Deloitte.



2-4 Whitworth Street West, Manchester

EIA Scoping Report

September 2024

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1 Introduction

Introduction

1.1 This Environmental Impact Assessment (EIA) Scoping Report (the "Report") has been prepared in respect of the redevelopment of 2-4 Whitworth Street West which is situated within Manchester City Centre ('the site').

1.2 At the time of writing, the Applicant, Glenbrook WWS Ltd, is continuing to develop the design. As such, this Scoping Report has been prepared on the basis of the maximum likely quantum of development, and therefore represents the anticipated "worst-case" scenario with regard to the identification and assessment of potentially significant environmental effects.

1.3 This Scoping Report is submitted to request that Manchester City Council as Local Planning Authority (LPA) adopt a Scoping Opinion under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. In accordance with Regulation 15, paragraph 2, this report contains:

- A plan sufficient to identify the land (included at Appendix 1); and
- A brief description of the nature and purpose of the Proposed Development and of its possible effects on the environment.

EIA Requirements

1.4 The EIA process is the mechanism by which development proposals are appraised in terms of environmental criteria, in addition to socio-economic, engineering and technical considerations. The EIA process defines the context of the Proposed Development and examines the issues considered pertinent.

1.5 The purpose of the EIA is to establish the nature of the development and the environment on which it is likely to take place to identify likely significant effects on the environment that may arise, by comparing the existing situation at the start of the work (baseline) with the situation once the proposals are in place. The scenarios are set out in full within Section 3 of this report.

1.6 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 require that any proposed development falling within the description of a 'Schedule 2 development' within the meaning of the Regulations, will be subject to an EIA where such development is likely to have 'significant' effects on the environment by virtue of such factors as its nature, size or location (Regulation 4(2)).

1.7 The Proposed Development falls under the category of "Infrastructure Projects – Urban Development Projects" (Schedule 2, 10, (b)) as described in the Regulations. The applicable threshold above which EIA is likely to be required is (i) the development includes more than 1 hectare of urban development which is not dwellinghouse development; or (ii) the development includes more than 150 dwellings; or (iii) the overall area of the development exceeds 5 hectares.

1.8 The indicative thresholds and criteria state that:

"In addition to the physical scale of such developments, consideration should be given to the potential increase in traffic, emissions and noise. EIA is unlikely to be required for the redevelopment of land unless the new development is on a significantly greater scale than the previous use, or the types of impact are of a markedly different nature or there is a high level of contamination".

1.9 The Site covers an area of approximately 0.17 ha. The Proposed Development includes circa 380 dwellings, which exceeds the threshold in relation to parts (ii) listed in Schedule 2, 10, (b) of the Regulations. In addition, given that the Proposed Development results in development of a greater scale than the existing use, an EIA is therefore considered appropriate to test the likely significant effects of the Proposed Development.

Purpose of the EIA Scoping Report

1.10 The process of identifying likely significant effects on the environment which should be addressed by the EIA is termed 'scoping' and the results are presented as a Scoping Report.

1.11 Regulation 15 of the EIA Regulations sets out the process for obtaining a Scoping Opinion from the relevant planning authority.

1.12 This Scoping Report sets out the approach taken to the topic areas and information that would be contained within the Environmental Statement. Statutory consultees are invited to express their views on the proposed scope of the EIA or suggest additional issues which may be considered to be of significance. The views expressed by statutory consultees will then be used by the LPA to inform the formal EIA Scoping Opinion.

1.13 The LPA is requested to respond to the formal request for an EIA Scoping Opinion within five weeks of registering receipt.

Structure of this Report

- Section 2 of this report provides a site description and outlines the nature of the Proposed Development.
- Section 3 sets out the proposed approach and methodology that an ES would take and who might need to be consulted.
- Section 4 provides details of those environmental disciplines to be scoped out of the EIA.
- Section 5 sets out the key issues that would be addressed by the EIA.

2 Site Description and Development Proposals

Site Context

2.1 The Site comprises circa 0.17 hectares of brownfield land located within Manchester City Centre at 2 – 4 Whitworth Street West. A Site Location Plan is provided in Appendix 1.

2.2 The Site is bound by Whitworth Street West to the north, with the listed railway viaduct and Deansgate Station platform immediately to the south and at first floor level to the existing buildings. Rowendale Street bisects the Site travelling under the railway viaduct providing vehicle and pedestrian links to Hewitt Street to the south. The Site is bound by Cameron Street to the east and Bugle Street to the west, which also provide vehicle and pedestrian access into the Knott Mill area, characterised by a mix of employment and residential buildings. Beyond Bugle Street is a live music venue (Rebellion) and Deansgate Station is beyond this.

2.3 The Site currently comprises two buildings. 2 Whitworth Street West is a four-storey, red-brick building which is vacant. 4 Whitworth Street West is a three-storey red brick building which is also vacant.

2.4 Whitworth Street West separates the Site from Deansgate Locks and the associated outdoor seating areas and the Deansgate Castlefield Metro Station located to the north and adjacent to the Rochdale Canal.

2.5 The Site is located within the Deansgate Ward, an area that has witnessed significant investment and regeneration over the last 20 years.

2.6 The Site presents a strategically important location for the city and within a cluster of high-rise buildings within the southern gateway of the City Centre, close to key public transport hubs, to the south of the Civic Quarter and to the north of Knott Mill.

2.7 It is also located within the Whitworth Street West Strategic Regeneration Framework area (2008). The Site is also adjacent to the Knott Mill Masterplan area and is part of the zone of interest of the Masterplan. It is also located within the Whitworth Street West Strategic Regeneration Framework area (2008).

2.8 The Great Northern Manchester Central and Castlefield Quay Strategic Regeneration Framework (2017) area is located to the north of the Rochdale Canal and Whitworth Street West.

Accessibility

2.9 The Site is in a highly accessible location, being in close proximity to Deansgate Railway Station, Deansgate Metrolink Station, and bus routes running through the City Centre. Due to its location within the City Centre, the Site is within walking distance of a wide range of services and amenities.

Surrounding Uses

2.10 Located on the southern edge of the City Centre, the Site sits amongst a broad range of uses:

- Residential uses including apartments located to the south within the Knott Mill area and along Hewitt Street, Axis Tower and Hacienda apartments to the north east, and Viadux Phase 1 to the north.

- Entertainment, commercial and office uses located to the north at Deansgate Locks and associated outdoor seating areas with Manchester Central beyond this, and Rebellion to the immediate west of the Site and Bugle Street. City Road Inn Public House is located east of 10-12 Whitworth Street West. Commercial and industrial uses are also located within the viaduct arches along Hewitt Street and there are further commercial uses within the Knott Mill area.

- The site, located west of Bugle Street near Deansgate Station and the Deansgate/Castlefield Metrolink, benefits from proximity to key transport infrastructure, including Whitworth Street West, a major bus route through Manchester City Centre.

- Situated within a cluster of tall buildings and adjacent to the Deansgate Castlefield Interchange, the site aligns with the Knott Mill Masterplan for large-scale development, making it suitable for a high-rise development. Its location outside of a conservation area further supports this suitability.

Surrounding Building Heights

2.11 The surrounding context of the Site along Whitworth Street West has changing significantly for example permission was granted in 2016 for a 35 Storey residential development at 10-12 Whitworth Street West, and despite this not looking likely to come forward it demonstrates the intent for the area. In addition, Hotspur Press which was approved in May 2024 will comprise a 36 storey purpose built student accommodation development providing an additional 578 bedspaces. This development builds on the vision as set out within the Whitworth Street West Development Framework as an ideal place to for landmark developments within the City.

2.12 The southern portion of the City Centre more generally is also continually changing and evolving as planning permissions are implemented and developments come forward, most notably this includes the recently approved mixed use proposals at Great Northern (up to 34 Storeys), the new hotel under construction at 325 Deansgate (22 Storeys) and ongoing development at the First Street and New Jackson neighbourhoods.

Planning History

2.13 The Site previously received Planning Permission (Ref: 126308/FO/2020) in 2020 for a Travelodge hotel with ground floor retail. The consent was never implemented and has since expired.

2.14 The site immediately adjacent to the Site has an extant Planning Permission (Ref. 111003/FO/2016/C1, as amended) for the demolition of the building at 10 - 12 Whitworth Street West, and the redevelopment of the site for a new 35 storey

residential building comprising 327 apartments, with associated highways, public realm and associated works.

2.15 The Consent has been implemented; however, it is noted that there is a condition which requires a construction main contract to be in place by 31st October 2024.

Site Specific Environmental Designations

Air Quality

2.16 The Site is located within the Greater Manchester Air Quality Management Area (AQMA), referring to an area where air pollution levels are, or are likely to, exceed national air quality objectives.

Ecology

2.17 There are no Sites of Special Scientific Interest located on the Site with the closest, the Rochdale Canal designated as an SSSI, being located 8.54km to the northeast of the Site. In terms of sites of Special Biological Interest ('SBI'), the closest to the Site is the Ashton Canal SBI which is located 1.26 km to the east of the Site. The River Irwell SBI is located 1.68km to the northwest of the Site.

Flood Risk and Drainage

2.18 The Site is located within Flood Zone 1, with a low probability of flooding. As with the majority of the Regional Centre, the Site is located within the Conurbation Core Critical Drainage Area, as defined in the Manchester, Salford, Trafford Strategic Flood Risk Assessment (SFRA).

Heritage

2.19 The Site is not located within a conservation area. The following conservation areas lie to the north, and west of the Site: St Peter's Square Conservation area (402m); Albert Square Conservation Area (505m); Deansgate Conservation Area (400m); St John Street Conservation Area (368m); and Castlefield Conservation Area (124m). Whitworth Street Conservation area is located to the east of the Site (537m).

2.20 The two existing vacant buildings on the Site are not listed. According to an assessment from the Heritage Consultant, Katheryn Sayers Associates, neither is considered to meet the threshold to be considered non-designated heritage assets. The Castlefield Viaduct, which forms the southern part of the Site is Grade II Listed.

2.21 As outlined within the archaeological scoping assessment, included at Appendix 3, the Site has potential to contain archaeological remains associated with the Roman and industrial period.

2.22 There are 75 listed buildings within a 500m radius of the Site, including 0 Grade I Listed, 7 Grade II* Listed, and 68 Grade II Listed buildings.

Proposed Development

2.23 The design is within the development stage, meaning that the building form, mix of uses, development quantum, and design have not yet been fixed. In order to facilitate early EIA Scoping consultation with the Local Planning Authority and technical consultees on the most robust basis, this EIA Scoping Request is therefore based on realistic parameters of the Proposed Development, acting as a 'worst case' scenario

for EIA assessment purposes. Notwithstanding, should these parameters be exceeded or otherwise materially change, then the EIA scope would be further reviewed.

2.24 The Proposed Development comprises the demolition of the two existing buildings on-site and the erection of a 44 storey residential building of up to 380 units with supporting amenity spaces and landscaping. The development will be delivered in a single phase.

2.25 As noted above the design is being developed, however for the purpose of the Scoping Report the following set of realistic parameters have been assessed as a 'worst case' scenario.

2.26 The Proposed Development will be delivered in a single phase.

Table 2.1 – Development Parameters

	Maximum development parameters (including 10% over expected development parameters)
Site Area (sq.m)	1,750 (to edge of pavement)
Height	135m (height from ground level) Circa 190m AOD (subject to GF level) 44 storeys (inc. level 00)
Residential Units (Use Class C3)	380
Commercial (Use Class E (sq.m)	85
Parking	Up to 3 Parking bays for disabled people. Secure cycle parking facilities will also be provided.
Public Realm (sq.m)	380

3 Approach to EIA and Proposed Methodology

The Project Team

3.1 Regulation 18, Paragraph 5 (a) of the EIA Regulations requires the ES to be prepared by competent experts. The Applicant has instructed Deloitte to lead and manage the EIA process. Deloitte has significant experience and expertise in managing the EIA process and holds the IEMA EIA Quality Mark.

3.2 As part of the Scoping Exercise, technical input to this EIA Scoping Report has been provided from the following members of the project team:

Table 3.1 Project Team and Technical Discipline

Consultant	Technical Disciplines
Deloitte	Planning and EIA Co-ordinator
Sheppard Robson	Architecture and design
Glenbrook	Construction
Layer Studios	Townscape and Visual Impact
Katheryn Sayer	Heritage
SRL	Air Quality
Hilson Moran	Noise and Vibration
GIA	Daylight/Sunlight/Overshadowing and Solar Glare
AKT II	Water Resources
GIA	Wind
Mainer	Climate Change, Energy, Sustainability, BREEAM, Ventilation
CBRE	Socio Economic
Enfusion	Human Health
Gtech	Broadband Connectivity, TV Reception, and Aviation
AKT II	Ground Conditions
Curtins	Traffic and Transport, Waste
Hilson Moran	Ecology
Salford Archaeology	Archaeology

3.3 All technical assessments in the EIA will be undertaken by a suitably qualified project team to ensure credibility, coordinated by Deloitte. Table 3.2 sets out details of the proposed EIA Team.

Table 3.2: EIA Team

Topic	EIA Consultant	Qualifications
EIA Coordinator	Deloitte	PIEMA, MRTPI, MPlan, BA (Hons) IEMA Quality Mark Registered
Townscape and Visual Impact	Layer Studios	Member of Landscape Instute
Heritage	Katheryn Sayer	BA, MSc, MCIFA, M.B.A
Air Quality	SRL	BSC (Hons), BA (Hons), Associate Member of the Institute of Environmental Sciences, Associate Member of the Institute of Air Quality Management
Noise and Vibration	Hilson Moran	BE, AMIOA, BSc (Hons), MSc, MIOA
Daylight/Sunlight/Overshadowing	GIA	LLB (Hons), BSc (Hons) MRICS
Solar Glare	GIA	MBSc, LLB (Hons)
Wind	GIA	BSc (Hons), MSc, PhD, MEng
Climate Change	Mainer	
Human Health	Enfusion	BSc, MSc, CEnv, FIEMA
Socio Economic	CBRE	BA (Hons), MRIC MRTPI
Traffic and Transport	Curtins	HNDCert MCHIT, BA (Hons), MSc, CMILT, FCIHT
Archaeology	Salford Archaeology	BA (Hons), MA, MBA, MCIFA
Ecology	Hilson Moran	BSc, MRes, CIEEM Member, PhD, MSc, BSc, CEnv, CSci, MIEnvSc, MCIEEM

Topic	EIA Consultant	Qualifications
Water Resources	AKTII	Meng (Hons), CEng MICE, BEng (Hons)
Ground Conditions	AKTII	BEng (Hons), CEng MIStructE, Meng (Hons)
Broadband, TV Reception, and Aviation	GTech	BEng

Approach to Scoping

3.4 This EIA Scoping Report supports a formal request for a Scoping Opinion under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. It aims to ensure that there is a clear and agreed scope for the EIA, to ensure a robust assessment of likely significant environmental effects arising from the Proposed Development.

3.5 The Scoping exercise has taken account of the proposed construction activities, operational characteristics of the Proposed Development, relevant planning policy, knowledge of the Site, and the professional opinion of the project team.

3.6 This EIA Scoping Report seeks to establish the overall framework for the EIA in relation to the environmental topics and associated likely significant effects that will be subject to detailed assessment. However, iterative re-scoping will continue as the design and strategy is refined, plans and principles are developed and additional technical survey work informs the final design for the Proposed Development. Any deviation between the scope of effects considered within this EIA Scoping Report and the ES will be clearly communicated in the ES.

3.7 The following statutory consultees should be consulted through the EIA Scoping process:

- Manchester City Council (MCC) – Contaminated Land, Environmental Health, Flood Risk, Highways, Tree Officer (Technical Officers);
- Transport for Greater Manchester (MCC Highways);
- Environment Agency (EA);
- Canal and River Trust;
- Greater Manchester Police Secure by Design;
- Historic England;
- Greater Manchester Archaeological Advisory Service;
- Natural England;
- Greater Manchester Ecological Unit; and,
- United Utilities.

