene	mg/kg	0.05	MCERTS	4.1
Pyrene	mg/kg	0.05	MCERTS	4.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.9
Chrysene	mg/kg	0.05	MCERTS	1.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.14
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	25.1

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	19
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-053869
Project / Site name: Vision, Manchester
Your Order No: 638

Lab Sample Number				379531
Sample Reference				BH202
Sample Number				None Supplied
Depth (m)				0.00-1.00
Date Sampled				04/11/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Petroleum Hydrocarbons				
TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-
TPHCWG - Aliphatic >EC16 - EC35 EH_CU_1D_AL	mg/kg	10	MCERTS	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_1D_AL	mg/kg	10	NONE	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	-
TPH (>EC5 - EC10) HS_1D_TOTAL	mg/kg	1	NONE	-
TPH (>EC16 - EC40) EH_CU_1D_TOTAL	mg/kg	10	NONE	-
TPH Total >EC5 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-
VOCs				
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	MCERTS	-
Benzene	mg/kg	0.005	MCERTS	-
Toluene	mg/kg	0.005	MCERTS	-
Ethylbenzene	mg/kg	0.005	MCERTS	-
p & m-xylene	mg/kg	0.008	MCERTS	-
o-Xylene	mg/kg	0.005	MCERTS	-

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

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Analytical Report Number : 24-053869
Project / Site name: Vision, Manchester

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
379526	WS201	None Supplied	0.05-1.00	Brown gravelly sand with brick and stones
379527	WS205d	None Supplied	0.00-1.00	Brown loam and sand with gravel and brick
379528	TP201	None Supplied	0.00-1.00	Brown loam and clay with vegetation and stones
379529	TP208	None Supplied	0.00-1.00	Brown loam and clay with vegetation and stones
379530	BH201	None Supplied	0.05-0.80	Brown gravelly sand with brick and stones
379531	BH202	None Supplied	0.00-1.00	Brown loam and clay with brick and stones

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Analytical Report Number : 24-053869
Project / Site name: Vision, Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	NONE
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Analytical Report Number : 24-053869
Project / Site name: Vision, Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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

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Sample Deviation Report

Analytical Report Number : 24-053869

Project / Site name: Vision, Manchester

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH201	N/A	S	379530	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
BH202	N/A	S	379531	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP201	N/A	S	379528	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS201	N/A	S	379526	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS205d	N/A	S	379527	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS205d	N/A	S	379527	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS205d	N/A	S	379527	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS205d	N/A	S	379527	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c

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The results included within the report relate only to the sample(s) submitted for testing.

APPENDIX D

Geotechnical Testing Results

MURRAY RIX
CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client Brownfield Solutions Ltd

Address William Smith House
173-183 Witton Street
Northwich
Cheshire
CW9 5LP

Contract C5504 -
Vision, Manchester

Job Number MRN 24032/40
Date of Issue 29 November 2024

Approved Signatories

S J Hutchings, O P Davies

Notes

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

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

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

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

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

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

M U R R A Y R I X

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

TEST CERTIFICATE

DETERMINATION OF THE COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS

ASTM D7012 - 14 Method C

CLIENT	Brownfield Solutions Ltd
SITE	C5504 - Vision, Manchester
JOB NUMBER	MRN 24032/40

DATE RECEIVED	21-Nov-24	DATE SAMPLED	5, 6, 7-Nov-24
DATE TESTED	25-Nov-24	SAMPLED BY	Client
MATERIAL TESTED	Rock Core		

Sample Number	B/H No.	Sample Depth	Tested By	Diameter (mm)	Length* (mm)	L/D Ratio	Method of Preparation	Load at Failure (kN)	Compressive Strength (N/mm^2)	Description after Test
602203	BH201	12.22-12.52	M.R.	86	172	2.00	Saw / Grinding	82.2	**14.2**	Split vertically top to bottom with no visible end defects
602205	BH201	15.00-15.52	M.R.	86	172	2.00	Saw / Grinding	69.4	**11.9**	Split vertically top to bottom with no visible end defects
602207	BH201	22.40-22.73	M.R.	86	172	2.00	Saw / Grinding	89.8	**15.5**	Split vertically top to bottom with no visible end defects
602211	BH201	29.20-29.55	M.R.	86	172	2.00	Saw / Grinding	104.2	**17.9**	Split vertically top to bottom with no visible end defects
602222	BH202	12.65-13.00	M.R.	86	172	2.00	Saw / Grinding	90.1	**15.5**	Split vertically top to bottom with no visible end defects
602217	BH202	19.22-19.46	M.R.	86	172	2.00	Saw / Grinding	89.4	**15.4**	Split vertically top to bottom with no visible end defects
602220	BH202	27.17-27.42	M.R.	86	172	2.00	Saw / Grinding	117.3	**20.2**	Split vertically top to bottom with no visible end defects
602221	BH202	29.09-29.36	M.R.	86	172	2.00	Saw / Grinding	101.3	**17.4**	Split vertically top to bottom with no visible end defects

Comments / Deviation from standard method / Abnormalities noted during visual inspection.

*Length after sample preparation

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

SIGNED [redacted]

DATE 29-Nov-24

MURRAY RIX

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

TEST CERTIFICATE

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

CLIENT	Brownfield Solutions Ltd
SITE	C5504 - Vision, Manchester
JOB NUMBER	MRN 24032/40

DATE RECEIVED	21-Nov-24	DATE SAMPLED	5, 6, 7-Nov-24
DATE TESTED	25-Nov-24	SAMPLED BY	Client

MATERIAL	Rock Core
ADVISED SOURCE	Site Investigation Sample

Sample Number	B/H No.	Depth (m)	Test Type*	D (mm)	W** (mm)	Load (P) (kN)	D_e^2 (mm^2)	D_e (mm)	Is (MPa)	F	$I_{s(50)}$ (MPa)
602201	BH201	4.95-5.14	D	85.9		1.2	7378.81	85.90	0.16	1.28	0.21
602202	BH201	8.11-8.27	D	85.4		0.8	7293.16	85.40	0.11	1.27	0.14
602204	BH201	13.51-13.76	D	85.8		1.2	7361.64	85.80	0.16	1.28	0.21
602206	BH201	18.57-18.73	D	85.7		0.4	7344.49	85.70	0.05	1.27	0.07
602208	BH201	22.97-23.12	D	85.9		0.6	7378.81	85.90	0.08	1.28	0.10
602209	BH201	25.60-25.74	D	85.9		1.1	7378.81	85.90	0.15	1.28	0.19
602210	BH201	27.97-28.12	D	85.4		0.9	7293.16	85.40	0.12	1.27	0.16
602212	BH202	7.16-7.32	D	85.9		0.7	7378.81	85.90	0.09	1.28	0.12
602213	BH202	11.41-11.50	D	86.0		1.4	7396.00	86.00	0.19	1.28	0.24
602214	BH202	14.55-14.72	D	85.9		0.7	7378.81	85.90	0.09	1.28	0.12
602216	BH202	18.55-18.71	D	85.8		0.9	7361.64	85.80	0.12	1.28	0.16
602218	BH202	21.00-21.12	D	86.3		1.5	7447.69	86.30	0.20	1.28	0.26
602219	BH202	25.60-25.76	D	86.1		1.0	7413.21	86.10	0.13	1.28	0.17
602215	BH202	15.42-15.66	D	86.2		0.8	7430.44	86.20	0.11	1.28	0.14

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

**W Entry required if test type is not Diametral

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 29-Nov-24
(Director / Head of Laboratory)

Brownfield Solutions Ltd
William Smith House
173 - 183 Witton Street
Northwich
Cheshire
CW9 5LP

e: a.hunt@brownfield-solutions.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-054270

Project / Site name:	Vision, Manchester	**Samples received on:**	18/11/2024
Your job number:	C5504	**Samples instructed on/ Analysis started on:**	18/11/2024
Your order number:	611	**Analysis completed by:**	28/11/2024
Report Issue Number:	1	**Report issued on:**	29/11/2024
Samples Analysed:	10 soil samples		

[redacted]

Signed: _____

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

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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

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

Analytical Report Number: 24-054270
Project / Site name: Vision, Manchester
Your Order No: 611

Lab Sample Number				381744	381745	381746	381747	381748
Sample Reference				TP205	WS207b	WS208	WS210	BH201
Sample Number				CLAY	SDST	SAND	SAND	SDST
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.50-2.00	3.80-4.20	2.50-3.00	1.50-1.80	6.70-6.80
Date Sampled				07/11/2024	04/11/2024	04/11/2024	04/11/2024	06/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	7.8	6.6	4.4	8
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.8	0.8
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.8	8.1	7.7	7.7	5.7
Total Sulphate as SO_4	%	0.005	MCERTS	-	-	-	-	-
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	160	490	280	99	230
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	-	-	-
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	78	247	138	49.4	114
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphur	%	0.005	MCERTS	-	-	-	-	-
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	-	-	-	-	-
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	-	-
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	-	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	-	-	-
Heavy Metals / Metalloids								
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-	-