3.8 Early consultation with a number of the above statutory consultees has already been undertaken/is being undertaken, to inform specifics of the design of the Proposed Scheme and to ensure early engagement to ascertain their views on likely significant effects, baseline data collection and appropriate assessment methodologies. Where relevant, the outcomes of those early consultations are reflected in this EIA Scoping Report.

Structure of the ES

3.9 The ES would comprise two volumes. Volume 1 would set out the findings with respect to each of the environmental disciplines that have been examined as part of the EIA. Volume 2 would include all the supporting documents and technical appendices relating to the chapters. A Non-Technical Summary (NTS) of the ES will also be produced and form a standalone document.

3.10 Overall, the information presented in the ES will be provided in accordance with Schedule 4 of the EIA Regulations and will include:

- A description of the Proposed Development;
- An outline of the main alternatives studied;
- A description of the aspects of the environment likely to be significantly affected by the Proposed Development;
- A description of the likely significant effects of the Proposed Development on the environment;
- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment;
- A non-technical summary; and;
- An indication of any difficulties encountered by the applicant in compiling the required information.

EIA Boundary

3.11 The geographical coverage of the EIA will be determined by a number of factors including:

- The physical extent of work;
- The nature of the baseline environment, including the location of sensitive receptors;
- The distance over which effects will be significant; and
- The presence and type of “pathways” along which impacts may be spread.

3.12 The specific EIA Boundary for each technical disciple is set out within each of the relevant technical chapters.

EIA Methodology

3.13 The introductory chapters of the ES will provide the following information:

- An introduction to the ES in a legislative and site specific context;

- Description of the Site and Proposed Development;
- Alternatives considered and project design evolution;
- EIA methodology;
- Construction methodology and programme;
- Stakeholder engagement;
- ES structure; and
- Details of the EIA project team.

3.14 The EIA will assess both the construction and operational phases of the Proposed Development.

3.15 Each ES chapter would follow the headings set out below to ensure the final document is transparent, consistent, and accessible.

- Introduction;
- Legislative and Policy Context;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Identification and Evaluation of Key Effects;
- Mitigation Measures;
- Cumulative Effects;
- Residual Effects; and,
- Summary.

3.16 Each chapter sub-heading is explained in further detail below.

3.17 A reference list will also be provided as relevant with each ES chapter.

3.18 Each ES chapter would follow the headings set out below to ensure the final document is transparent, consistent, and accessible. A reference list will also be provided as relevant with each ES chapter. This is considered to be a robust approach and aligns with the EIA Regulations (2017).

Introduction

3.19 This section will introduce the assessment discipline and the purpose for which it is being undertaken.

Legislative and Policy Context

3.20 This section will include a summary of national, regional and local policies of relevance to the environmental discipline and assessment. Relevant legislation will be summarised where applicable.

Assessment Methodology and Significance Criteria

3.21 This section will provide an explanation of methods used in undertaking the technical study with reference to published standards, guidelines and best practice. The application of significance criteria will also be discussed.

3.22 It will also outline any difficulties encountered in compiling the required information.

Baseline Conditions

3.23 This will include a description of the environment as it is currently and as it is expected to change given the project were not to proceed (i.e. 'do-nothing' scenario). The method used to obtain this information will be clearly identified. Baseline data will be collected in such a way that the importance of the particular subject area to be affected can be placed in its context and surroundings so that the effects of the proposed changes can be predicted.

Identification and Evaluation of Likely Significant Effects

3.24 This section will identify the likely significant effects on the environment resulting from the Proposed Development.

3.25 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the effects can be positive or negative. The criteria to be used in carrying out this process are detailed below. It should be noted that these tables provide a standardised set of criteria, which may not be applicable to all technical disciplines considered within the EIA. Where relevant, individual consultants may use a variation of the criteria and this will be clearly explained within the methodology of each chapter.

Scenarios

3.26 Developments that are already under construction are considered to form part of the Existing Baseline and those subject to planning permissions or otherwise identified within the committed developments are considered as part of the cumulative analysis.

3.27 The scenarios to be considered for all the EIA Chapters are as follows:

- Scenario 1: Existing site (existing baseline as the Site is today (July 2024);
- Scenario 2: Baseline + Proposed Development; and
- Scenario 3: Baseline + Proposed Development + cumulative.

3.28 A list of cumulative developments to be assessed is provided within Appendix 2 of this report. This will be reviewed and updated as required within the environmental statement.

Prediction of Impact Magnitude

3.29 The methodology for determining the scale or magnitude of change caused by the impact is set out in Table 3.3. Where disciplines deviate from this methodology will be clearly stated within the relevant chapter.

Table 3.3: Methodology for Assessing Magnitude of Change

Magnitude of Change	Criteria for assessing magnitude of change caused by an impact
Major	Total loss or major/substantial alteration to key elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

Prediction of Receptor Sensitivity

3.30 The sensitivity of a receptor is based on the relative importance of the receptor using the scale set out in Table 3.4. Where disciplines deviate from this methodology will be clearly stated within the relevant chapter.

Table 3.4: Methodology for Determining Sensitivity

Sensitivity	Examples of receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.
Moderate	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high importance.
Low	The receptor/resource is tolerant of change without detriment to its character, is of low or local importance.

Assessment of Effect Significance

3.31 Effect significance will be calculated using the matrix in Table 3.5. This illustrates the interaction between impact magnitude and receptor sensitivity. Where disciplines deviate from this methodology will be clearly stated within the relevant chapter.

Table 3.5: Effect Significance Matrix

Magnitude	Sensitivity		
	High	Moderate	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial

Magnitude	Sensitivity High	Moderate	Low
Moderate	Major - Moderate Adverse/Beneficial	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor - Negligible
Negligible	Negligible	Negligible	Negligible

Mitigation Measures

3.32 Adverse effects will be considered for mitigation and specific measures will be put forward, where practicable. Mitigation measures considered may include modification of the project, compensation and the provision of alternative solutions as well as pollution control. The extent of the mitigation measures and how these will be effective will be discussed. Where the effectiveness is uncertain or depends upon assumptions about operating procedures, data will be introduced to justify the acceptance of these assumptions.

3.33 The approach to mitigation will follow best practice guidance, which suggests a hierarchical approach. The UNEP EIA Training Resource Manual (2002) advises that impacts should ideally be:

- Avoided; if not
- Minimised; and/or compensated.

3.34 Three 'types' of mitigation are characterised in IEMA's Special Report – The State of Environmental Impact Assessment Practice in the UK (2011):

- EIA influence at design stage;
- Standard construction practices for minimising effects; and
- Follow-up actions for implementation post-consent.

3.35 Clear details of when and how the mitigation measures were carried out, or will be carried out, are to be given within the ES. When certainty of impact magnitude and/or effectiveness of mitigation over time exists, monitoring programmes will be proposed to enable subsequent adjustment of mitigation measures, as necessary.

3.36 The opportunity for enhancement measures will also be considered where appropriate.

Cumulative Effects

3.37 Two types of cumulative effect will be assessed:

- Type 1 Cumulative effects - are the interactions between effects of the construction and development works on a single receptor.

- Type 2 Cumulative effects - are those that arise from incremental changes caused by other past, present or reasonably foreseeable projects together with the development proposals and associated works.

3.38 An assessment of the cumulative effect of the Proposed Development and other committed developments within a defined radius of the Site, including those with recent Planning Permissions and reasonably foreseeable to come forward in the near future, will be undertaken as part of the EIA.

3.39 Where schemes are under construction, they have been considered part of the baseline. If applications are approved, subject to a live application reasonably considered likely to be approved, or otherwise reasonably considered likely to come forward, these are included as a committed development to be considered as part of the cumulative analysis. Where construction has commenced on a development but has then stalled, for example on the adjacent site at 10-12 Whitworth Street, professional judgement based on our understanding of the project status has been used to determine whether they be included in the baseline or cumulative scenario.

3.40 There is no agreed / standard threshold for how far the assessment should go. Therefore, a professional judgement has been taken regarding which schemes to highlight, taking into consideration the surrounding context of the Site, which may differ between disciplines. This is exemplified in the inclusion of the Vision Tower within the cumulative developments as although construction has commenced construction has stalled and therefore timescales for delivery are unknown.

3.41 A list of cumulative developments to be assessed is provided within Appendix 2 of this report. This will be reviewed and updated as required within the environmental statement.

Residual Effects

3.42 The residual effects, i.e. the effects of the Proposed Development assuming implementation of proposed mitigation, will be determined. The residual effects represent the overall likely significant effect of the Proposed Development on the environment having taken account of practicable/available mitigation measures.

4 Environmental Disciplines to be Scoped Out of the EIA

4.1 As part of the EIA process and based on the information available to date, there are a number of topics which will not give rise to likely significant effects on the environment and therefore will not be considered within the ES.

4.2 Each consultant, whether the discipline has been determined to be sought to be 'Scoped In' or 'Scoped Out' has followed the Scoping Template as issued by Deloitte, the EIA Co-ordinator. In summary, each consultant has advised:

- Whether consultation has taken place.
- Any background studies which have been completed or baseline information available.
- Provided the baseline of the Site as relevant to each of the technical areas.
- Identification of effects which are not significant at both the Construction 'C' and Operational 'O' stages of development and the mitigation proposed.

Discipline	Evidence Base
Agricultural Circumstances	The Site is entirely on brownfield land so there would be no likely significant effects with respect to agriculture. This discipline can therefore be scoped out of the EIA.
Aviation	The Site is located in the Manchester control zone (CTR) airspace, which extends from the ground to 3,500 feet above mean sea level (AMSL), and laterally within the Outer Horizontal Surface (OHS) associated with Manchester Airport (Aerodrome Reference Point - (Mid point Runway 05L/23R) Latitude 532113.48N and Longitude 0021629.82W.) It is unlikely that any significant adverse effect upon SSR operations at Manchester Airport is likely to occur, due to the massing of the Proposed Development and the location of the Site relative to the number of existing significantly tall buildings surrounding the Site. If any impact is identified by NATS, mitigation would be suggested. Once mitigation has been implemented (unlikely to be required for the Proposed Development), there would be no residual effects. Significant effects upon helicopter operations are not predicted due to the external lighting requirements of the Proposed Development and the cranes used during the construction phase making them more visible to pilots at night and during certain weather conditions. Significant effects upon aircraft flying IFR are not anticipated but could be identified by MAG. If mitigation is required (which is

Discipline	Evidence Base
	unlikely), no residual effects would remain. Consequently, there would be no residual effects and impacts to IFR are not a proportionate ES matter. On this basis, it is not likely significant effects would be expected with respect to aviation. This discipline can therefore be scoped out of the EIA.
Traffic and Transport	*Summary analysis* The Proposed Development will be car-free (except accessible parking). Notwithstanding, the Proposed Development would still generate new trips associated with the Operational and Construction Phases, which are considered further below. This is based on the current design scenario with a 5% uplift, resulting in 380no. apartments. The Proposed Development will include secure cycle parking on-site, and provide for deliveries and servicing at the base of the tower. The planning application will be supported by a Transport Statement (to consider the traffic and transport impacts of the Proposed Development), a Framework Travel Plan (to promote active and sustainable travel and provide a management strategy for deliveries and taxis for future residents, in accordance with best practise as per other schemes in the city centre), and a Waste Management Strategy. Initial TRICS analysis shows that the trips generated by the Proposed Development would be negligible against the existing baseline. In relation to the Framework Travel Plan, the Site already benefits from excellent accessibility due to its City Centre location and proximity to high frequency public transport infrastructure. The location of the proposal will be an influential factor from day one of operation in the way residents travel. The Travel Plan will seek to build on the excellent sustainable location of the Site and promote existing facilities. The measures proposed will be taken from latest Government and Local Authority guidance and best practice. The Framework will also include recommended management and monitoring measures for adoption upon occupation of the Site, including: targets, survey recommendations and an implementation plan. The Framework measures will seek to maximise the sustainable access potential of the Site and further reduce the traffic impact of the development proposals on the local environment. Any measures proposed would be fed back into the Transport Statement to allow residual traffic flows to be discounted. The construction (including demolition) of the Proposed Development will result in a temporary increase in HGVs and cars / vans carrying construction workers and materials on roads surrounding the Site. When compared to the existing traffic flows on the local highway network, this volume of construction traffic (between 3-9 trips per hour) would fall well below the IEMA Guidelines assessment thresholds outlined above. In addition,

Discipline	Evidence Base
	this level of construction traffic is significantly less than the completed and operational development would generate. The Proposed Development will also be supported by a Construction Traffic Management Plan.
	Consultation No consultation in relation to traffic and transport has been undertaken to date .
	Rationale for Scoping Out Based on the type of development proposed the impacts on traffic and transport are not expected to give rise to significant environmental impacts during construction or operation and therefore has been scoped out of the ES. This means that the Proposed Development would not change any of the IEMA guidelines' effects of severance of communities, road vehicle driver and passenger delay, non-motorised user delay, non-motorised amenity, fear and intimidation on and by road users, road user and pedestrian safety, and hazardous/large loads.
Air Quality	*Summary analysis* A review of the NAEI point source inventory shows the nearest industrial point source to the Site is Manchester Metropolitan University approximately 1km southeast. Emissions will predominantly be transported away from the Site, due to the prevailing wind direction. The Manchester Piccadilly to Manchester Deansgate line runs immediately south of the Site and is listed in Defra's table of 'Rail Lines with a Heavy Traffic of Diesel Passenger Trains. Approximately 10 trains travelling on this line per hour on weekdays. Emissions from these trains will influence air quality at the Site. Road transport will also affect air quality in the area and will likely be the main pollutant source in the area. Emissions from vehicles using B6469 Whitworth Street West, the A5103, and the A56 will likely have the largest influence on local air quality. DEFRA background data and local authority monitoring data show that NO2, PM10, and PM2.5¬ concentrations at the Site are likely to be below their respective annual mean objective limits at the Site.
	Consultation No consultation has been undertaken to date
	Rationale for scoping out Dust effects during the demolition, earthworks, and construction phase will be mitigated by implementing best practice mitigation

Discipline	Evidence Base
	measures, which are considered proportionate to the identified level of risk in the IAQM guidance. Significant effects from operational dust emissions are considered unlikely as the Proposed Development will not introduce any sources of operational dust emissions. Using the TRICS analysis from the highways consultant, which shows no significant impacts during construction or operation, an air quality dispersion model will be undertaken and it is considered that the mitigation measures suggested in this will ensure that no significant impacts on air quality are realised. On this basis, air quality impacts from construction and operational will be scoped out of the assessment.
Archaeology	*Summary analysis* The site has potential for Roman and industrial archaeological remains. An assessment in 2018 identified possible archaeological sites. While no prehistoric activity is known, the area was likely conducive to late prehistoric settlement. The site falls within the Area of Castlefield Roman Vicus and Area of Roman Manchester, with a Roman road located nearby. Medieval activity is not known within the site. By the late 18th century, housing developments began to accommodate workers, and by the mid-19th century, the site was fully developed. The site was cleared by 1908 and redeveloped into two warehouses, which still stand today. The Proposed Development may impact these archaeological remains, considered to be of low and medium significance.
	Consultation A meeting was held with the Greater Manchester Archaeological Advisory Service (GMAAS) as the historic environment record officer on 28th May 2024 at which the Historic Environment Record data was received. A second meeting with GMAAS was undertaken on 7th June 2024 at which it was agreed that archaeology can be scoped out of the EIA provided that a desk-based study is submitted with the planning application and appropriate mitigation is undertaken (tertiary).
	Rationale for scoping out The Proposed Development is not considered to have any significant effects in respect of Archaeology. It is proposed that any potential impacts on Archaeology can be fully considered though the planning process through the submission of an Archaeological Desk-Based Assessment. Archaeological investigations at the Site will mitigate against the loss of below-ground archaeological remains. Such mitigatory

Discipline	Evidence Base
	measures can be secured on any permission via appropriately worded conditions and will ensure there are no significant effects arising from the development.
Ground Conditions	*Summary analysis* Geological surveys indicate the presence of made ground, potentially contaminated due to historical railway construction. While located within a Coal Mining Reporting Area, no mining-related risks are identified within 100m. Radon levels are low, requiring no specific measures. The site sits above a Principal Aquifer, with the nearest active groundwater abstraction license 752m away. The closest surface water features are the Rochdale Canal (30m north) and River Medlock (150m south). Several historical and active discharge consents are located nearby. The risk of unexploded ordnance is considered low despite WWII bombing, with the nearest recorded impact 75m away. Numerous underground services traverse the Site, with a potential for an abandoned sewer beneath Rowendale Street. Further assessment will be conducted to evaluate potential contamination risks and necessary remediation, following relevant guidelines and regulations.
	Consultation No consultation has been undertaken to date.
	Rationale for scoping out Potential ground contamination will be investigated through detailed site surveys. If found, appropriate remediation strategies and construction methodologies will be implemented. The risk to future users is considered low due to the proposed building design and landscaping. The thickness of any cover soil could only be determined upon completion of the Phase 2 intrusive geo-environmental ground investigation. Ground gas risk is deemed low due to the lack of a generating source. If unexpected contamination is discovered during site investigations, the assessment will be revised, and necessary mitigation measures will be taken. Therefore, these factors are not considered significant enough to warrant inclusion in the Environmental Impact Assessment (EIA).
Water Resources	Summary Analysis The existing site is 100% impermeable, comprising two existing buildings, Rowendale Street and associated footpath which currently have a positive surface water drainage connection to the public sewer. There is currently no attenuation provided to the Site. Whilst it is not possible to say that this is definitely causing flood risk elsewhere, its current unattenuated state may contribute cumulatively with other unattenuated sites to result in surface water flooding within the relevant local catchments.