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-054270
Project / Site name: Vision, Manchester
Your Order No: 611

Lab Sample Number				381749	381750	381751	381752	381753
Sample Reference				BH201	BH201	BH202	BH202	WS205d
Sample Number				SDST	SDST	SDST	SDST	SAND
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				10.00-10.20	17.72-17.80	14.00-14.20	24.00-24.10	3.00-3.60
Date Sampled				06/11/2024	06/11/2024	05/11/2024	05/11/2024	05/11/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	6.7
Moisture Content	%	0.01	NONE	9.3	9.3	8.3	8.7	5.1
Total mass of sample received	kg	0.1	NONE	0.8	0.9	0.9	0.8	0.8
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.8	8.5	8.5	8.6	8.2
Total Sulphate as SO_4	%	0.005	MCERTS	-	-	0.01	-	0.029
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	200	29	39	45	120
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	-	19.6	-	59.5
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	98.1	14.3	-	22.7	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	2	-	1.2
Total Sulphur	mg/kg	50	MCERTS	-	-	53	-	83
Total Sulphur	%	0.005	MCERTS	-	-	0.005	-	0.008
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	-	-	< 0.5	-	< 0.5
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	< 0.05	-	< 0.05
Water Soluble Nitrate (2:1) as N	mg/kg	2	NONE	-	-	< 2.0	-	< 2.0
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	< 2.0	-	< 2.0
Heavy Metals / Metalloids								
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	3.5	-	2.7
Magnesium (water soluble)	mg/kg	5	NONE	-	-	7	-	5.4

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-054270
Project / Site name: Vision, Manchester

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
381744	TP205	CLAY	1.50-2.00	Brown clay with gravel
381745	WS207b	SDST	3.80-4.20	Brown sand
381746	WS208	SAND	2.50-3.00	Brown sand with gravel
381747	WS210	SAND	1.50-1.80	Brown sand with gravel
381748	BH201	SDST	6.70-6.80	Brown clay and sand
381749	BH201	SDST	10.00-10.20	Brown clay and sand
381750	BH201	SDST	17.72-17.80	Brown clay and sand
381751	BH202	SDST	14.00-14.20	Brown clay and sand
381752	BH202	SDST	24.00-24.10	Brown clay and sand
381753	WS205d	SAND	3.00-3.60	Brown sand with gravel and stones

Analytical Report Number : 24-054270
Project / Site name: Vision, Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

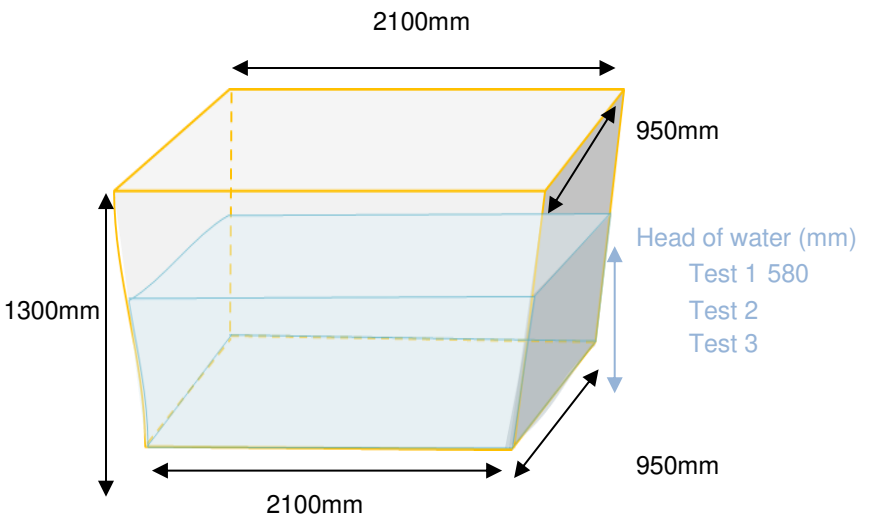
Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

Percolation Test	ATRI7 6 LTD	Date of Test: 03/11/2024
	VISION	Logged By: SJ
SA201A	C5504	Checked By: NS

BROWNFIELD SOLUTIONS LTD

Dimensions (mm)	TEST 1	TEST 2	TEST 3
Length at Top	2100		
Length at Bottom	2100		
Width at Top	950		
Width at Bottom	950		
Depth Tested (Head of Water)	580		
Depth of Excavation	1300		
Volume of Water (m3)	1.1571		
Void Ratio	1		
Factored Volume of Water (m3)	1.1571		
Strata Description	Made Ground: Brown slightly clayey very gravelly sand with moderate cobble content.		
Pit Details	Open with no stone filling See associated log for stratum details		

Test Pit Construction

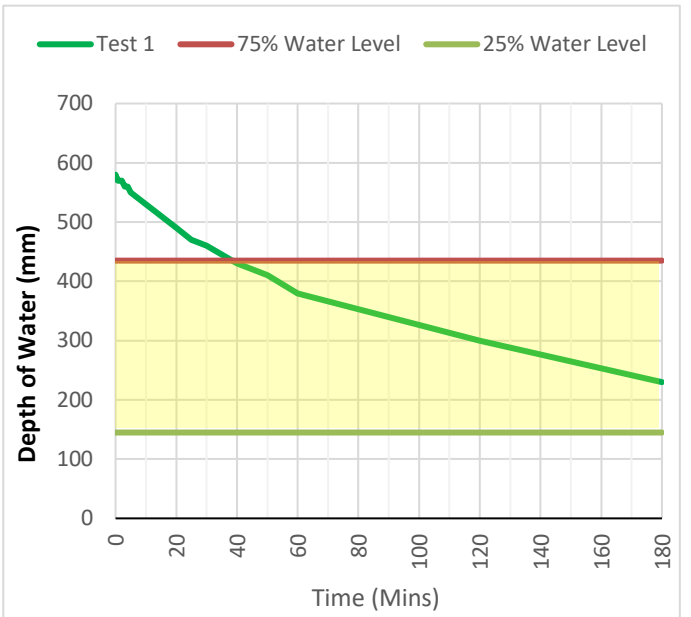


Site Recorded Data

Test 1			Test 2			Test 3		
Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)	Time (mins)	Depth to water (mm)	Head of water (mm)
0.00	720	580						
0.17	722	578						
0.25	724	576						
0.33	725	575						
0.42	726	574						
0.50	728	572						
0.67	729	571						
0.83	730	570						
1.00	730	570						
2.00	730	570						
3.00	740	560						
4.00	740	560						
5.00	750	550						
10.00	770	530						
15.00	790	510						
20.00	810	490						
25.00	830	470						
30.00	840	460						
40.00	870	430						
50.00	890	410						
60.00	920	380						
90.00	960	340						
120.00	1000	300						
180.00	1070	230						

Percolation Test	**ATRI7 6 LTD**	Date of Test: 03/11/2024	BROWNFIELD SOLUTIONS LTD
	VISION	Logged By: SJ	
SA201A	C5504	Checked By: NS	

Data Analysis



Soil Infiltration Rate Calculation

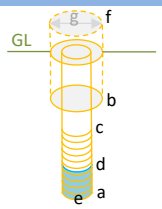
	Test 1	Test 2	Test 3
Water Level 1	1070.000		
Water Level 2	720.000		
Time to drain from Water Level 1 to Level 2 (mi	180.000		
Volume of Water Discharged m3)	0.6982500		
Discharge Area (m3)	7.455		
Soil Infiltration Rate (m/min)	0.0005204		
Soil Infiltration Rate (m/sec)	8.67E-06		

Compliancy Check

	Test 1	Test 2	Test 3
Water Level at 75% effective depth (mm)	435		
Water Level at 25% effective depth (mm)	145		
	Not Compliant with BRE 365 - Insufficient time to drain past 25% effective depth		

Falling Head Permeability Test	**ATRI7 6 LTD**	Date of Test: 27/11/2024	BROWNFIELD SOLUTIONS LTD
	VISION	Logged By: GK	
BH201	C5504	Checked By: NS	

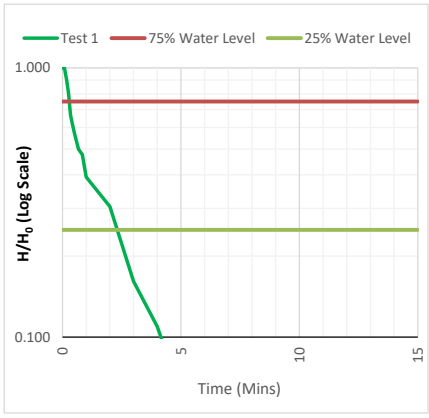
Dimensions (mm)	Test 1	Test 2	Test 3
Bottom of Borehole (a)	12900	12900	12900
Top of Filter Material (c)	6000	6000	6000
Initial Groundwater Level or Base of Hole (d)	9190	9190	9190
Centre of Piezometer Tip (e)			
Height of Casing/Standpipe Above Surface (f)	0	0	0
Diameter of Casing/Standpipe (g)	150	150	150
Length of Filter (above GW table/base of hole)	3190	3190	3190

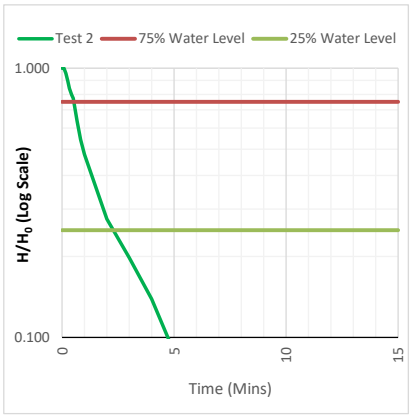


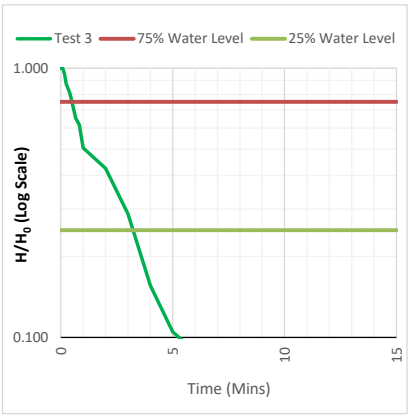
Site Recorded Data

Test 1				Test 2				Test 3			
Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0	Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0	Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0
0.00	6080	3110	1.000	0.00	5450	3740	1.000	0.00	5470	3720	1.000
0.08	6080	3110	1.000	0.08	5450	3740	1.000	0.08	5470	3720	1.000
0.17	6390	2800	0.900	0.17	5610	3580	0.957	0.17	5660	3530	0.949
0.25	6700	2490	0.801	0.25	5840	3350	0.896	0.25	5940	3250	0.874
0.33	7110	2080	0.669	0.33	6040	3150	0.842	0.33	6070	3120	0.839
0.42	7270	1920	0.617	0.42	6210	2980	0.797	0.42	6200	2990	0.804
0.50	7410	1780	0.572	0.50	6300	2890	0.773	0.50	6410	2780	0.747
0.67	7640	1550	0.498	0.67	6810	2380	0.636	0.67	6770	2420	0.651
0.83	7710	1480	0.476	0.83	7160	2030	0.543	0.83	6900	2290	0.616
1.00	7970	1220	0.392	1.00	7400	1790	0.479	1.00	7310	1880	0.505
2.00	8240	950	0.305	2.00	8160	1030	0.275	2.00	7610	1580	0.425
3.00	8690	500	0.161	3.00	8450	740	0.198	3.00	8120	1070	0.288
4.00	8850	340	0.109	4.00	8670	520	0.139	4.00	8610	580	0.156
5.00	9000	190	0.061	5.00	8860	330	0.088	5.00	8800	390	0.105
10.00	9160	30	0.010	10.00	9150	40	0.011	10.00	9020	170	0.046
15.00	9190	0	0.000	15.00	9190	0	0.000	15.00	9190	0	0.000

Data Analysis







Falling Head Permeability Test	**ATRI7 6 LTD**	Date of Test: 27/11/2024 Logged By: GK Checked By: NS	BROWNFIELD SOLUTIONS LTD
	VISION		
BH201	C5504		

Calculation of Intake Factor (F)

		Test 1	Test 2	Test 3
m^2	Cross sectional area of base	0.018	0.018	0.018
m	Diameter	0.150	0.150	0.150
m	Length	3.190	3.190	3.190
	Intake Factor Scenario	Soil flush with bottom in uniform soil		
	Intake Factor, F	**0.4125**	**0.4125**	**0.4125**

Soil Infiltration Rate Calculation

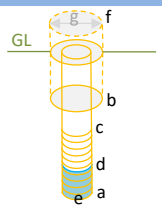
		Test 1	Test 2	Test 3
75% Effective Level	Head (m)	2.333	2.805	2.790
	Depth to water (m bgl)	6.858	6.385	6.380
	Time (mins)	0.30	0.50	0.50
	Time (sec)	18	30	30
25% effective Level	Head (m)	0.778	0.935	0.930
	Depth to water (m bgl)	8.413	8.255	8.260
	Time (mins)	2.50	2.50	3.50
	Time (sec)	150	150	210
m (bgl)	Initial groundwater level	9.19	9.19	9.19
m (bgl)	At time (t_1) Depth to water	6.858	6.385	6.380
seconds	t_1	18	30	30
m (bgl)	Depth of water H_1	2.333	2.805	2.810
m (bgl)	At time (t_2) Depth to water	8.413	8.255	8.260
seconds	t_2	150	150	210
m (bgl)	Depth of water H_2	0.778	0.935	0.930

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

	Test 1	Test 2	Test 3
Permeability, k (m/s)	**3.57E-04**	**3.92E-04**	**2.63E-04**

Falling Head Permeability Test	**ATRI7 6 LTD**	Date of Test: 27/11/2024 Logged By: GK Checked By: NS	BROWNFIELD SOLUTIONS LTD
	VISION		
BH201	C5504		

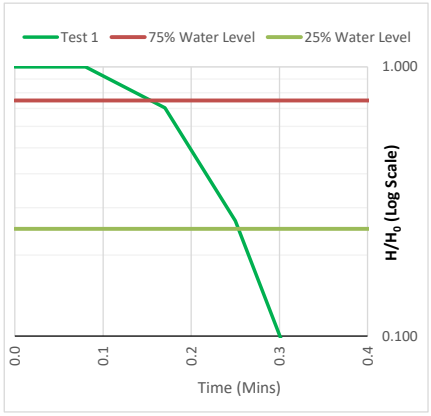
Dimensions (mm)	Test 1	Test 2	Test 3
Bottom of Borehole (a)	3410	3410	3410
Top of Filter Material (c)	500	500	500
Initial Groundwater Level or Base of Hole (d)	3410	3410	3410
Centre of Piezometer Tip (e)			
Height of Casing/Standpipe Above Surface (f)	0	0	0
Diameter of Casing/Standpipe (g)	100	100	100
Length of Filter (above GW table/base of hole)	2910	2910	2910

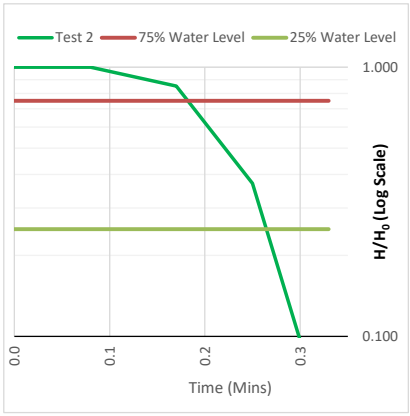


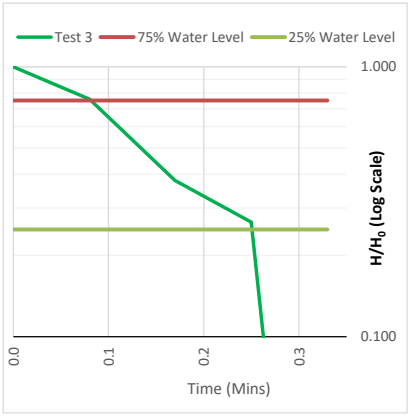
Site Recorded Data

Test 1				Test 2				Test 3			
Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0	Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0	Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0
0.00	2700	710	1.000	0.00	2600	810	1.000	0.000	2620	790	1.000
0.08	2700	710	1.000	0.08	2600	810	1.000	0.080	2810	600	0.759
0.17	2910	500	0.704	0.17	2720	690	0.852	0.170	3110	300	0.380
0.25	3220	190	0.268	0.25	3110	300	0.370	0.250	3200	210	0.266
0.33	3370	40	0.056	0.32	3409	1	0.056	0.320	3409	1	0.001
0.42	3410	0	0.000	0.33	3410	0	0.000	0.330	3410	0	0.000

Data Analysis







Falling Head Permeability Test	ATRI7 6 LTD	Date of Test: 27/11/2024
	VISION	Logged By: GK
BH201	C5504	Checked By: NS

BROWNFIELD SOLUTIONS LTD

Calculation of Intake Factor (F)

		Test 1	Test 2	Test 3
m^2	Cross sectional area of base	0.008	0.008	0.008
m	Diameter	0.100	0.100	0.100
m	Length	2.910	2.910	2.910
	Intake Factor Scenario	Soil flush with bottom in uniform soil		
	Intake Factor, F	**0.275**	**0.275**	**0.275**