Discipline	Evidence Base
	As both existing buildings are vacant it is assumed that, although both buildings are connected to the public sewer, there are currently no foul flows being generated. The following bullet points summarise the current site conditions: • the Site lies entirely within Flood Zone 1 - an area assessed as having a less than 1 in 1000 annual probability of river or sea and river flooding (<0.1%). In accordance with the NPPF, all proposed land uses are acceptable within Flood Zone 1 and therefore the Site passes the Sequential Test. • The Site has been assessed as being at **very low risk** of flooding from rivers or tidal sources. • The Site has been assessed as being at **low risk** from surcharging sewers. • The Site has been assessed as being at **low risk** from groundwater sources. • The Site has been assessed as being at **low risk** from artificial sources. The Site has therefore been assessed as being at **low risk** from surface water flooding sources.
	Consultation No consultation has been undertaken to date.
	Rationale for scoping out The Proposed Development will result in a reduction in surface water run off rate and volume and therefore contribute towards reducing surface water flood risk elsewhere. Surface water flood risk is not considered to be a significant effect as the Site sits within Flood Zone 1. Any exceedance events will be considered, and overland flood routes developed to ensure flood risk is not increased. Whilst existing drainage network performance is unknown, the provision of attenuation and designed to the LLFA requirements is expected to provide a betterment to existing baseline conditions. It is considered that adopting good environmental practices throughout the duration of the construction works will prevent polluting effects on existing groundwater, public sewer networks and nearby watercourses from being significant.
Ecology	**Summary Analysis** A desk-based ecological study of 2-4 Whitworth Street West and its surrounding 2km area was conducted using local record centresand online databases. While numerous protected and significant species were identified within the broader study area, analysis focused on those likely to be present within the site's specific habitat. Numerous bird records (925) were noted, with the most recent being a Black redstart in June 2023. Bat activity was also recorded (246 observations), primarily common pipistrelles, with the most recent in 2013. Other protected species records included bee

Discipline	Evidence Base
	orchids, otters, hedgehogs, and white-letter hairstreak butterflies. The site falls within two SSSI risk zones primarily related to air pollution and combustion, which are not anticipated to be significantly impacted by the Proposed Development. Two active protected species applications for common pipistrelle bats are documented within the study area. No Priority Habitat Index habitats are present within 500m of the site. A habitat survey of the vacant commercial buildings has revealed limited ecological value. While buddleia was observed growing on the western building and bird nesting was evident in the eastern building's roof and stairwell, the Site is deemed to have low potential for roosting bats due to a lack of connectivity, foraging resources, and the presence of artificial lighting. Further bat surveys are not recommended.
	Consultation A data-search of the Greater Manchester Local Record Centre on 28 June 2024 which requested information on locally designated sites and records of protected/notable species within 2km of the application site. The search indicated no report of species within the Site.
	Reasons for scoping out The Proposed Development is not anticipated to result in the loss of any habitat of ecological value. It will include biodiversity enhancements on the Site, including greenspaces and tree planting. Although the demolition and construction phase of the development will result in the removal of the existing buildings and the loss of bird nesting habitat, the potential impacts can be suitably managed to avoid significant impacts on the species of concern. Impacts to protected sites is deemed very unlikely owing to lack of protected sites within the Site or immediate vicinity. As a result, it is proposed that Ecology is scoped out of the EIA.
Television, FM Radio and DAB Radio Reception	Summary Analysis <u>TV Interference Mechanisms:</u> The Proposed Development could create signal shadow zones, potentially impacting TV reception (DTT and satellite) southeast of the site due to interference with the northwest DTT transmitter. Satellite TV could be affected northwest of the site due to the southeast location of serving satellites. <u>Digital Terrestrial Television:</u> The survey area is served by DTT services (North West and Granada TV regions) from the Winter Hill transmitter (NGR SD

Discipline	Evidence Base
	66053 14463), located to the northwest and 24km from the Site. The baseline survey work has demonstrated that reception conditions around the Site are currently robust and interference free. Signal levels were noted to be good and the quality of received signals was deemed to be high. <u>Digital Satellite Television:</u> Reception conditions around the Site are currently interference free because no unwanted obstructions are positioned on the required signal path between the serving satellite (located to the southeast) and any satellite dishes. If the Proposed Development did not come forward, receptions conditions around the Site would remain optimal because no signal interference would be created. <u>VHF Radio:</u> The areas around the Site are served by VHF (FM) radio services of BBC Radio 1, 2, 3, and 4 from the Holme Moss transmitter (NGR SE 09550 04050). Reception conditions around the Site were robust and interference free. If the Proposed Development did not come forward, receptions conditions around the Site would remain optimal. <u>Broadband Connectivity:</u> New residences require access to superfast broadband (minimum 24 Mbps). Manchester City Council and the Places for Everyone Joint Development Plan mandate full fibre to premises connections for new builds, unless unfeasible, to ensure gigabit-capable connectivity upon occupancy. Existing connectivity around the site is robust, with multiple providers and the Proposed Development would not negatively impact local broadband availability.
	Consultation No Consultation has been undertaken to date.
	Reasons for scoping out Whilst the Proposed Development may have the potential to impact TV reception in certain limited areas around the Site, it is not anticipated that there will be significant impacts on reception in those areas as a result of the Proposed Development. A suitably worded condition is proposed on the subsequent consent to assess the impacts following completion of construction and suitable mitigation will be implemented if identified as required. The topic of Broadband Connectivity is not an EIA proportionate matter and consequently this is proposed to be scoped out of the EIA. A Broadband Connectivity Assessment will be submitted as part of the planning application, which is a standard document required by MCC to support a planning application submission.

5 Environmental Statement Chapters

5.1 The list of proposed technical ES Chapters are set out as follows:

- Townscape and Visual Impact;
- Heritage;
- Noise and Vibration;
- Daylight/Sunlight/Overshadowing;
- Solar Glare;
- Wind;
- Climate Change;
- Human Health; and
- Socio-Economic.

5.2 In addition to the information as set out in Section 4 of this report, for those disciplines which are sought to be scoped in consultants have further advised:

- Identification of effects which are likely to be significant.
- Assessment methodology for the likely significant effects.
- Limitations and assumptions.

Townscape and Visual Impact

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
Manchester City Council	Planning Authority	23 July 2024	Key views presented to the LPA in pre-application meeting. To be agreed with Historic England during pre-application engagement.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion

Viewpoint locations	Production of Zone of Theoretical Visibility in VU.CITY (Sheppard Robson). Desktop study to identify visual receptors and understand approach to nearby development.	July 2024
Townscape baseline	Desktop study interrogating local designations and policy protections.	July 2024

Baseline

Townscape Character and Heritage Assets

5.3 The City Centre is defined as the area inside the Inner Relief Route and extends to the south to encompass the Oxford Road Corridor and includes several distinct areas. It is located on the southern edge of the Petersfield area of the City Centre, separated from the Southern Gateway area by the railway viaduct. In development terms, the Site is within the Petersfield Strategic Regeneration Area. Petersfield is characterised by its blend of historic listed buildings, modern architecture and high quality cultural and leisure facilities. The area is home to Manchester Central – the city's premier conferencing venue, the Bridgewater Hall, the Great Northern Warehouse and some of the region's best hotels.

5.4 The surrounding context of the site is described in full within Section 2 of this report.

Identification of Effect/s which are Significant

Effect	Receptor	Applicable Development Phase (C / O)
Change to urban grain	Urban grain	C/O
Change of land use from commercial to residential	Land use of Site and locality	C/O
Changes to townscape character and heritage assets within the Site context.	Townscape character of Whitworth Street West, Petersfield and adjoining area of Southern Gateway and surrounding area, including heritage assets.	C / O
Changes to building heights	The Site (direct effect) and local site context (potential indirect effect).	C / O

Change to the arrangement and quantity of public realm and movement and linkages.	The Site (direct effect) and local site context (potential indirect effect), including. Whitworth Street West and the linkages with Hewitt Street.	C / O
Changes to the character and amenity of key views	Refer to list of viewpoints in methodology.	C / O
Changes to Site character.	Direct effects on Site character.	C / O

Assessment Methodology for Likely Significant Effects

Scenarios to be Tested

5.5 Scenarios to be considered in the EIA are as follows:

- Scenario 1: Existing site (existing baseline as the Site is today (June 2024);
- Scenario 2: Baseline + Proposed Development; and
- Scenario 3: Baseline + Proposed Development + cumulative.

5.6 The TVIA will be produced in accordance with industry best practice including Guidelines for Landscape and Visual Impact Assessment, Third Edition (2013), by The Landscape Institute and the Institute of Environmental Management and Assessment and as recommended by the guidelines, be appropriate to the type and scale of the Proposed Development.

Determining the Baseline

5.7 A desk-based review of published documents and mapping will be completed to establish the character of the existing townscape and identify visual receptors. This will include review of local planning policy, local character areas and online databases such as Mapping GM.

5.8 A site visit will allow exploration of the study area, photographs and the testing of desktop analysis. Baseline findings will be compiled using written commentary and a suite of supporting drawings expected to illustrate local character, building heights, urban grain, heritage assets, public realm and open space, public rights of way. Each receptor will be assigned a value.

5.9 The visual baseline will establish locations from which the Site is visible and from which views have the potential to be affected by the Proposed Development (views to be agreed in discussion with the Local Planning Authority and Historic England). The viewpoint locations are informed by Zone of Visual Influence Studies (produced by Layer), site surveys and VU.CITY analysis (July 2024). A total of 11 key townscape views have been identified for the assessment as listed below and shown on the 'Proposed Location of TVIA Viewpoints' Plan in Appendix 8:

- View 1: St Peter's Square (wireline);
- View 2: Midlands Hotel, Lower Moseley Street (fully rendered);
- View 3: Manchester Central (fully rendered);

- View 4: Britons Protection (wireline);
- View 5: Whitworth Street East (wireline);
- View 6: Medlock Street (wireline);
- View 7: Whitworth Street West (fully rendered – nighttime view);
- View 8: St George's Church, Chester Road (wireline);
- View 9: Castlefield (wireline);
- View 10: Albert Square (wireline); and
- View 11: St Anne's Square - (wireline).

5.10 As identified above Viewpoint 7 (Whitworth Street West) will also be a 'night-time/dusk shot'.

Assessment

5.11 Having established the baseline position, an assessment of potential effects caused by the Proposed Development will be undertaken and follow three stages.

5.12 Firstly, receptor 'Sensitivity' will be determined by combining judgements on the susceptibility of the receptor to the specific type of development proposed and the value attributed to that receptor. Sensitivity of townscape and visual receptors will be assessed on a scale of high, moderate and low.

5.13 Next, the 'Magnitude of Change' is identified by combining judgements about the size and scale of the effects, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is of short or long term in duration and is assessed using a set of predetermined criteria. The magnitude of change is considered on a scale of major, moderate, minor or negligible. The magnitude of change in the view relates to the degree of contrast or integration likely to result from the proposed development and is influenced by the relative time over which a view is experienced and whether it is a full, partial or glimpsed view.

5.14 Finally, 'Significance of Effect' is set out for each receptor by combining the judgements previously identified for Sensitivity and Magnitude.

Limitations and Assumptions

5.15 Photographs are taken from publicly accessible locations and so viewpoints are at ground level.

Built Heritage

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
GMAAS (Greater Manchester Archaeological Advisory Service)	Historic Environment Record Officer	Email on 19 June 2024	Historic Environment Record (HER) data received
Manchester City Council Planning Department	Planning Officers	8 May 2024 19 June 2024 23 July 2024 In person pre-application consultation	Discussion of proposed development, site and site context, including nearby heritage assets, and the proposed verified views.
Historic England	Historic Areas Adviser	Email	Consultation in progress/proceeding

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Kathryn Sather & Associates 2018 Proposed development, Whitworth Street West, Manchester: Archaeological Desk Based Assessment. unpublished report (EGM5062)	An archaeological desk-based assessment was completed to assess the nature and significance of the sub-surface archaeological resource and to discuss the impact of the scheme on heritage assets.	2018
Kathryn Sather & Associates 2020 Whitworth Street West, Manchester: Heritage Statement. unpublished report	A Heritage Statement was completed that identifies the heritage assets close to the proposal site and assesses the impact of the previously proposed development on the significance and setting of the heritage assets.	2020

2-4 Whitworth Street West Manchester: Heritage Peer Review	The Peer Review concurred with the conclusions of the 2020 Heritage Statement: • that the existing two buildings have no heritage status and are not of sufficient architectural or historic interest to warrant designation at national or local level. • the previous proposals will not have any adverse impacts on the settings of the heritage assets in the vicinity. • A Level 2 building recording was recommended as mitigation for the loss of the existing buildings on the Site.	3 November 2020
Historic England (Designation) Rejection at Initial Assessment Report: 2-4 Whitworth Street	The Rejection Report details that the buildings do not merit listing as the buildings are typical in design rather than special, neither possesses claims to technological interest, there are no known connections with nationally significant events or persons, and there is no group value with the GII listed buildings in the vicinity as the location in relation to the listed buildings is insufficient to compensate for the overall lack of architectural interest.	20 November 2020
Viewpoint Locations	Review of visual receptors as identified by TVIA consultants.	June 2024
Heritage Policy Baseline	Desktop study including consultation with Greater Manchester HER, review of local listing and national listing designations. Review of relevant local and national planning policy.	June 2024
Site Survey And Assessment	Site and building survey, including viewpoints from the proposal site towards heritage	July 2024

	assets in the vicinity and vice versa.	

Baseline

5.16 The Site abuts and includes the Grade II listed Manchester South Junction and Altrincham Railway Viaduct. Beyond the railway viaduct, the Site does not contain any other statutory designated heritage assets such as Listed Buildings, Scheduled Monuments, or any Registered Parks and Gardens.

5.17 A narrow road, Rowendale Street, separates the two buildings on the Site and continues through the railway viaduct to connect with Hewitt Street to the south of the viaduct.