Soil Infiltration Rate Calculation

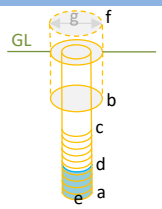
		Test 1	Test 2	Test 3
75% Effective Level	Head (m)	0.533	0.608	0.593
	Depth to water (m bgl)	2.878	2.803	2.798
	Time (mins)	0.15	0.18	0.08
	Time (sec)	9	11	5
25% effective Level	Head (m)	0.178	0.203	0.198
	Depth to water (m bgl)	3.233	3.208	3.213
	Time (mins)	0.25	0.26	0.26
	Time (sec)	15	16	16
m (bgl)	Initial groundwater level	3.41	3.41	3.41
m (bgl)	At time (t_1) Depth to water	2.878	2.803	2.798
seconds	t_1	9	11	5
m (bgl)	Depth of water H_1	0.533	0.608	0.613
m (bgl)	At time (t_2) Depth to water	3.233	3.208	3.213
seconds	t_2	15	16	16
m (bgl)	Depth of water H_2	0.178	0.203	0.198

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

	Test 1	Test 2	Test 3
Permeability, k (m/s)	**5.23E-03**	**6.54E-03**	**2.99E-03**

Falling Head Permeability Test	**ATRI7 6 LTD**	Date of Test: 27/11/2024	BROWNFIELD SOLUTIONS LTD
	VISION	Logged By: GK	
WS210	C5504	Checked By: NS	

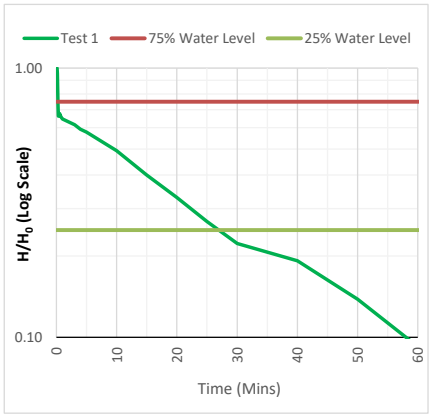
Dimensions (mm)	Test 1	Test 2	Test 3
Bottom of Borehole (a)	1650	1640	
Bottom of Casing (b)			
Top of Filter Material (c)	500	500	
Initial Groundwater Level or Base of Hole (d)	1650	1640	
Centre of Piezometer Tip (e)			
Height of Casing/Standpipe Above Surface (f)	0	0	
Diameter of Casing/Standpipe (g)	100	100	
Length of Filter (above GW table/base of hole)	1150	1150	

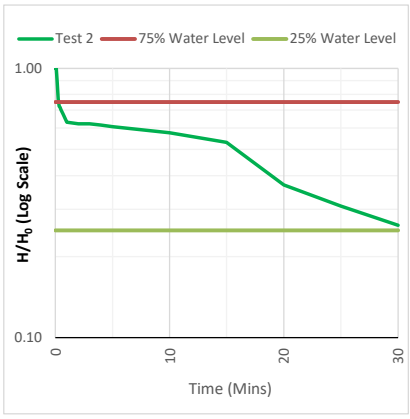


Site Recorded Data

Test 1				Test 2				Test 3			
Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0	Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0	Time (mins)	Depth to water (mm)	Head of water (mm)	Head Ratio H/H_0
0.00	350	1300	1.00	0.00	340	1300	1.00				
0.08	350	1300	1.00	0.08	340	1300	1.00				
0.17	410	1240	0.95	0.17	490	1150	0.88				
0.25	710	940	0.72	0.25	640	1000	0.77				
0.33	790	860	0.66	0.33	700	940	0.72				
0.42	790	860	0.66	0.42	710	930	0.72				
0.50	770	880	0.68	0.50	730	910	0.70				
0.67	790	860	0.66	0.67	760	880	0.68				
0.83	800	850	0.65	0.83	790	850	0.65				
1.00	810	840	0.65	1.00	820	820	0.63				
2.00	830	820	0.63	2.00	830	810	0.62				
3.00	850	800	0.62	3.00	830	810	0.62				
4.00	880	770	0.59	4.00	840	800	0.62				
5.00	900	750	0.58	5.00	850	790	0.61				
10.00	1010	640	0.49	10.00	890	750	0.58				
15.00	1130	520	0.40	15.00	950	690	0.53				
20.00	1220	430	0.33	20.00	1160	480	0.37				
25.00	1300	350	0.27	25.00	1240	400	0.31				
30.00	1360	290	0.22	30.00	1300	340	0.26				
40.00	1400	250	0.19								
50.00	1470	180	0.14								
60.00	1530	120	0.09								
90.00	1650	0	0.00								

Data Analysis





Falling Head Permeability Test	**ATRI7 6 LTD**	Date of Test: 27/11/2024 Logged By: GK Checked By: NS	BROWNFIELD SOLUTIONS LTD
	VISION		
WS210	C5504		

Calculation of Intake Factor (F)

		Test 1	Test 2	Test 3
m^2	Cross sectional area of base	0.008	0.008	
m	Diameter	0.100	0.100	
m	Length	1.150	1.150	
	Intake Factor Scenario	Soil flush with bottom in uniform soil		
	Intake Factor, F	**0.275**	**0.275**	-

Soil Infiltration Rate Calculation

		Test 1	Test 2	Test 3
75% Effective Level	Head (m)	0.975	0.975	
	Depth to water (m bgl)	0.675	0.665	
	Time (mins)	0.25	0.30	
	Time (sec)	15	18	
25% effective Level	Head (m)	0.325	0.325	
	Depth to water (m bgl)	1.325	1.315	
	Time (mins)	27.00	30.00	
	Time (sec)	1620	1800	
m (bgl)	Initial groundwater level	1.65	1.64	
m (bgl)	At time (t_1) Depth to water	0.675	0.665	
seconds	t_1	15	18	
m (bgl)	Depth of water H_1	0.975	0.975	
m (bgl)	At time (t_2) Depth to water	1.325	1.315	
seconds	t_2	1620	1800	
m (bgl)	Depth of water H_2	0.325	0.325	

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

	Test 1	Test 2	Test 3
Permeability, k (m/s)	**1.95E-05**	**1.76E-05**	-

APPENDIX E

Monitoring Results

Ground Gas Monitoring Results

BROWNFIELD SOLUTIONS LTD

CLIENT:	Date	Operator	Analsyer	Weather Observations			Temp (°C)	Pressure Trend	Min Barometric Pressure (mb)	Notes
ATRI7 6 LTD	19/11/2024	AR	GFM436	Overcast	No wind	Cold	3	Rising	996	
JOB NO.	03/12/2024	AR	GFM436	Sunny	No wind	Cold	2	Falling	1017	
C5540	16/12/2024	TW	GFM436	Overcast	No wind	Cool	11	Falling	1023	
SITE:										
VISION, MANCHESTER										

Notes: mb = milibars; CH_4 = methane; LEL = lower explosive limit = 5%v/v; CO_2 = carbon dioxide; O_2 = oxygen; CO=carbon monoxide; H_2S = hydrogen sulphide; TVOC= Total volatile organic compounds; PPM = parts per million. Where the flow is less than the limit of detection of the instrument, the detection limit is reported (Highlighted in **green**). Gas Screening Values (GSVs) are rounded to 3 decimal places. Calibration Records for analysers used availble on request.

Date	Time	Location	Response zone (m)			Pressures (mb)		Gas flows (l/hr)		CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Other Gases (PPM)			Depth to Water (m)	Well Base (m)	Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes
						Atmospheric Pressure	Relative Well Pressure	Initial	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	CO	H_2S	TVOC (PID)					
						Summary Statistcs																			
				Max. values:		1023	0.0	3.1	0.0	0.0	0.0	8.0	6.0	1.0	0.5	20.0	20.0	0.0	0.0	0.0	9.3	13.0	0.000	0.000	**Highlight Box - Methane >1.0% v/v**
				Min. values:		996	0.0	0.0	0.0	-0.4	-0.3	0.0	0.0	0.0	0.0	7.2	8.0	0.0	0.0	0.0	1.3	1.6	0.000	0.000	**Highlight Box - Carbon Dioxide >5.0% v/v**
				Top	Bottom	Worst-case (note - not worst credible) GSVs based on maximum recorded steady flow and maximum individual peak concentrations:																	0.000	0.001	**Highlight Box - Water above Response Zone**
19/11/2024	PM	Ambient				997																			
		BH201		6.00	13.00		0.0	0.0	0.0	-0.3	-0.3	6.0	6.0	0.3	0.0	12.5	19.1	0.0	0.0		9.27	12.73	0.000	0.000	
		WS202		0.50	3.50		0.0	3.1	0.0	-0.3	-0.3	6.0	6.0	0.0	0.0	7.8	9.0	0.0	0.0		NGW	3.37	0.000	0.000	
		WS207A		0.50	3.50		0.0	0.0	0.0	-0.3	-0.3	6.0	6.0	0.0	0.0	8.1	12.5	0.0	0.0		NGW	3.39	0.000	0.000	
		BH202		6.00	13.00		0.0	0.0	0.0	-0.4	-0.3	8.0	6.0	0.7	0.1	13.9	19.7	0.0	0.0		9.25	12.74	0.000	0.000	
		WS210		0.5	1.50		0.0	0.0	0.0	-0.3	-0.3	6.0	6.0	0.0	0.0	17.1	18.3	0.0	0.0		NGW	1.61	0.000	0.000	
		Ambient				996																			
03/12/2024	AM	Ambient				1019				0.0		0.0		0.0		20.0									
		BH201		6.00	13.00		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	18.5	20.0	0.0	0.0		9.24	12.75	0.000	0.000	
		WS202		0.50	3.50		0.0	0.0	0.0	-0.1	-0.1	2.0	2.0	0.0	0.0	7.2	11.1	0.0	0.0		NGW	3.30	0.000	0.000	
		WS207A		0.50	3.50		0.0	0.0	0.0	-0.1	-0.1	2.0	2.0	0.3	0.0	14.7	18.1	0.0	0.0		NGW	3.39	0.000	0.000	
		BH202		6.00	13.00																				Inaccessable due to puddle.
		WS210		0.5	1.50		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0	18.9	0.0	0.0		NGW	1.59	0.000	0.000	
		Ambient				1017																			
16/12/2024	AM	Ambient				1023																			
		BH201		6.00	13.00			0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5	18.3	19.7	0.0	0.0		8.02	13.00	0.000	0.000	
		WS202		0.50	3.50			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	8.0	0.0	0.0		2.40	3.30	0.000	0.000	
		WS207A		0.50	3.50			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	12.4	0.0	0.0		1.30	3.40	0.000	0.000	
		BH202		6.00	13.00																				Inaccessable due to puddle.
		WS210		0.50	1.50			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	19.7	0.0	0.0		NGW	1.60	0.000	0.000	
		Ambient				1023																			

APPENDIX F

Waste Assessment Report

Waste Classification Report

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

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

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

EZ1I1-RSBVZ-2UR4Y

Report is invalid if pages are removed.

Job name

C5504 Vision

Description/Comments

Project

C5504

Site

Vision

Classified by

Name:
Jack Mather
Date:
16 Dec 2024 13:31 GMT
Telephone:
01606334844

Company:
Brownfield Solutions Limited
173-183 Witton Street
Northwich
CW9 5LP

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	09 Feb 2023

Next 3 year Refresher due by Feb 2026

Purpose of classification

2 - Material Characterisation

Address of the waste

Whitworth Street West, Manchester **Post Code** M1 5NZ

SIC for the process giving rise to the waste

41100 Development of building projects

Description of industry/producer giving rise to the waste

Redevelopment of brownfield site currently used as a storage area for building materials.

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

Waste created during the excavation of soils for ground investigation.

Description of the waste

A mixture of made ground comprising brown gravelly clayey sand, natural sand and clay and sandstone.

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS201	0.05-1.00	Non Hazardous		3
2	WS205d	0.00-1.00	Non Hazardous		5
3	TP201	0.00-1.00	Non Hazardous		8
4	TP208	0.00-1.00	Non Hazardous		10
5	BH201	0.05-0.80	Non Hazardous		13
6	BH202	0.00-1.00	Non Hazardous		15
7	TP205	1.50-2.00	Non Hazardous		17
8	WS207b	3.80-4.20	Non Hazardous		18
9	WS208	2.50-3.00	Non Hazardous		19
10	WS210	1.50-1.80	Non Hazardous		20
11	BH201[2]	6.70-6.80	Non Hazardous		21
12	BH201[3]	10.00-10.20	Non Hazardous		22
13	BH201[4]	17.72-17.80	Non Hazardous		23
14	BH202[2]	14.00-14.20	Non Hazardous		24
15	BH202[3]	24.00-24.10	Non Hazardous		25
16	WS205d[2]	3.00-3.60	Non Hazardous		26

Related documents

#	Name	Description
1	BSL Suite	waste stream template used to create this Job

Report

Created by: Jack Mather

Created date: 16 Dec 2024 13:31 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	27
Appendix B: Rationale for selection of metal species	28
Appendix C: Version	28

Classification of sample: WS201

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

Sample details

Sample name:
WS201
Sample Depth:
0.05-1.00 m
Moisture content:
7.9%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.9% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		11	pH		11	pH	11pH		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.1	mg/kg	1.32	11.066	mg/kg	0.00111 %	✓	
3	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3	mg/kg	1.285	0.355	mg/kg	0.0000276 %	✓	
4	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16	mg/kg	1.462	21.537	mg/kg	0.00215 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		51	mg/kg	1.126	52.884	mg/kg	0.00529 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	78	mg/kg		71.838	mg/kg	0.00718 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4	mg/kg	1.353	0.499	mg/kg	0.0000499 %	✓	
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		15	mg/kg	1.579	21.821	mg/kg	0.00218 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		67	mg/kg	2.469	152.373	mg/kg	0.0152 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.79	mg/kg		0.728	mg/kg	0.0000728 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.15	mg/kg		0.138	mg/kg	0.0000138 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.58	mg/kg		0.534	mg/kg	0.0000534 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		fluorene				0.61	mg/kg		0.562	mg/kg	0.0000562 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				4.8	mg/kg		4.421	mg/kg	0.000442 %	✓	
			201-581-5	85-01-8									
17		anthracene				0.96	mg/kg		0.884	mg/kg	0.0000884 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				5.4	mg/kg		4.973	mg/kg	0.000497 %	✓	
			205-912-4	206-44-0									
19		pyrene				5.2	mg/kg		4.789	mg/kg	0.000479 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				2.6	mg/kg		2.395	mg/kg	0.000239 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				2.5	mg/kg		2.303	mg/kg	0.00023 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				2.3	mg/kg		2.118	mg/kg	0.000212 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				1.3	mg/kg		1.197	mg/kg	0.00012 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				2.5	mg/kg		2.303	mg/kg	0.00023 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				1.1	mg/kg		1.013	mg/kg	0.000101 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.23	mg/kg		0.212	mg/kg	0.0000212 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				1.3	mg/kg		1.197	mg/kg	0.00012 %	✓	
			205-883-8	191-24-2									
										Total:	0.0367 %		

Key

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

Classification of sample: WS205d

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

Sample details

Sample name:
WS205d
Sample Depth:
0.00-1.00 m
Moisture content:
9.8%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.8% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		10.2	pH		10.2	pH	10.2 pH		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.1	mg/kg	1.32	9.647	mg/kg	0.000965 %	✓	
3	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3	mg/kg	1.285	0.348	mg/kg	0.0000271 %	✓	
4	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15	mg/kg	1.462	19.775	mg/kg	0.00198 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		30	mg/kg	1.126	30.467	mg/kg	0.00305 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	59	mg/kg		53.218	mg/kg	0.00532 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		13	mg/kg	1.579	18.521	mg/kg	0.00185 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		70	mg/kg	2.469	155.911	mg/kg	0.0156 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.12	mg/kg		0.108	mg/kg	0.0000108 %	✓	
13	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
14	acenaphthene		201-469-6	83-32-9		0.17	mg/kg		0.153	mg/kg	0.0000153 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		fluorene				0.15	mg/kg		0.135	mg/kg	0.0000135 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				1.4	mg/kg		1.263	mg/kg	0.000126 %	✓	
			201-581-5	85-01-8									
17		anthracene				0.32	mg/kg		0.289	mg/kg	0.0000289 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				2.3	mg/kg		2.075	mg/kg	0.000207 %	✓	
			205-912-4	206-44-0									
19		pyrene				2.3	mg/kg		2.075	mg/kg	0.000207 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				1.1	mg/kg		0.992	mg/kg	0.0000992 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				1.1	mg/kg		0.992	mg/kg	0.0000992 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				1.2	mg/kg		1.082	mg/kg	0.000108 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				0.62	mg/kg		0.559	mg/kg	0.0000559 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				1.1	mg/kg		0.992	mg/kg	0.0000992 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				0.6	mg/kg		0.541	mg/kg	0.0000541 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.09	mg/kg		0.0812	mg/kg	0.00000812 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				0.66	mg/kg		0.595	mg/kg	0.0000595 %	✓	
			205-883-8	191-24-2									
28		TPH (C6 to C40) petroleum group				84	mg/kg		75.768	mg/kg	0.00758 %	✓	
				TPH									
29		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0381 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: Concentration too low to be considered flammable. Low concentrations of short chain hydrocarbons. Discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00758%)