5.18 There are two existing buildings on the Site, neither of which meet the criteria to be considered as non-designated heritage assets. 2 Whitworth Street West was built in 1909 of traditional brick load bearing construction with some steel columns, and a concrete roof and floors, to designs of Henry McCulloch. Research documents use of the four storey building as a warehouse initially. 4 Whitworth Street West was built in 1914 as a warehouse, office, workshop and garage, to designs of Cyril Eyres Ainley. There is a single storey garage structure to the rear, parallel with the viaduct, and a three storey warehouse and office range to Whitworth Street West. The building is constructed from load bearing brick, with a partial internal concrete frame. Both buildings have been vacant for some time.

5.19 In 2020, Historic England determined that the two buildings at 2-4 Whitworth Street West do not have sufficient architectural or historic interest to be considered nationally significant, nor are the buildings contributing to the group value of the other heritage assets in the immediate vicinity, with the rejection decided at the initial assessment. The previous Heritage Assessment and a Peer Review, both from 2020, concluded that the existing buildings do not meet the criteria to be considered as non-designated heritage assets

Heritage Assets in the Vicinity

5.20 There are several Grade II and some Grade II* listed buildings in the immediate vicinity and the Site falls within the settings of a Conservation Area and a large range of other listed buildings. The HER search results included both a 250m and a 500m radius. Although additional sensitive receptors may be identified following the further research and fieldwork, the likely sensitive receptors have been initially identified as follows:

Table 5.1 – Heritage Assets within a 500m Radius:

Heritage Asset	National Listing	HER Number	Distance from Site
Manchester South Junction and Altrincham Railway Viaduct	Grade II	11681.1.0	0m
Rochdale Canal Lock Number 91	Grade II	12089.9.0	30m

Castlefield Railway Viaduct	Grade II	8385.1.0	35m
Rochdale Canal Lock Number 90	Grade II	12089.8.0	45m
Rochdale Canal Lock Keepers Cottage	Grade II	8586.1.0	45m
Deansgate Station	Grade II	15574.1.0	60m
Castlefield Conservation Area (to the west end of Whitworth Street West	Conservation Area	8385.1.0	103m
Albion Wharf (19 Albion Street)	Grade II	8268.1.0	105m
The Britons Protection Public House	Grade II	8412.1.0	150m
Manchester Central	Grade II*	129.1.0	169m
Former Congregational Chapel	Grade II	8379.1.0	176m
Midland Hotel	Grade II*	8537.1.0	407m

Identification of Effect/s which are Not Significant

Effect	Loss of Rowendale Street	**Applicable Development Phase (C / O)**	C/O	**Receptor**	Manchester South Junction and Altrincham Railway Viaduct (Grade II Listed)
Discussion of Effect					
The plan form of the short roads connecting Whitworth Street West to Hewitt Street, through the railway viaduct, will be altered with the loss of Rowendale Street.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Design details will reflect the position of Rowendale Street and the area beneath the Grade II Listed Viaduct will be retained. In addition, the short roads to the east and west, Bugle Street and Cameron Street, will also be retained. The inclusion of Rowendale Street in a condition requiring a Level 2 recording could include photographic documentation of the Street and Viaduct bridge as mitigation.					
Concluding Statement					
The loss of Rowendale Street is not a significant effect and can be mitigated through design and recording. Therefore, this effect is proposed to be scoped out of the EIA. The townscape effects from a change of urban grain resulting from the closure of Rowendale Street will be considered as part of the relevant TVIA ES Chapter.					

Effect	Alteration to a railway viaduct through the insertion of a new gate across an open area under the viaduct	**Applicable Development Phase (C / O)**	C/O	**Receptor**	Manchester South Junction and Altrincham Railway Viaduct (Grade II Listed)
Discussion of Effect					
The Proposed Development will require very minor alterations to the Grade II Listed Viaduct, with gates installed directly to the Viaduct on the Hewitt Street elevation.					
Mitigation Committed to in order to Avoid or Reduce Effect					
The specific positions of the fixings of the gate beneath the viaduct can be detailed. Should any structure directly impact on the structure, then a separate application for Listed Building Consent will be submitted to the Local Planning Authority to confirm the nature of fixings and method of works.					
Concluding Statement					
The very minor alteration of additional gate fixings to the railway viaduct will not be a significant effect and can be dealt with through the usual listed building consent process. Therefore, this effect is proposed to be scoped out of the EIA.					
Effect	Loss of 2 Whitworth Street West	**Applicable Development Phase (C / O)**	C	**Receptor**	2 Whitworth Street West (Wrendal House)
Discussion of Effect					
Demolition works will affect the 1909 warehouse currently extant and vacant within the Site. 2 Whitworth Street West has no heritage status and has previously been assessed as not having sufficient architectural or historic interest to warrant designation at national or local level.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Any effect would be mitigated prior to construction through a historic building recording and preservation by record. Any necessary mitigation would be secured through a planning condition in line with the National Planning Policy Framework.					
Concluding Statement					
Effects on 2 Whitworth Street West is therefore not considered to be significant and is proposed to be scoped-out of the EIA.					
Effect	Loss of 4 Whitworth Street West	**Applicable Development Phase (C / O)**	C	**Receptor**	4 Whitworth Street West (Whitworth House)
Discussion of Effect					

Demolition works will affect the 1914 warehouse, office, workshop and garage currently extant and vacant within the Site. 4 Whitworth Street West has no heritage status and has previously been assessed as not having sufficient architectural or historic interest to warrant designation at national or local level.
Mitigation Committed to in order to Avoid or Reduce Effect
Any effect would be mitigated prior to construction through a historic building recording and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with the National Planning Policy Framework.
Concluding Statement
Effects on 4 Whitworth Street West is therefore not considered to be significant and is proposed to be scoped-out of the EIA.

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Potentially Significant (beneficial or adverse effect on settings of listed buildings).	Rochdale Canal Lock Number 90 Castlefield Railway Viaduct Manchester South Junction and Altrincham Railway Viaduct Rochdale Canal Lock Number 91 Rochdale Canal Lock Keepers Cottage Deansgate Station The Britons Protection Public House Albion Wharf (19 Albion Street)	C / O
Potentially Significant (beneficial or adverse effect on special interest of the surrounding conservation areas)	Conservation Areas	C /O

Assessment Methodology for Likely Significant Effects

5.21 A Heritage Assessment will be appended to the ES. The Statement will provide a detailed and robust baseline assessment of the identified designated heritage assets surrounding the Site and assess their significance and consider to what extent their setting contributes to an appreciation of this.

5.22 The Heritage Assessment will be prepared in accordance with or in reference to best practice including the following national guidance and professional standards as appropriate:

- Greater Manchester Combined Authority. *Places for Everyone – Joint Development Plan, Document 2022-2039,* March 2024

- Historic England *Conservation Area Designation, Appraisal and Management* (2019)
- Historic England *Local Heritage Listing: Identifying and Conserving Local Heritage. Historic England Advice Note 7 (2nd ed) (2021)*
- Historic England *Managing Significance in Decision-Taking in the Historic Environment: Historic*
- *Environment Good Practice Advice in Planning 2* (2015)
- Historic England *Statements of Heritage Significance: Analysing Significance in Heritage Assets: Historic England Advice Note 12 (2019)*
- Historic England *Tall Buildings: Historic England Advice Note 4.* Swindon. Historic England (2022)
- Historic England *The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (2nd ed)* (2017)
- ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (2011)
- IEMA, IHBC & CIfA. *Principles of Cultural Heritage Impact Assessment in the UK* (2021)
- Manchester City Council Core Strategy 2012-2027
- National Planning Policy Framework (NPPF) *Chapter 16 Conserving and enhancing the Historic Environment 2023*

5.23 The Heritage Statement will consider the potential impact of the Proposed Development on the setting (through indirect visual impact) to sensitive receptors. The sensitive receptors will be identified through review of the completed background reports, followed by a site survey and further historic research. Identification of sensitive receptors will also include reference to the receptors identified in the TVIA and associated Zone of Visual Influence.

5.24 The visual baseline will establish locations from which the Site is visible and from which views have the potential to be affected by the Proposed Development (views to be agreed in discussion with the Local Planning Authority and Historic England). The viewpoint locations are informed by Zone of Visual Influence Studies (produced by Layer), site surveys and VU.CITY analysis (July 2024). A total of 8 key heritage views have been identified as follows for assessment in the Heritage Assessment. The viewpoints are shown in Appendix 8:

- View 1: St Peter's Square (wireline);
- View 2: Midlands Hotel, Lower Moseley Street (fully rendered);
- View 3: Manchester Central (fully rendered);
- View 4: Britons Protection (wireline);
- View 5: Whitworth Street East (wireline);
- View 7: Whitworth Street West (fully rendered – nighttime view);
- View 9: Castlefield (wireline); and
- View 10: Albert Square (wireline).

5.25 The assessment methodology for likely significant effects will follow the significance criteria (Table 3.5), which is largely in accordance with the specific heritage impact assessment guidance in the ICOMOS and IEMA guidance. The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgement.

5.26 In order to assess the potential magnitude and significance of effect of the visual impact of the Proposed Development, the following criteria is considered:

- The sensitivity and proximity of receptors (i.e. heritage assets);
- The nature of the existing views;
- The degree of change to existing views and the visibility of the Proposed Development; and
- The availability and amenity of alternative views.

5.27 The assessment of heritage effects within the Heritage Statement will be informed by Accurate Visual Representations ('AVRs') which provide an accurate representation of how the Proposed Development will appear in its local and wider townscape setting and in conjunction with heritage assets in the setting of the Site.

5.28 The scenarios to be considered are as follows:

- Scenario 1: Existing site (existing baseline as the site is today (June 2024);
- Scenario 2: Baseline + Proposed Development;
- Scenario 3: Baseline + Proposed Development + cumulative.

5.29 Potential effects associated with the construction and operational phases of the Proposed Development will relate to indirect temporary visual impacts and indirect permanent visual impacts respectively.

5.30 Significant effects in EIA terms relate to effects categorised as Moderate, Moderate-Major, or Major. Any effects categorised below this – Minor-Moderate, Minor, Negligible, or None are considered to be Not Significant.

Limitations and Assumptions

5.31 Survey of the identified heritage assets within the study area was from publicly accessible areas. As such the study is limited to assessment from ground level.

5.32 Assessment of below ground archaeology does not form part of this assessment.

Noise and Vibration

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation

Manchester City Council	Premises Licencing	2 April to 25 June 2024 Via Email	Request and receipt of premises licences (redacted) for the nearby nightclubs. Request made for additional information regarding specific nightclub conditions but no response received to date.
Manchester City Council	Environmental Protection	6 to 24 June 2024 Via Email	Request and receipt of details regarding overheating noise requirements related to planning, and confirmation of requirements for other noise and vibration considerations and sensitive receptors for assessment.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Noise survey	Long-term fixed unattended measurements, and short-term daytime and night-time attended measurements at the Site to capture rail, road and nightclub noise.	15 to 21 May 2024
Vibration survey	Short-term attended measurements to capture rail vibration at the Site.	18 and 23 April 2024

Baseline

5.33 Baseline noise and vibration surveys have been undertaken at the Site in accordance with relevant guidance, and potentially sensitive noise and vibration receptors within and surrounding the Site have been identified and agreed with MCC. Having completed these, the following activities will be undertaken to support the assessment of the existing and future baseline environment.

- Preparation of a detailed three-dimensional noise model of the Site and its surrounds to predict and illustrate, through the generation of noise contour maps, the noise levels impacting the different building façades and external amenity areas forming a part of the Proposed Development; and
- Prediction of the propagation of vibration and resulting ground-borne noise levels from the railway lines through the building, based on the measured data and worst-case attenuation factors (due to coupling between the ground and the building foundations) and amplification factors (due to resonance of the floor span) taken from ANC Guidelines[1].

5.34 Outline details of the noise and vibration surveys undertaken at the Site are provided in the following sections, as well as the identified noise and vibration sensitive receptors for assessment.

Noise Survey

5.35 Environmental noise surveys have been undertaken at the Site to determine prevailing noise levels affecting the Site and its surroundings.

5.36 Continuous long-term monitoring was carried out over a 6-day period between Wednesday 15th May and Tuesday 21st May 2024 at two positions, considered to represent noise levels at the Site and in the surrounding area. Supplementary attended short-term noise measurements were also undertaken to determine the spatial variation in noise levels across the Site.

5.37 In addition to the above, specific attended noise measurements were made on the evening of Friday 17th May to capture noise from nightclubs in proximity to the Site. The date was chosen specifically to align with scheduled events at the Rebellion nightclub, which included a live band playing at the venue, and then a subsequent DJ set from 23:00 onwards. The measurements were taken in relative proximity to each nightclub venue so that their contribution to the overall noise levels measured at the Site could be determined.

5.38 Generally, the Site is exposed to high levels of noise, even considering its central urban location, with multiple types of noise source in close proximity to the boundary. In particular, nightclub and railway noise will require careful consideration in the assessment of site suitability.

5.39 During the daytime, road traffic noise from Whitworth Street West and surrounding roads dominates at the northern boundary of the Site, with regular passing trams also contributing, albeit at distance from the Site. During evening and night-time weekend hours, exceptionally high levels of low frequency noise from music at the Rebellion nightclub, and to a lesser extent Deansgate Locks dominates the noise climate.

5.40 At the southern boundary of the Site, regular passenger trains both stopping at Deansgate Station and passing through dominate the noise climate. Occasional freight trains also influence the noise climate for short periods, but these are infrequent. Road traffic noise from the surrounding area contributes to the background noise levels.

[1] ANC, "Measurement and assessment of ground-borne noise and vibration," ANC, 2020.

Vibration Survey

5.41 Attended baseline vibration surveys were undertaken on Thursday 18th, Tuesday 23rd and Monday 29th April 2024 at the Site to measure the level of ground-borne vibration from individual passing passenger and freight trains on the railway viaduct to the south.

5.42 Tactile vibration was not perceived at any point during the attended noise and vibration surveys, although some low frequency noise was observed from the viaduct during the passing of several passenger and freight trains, which may be attributable to ground-borne noise.

Sensitive Receptors

5.43 Existing sensitive receptors (SRs) identified for consideration in the assessment are detailed in the table below. It should be noted that only SRs most proximate (and therefore the worst affected) to the Site boundary are included. These were provided to the Environmental Protection team at MCC for confirmation of suitability (see Consultation above), and no concerns were raised.

Table 5.2 – Sensitive Receptors

Receptor Location	Type of Receptor	Description/Name	Approximate Distance to Site Boundary
SR A [1]	Residential	Vision Tower (in construction but on hold). The project has a critical date on 31st October 2024	Adjacent to the eastern Site boundary
SR B	Residential	Axis Tower	Approximately 45 m from the north-eastern corner of the Site boundary
SR C [1]	Residential	Viadux (Phase 1 Complete)	Approximately 75 m from the northern Site boundary
SR D	Residential	Ropeworks, 33 Little Peter Street	Approximately 20 m from the southern Site boundary

Notes: [1] These SRs are under construction, so noise and vibration effects will only be realised upon occupation.

Identification of Effect/s which are Not Significant

5.44 In determining whether an issue should be scoped in or out of the noise and vibration assessment, no built-in mitigation has been taken into account.

5.45 The assessments conducted as part of the noise and vibration chapter will highlight the need for and extent of mitigation measures required to reduce the anticipated effects of noise and vibration described above. Mitigation measures will be initially focussed on containing noise and vibration impacts at source where practicable but may also include use of screening, buffer zones, acoustic hardware and the like.

Effect	Operational Activity Noise	Applicable Development Phase (C / O)	[O]	Receptor	All

Discussion of Effect
Operational noise from activities from the types of use that might impact on the existing environment, other than from building services noise or changes to traffic flows.
Mitigation Committed to in order to Avoid or Reduce Effect
It is not anticipated that noisy uses will be proposed.
Concluding Statement
The proposed uses are not anticipated to result in the generation of operational noise that might impact on the existing environment. Operational activity noise is therefore proposed to be scoped out of the EIA.