Classification of sample: TP201

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

Sample details

Sample name:
TP201
Sample Depth:
0.00-1.00 m
Moisture content:
9.6%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		10.7	pH		10.7	pH	10.7 pH		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	13.129	mg/kg	0.00131 %	✓	
3	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.4	mg/kg	1.285	0.465	mg/kg	0.0000362 %	✓	
4	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20	mg/kg	1.462	26.425	mg/kg	0.00264 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		48	mg/kg	1.126	48.855	mg/kg	0.00489 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	78	mg/kg		70.512	mg/kg	0.00705 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16	mg/kg	1.579	22.846	mg/kg	0.00228 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		100	mg/kg	2.469	223.224	mg/kg	0.0223 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.55	mg/kg		0.497	mg/kg	0.0000497 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.14	mg/kg		0.127	mg/kg	0.0000127 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.38	mg/kg		0.344	mg/kg	0.0000344 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		fluorene				0.44	mg/kg		0.398	mg/kg	0.0000398 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				3.6	mg/kg		3.254	mg/kg	0.000325 %	✓	
			201-581-5	85-01-8									
17		anthracene				0.71	mg/kg		0.642	mg/kg	0.0000642 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				4.2	mg/kg		3.797	mg/kg	0.00038 %	✓	
			205-912-4	206-44-0									
19		pyrene				4.1	mg/kg		3.706	mg/kg	0.000371 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				2.1	mg/kg		1.898	mg/kg	0.00019 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				2.1	mg/kg		1.898	mg/kg	0.00019 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				1.9	mg/kg		1.718	mg/kg	0.000172 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				1.1	mg/kg		0.994	mg/kg	0.0000994 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				2	mg/kg		1.808	mg/kg	0.000181 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				0.86	mg/kg		0.777	mg/kg	0.0000777 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.16	mg/kg		0.145	mg/kg	0.0000145 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				1.1	mg/kg		0.994	mg/kg	0.0000994 %	✓	
			205-883-8	191-24-2									
										Total:	0.0434 %		

Key

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

Classification of sample: TP208

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

Sample details

Sample name:
TP208
Sample Depth:
0.00-1.00 m
Moisture content:
17%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.4	pH		8.4	pH	8.4 pH		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		24	mg/kg	1.32	26.301	mg/kg	0.00263 %	✓	
3	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.7	mg/kg	1.285	0.747	mg/kg	0.0000581 %	✓	
4	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16	mg/kg	1.462	19.409	mg/kg	0.00194 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		110	mg/kg	1.126	102.794	mg/kg	0.0103 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	270	mg/kg		224.1	mg/kg	0.0224 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.9	mg/kg	1.353	1.011	mg/kg	0.000101 %	✓	
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		21	mg/kg	1.579	27.531	mg/kg	0.00275 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		180	mg/kg	2.469	368.913	mg/kg	0.0369 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		7.1	mg/kg		5.893	mg/kg	0.000589 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.23	mg/kg		0.191	mg/kg	0.0000191 %	✓	
14	acenaphthene		201-469-6	83-32-9		6.7	mg/kg		5.561	mg/kg	0.000556 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		fluorene				5.4	mg/kg		4.482	mg/kg	0.000448 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				32	mg/kg		26.56	mg/kg	0.00266 %	✓	
			201-581-5	85-01-8									
17		anthracene				7.9	mg/kg		6.557	mg/kg	0.000656 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				21	mg/kg		17.43	mg/kg	0.00174 %	✓	
			205-912-4	206-44-0									
19		pyrene				22	mg/kg		18.26	mg/kg	0.00183 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				11	mg/kg		9.13	mg/kg	0.000913 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				10	mg/kg		8.3	mg/kg	0.00083 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				9.8	mg/kg		8.134	mg/kg	0.000813 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				3.4	mg/kg		2.822	mg/kg	0.000282 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				9.1	mg/kg		7.553	mg/kg	0.000755 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				3.4	mg/kg		2.822	mg/kg	0.000282 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.9	mg/kg		0.747	mg/kg	0.0000747 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				4	mg/kg		3.32	mg/kg	0.000332 %	✓	
			205-883-8	191-24-2									
28		TPH (C6 to C40) petroleum group				199.6	mg/kg		165.668	mg/kg	0.0166 %	✓	
				TPH									
29		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.107 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: Concentration too low to be considered flammable. Low concentrations of short chain hydrocarbons. Discounted as this is a solid waste without a free draining liquid phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0166%)

Classification of sample: BH201

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

Sample details

Sample name:
BH201
Sample Depth:
0.05-0.80 m
Moisture content:
13%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		10.1	pH		10.1	pH	10.1 pH		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	13.784	mg/kg	0.00138 %	✓	
3	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.5	mg/kg	1.285	0.559	mg/kg	0.0000435 %	✓	
4	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17	mg/kg	1.462	21.616	mg/kg	0.00216 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		98	mg/kg	1.126	95.993	mg/kg	0.0096 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	100	mg/kg		87	mg/kg	0.0087 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4	mg/kg	1.353	0.471	mg/kg	0.0000471 %	✓	
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		15	mg/kg	1.579	20.612	mg/kg	0.00206 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		120	mg/kg	2.469	257.795	mg/kg	0.0258 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		1.2	mg/kg		1.044	mg/kg	0.000104 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.17	mg/kg		0.148	mg/kg	0.0000148 %	✓	
14	acenaphthene		201-469-6	83-32-9		1.7	mg/kg		1.479	mg/kg	0.000148 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15	●	fluorene				1.5	mg/kg		1.305	mg/kg	0.000131 %	✓	
			201-695-5	86-73-7									
16	●	phenanthrene				11	mg/kg		9.57	mg/kg	0.000957 %	✓	
			201-581-5	85-01-8									
17	●	anthracene				2.7	mg/kg		2.349	mg/kg	0.000235 %	✓	
			204-371-1	120-12-7									
18	●	fluoranthene				10	mg/kg		8.7	mg/kg	0.00087 %	✓	
			205-912-4	206-44-0									
19	●	pyrene				10	mg/kg		8.7	mg/kg	0.00087 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				4.6	mg/kg		4.002	mg/kg	0.0004 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				4.4	mg/kg		3.828	mg/kg	0.000383 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				4.8	mg/kg		4.176	mg/kg	0.000418 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				1.5	mg/kg		1.305	mg/kg	0.000131 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				4.4	mg/kg		3.828	mg/kg	0.000383 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25	●	indeno[123-cd]pyrene				1.9	mg/kg		1.653	mg/kg	0.000165 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.35	mg/kg		0.305	mg/kg	0.0000305 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27	●	benzo[ghi]perylene				2.2	mg/kg		1.914	mg/kg	0.000191 %	✓	
			205-883-8	191-24-2									
										Total:	0.0557 %		

Key

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

Classification of sample: BH202

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

Sample details

Sample name:
BH202
Sample Depth:
0.00-1.00 m
Moisture content:
8.8%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.8% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	pH			PH		11.1	pH		11.1	pH	11.1 pH		
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	13.246	mg/kg	0.00132 %	✓	
3	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.5	mg/kg	1.285	0.586	mg/kg	0.0000456 %	✓	
4	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19	mg/kg	1.462	25.326	mg/kg	0.00253 %	✓	
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		100	mg/kg	1.126	102.681	mg/kg	0.0103 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	120	mg/kg		109.44	mg/kg	0.0109 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16	mg/kg	1.579	23.048	mg/kg	0.0023 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		140	mg/kg	2.469	315.28	mg/kg	0.0315 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.39	mg/kg		0.356	mg/kg	0.0000356 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.12	mg/kg		0.109	mg/kg	0.0000109 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.49	mg/kg		0.447	mg/kg	0.0000447 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15	●	fluorene				0.46	mg/kg		0.42	mg/kg	0.000042 %	✓	
			201-695-5	86-73-7									
16	●	phenanthrene				3.8	mg/kg		3.466	mg/kg	0.000347 %	✓	
			201-581-5	85-01-8									
17	●	anthracene				0.89	mg/kg		0.812	mg/kg	0.0000812 %	✓	
			204-371-1	120-12-7									
18	●	fluoranthene				4.1	mg/kg		3.739	mg/kg	0.000374 %	✓	
			205-912-4	206-44-0									
19	●	pyrene				4.1	mg/kg		3.739	mg/kg	0.000374 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				1.9	mg/kg		1.733	mg/kg	0.000173 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				1.9	mg/kg		1.733	mg/kg	0.000173 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				2.1	mg/kg		1.915	mg/kg	0.000192 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				0.7	mg/kg		0.638	mg/kg	0.0000638 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				2	mg/kg		1.824	mg/kg	0.000182 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25	●	indeno[123-cd]pyrene				0.9	mg/kg		0.821	mg/kg	0.0000821 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.14	mg/kg		0.128	mg/kg	0.0000128 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27	●	benzo[ghi]perylene				1.1	mg/kg		1.003	mg/kg	0.0001 %	✓	
			205-883-8	191-24-2									
										Total:	0.0618 %		

Key

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

Classification of sample: TP205

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

Sample details

Sample name:	LoW Code:	
TP205	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
1.50-2.00 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:		
18% (wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH				7.8 pH		7.8 pH	7.8 pH		
				PH							
								Total:	0%		

Key

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

Classification of sample: WS207b

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

Sample details

Sample name:
WS207b
Sample Depth:
3.80-4.20 m
Moisture content:
7.8%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.8% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	•	pH		PH		8.1 pH		8.1 pH	8.1 pH		
								Total:	0%		

Key

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

Classification of sample: WS208

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

Sample details

Sample name:	LoW Code:	
WS208	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
2.50-3.00 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:		
6.6% (wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 6.6% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH				7.7 pH		7.7 pH	7.7 pH		
				PH							
								Total:	0%		

Key

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

Classification of sample: WS210

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

Sample details

Sample name:
WS210
Sample Depth:
1.50-1.80 m
Moisture content:
4.4%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.4% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	•	pH		PH		7.7 pH		7.7 pH	7.7 pH		
								Total:	0%		

Key

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

Classification of sample: BH201[2]

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

Sample details

Sample name:	LoW Code:	
BH201[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
6.70-6.80 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:		
8% (wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 8% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	•	pH		PH		5.7 pH		5.7 pH	5.7 pH		
								Total:	0%		

Key

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

Classification of sample: BH201[3]

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

Sample details

Sample name:
BH201[3]
Sample Depth:
10.00-10.20 m
Moisture content:
9.3%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.3% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH				7.8 pH		7.8 pH	7.8 pH		
				PH							
								Total:	0%		

Key

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

Classification of sample: BH201[4]

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

Sample details

Sample name:
BH201[4]
Sample Depth:
17.72-17.80 m
Moisture content:
9.3%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.3% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	•	pH		PH		8.5 pH		8.5 pH	8.5 pH		
								Total:	0%		

Key

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

Classification of sample: BH202[2]

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

Sample details

Sample name:
BH202[2]
Sample Depth:
14.00-14.20 m
Moisture content:
8.3%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.3% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	•	pH		PH		8.5 pH		8.5 pH	8.5 pH		
								Total:	0%		

Key

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

Classification of sample: BH202[3]

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

Sample details

Sample name:
BH202[3]
Sample Depth:
24.00-24.10 m
Moisture content:
8.7%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.7% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	pH				8.6 pH		8.6 pH	8.6 pH		
				PH							
								Total:	0%		

Key

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

Classification of sample: WS205d[2]

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

Sample details

Sample name:
WS205d[2]
Sample Depth:
3.00-3.60 m
Moisture content:
5.1%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.1% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	•	pH		PH		8.2 pH		8.2 pH	8.2 pH		
								Total:	0%		

Key

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

Appendix A: Classifier defined and non GB MCL determinands

pH (CAS Number: PH)

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

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

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

lead compounds with the exception of those specified elsewhere in this Annex

GB MCL index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

- **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

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

Worst case species based on hazard statements

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

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Absence of hexavalent chromium indicates it unlikely that lead chromate is present within the site soils.

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on hazard statements

zinc {zinc sulphate}

Absence of hexavalent chromium indicates it unlikely that zinc chromate is present within the site soils.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2024.347.6405.11699 (12 Dec 2024)
HazWasteOnline Database: 2024.347.6405.11699 (12 Dec 2024)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021
GB MCL List v2.0 - version 2.0 of 20th October 2023
GB MCL List v3.0 - version 3.0 of 11th January 2024
GB MCL List v4.0 - version 4.0 of 2nd March 2024
GB MCL List v5.0 - version 5.0 of 26th June 2024

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Analytical Report Number : 24-053872

Project / Site name:	Vision, Manchester	**Samples received on:**	14/11/2024
Your job number:	C5504	**Samples instructed on/ Analysis started on:**	14/11/2024
Your order number:	638	**Analysis completed by:**	21/11/2024
Report Issue Number:	1	**Report issued on:**	21/11/2024
Samples Analysed:	2 10:1 WAC samples		

Signed: [redacted]

Joanna Wawrzeczko
Senior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-053872
Project / Site name: Vision, Manchester
Your Order No: 638

Lab Sample Number				379534	379535
Sample Reference				WS205d	TP208
Sample Number				None Supplied	None Supplied
Depth (m)				0.00-1.00	0.00-1.00
Date Sampled				04/11/2024	08/11/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
Stone Content	%	0.1	NONE	40.2	41.5
Moisture Content	%	0.01	NONE	9.8	17
Total mass of sample received	kg	0.1	NONE	0.8	0.8
General Inorganics					
pH (L005B)	pH Units	N/A	MCERTS	9.6	8.1
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.8	1.5
Loss on Ignition @ 450°C	%	0.2	MCERTS	2.4	4.6
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	43	17
Speciated PAHs					
Naphthalene	mg/kg	0.05	MCERTS	0.12	7.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.23
Acenaphthene	mg/kg	0.05	MCERTS	0.17	6.7
Fluorene	mg/kg	0.05	MCERTS	0.15	5.4
Phenanthrene	mg/kg	0.05	MCERTS	1.4	32
Anthracene	mg/kg	0.05	MCERTS	0.32	7.9
Fluoranthene	mg/kg	0.05	MCERTS	2.3	21
Pyrene	mg/kg	0.05	MCERTS	2.3	22
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1	11
Chrysene	mg/kg	0.05	MCERTS	1.1	10
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.2	9.8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.62	3.4
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1	9.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.6	3.4
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.09	0.9
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.66	4
Coronene	mg/kg	0.05	NONE	0.27	1.6
Total PAH					
Total WAC-17 PAHs	mg/kg	0.85	NONE	13.6	155
Petroleum Hydrocarbons					
Mineral Oil (EC10 - EC40) EH_CU_1D_AL	mg/kg	10	NONE	31	< 10
VOCs					
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
Total BTEX	µg/kg	10	MCERTS	< 10	< 10

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-053872
Project / Site name: Vision, Manchester
Your Order No: 638

Lab Sample Number				379534	379535
Sample Reference				WS205d	TP208
Sample Number				None Supplied	None Supplied
Depth (m)				0.00-1.00	0.00-1.00
Date Sampled				04/11/2024	08/11/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**		
PCBs by GC-MS					
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	< 0.007

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

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The results included within the report relate only to the sample(s) submitted for testing.

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Waste Acceptance Criteria Analytical Results

Report No:	**24-053872**						
					Client:	**BSL**	
Location	**Vision, Manchester**						
Lab Reference (Sample Number)	379534				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	04/11/2024				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS205d						
Depth (m)	0.00-1.00						
Solid Waste Analysis							
TOC (%)**	0.8				3%	5%	6%
Loss on Ignition (%) **	2.4				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	31				500	--	--
Total PAH (WAC-17) (mg/kg)	13.6				100	--	--
pH (units)**	9.6				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	43				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.00106			0.0106	0.5	2	25
Barium *	0.00725			0.0725	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0022			0.022	0.5	10	70
Copper *	0.019			0.19	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.00110			0.0110	0.5	10	30
Nickel *	0.00033			0.0033	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	0.0031			0.031	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0010			0.010	4	50	200
Chloride *	0.92			9.2	800	15000	25000
Fluoride*	0.15			1.5	10	150	500
Sulphate *	26			260	1000	20000	50000
TDS*	99			990	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.71			47.1	500	800	1000
Leach Test Information							
Stone Content (%)	40.2						
Sample Mass (kg)	0.8						
Dry Matter (%)	90						
Moisture (%)	9.8						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation
** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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

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Waste Acceptance Criteria Analytical Results

Report No:	**24-053872**						
					Client:	**BSL**	
Location	**Vision, Manchester**						
Lab Reference (Sample Number)	379535				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	08/11/2024				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	TP208						
Depth (m)	0.00-1.00						
Solid Waste Analysis							
TOC (%)**	1.5				3%	5%	6%
Loss on Ignition (%) **	4.6				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	155				100	--	--
pH (units)**	8.1				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	17				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.00548			0.0548	0.5	2	25
Barium *	0.0159			0.159	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0025			0.025	0.5	10	70
Copper *	0.019			0.19	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.00206			0.0206	0.5	10	30
Nickel *	0.0011			0.011	0.4	10	40
Lead *	0.011			0.11	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.018			0.18	4	50	200
Chloride *	2.2			22	800	15000	25000
Fluoride*	0.25			2.5	10	150	500
Sulphate *	4.8			48	1000	20000	50000
TDS*	48			480	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	7.96			79.6	500	800	1000
Leach Test Information							
Stone Content (%)	41.5						
Sample Mass (kg)	0.8						
Dry Matter (%)	83						
Moisture (%)	17						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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

Analytical Report Number : 24-053872
Project / Site name: Vision, Manchester

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
379534	WS205d	None Supplied	0.00-1.00	Brown loam and sand with gravel and brick
379535	TP208	None Supplied	0.00-1.00	Brown loam and clay with vegetation and stones

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-053872
Project / Site name: Vision, Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	W	NONE
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025

Analytical Report Number : 24-053872
Project / Site name: Vision, Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

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

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Sample Deviation Report

Analytical Report Number : 24-053872
Project / Site name: Vision, Manchester

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS205d	N/A	S	379534	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS205d	N/A	S	379534	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS205d	N/A	S	379534	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c