Effect	Operational Road Traffic Noise	**Applicable Development Phase (C / O)**	[O]	**Receptor**	All
Discussion of Effect					
Changes in noise level on nearby roads due to road traffic generated by the Proposed Development.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Due to the Site's location in proximity to multiple options for public transport, the lack of car-parking proposed for the Proposed Development (accessible to disabled people only), and the already relatively high traffic flows on surrounding roads, it is not anticipated that the Proposed Development will generate enough operational traffic to generate a significant effect. A doubling of traffic would be required to generate even a minor adverse effect (considered Not Significant) on nearby roads, and this is considered highly unlikely to occur.					
Concluding Statement					
The proposed uses are not anticipated to result in the generation of sufficient operational road traffic noise to have a significant impact on the existing noise environment. Operational road traffic noise is therefore proposed to be scoped out of the EIA.					

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Demolition and Construction Noise	All	[C]
Demolition and Construction Vibration	All	[C]

Demolition and Construction Traffic Noise	All	[C]
Building Services Noise	All	[O]
Environmental and Entertainment Noise Ingress	Future occupiers of the Proposed Development	[O]
Overheating Control Noise Ingress	Future occupiers of the Proposed Development	[O]
Railway Vibration and Ground-borne Noise Ingress	Future occupiers of the Proposed Development	[O]

Assessment Methodology for Likely Significant Effects

5.46 In order to assess the potential noise and vibration effects of the Proposed Development, the following methodology shall be adopted.

Construction Assessment

5.47 Prediction and assessment of potential noise and vibration impacts from key demolition and construction activities on existing sensitive receptors surrounding the Site will be undertaken in accordance with the assessment procedures set out in British Standards (BS) BS 5228-1:2009+A1:2014[2] and BS 5228-2+A1:2014[3] 'Code of practice for noise and vibration control on construction and open sites' Part 1 covering noise and Part 2 covering vibration. These determine appropriate construction noise and vibration limits depending on site context and baseline noise conditions.

5.48 Noise level changes arising from demolition and construction traffic will be determined using the calculation methodology detailed within the Calculation of Road Traffic Noise ('CRTN')[4] and based on construction routings and estimated demolition and construction traffic data commensurate of a scheme of this nature as provided by the Applicant.

Operational Assessment

5.49 Building services scheme details are not likely to be sufficiently developed at planning to quantify the noise impacts (i.e., the type, number and configuration of plant will not be defined). As a result, maximum plant noise emission limits will be calculated and set based on surveyed background noise levels ($L_{A90,T}$) at the nearest sensitive receptors, the guidance contained in BS 4142:2014[5], and the requirements of MCC to which services plant should be selected as not to exceed during design development.

5.50 Assessment of the impact of existing environmental and entertainment (nightclub) noise ingress on the residential uses of the Proposed Development will be undertaken

[2] British Standards Institution, "BS 5228-1:2009 + A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 1: Noise'," BSI Standards Limited, London, 2014.
[3] British Standards Institution, "BS 5228-2:2009 + A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 2: Vibration'," BSI Standards Limited, London, 2014.
[4] Department for Transport Welsh Office, "Calculation of Road Traffic Noise," The Stationery Office Ltd, London, 1988.
[5] British Standards Institution, "BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'," BSI Standards Limited, London, 2019.

with reference to the specific noise criteria of MCC Technical Guidance[6] (as agreed in consultation), as well as national, regional and local planning policy and credited guidance documents such as BS 8233:2014[7] and the WHO 'Guidelines for Community Noise'[8], as appropriate. The assessment will identify the need for in-built mitigation measures such as suitable glazing, façade, and ventilation specifications;

5.51 MCC require that noise ingress when overheating controls are in place (such as open windows) is assessed against the guidelines of the AVO Guide[9]. The assessment will identify what measures can be used to control overheating when considering the ingress of noise, and how long they can be used per daytime/night-time period in line with the AVO Guide.

5.52 Vibration impacts (including related ground-borne noise) from the adjacent railway viaduct on the Proposed Development residential uses will be assessed with reference to credited guidance documents such as BS 6472-1[10] and the ANC Measurement and Assessment of Groundborne Noise and Vibration (Red Book)[11], as well as the overall noise ingress criteria (i.e. airborne plus ground-borne noise) agreed with MCC in consultation. The assessment will identify the need for any vibration isolation measures as in-built mitigation.

5.53 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment. Mitigation measures will be proposed as necessary, and the significance of any residual effects will be identified.

Limitations and Assumptions

Construction Phase

5.54 In undertaking the construction noise assessments of the application site and wider surrounding area, there are limitations and constraints that are expected to affect the outputs from this work. The BS 5228 calculation methods allow accurate noise levels to be determined for various demolition and construction activities. However, the value of any such predictions is necessarily limited by the number of assumptions that are made regarding the number and type of plant to be utilised, their location and detailed operating arrangements.

5.55 Some of this information would be clarified as the details of the demolition and construction works are specified and later when resources are mobilised on application site for the works, but other information such as exactly where the plant operates and for how long would remain uncertain, even after works have commenced. Available information (e.g. suitable areas for plant equipment and

[6] Manchester City Council, "Planning and Noise Technical Guidance," The Neighbourhoods Service, Manchester, 2022.
[7] British Standards Institution, "BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'," BSI Standards Limited, London, 2014.
[8] World Health Organisation, "Guidelines for Community Noise," WHO, Geneva, 1999.
[9] ANC, IoA, "Acoustics Ventilation and Overheating - Residential Design Guide" ANC, 2020.
[10] British Standards Institution, "BS 6472-1:2008 'Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting'," BSI Standards Limited, London, 2008.
[11] ANC, "Measurement and assessment of ground-borne noise and vibration," ANC, 2020.

associated acoustic mitigation methods) will be set out in a detailed Demolition and Construction Management Plan, but onsite constraints will always influence operations to some degree.

5.56 As a consequence, the anticipated available information will be sufficient to perform a generic demolition and construction phase noise assessment, focussing on key activities operating within 5 m of the application site boundary, with the aim of identifying whether a significant, albeit temporary, noise effect is likely to arise at the nearest SRs.

Operational Phase

5.57 The number, location, specific type and configuration of fixed plant connected with the Proposed Development will not be fixed at the time of issue of the EIA, and often this wouldn't be fixed until late into the technical design stages of the development. As a consequence, it will not be possible to undertake accurate predictions to determine whether appropriate standards might be met, so instead appropriate plant noise emission limits will be set.

Daylight/Sunlight/Overshadowing

Consultation

5.58 There are no specialists within Manchester City Council or other statutory consultees relevant to the area of daylight and sunlight. As such, no consultation has been undertaken.

5.59 Details of the initial testing and proposed methodology have, however, formed part of pre-application discussions with Manchester City Council Local Planning Authority.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Identification of residential and hotel sensitive receptors surrounding the Site	Site visit and review of council tax records	April 2024
Identification of external amenity space sensitive receptors surrounding the Site	Site visit and review of Proposed Scheme and aerial photography	April 2024
Location of floor plans for the sensitive receptors	Review of MCC planning portal, leases and online marketing details	April 2024

Baseline

Daylight & Sunlight

5.60 The BRE Guidelines[12] suggest that residential properties have the highest requirement for daylight and sunlight and states that:

[12] Building Research Establishment (BRE) (2022) Site layout planning for daylight and sunlight: a guide to good practice (BR209) (2022)

"the guidelines are intended for use for rooms in adjoining dwellings where light is required, including living rooms, kitchens and bedrooms."

5.61 The scope of properties that contain an element of residential accommodation (sensitive receptors) that will be assessed has been determined through professional judgement, considering their orientation and proximity to the Site.

5.62 Baseline studies are currently being undertaken by GIA. The baseline assessment will review the daylight and sunlight conditions within each of the sensitive receptors in the Site area's present form (ie the current baseline).

5.63 The following sensitive receptors will be considered for daylight and sunlight due to their residential or hotel use and proximity to the Site:

Table 5.3 – Sensitive Receptors

Plan Reference	Property Address	Use
1	Viadux 1 (Baseline Development 10)	Residential
2	Viadux 2a+b (Committed Development 20)*	Residential
3	Apex Tower (Committed Development 15)*	Pub/Residential
4	Axis Tower	Residential
5	The Hacienda Apartments	Residential
6	Vision Tower (Committed Development 11)	Residential
7	14 Albion Street	Pub/Residential
8	The Ropeworks Apartments	Residential
9	Hill Quays Apartments	Residential
10	The Nile Apartments	Residential
11	The Rhine Apartments	Residential
12	30 City Road East	Residential
13	Riverside Mews	Commercial/Residential
14	2 Hewitt Street & 355 Deansgate	Commercial/Residential
15	Deansgate Locks	Residential
16	8-10 Hewitt Street - 21 Little Peter Street	Commercial/Residential
17	12 Hewitt Street - 21 Little Peter Street	Commercial/Residential

*Live application not yet approved but anticipated to come forward and is therefore considered for robustness

Figure 5.1: Sensitive Receptors



Overshadowing

5.64 Any overshadowing sensitive receptors will be established from a transient overshadowing assessment of the Proposed Development upon the surrounding context on 21st March (Spring & Autumn Equinoxes) 21st June (summer Solstice) and 21st December (winter solstice).

Identification of Effect/s which are Not Significant

Effect	Reduced daylight and sunlight amenity within commercial properties or distant residential properties	**Applicable Development Phase**	O	**Receptor**	All
Discussion of Effect					
The scope of works will focus on the nearest sensitive receptors which are the residential receptors and public and/or private amenity spaces in the immediate vicinity of the Site. These have been determined in line with the reasonable expectation of daylight and sunlight as per the BRE guidelines. The BRE guidelines consider that residential properties have the highest requirement for daylight and sunlight. As such, daylight and sunlight effects to commercial buildings surrounding the Site, or residential buildings and areas of amenity space which are not in sufficient proximity to the Site, are not considered to be significant and will not be considered further in the EIA or reported in the ES.					
Mitigation Committed to in order to Avoid or Reduce Effect					
None					
Concluding Statement					

Reduced daylight and sunlight amenity within commercial properties or distant residential properties and areas of amenity space will not be significant and the effects are therefore proposed to be scoped-out of the EIA.					
Effect	Reduced daylight and sunlight amenity within surrounding residential receptors during demolition and construction	**Applicable Development Phase**	C	**Receptor**	All
Discussion of Effect					
Owing to the evolving and changing nature of construction activities, the assessment of potential effects during construction of the Proposed Development on daylight and sunlight to surrounding properties and areas of amenity space will not be modelled. Since the potential daylight and sunlight effects relating to construction works will vary throughout the construction programme and gradually increase to the potential effects identified for the completed Proposed Development, the interim construction effects will not be assessed quantitatively as it is considered that the completed Proposed Scheme represents the worst-case assessment in terms of likely daylight and sunlight.					
Mitigation Committed to in order to Avoid or Reduce Effect					
None					
Concluding Statement					
Therefore, reduced daylight and sunlight amenity within the surrounding residential receptors and areas of amenity space during the demolition and construction phases is not considered to be significant (or if it is, only on parity with the completed Proposed Scheme) and is proposed to be scoped-out of the EIA.					
Effect	Daylight & Sunlight within the proposed Residential Accommodation and Areas of Amenity Space	**Applicable Development Phase**	O	**Receptor**	All
Discussion of Effect					
As these assessments are not effect assessments, they will not be included within the ES Chapter. A standalone report will be submitted as part of the planning application describing the levels of compliance against the relevant guidance.					
Mitigation Committed to in order to Avoid or Reduce Effect					
None					
Concluding Statement					
Daylight & Sunlight within the proposed residential accommodation and areas of amenity space is therefore proposed to be scoped-out of the EIA.					

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Reduction in daylight amenity	See above list	O
Reduction in sunlight amenity	See above list	O

Increase in shadow to surrounding amenity spaces	Deansgate Lock Terrace. Others TBC from transient overshadowing assessments	O

Assessment Methodology for Likely Significant Effects

Daylight & Sunlight Assessment Methodologies

5.65 The assessments will be carried out in accordance with the BRE Guidelines. The analysis will be calculated from a 3D computer model using specialist software based on detailed architectural models, Ordnance Survey (OS) mapping and photogrammetry.

5.66 In line with the BRE Guidelines, both the Vertical Sky Component (VSC) and No Sky Line (NSL) assessments will be undertaken in the Proposed Development scenario for the relevant sensitive receptors identified. Where floorplans are not available, NSL assessments will not be undertaken in accordance with the BRE guidelines.

5.67 The sunlight amenity to the surrounding relevant receptors will be considered by reference to the BRE recommended Annual Probable Sunlight Hours (APSH) and Winter Probable Sunlight Hours (WPSH) methods of assessment. Due to the southerly location of the sun in the sky, this assessment will consider those windows which face the site and are located within 90 degrees of due south.

Overshadowing Assessment Methodologies

5.68 The assessments will be carried out in accordance with the BRE Guidelines. The analysis will be calculated from a 3D computer model using specialist software based on detailed architectural models, Ordnance Survey (OS) mapping and photogrammetry.

5.69 The overshadowing analysis on the surrounding areas of amenity space will be undertaken by reference to the Transient Overshadowing (TOS) and Sun Hours on Ground (SHOG) methods of assessment.

5.70 For the TOS assessment, the path of shadow will be mapped for the Proposed Scheme on the following dates as suggested by the BRE Guidelines:

- 21st March (Spring Equinox);
- 21st June (Summer Solstice); and
- 21st December (Winter Solstice).

5.71 Should potentially significant effects be identified through the TOS assessment, a SHOG assessment will be undertaken to confirm and quantify any effect on 21st March, as recommended by the BRE Guidelines. The SHOG assessment will consider the proportion of a designated amenity space which receives 2 or more hours of direct sunlight on 21st March.

Scenarios to be Assessed

- Scenario 1: Existing site (existing baseline as the Site is today (May 2024);
- Scenario 2: Baseline* + Proposed Scheme; and
- Scenario 3: Baseline* + Proposed Scheme + cumulative.

Assessment Criteria

5.72 The following table provides a summary of the criteria set out within the BRE Guidelines for daylight and sunlight.

Table 5.4 – Summary of BRE Guidelines

Method	BRE Criteria
VSC	A window may be adversely affected if its VSC measured at the centre of the window is less than 27% and less than 0.8 times is former value.
NSL	A room may be adversely affected if the daylight distribution (NSL) is reduced beyond 0.8 times its existing area.
APSH	A window may be adversely affected if a point at the centre of the window received for the whole year, less than 25% of the APSH including at least 5% of the APSH during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period, and for existing neighbouring buildings, if there is a reduction in total APSH which is greater than 4%.
SHOG	An amenity area may be adversely affected if less than 50% of its area receives less than 2 hours of direct sunlight on 21 March and less than 0.8 times its former value.

5.73 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible), the magnitude of change (on a scale of large, medium, small and negligible), and the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined from this evaluation and including professional judgment.

5.74 When assigning significance criteria for daylight and sunlight effects, professional judgement will be used in conjunction with the significance criteria in Table 3.5. Consideration will be given to the proportion of rooms/windows affected, as well as the percentage alterations, absolute changes, sensitivity of the receptor, and any other relevant factors. There may be mitigating factors such as location and nature of development, balconies, overhangs or design features which may also affect the determination of assigning the criteria.

5.75 When assigning significance criteria for sun hours on ground effects professional judgement will be used in conjunction with the significance criteria in Table 3.5. Consideration will be given to the nature of the adjoining amenity space, as well as the percentage alterations, absolute changes, sensitivity of the receptor, and any other relevant factors.

5.76 Effects classified as Moderate or Major in scale are considered to be 'significant'. Effects classified as Minor or Negligible in scale are considered to be 'not significant'.

Limitations and Assumptions

5.77 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- Where floorplans are not available, assumptions will be made based on external inspection as to the use and internal configuration of the rooms behind the fenestration observed.
- Unless building form dictates otherwise, a standard 4.2 m (14 ft) room depth will be assumed. This is common practice where access to buildings for surveying is unavailable.
- Floor levels will be assumed for surrounding properties where access or detailed planning drawings cannot be obtained. Where floor levels are assumed, the working plane will be located 850 mm above the assumed Finished Floor Level (FFL).