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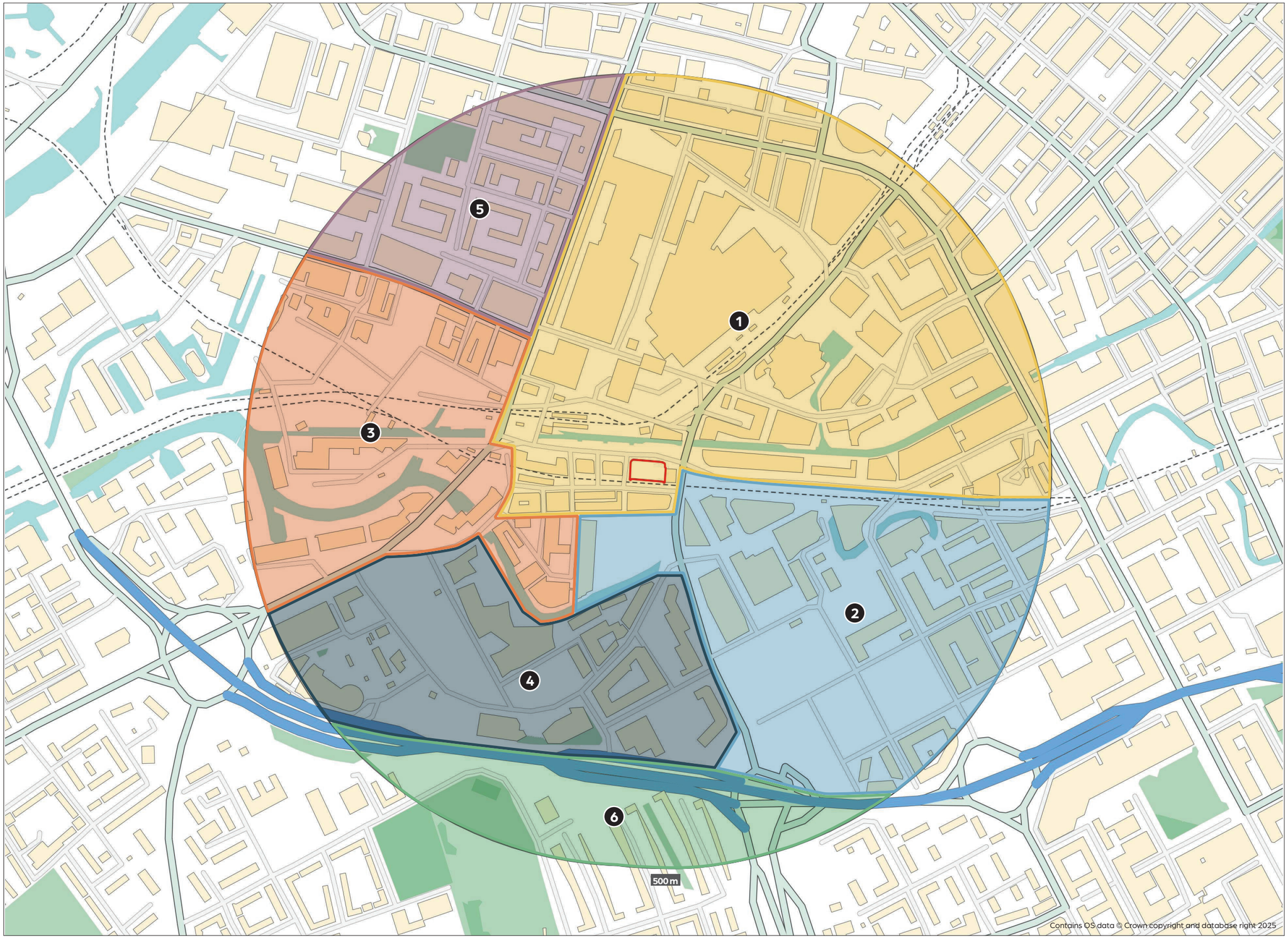
Tel: 01215 729 014

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Appendix F

Townscape Character Area Plan



TOWNSCAPE CHARACTER AREA PLAN

- Application Site
- 1 Petersfield
- 2 First Street
- 3 Castlefield
- 4 Great Jackson Street
- 5 St John's
- 6 Hulme Park

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LOCATION:
10–12 Whitworth Street West, Manchester

DATE:
April 2025

SCALE:
1:5,000 @ A3

FIGURE:

▲ **NORTH**

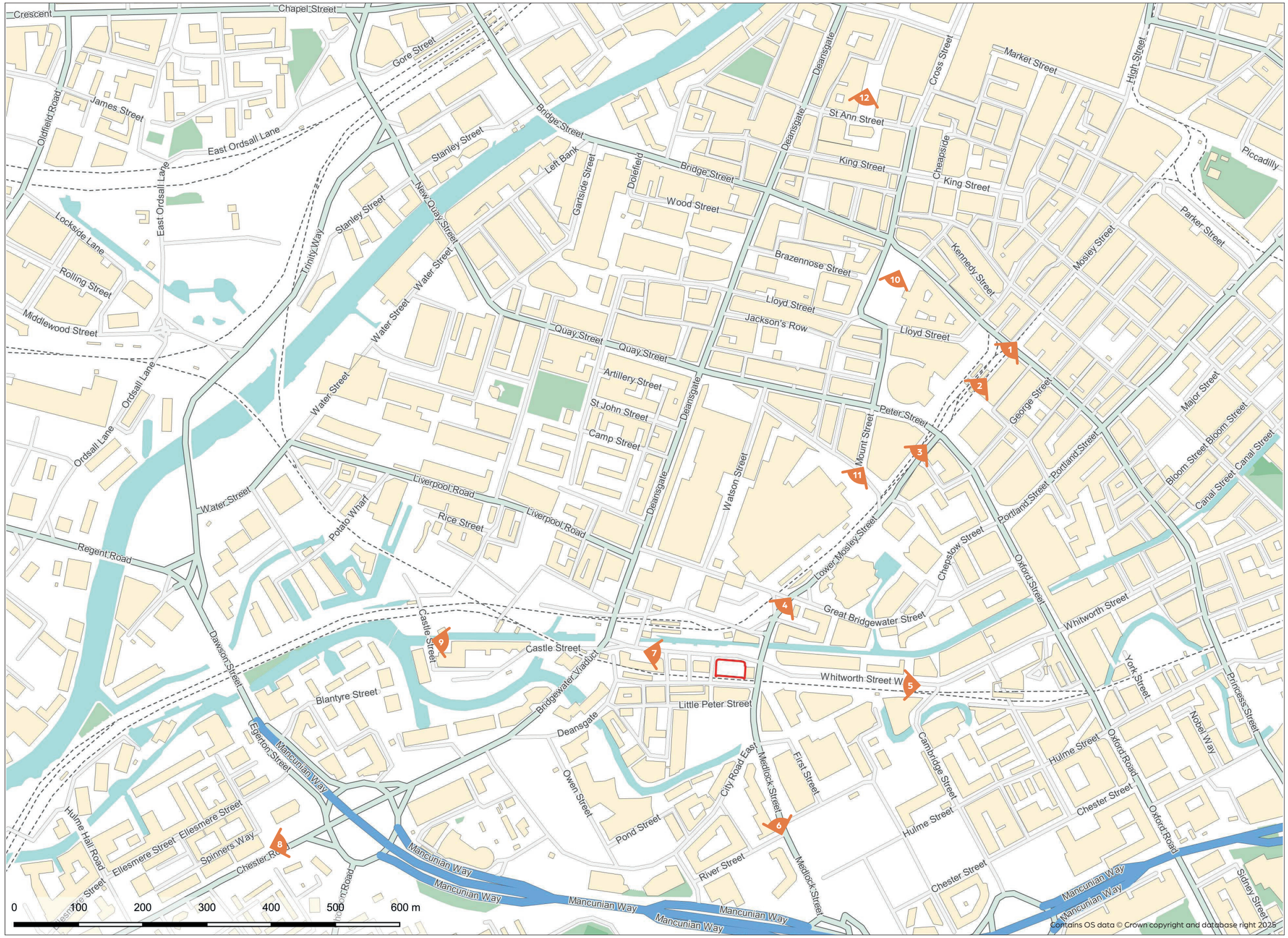
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Appendix G

Viewpoint Location Plan

VIEWPOINT LOCATION PLAN

- Application Site
1. Mosley Street / Art Gallery
2. St Peter's Square
3. Lower Mosely Street
4. Albion Street / Great Bridgewater Street
5. Whitworth Street West – eastern end
6. Medlock Street
7. Whitworth Street West – west end
8. St George's Church/Chester Road
9. Castle Street, Castlefield
10. Albert Square
11. Windmill Street
12. St Ann's Square



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LOCATION:
10–12 Whitworth Street West, Manchester

DATE:
April 2025

SCALE:
1:6,000 @ A3

FIGURE:

NORTH

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Appendix H

Address Map



PROJECT
10 - 12 Whitworth Street

PROJECT NUMBER
20231

DRAWING TITLE
Address Map

DATE
4 April 2025