Solar Glare

Consultation

5.78 There are no specialists within Manchester City Council or other statutory consultees relevant to the area of solar glare. As such, no consultation has been undertaken.

5.79 Discussions on solar glare may, however, form part of any pre-application process with Manchester City Council.

Completed Background Studies / Available Baseline Information

5.80 No background studies have been undertaken for solar glare.

Baseline

5.81 The solar glare assessment is undertaken on the worst-case scenario. Solar Glare is not a comparative assessment; the fact it may occur in the baseline does not necessarily justify its occurrence as a result of the Proposed Development. Therefore, the assessment considers the effect of the Proposed Development in absolute terms.

5.82 However, it should be noted that the Proposed Development will be located on a Site where its existing state is two low-rise brick buildings with punched windows, thus there is limited opportunity for instances of solar glare from the Site to be experienced. Solar glare from surrounding buildings is not assessed.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Solar Glare causing visual discomfort to occupiers of adjoining buildings	**Applicable Development Phase (C / O)**	O	**Receptor**	Occupants of adjoining buildings
Discussion of Effect					
BRE states that reflected sunlight can affect occupants of adjoining buildings. There are two types of glare: disability glare, which is a safety issue; and discomfort glare, which includes solar reflections impacting adjacent buildings. Discomfort glare does not impair the ability to see. Whilst it can be important where work involves continuous viewing of the outdoor space from a fixed vantage point, it can generally be managed where glare is an issue by using blinds of curtains for					

the periods of time where such glare occurs. For these reasons, residential uses are classified as low-sensitivity receptors and do not require assessment as no significant adverse effects could occur. Where analysis is undertaken, it would consider the total duration of time for which the sun can be reflected to the affected location per year. Durations of less than 50 hours per year are classified as being unlikely to lead to significant impacts. Some reflections from glazed buildings into surrounding buildings will inevitably occur in an urban context; however, it is highly unlikely that the proposed development would generate reflections that could impact any individual occupant in neighbouring buildings for 50 hours or more per year. Any discomfort glare that would occur would be entirely transient and short-lived as the sunpath moves past the Site and could be managed by residents using blinds or curtains for those short periods where necessary. This is considered to be typical of the Site's urban location and would potentially occur with any redevelopment proposal of the Site that includes areas of glazing.
Mitigation Committed to in order to Avoid or Reduce Effect
None required
Concluding Statement
It is therefore considered that any impact on residential amenity is not expected to be significant and an assessment of discomfort glare is not considered necessary. Therefore, solar glare effects to occupants of neighbouring buildings is proposed to be scoped out of the EIA.

Identification of Effect/s which are Likely to be Significant

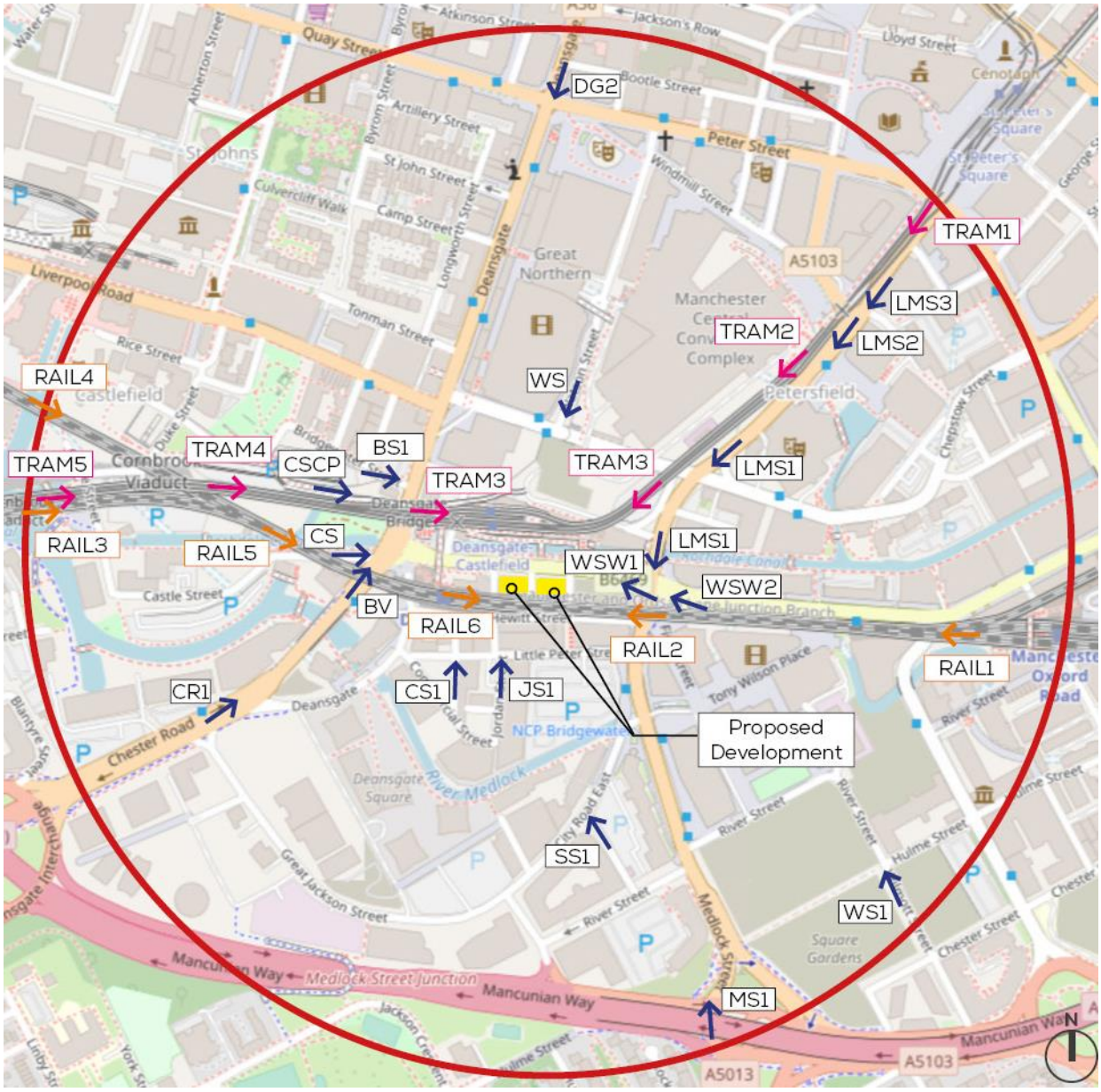
Effect	Receptor	Applicable Development Phase (C / O)
Solar Glare safety issues concerning transit through critical intersections and junctions	Solar Glare impacting visibility of road users at selected viewpoints within 500m of the Site where the Proposed Development is visible	O
Solar Glare safety issues concerning visibility of train/tram drivers along nearby railway tracks	Solar Glare impacting visibility of train and tram drivers at selected viewpoints within 500m of the Site where the Proposed Development is visible	O

Assessment Methodology for Likely Significant Effects

5.83 The assessment will consider potentially sensitive viewpoints for road and train/tram drivers surrounding the Site. The viewpoints will generally be located at the minimum stopping distance for road users and at the driver's eye level with the focal point being a relevant traffic element, such as signals or incoming traffic. For train/tram drivers, viewpoints will be assessed where signals are visible or at representative intervals where the Proposed Development would be visible close to the direct line of sight for a substantial stretch of track.

5.84 Viewpoints within 500m of the Site, where the Proposed Development is visible within the driver's field of view will be assessed. At distances greater than 500m from the Proposed Development, instances of solar glare would be unlikely to occur. A review of the surrounding area has identified the following road junctions and train/tram tracks are likely to be receptors sensitive to solar glare, this will be kept under review as the design evolves.

Figure 5.2 – Viewpoints within 500m of the Site



Scenarios to be Tested

5.85 For solar glare, the worst-case scenario is portrayed by the complete and operational Proposed Development, where all reflective facade materials have been installed and any covers, films or hoarding used during the construction period have been removed.

5.86 As construction works progress, and the facades of the Proposed Development are installed, the potential solar glare effects would be similar to those once the Proposed Development is complete and operational. It is therefore considered that the completed Proposed Development represents the worst-case assessment in terms of likely solar glare effects. The construction scenario will be assessed qualitatively, based on professional judgement. As the worst-case scenario for solar glare is portrayed by the complete and operational development, a quantitative assessment has been undertaken for the operational phase only.

5.87 Based on a common practice approach to portray the worst-case scenario, the cumulative effect will not be considered as neighbouring Committed Developments can block sunlight reaching the facades of the Proposed Development and/or obscure the Proposed Development from the viewpoints to be assessed. However, committed development are included within the surrounding context as their completed form where their construction has commenced consistent with our overarching approach to committed and baseline developments.

Assessment Methodology

5.88 The assessment of solar glare identifies the time of the day and year that solar reflections will be visible from the assessed viewpoints, as well as their relationship to a driver's line of sight. The assessment does not however, measure the intensity of the reflection but merely the occurrence and duration.

5.89 Drivers at each of the relevant road junctions are considered the sensitive receptors, where there are multiple directions of travel potentially affected, each direction of travel at the junction is considered a separate receptor as their effect significance may differ. For train/tram tracks, the train/tram drivers on the stretch of track are considered to be the sensitive receptor. The effect significance will be determined using professional judgement taking into consideration the duration of solar reflections, location of these in relation to a driver's line of sight, type of junction control and the probability of reflections occurring. The effect significance is given on a per junction basis considering all viewpoints assessed for that junction as well as any viewpoints that would not be affected by the Proposed Development.

5.90 There are no quantitative criteria within the BRE Guidelines or elsewhere regarding acceptable levels of solar glare. When assessing the overall significance of effect, the following factors could influence the nature, scale and resultant significance of effect:

- Sunlight availability probability;
- Area of façade off which reflections are visible;
- Period of time when reflections are visible;
- Angle at which reflections are visible from line of sight;
- Views of the Proposed Development being obscured for example by trees; and/or
- The time of day at which the solar reflection will occur for example during peak traffic times.

5.91 The factors in the table below will be used to ascertain the possible significance for each view and the factors listed above will then be taken into consideration to determine the overall significance for the designated viewpoint.

Table 5.5 – Factors table

Negligible	No reflections are visible or if visible all occur at angles greater than 30° from the driver's line of sight and so, as stated by the CIE, will be of "little significance".
Minor	Solar reflections are visible within 30° to 10° or between 10° to 5° of the driver's line of sight for a short period of time.

Moderate	Solar reflections are visible within 10° and 5° of the driver's line of sight occurring for a long period of time.
Major	Solar reflections are visible within 5° of a driver's line of sight.

5.92 Effects classified as Moderate or Major in scale are considered to be 'significant'. Effects classified as Minor or Negligible in scale are considered to be 'not significant'.

5.93 All viewpoints assessed for solar glare are considered to be of high sensitivity.

Limitations and Assumptions

5.94 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- Façade details are not yet known however the façade design of the Proposed Scheme is anticipated at this stage (worst case) to comprise large areas of glazing which have the potential for solar glare effects.
- Although great care will be taken to identify typical viewpoints, this does not guarantee that there will be no additional sensitive locations where reflected solar glare could present a particular risk. For practical reasons, the area of the assessment has been limited to the area surrounding the Proposed Scheme This area extends to a distance of approximately 500m around the Site in all directions. At greater distances, the likelihood of solar reflections causing significant glare is reduced as the time that buildings will reflect is reduced and the area of façade visible constitutes a reduced angle and so reduces the possibility of the whole sun disk being reflected.
- The assessment methodology for solar glare is not aimed at addressing the intensity of an instance of reflected solar glare, but rather its occurrence, duration throughout the year, and the location of this occurrence in respect of an individual's line of sight. It must also be noted that the hours presented reflect solar time and therefore do not take Daylight Saving Hours into account. This approach to solar glare assessment within EIA has been adopted using professional judgement and by reference to Commission Internationale L'Eclairage (CIE) guidance.

Wind

Consultation

5.95 There are no specialists within Manchester City Council or other statutory consultees relevant to the area of wind microclimate. As such, no consultation has been undertaken.

5.96 Discussions on wind microclimate may, however, form part of any pre-application process with Manchester City Council.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Identification of existing sensitive receptors surrounding the Site	Review of site and aerial photography to establish locations of off-site entrances, transit stops and amenity spaces which may be sensitive to wind conditions	June 2024
Wind Climate Characterisation	Acquisition of historic weather data for the region from Manchester International Airport, review of significant terrain and topography within the region, development of a wind climate model for Manchester and surrounding areas.	June 2024

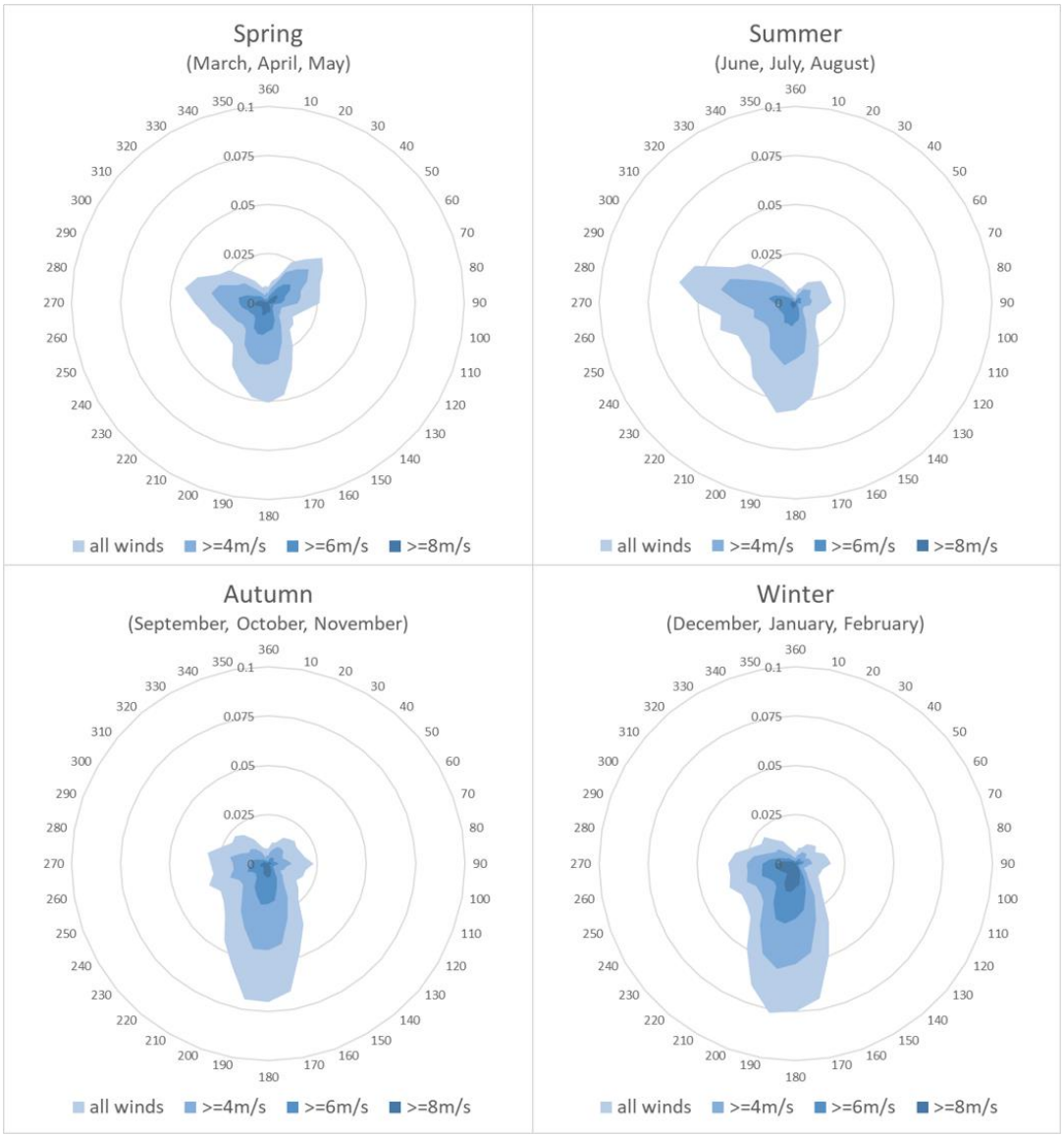
Baseline

5.97 Winds for the Manchester area are predominantly from the south, with a secondary peak from the north-west west during spring and summer. Winds are typically stronger in the winter season, and lighter throughout the summer. Wind roses per season for the Manchester area are shown in Figure 5.2 from data attained from Manchester airports over a period of 30 years. These wind roses provide the frequency of occurrence and magnitude of winds from all directions within the 30-year period.

5.98 To understand and quantify the baseline conditions at the Site, a full-scale digital model will be constructed reflecting the existing built form of the Site and the surrounding area (400m radius from the centre of the Site). This full-scale digital model will be tested in high resolution Computational Fluid Dynamics (CFD) to allow the baseline wind microclimate conditions to be quantified.

5.99 The baseline results from CFD will be combined with long-term meteorological climate data for the Manchester area, corrected to understand the baseline conditions specific to the Site, having regard to its location within Manchester. Testing in CFD will be conducted in the absence of any existing hard or soft landscaping, in order to provide a worst case result.

Figure 5.3 Seasonal Wind Roses for Manchester International Airport (1990-2021)



Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Wind safety risk due to strong winds (where 15m/s wind speeds are recorded for more than 0.025% annually)	All locations which are accessible to pedestrians or cyclists either on site or in the immediate surrounding area	C & O
Changes to suitability of pedestrian wind comfort levels in excess of the industry standard Lawson Comfort Criteria	Existing thoroughfares and roadways	C & O
Changes to suitability of pedestrian wind comfort levels in excess of	Existing transit stops (bus stops on Whitworth Street West,	C & O

the industry standard Lawson Comfort Criteria	platforms of Deansgate Tram stop)	
Changes to suitability of pedestrian wind comfort levels in excess of the industry standard Lawson Comfort Criteria	Existing off-site entrances	C & O
Suitability of pedestrian wind comfort levels in excess of the industry standard Lawson Comfort Criteria	Entrances to the Proposed Development	O
Suitability of pedestrian wind comfort levels in excess of the industry standard Lawson Comfort Criteria	External Amenity Spaces (ground floor spill out seating or public realm, roof terraces, balconies) which are introduced by the Proposed Development.	O

Assessment Methodology for Likely Significant Effects

5.100 3D models of the Proposed Development, existing surroundings and nearby cumulative schemes, as appropriate, will be created and tested in high resolution Computational Fluid Dynamics (CFD), to allow the future wind microclimate conditions to be quantified. The model will cover a minimum radius of 400m and simulations will be performed from 18 wind angles, representing all wind directions and spaced so that no individual wind angle is representative of more than 10% of annual winds. Mean wind speeds and turbulence levels (to allow the calculation of gust speeds) will be measured at 1.5m above ground level and any raised areas which are accessible to pedestrians, for all wind directions.

5.101 CFD has been chosen as a method for this study as physical limitations on the number of probes associated with wind tunnel testing would restrict the potential coverage of the Site and surrounding area, and could cause significant wind effects to be missed. GIA's High resolution CFD was used to ensure that accurate and conservative results were obtained.

5.102 GIA's CFD methods have been extensively correlated to physical data to ensure accuracy, and also allows for a greater level of detail (such as terrain undulations and fine building details) to be captured by the model, as well as allowing the ability to test at full scale.

5.103 The measured mean and gust-equivalent-mean wind speeds will be combined with wind statistics, based upon 30 years of wind climate data from Manchester Airport and used to undertake a statistical analysis of the wind climate prevailing across the area.

5.104 Three Scenarios will be tested in CFD as set out below:

- Scenario 1: Existing Site (baseline scenario) with the existing surrounding buildings.
- Scenario 2: Proposed Development with the existing surrounding buildings.
- Scenario 3: Proposed Development with cumulative surrounding buildings.

5.105 The assessment will take into account the following factors:

- The effect of the geometry, height, massing, exposure and orientation of the Proposed Development;
- The pedestrian activity to be expected, e.g. thoroughfare, ingress / egress, waiting areas, recreational spaces, outdoor seating spaces (such as cafes), and the Lawson comfort category that corresponds to the activity – long term sitting, short-term sitting / standing, strolling or walking; and
- The season(s) in which the activity is anticipated to take place, e.g. thoroughfare, waiting (at bus stops, for example) and entrance use would all take place year-round and be assessed against a worst-case ('worst-seasonal' results) while prolonged outdoor seating (outdoor café spaces, for example) would be assessed during summer.

5.106 Based on the results of the CFD testing assessed against the Lawson Comfort Thresholds, shown in Table 5.6, the suitability of the conditions and the likely effect at particular locations, both within and off-site, will be determined. If the measured wind conditions exceed the threshold wind speed for more than 5% of the time (whether that is seasonally or annually), then they are unacceptable for the stated pedestrian activity and the expectation is that there may be complaints of nuisance or people will not use the area for its intended purpose.

Table 5.6 Lawson Comfort Criteria (LDDC variant)

Key	Comfort Category	Mean Wind Speed (5% exceedance)	Description
	Sitting	4 m/s	Acceptable for outdoor sitting use (e.g. cafes, benches, balconies)
	Standing	6 m/s	Acceptable for main building entrances, pick-up / drop-off points and bus stops
	Walking (leisure)	8 m/s	Acceptable for strolling
	Walking (business)	10 m/s	Acceptable for external pavements, walking purposefully without lingering

	Uncomfortable	>10 m/s	Not comfortable for regular pedestrian access

Table 5.7 Lawson Safety Criteria

Key	Safety Category	Mean Wind Speed (0.025% exceedance)	Description
	No Safety Exceedance	<15 m/s	
	S15 (Distress)	>15 m/s	Unsafe for frail individuals, or cyclists
	S20 (Safety)	>20 m/s	Wind conditions considered unsafe for all users

5.107 If strong winds are measured, then these will also be reported. The activities described above are those used by Lawson Comfort Criteria. The two further categories (business walking and uncomfortable) are often associated with occasional strong winds (in excess of 15 or 20 m/s) and should be mitigated unless there are alternative routes, or they occur on less frequently used routes or in areas inaccessible to the general public.

5.108 Strong winds are reported for exceedances of 15m/s (to account for less able-bodied people or vulnerable users such as cyclists) and 20 m/s (for able bodied people) for more an 0.025% of the year (or above approximately 2 hours).

5.109 The suitability of the conditions both within and surrounding the Site, both in terms of comfort and strong winds, will be presented and discussed within the ES, and a supporting technical appendix.

5.110 A significant effect is defined as any effect where:

- Conditions at an existing receptor which were suitable for the intended use (in accordance with the Lawson Comfort Criteria) in the baseline are made unsuitable by the inclusion of the Proposed Development;
- Conditions at an introduced receptor are not suitable for the intended use; or
- The inclusion of the Proposed Development causes the introduction of a wind safety risk due to strong winds.

5.111 An increase in windiness relative to the baseline will be considered not significant if the wind speed is not expected to exceed the limit for the pedestrian activity being undertaken in that area.

5.112 Any significant adverse effects would require mitigation.

5.113 Should mitigation measures be required to provide wind conditions within a particular area / space to be suitable for their intended use, or are required to mitigate against predicted strong winds, the areas identified requiring suitable mitigation measures will be developed in consultation with the Applicant and the Design Team. Where necessary, mitigation measures will be tested through additional rounds of CFD studies. Following mitigation, the scale of any residual effects will be identified.

5.114 Effect magnitude is defined by the severity of the deviation from the standards set out by the Lawson criteria. Exceedances of the safety criteria are deemed to be the most critical, given their potential effect on pedestrians' wellbeing, i.e. they may be unduly exposed to the potential for harm. Such effects are thus deemed to have a major impact magnitude. Where the comfort criteria are not met, i.e. where the conditions are too windy for a particular receptor to be sufficiently comfortable for existing or planned pedestrian uses and thus inconvenient but not unsafe, the magnitude of such effects is determined by the number of categories by which the target condition is exceeded (minor for one category up to major for three categories over the target). Effects where the comfort conditions are consistent with the target conditions are considered negligible.

5.115 Any adverse major, moderate or minor effects are considered to be significant in EIA terms and would require mitigation. Negligible or beneficial effects (of and magnitude) are not considered significant in EIA terms as they would not require mitigation.

Limitations and Assumptions

5.116 The accuracy of the results is dependent upon the accuracy of the architectural CAD used to construct the model.

5.117 There is an inherent assumption that on-site wind speeds will scale linearly with the measured wind speeds at the airport (Manchester International).

5.118 It is assumed that, during the construction process, wind conditions will gradually change from the Baseline Conditions to the conditions for the Completed Proposed Development.

5.119 It is assumed that on-site activity during construction will be able to withstand a higher category of pedestrian comfort level that for the Completed Proposed Development.

Climate Change

Consultation

5.120 To our knowledge, no consultation has been undertaken to date in relation to this issue.

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
NA	NA	NA	NA

Completed Background Studies / Available Baseline Information

5.121 No Climate Change studies been undertaken prior to this EIA Scoping process.

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
NA	NA	NA

Baseline Scenario:

5.122 The baseline scenario in relation to climate change is one where the Proposed Development, hereby applying for Planning Approval, does not proceed and the site remains as it is currently. This is because the existing buildings on the Site are vacant and have no significant Green House Gas emissions associated with the site at current, hence Scenario 1 (site in current state) is the baseline for this assessment.

Current Climate:

5.123 The existing baseline for climate change resilience is set as the current climate environmental conditions in the location of the Proposed Development. Historic climate data obtained from the Met Office website (accessed September 2023) recorded by the closest meteorological station to the Proposed Development (Woodford Station) for the 30-year climate periods of 1981- 2010 and 1991-2020 is summarised in the below Table 5.8 and shows an increase in the average annual maximum daily temperature.

Table 5.8: Historic Climate Data Recorded by the Woodford Meteorological Station

Climate Period	1981 – 2010		1991 – 2020	
Climatic Factor	Month	Figure	Month	Figure
Average annual maximum daily temperature (°c)	-	13.2	-	13.6
Warmest month on average (°c)	July	20.2	July	20.7
Coldest month on average (°c)	January	6.9	January	7.1
Mean annual rainfall levels (mm)	-	867.05	-	868.40
Wettest month on average (mm)	October	98.83	December	98.98
Driest month on average (mm)	February	51.46	March	52.53

5.124 The Met Office baseline climate averages for the NW England and N Wales District (Met Office website, accessed September 2023) identify gradual warming between 1961 and 2010. Information on mean maximum annual temperatures (°C) and average annual rainfall (mm) is summarised in the below Table 5.9

Table 5.9: Historic Climate Data for the NW England and N Wales District

Climate Period	Mean Maximum Annual Temperatures (°c)	Mean Annual Rainfall (mm)
1961 – 1990	11.75°c	1260.08mm
1971 – 2000	12.04°c	1274.77mm
1981 – 2010	12.35°c	1304.57mm
1991 – 2020	12.66°c	1337.87mm

Future Climate:

5.125 UK Climate Projections published in 2018 (UKCP18) have been developed by the UK Climate Impacts Programme (UKCIP) to provide projections for future climate scenarios and trends. Table 5.10 below provides a summary of predications for summer and winter changes by the 2070s (Met Office, 2018).

Table 5.10: Future Climate Estimates Under a High Emissions Scenario (England)

Summer Rainfall Change	Winter Precipitation Change	Summer Temperature Change	Winter Temperature Change
57% drier to 3% wetter	2% drier to 33% wetter	1.1°c warmer to 5.8°c warmer	0.7°c warmer to 4.2°c warmer

Scope of Assessment

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Emissions associated with the manufacture of construction materials, transport of materials to the construction site, on-sit works and the disposal; of construction waste (Life cycle Stages A1-A5)	Embodied Carbon Emissions	C

Climate change as a result of the greenhouse gasses produced in operation (Life Cycle Sages B4-B5)	Embodies Carbon Emissions	O
Emissions associated with buildings' (operational) energy use (Life Cycle Stage B6)	Operational Energy Emissions	O
Emissions associated with decommissioning, deconstruction and demolition (Life Cycle Stages C1-C4)	Embodied Carbon Emissions	C

Assessment Methodology for Likely Significant Effects

5.126 The following section describes the methodologies adopted in order to assess the significant effects the project will have on climate change and greenhouse gas emissions during construction and operation. The following methodologies will be utilised to undertake this assessment:

1. The calculation of Whole Life Carbon emissions in line with The RICS Professional Standard: Whole life carbon assessment for the built environment, 2nd Edition, Nov 2023.
2. The impact of the project on climate change, in line with IEMA (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance.
3. The vulnerability of the project to climate change (climate change resilience) in line with IEMA (2020) EIA Guide to: Climate Change Resilience & Adaptation.

Assessment Scenario:

5.127 Scenario 3 will be assessed, utilising the above methodologies, as it will present the most robust assessment in terms of Carbon Emissions associated with the Proposed Development.

5.128 There are multiple likely significant effects acting upon the 'embodied carbon emissions' receptor. As such, interactions between these effects within the bounds of the development are possible. Therefore, the 'effect interactions' type of cumulative effects should be included in order to wholly assess the climactic effects of the proposed development.

5.129 It should be noted that the assessment of cumulative effects in conjunction with other developments in the area presents a challenge from a climate change standpoint. The Climate Studies produced as part of this application will represent the Proposed Development only, as it would be unreasonable to expect the assessment of other developments, despite the impact being cumulative across the globe. No inter-project cumulative effects are anticipated on the basis that climate change adaptation effects and impacts are specific to the development and will not result in impacts to neighbouring development.

Assessment Methodologies:

5.130 The Whole Life Carbon emissions of the Proposed Development will be estimated using Life Cycle Assessment (LCA) modelling using estimated data and assumptions.

These will be in line with typical benchmarks and standards including the RICS 2nd Edition. To inform the Whole Life Carbon Assessment we will utilise; Initial energy modelling will be undertaken as part of a separate Energy Statement which will accompany the application. The Operational Energy Calculations, included within the Energy Statement (BRUKL and SAP), the Embodied Carbon and Whole Life Carbon Calculation using One-Click LCA software and the Transport assessment will be utilised in the Whole Life Carbon Assessment of Scenario 3.

5.131 The Climate Change Resilience Assessment will be undertaken in line with the Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation (IEMA, 2020).

Receptor Sensitivity:

5.132 Receptor groups will be identified, and their sensitivity will be determined based on the susceptibility of the receptor (e.g. ability to be affected by a change – low, medium or high) and the vulnerability of the receptor (i.e. potential exposure to a change – low, medium or high) by utilising the following matrix:

Table 5.11: Climate Change Receptor sensitivity matrix

	1 (Low Vulnerability)	2 (Moderate Vulnerability)	3 (High Vulnerability)
1 (Low Susceptibility)	1 (Low sensitivity)	2 (Low sensitivity)	3 (Moderate sensitivity)
2 (Medium Susceptibility)	2 (Low sensitivity)	4 (Moderate sensitivity)	6 (High sensitivity)
3 (High Susceptibility)	3 (Moderate sensitivity)	6 (High sensitivity)	9 (High sensitivity)

5.133 The receptor susceptibility and vulnerability levels are as follows:

- Low susceptibility: receptor has the ability to withstand/not be altered much by the projected changes to the existing/prevailing climatic factors (e.g. retain much of its original function and form).
- Moderate susceptibility: receptor has some limited ability to withstand/not be altered by the projected changes to the existing/prevailing climatic conditions.
- High susceptibility: receptor has no ability to withstand/not be substantially altered by the projected changes to the existing/prevailing climatic factors.
- Low vulnerability: Climatic factors have little influence on the receptors.
- Moderate vulnerability: receptor is dependent on some climatic factors but able to tolerate a range of conditions.
- High vulnerability: receptor is directly dependent on existing/prevailing climatic factors and reliant on these specific existing climate conditions continuing in future or only able to tolerate a very limited variation in climate conditions.

Magnitude:

5.134 The magnitude of the impact this project will be determined in accordance with IEMA (2022) guide and the RIBA Climate Challenge v2 (2021).

Table 5.12: Climate Change Magnitude of Impact Criteria

Magnitude of Impact	Criteria for Assessing Impact
Major Adverse	The project's GHG impacts are not mitigated or are only compliant with regulatory minimum requirements. The project does not provide further reductions required by existing local and national policy. A major adverse project will not make a meaningful contribution to the UK's trajectory towards net zero. For example, the project's GHG emissions are in line with the 'Business as Usual' thresholds set out within the RIBA 2030 Climate Challenge.
Moderate Adverse	The project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero. For example, the project's GHG emissions are in line with the '2025' targets set out within the RIBA 2030 Climate Challenge.
Minor Adverse	The project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero. For example, the project's GHG emissions are in line with the '2030' targets set out within the RIBA 2030 Climate Challenge.
Negligible	The project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions. For example, the project's GHG emissions exceed the '2030' targets set out within the RIBA 2030 Climate Challenge.

5.135 IEMA (2022) advises that 'a modification to this approach is required for the very largest-scale developments, those that in themselves have magnitudes of GHG emissions that materially affect the UK's or a devolved administration's total carbon budget. An indicative threshold of 5% of the UK or devolved administration carbon budget in the applicable time period is proposed, at which the magnitude of GHG emissions irrespective of any reductions is likely to be significant.'

5.136 Therefore, the assessment will also include a calculation of the total predicted GHG emissions in relation to the UK's Carbon Budget.

Significance:

5.137 IEMA guidance (IEMA, 2022) will be used as a basis for assessing the significance of both construction and operational impacts. In following this, the significance of the

impact this project has on climate change shall be determined by how the project's GHG emissions align with the UK's net zero carbon compatible trajectory.

5.138 The significance of an environmental impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. This will be determined using the following matrix:

Table 5.13: Climate Change Effect Significance Matrix

	Sensitivity		
Magnitude	High Sensitivity	Moderate	Low
Major	Major Adverse / Beneficial	Major – Moderate Adverse - Beneficial	Moderate – Minor Adverse – Beneficial
Moderate	Major Adverse / Beneficial	Moderate Adverse – Beneficial	Minor Adverse / Beneficial
Minor	Minor Adverse / Beneficial	Minor Adverse / Beneficial	Negligible
Negligible	Negligible	Negligible	Negligible

Limitations and Assumptions

5.139 The assessment of construction stage GHG emissions will be based on assumptions and a typical benchmark. The actual quantity of GHG emissions is likely to be different to this as will vary depending on the construction materials, construction methods etc. The assessment will be based on a 60-year life span for the proposed development.

5.140 Operational regulated GHG emissions will be calculated using an assessment based on the estimated demand figures with an analysis of typical loading profiles, normal working practices and impact of external climate conditions. Actual GHG emissions are likely to be different to the estimations provided, depending on both detailed design and operational use of the buildings. It is not possible to fully understand, at this time, how energy use and emissions will vary, but it has been assumed that energy use will remain the same, year on year, throughout the assessment period. Unregulated energy use could vary substantially when the proposed development is operational, but it is not possible to accurately predict this energy use.

Human Health

Consultation

5.141 No consultation has taken place to date.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Health data from Office for Health Improvement &	Health profiles by local authority & compared with	13 June 2024

Disparities (OHID previously Public Health England)[13]	subregional (Manchester) & national (England)	
Health data from MCC Intelligence Hub[14]	General health & IMD by Ward; reported street crime	13 June 2024
English indices of deprivation 2019[15]	Relative levels of deprivation in small areas/neighbourhoods called Lower-layer Super Output Areas LSOAs. The Index of Multiple Deprivation (IMD) is comprised of 7 domains – income, employment, health derivation & disability, Education skills & training, crime, Barriers to Housing & Services, Living environment.	13 June 2024
Data for Local Health (2021)[16]	Health data by age group by Ward	13 June 2024
Google Maps[17] for general geographical features & measurement of approximate distances	Identification of relevant services & facilities Identification of potential sensitive receptors	13 June 2024

Baseline

5.142 There is no prescribed EIA definition for human health but the identification, description, and assessment of effects on human health is well established in the UK for Strategic Environmental Assessment (SEA). Consideration of human health and wellbeing within EIA is separate from Health Impact Assessment (HIA), although each process can inform the other. It is considered that most of the factors addressed in development proposals can have impacts on health and quality of life/wellbeing – both positive and negative, and both physical and mental - through townscape, air quality, climate change resilience, flood risk/water resources, noise, provision of/accessibility to good quality housing/buildings and employment, health and community services, transport, and provision of/accessibility to open space/green infrastructure.

[13] https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/ati/302/are/E08000003
[14] https://www.manchester.gov.uk/info/200088/statistics_and_intelligence/7611/intelligence_hub
[15] https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019
[16] https://localhealth.org.uk/#bbox=377872,401662,11400,6950&c=indicator&selcodgeo=E05011361&view=map12
[17] https://www.google.co.uk/maps/place/Whitworth+St,+Manchester/

5.143 The overall approach to human health will be to consider the summary findings of each relevant technical topic and align these with their interconnectedness into the themes for healthy urban planning. The key baseline from the other technical topics will be studied where relevant, and including any specific sensitive receptors. It is not considered to be necessary to undertake primary research or surveys specific to the Human Health chapter. This is because the extent and nature of available information and the conclusions of other technical reports are sufficient to enable undertaking an appropriate and proportionate assessment of impacts on Human Health.

5.144 According to OHID local authority profiles for 2020-22, life expectancy at birth in Manchester for males was 74.8 years and compares with 77.3 for the north-west and 78.9 for England. Life expectancy at birth in Manchester for females was 79.2 years and compares with 81.3 for the north-west and 82.8 for England. The under 75 mortality rate from all causes for Manchester has a recent trend of worsening at 507.7 compared to 410.4 for the north-west and 342.3 for England.

5.145 The English Index of Multiple Deprivation (IMD) is a measure of relative deprivation for small areas or neighbourhoods (Lower-layer Super Output Areas LSOAs based on the 2011 Census) where 1 is the most deprived area and 32,844 is the least deprived. The IMD is compiled from seven domains of deprivation – income; employment; education, skills, training; health & disability; crime; barriers to housing & services; living environment. The Site is located within the Deansgate Ward where the IMD score (2019)[18] is 24.1, a low score and indicating low deprivation – and comparable to other adjacent City Centre Wards of Hulme and Piccadilly. The number of households in fuel poverty is low at 466 and again, similar to other adjacent City Centre Wards. The population of Deansgate (2022) is reported as 8,781 people.

5.146 Data for Local Health (2021)[19] reports population by % age group by Ward and compared with Manchester overall and England. Deansgate shows a low residency of young people aged 5 to 15 years at 1.8% compared to 13.7% for Manchester. Similarly, the population of older people aged 65 years and over is low at 1.9% compared to 9.3% for Manchester and 18.5% for England. The key demographic relates to the population aged 16 to 24 years with 43.8% for Deansgate Ward, compared to 17.5% for Manchester and 10.5% for England. The OHID data reports an IMD score (2019) for Deansgate at 21.8, compared to 40.0 for Manchester and 21.7 for England. Long-term health conditions and morbidity (%, 2011) are reported for Deansgate at 4.0, compared with 17.8 for Manchester and 17.6 for England. Overcrowded houses (%, 2011) are reported at 43.6 for Deansgate, compared to 16.4 for Manchester and 8.7 for England. Unemployment is low at 1.1% compared to 7.4% for Manchester and 5.0% for England.

5.147 Reported street crime (2018) for Deansgate is high at 14,172 for total number reported and second only to the highest at 16,552 for the adjacent Piccadilly Ward. Anti social behaviour is at 16.8% within the range 10.0 to 18.7 and similar to the adjacent Piccadilly Ward.

5.148 There are some 9 health centres/GPs within a 1 mile radius of the Site, and some 18 dentists. There are a number of green spaces within a 1 mile radius, including Sackville Gardens, the Vimto Park, Mayfield Park, Piccadilly Gardens, Parsonage Gardens, Hulme Park, St John's Gardens, and easy walking access to the Bridgewater Canal and a wider

[18] https://dashboards.instantatlas.com/viewer/report?appid=0d1fdf43ebbd4727ac9be5d71e77e878
[19] https://localhealth.org.uk/#c=report&chapter=c01&report=r01&selgeo1=ward_2021.E05011361

network of walking and cycling. The City Centre is a rich source of diverse services and facilities relevant for health and wellbeing, including gyms and exercise/yoga/dance studios, restaurants, bars and cafes, museums and cinemas.

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Health & wellbeing – air, noise & vibration, safety	On-site workers Nearby residents, including any particularly sensitive receptors such care homes, schools	C
Health & wellbeing – socioeconomic including housing; employment & economy; services & facilities, open/green space	Local & wider communities	C & O
Health & wellbeing – air; noise & vibration; daylight/sunlight/overshadowing; solar glare; wind microclimate	New & nearby residents & visitors	O
Health & wellbeing – townscape & visual impact	New & nearby residents & visitors	O
Health & wellbeing – crime, safety	New & nearby residents & visitors	O

Assessment Methodology for Likely Significant Effects

5.149 The following testing scenarios will need to be considered:

- Scenario 1: Existing site (existing baseline as the Site is today (May 2024);
- Scenario 2: Baseline + Proposed Development; and
- Scenario 3: Baseline + Proposed Development + cumulative

5.150 There is no standard methodology for assessing health in EIA. The complexities of investigating health impacts are recognised, for example, by Public Health England (PHE, 2017) with their Wider Determinants of Health tool that details the multiple determinants for health and the need for cross-sectoral understanding. This guidance is primarily focused on spatial plan makers and public health practitioners, but the principles and checklist can be applied to major development proposals. The recent Health Impact Assessment in Spatial Planning (PHE, 2020) similarly focuses on spatial planning and Strategic Environmental Assessment (SEA) but does include an annex on

integrating HIA in EIA and asserts the importance of a "*proportionate and justified approach*".

5.151 The EIA professional body Institute of Environmental Assessment & Management (IEMA) has prepared outline guidance for practitioners – Health in EIA, a Primer for a Proportionate Approach (2017) - it is important that health in EIA is proportionate, balanced, and relevant. This guidance notes that there is an absence of specific significance criteria or defined thresholds for determining significance for population and health in UK EIA practice. Given the multitude of factors that contribute to an individual's health outcomes, it is difficult to draw a quantified conclusion regarding the contribution of a particular development to an increase or decrease in the number of additional cases of a particular physical or mental health outcome. More recently (November 2022), IEMA has published guidance on effective scoping and assessment of human health in EIA. This includes five categories for the wider determinants of health – Health related Behaviours; Social Environment; Economic Environment; Biophysical Environment; and Institutional & Built Environment.

5.152 Themes are also identified by the Healthy Urban Development Unit HIA Tool (2017, 2019), as follows – Healthy Housing/Buildings; Active Travel; Healthy Environment; and Vibrant Neighbourhoods. This HUDU checklist aims to promote healthy urban planning by ensuring that the health and wellbeing implications of major planning applications are consistently considered, through providing a set of themes and planning issues that can be used to assess development proposals. The HUDU tool recognises eleven topics or broad determinants of health and wellbeing focused on the built environment and issues influenced by planning decisions. The HUDU tool aligns with the wider determinants of health listed in the IEMA guidance and better correlates with proposed developments in a City Centre context.

5.153 Housing/Building Design is fundamental for health and wellbeing, together with accessibility to health and social care services and other social infrastructure. Access to open space and nature; Air quality, noise and neighbourhood amenity; Accessibility and active travel; and Crime reduction and community safety are relevant to health and wellbeing associated with the Proposed Development. It is understood that socioeconomics, air quality, noise and vibration are each considered to have likely significant effects and have all been scoped into the EIA process. Townscape & Visual Impact have been considered to have likely significant effects and are scoped into the EIA process. These factors also interact and contribute to the health and wellbeing of residents and visitors.

5.154 Access to healthy food is beyond the scope of the Proposed Development, although a City Centre location indicates the potential for a variety of food resources. Access to work and training is well known to affect health and wellbeing - employment and the local economy will be considered through the socioeconomic impact assessment. Limited elements of social cohesion and inclusive design may be relevant to the Proposed Development and contribute to health-related behaviours and the social environment.

5.155 Minimising the use of resources and climate change are key factors in considering environmental sustainability, a healthy environment, and reducing risks to health and wellbeing from the predicted effects of climate change. Daylight/Sunlight & overshadowing; Wind microclimate; and Climate Change effects have been considered

and found to be likely to have significant effects and thus, these topics have been scoped into the EIA process.

5.156 The Site is located within the City Centre, close to a wide range of services and facilities, and including sustainable transport.

5.157 The IEMA Guidance on scoping for Human Health in EIA advises that "*An EIA health chapter is required when other EIA technical topics have been scoped in to assess likely significant effects on human receptors, or there is a likely significant change for the health of a group of individuals due to the proposed project and in a wider determinant of health not covered by other technical EIA topics".* Therefore, it is considered that a Human Health EIA chapter should be scoped in. This will draw together the relevant summary aspects relating to health & wellbeing from other EIA technical chapters, and present the findings clearly within a separate chapter to demonstrate that human health has been addressed. The interactions between topics and the multifunctionality of factors for health & wellbeing will be considered through the themes for healthy urban living.

5.158 The overall approach to human health will be to consider the summary findings of each relevant technical topic –socioeconomic; townscape and visual impacts; flood risk & drainage; noise and vibration; air quality; sunlight, daylight & overshadowing; wind microclimate; climate change - and align these with their interconnectedness into the themes for healthy urban planning and taking into account the relevant broad determinants of health. Different study areas will be used for the assessment of individual human health impacts, according to each relevant technical topic.

5.159 The Human Health chapter will consider Scenario 1 Baseline (existing site today), Scenario 2 Baseline + proposed Development; and Scenario 3 Baseline + Proposed Development + Cumulative.

5.160 Sensitive receptors will include:

- onsite workers during construction
- existing residents, businesses, educational facilities, healthcare facilities, and communities around the Site, as well as any other sensitive receptors identified by the technical assessments
- future users and visitors of the Site

5.161 Effects that are described as 'minor' or 'negligible' are determined to be 'Not Significant' and effects that are described as 'moderate' or 'major' are determined to be 'Significant'. This takes into account the sensitivities of receptors as high, moderate, low. The criteria and categories of significance applied in the health impact assessment are, as follows:

- Major Adverse/Beneficial – important considerations at local or district scale; if adverse, are potential concerns to the project and may become key factors in the decision-making process
- Moderate Adverse/Beneficial – modest important local effects that, if adverse, are not likely to be key issues for decision-making

- Minor Adverse/Beneficial – Slight, short, or highly localised effects that, if adverse, are unlikely to be important in the decision-making process
- Negligible – no appreciable effects on health factors

5.162 Each technical impact assessment is subject to its own standards, regulations, and methods of assessment. Standardised sectoral thresholds and significance criteria will be used for each of the relevant technical factors that contribute to health and wellbeing. The overall likely significant effects on health will then be determined in a qualitative way using professional judgment. The key impacts for health will be considered and inter-relationships will be integrated within the themes identified for healthy urban living, such that any significant impacts for human health are clearly presented in a separate chapter.

5.163 The GM JDP (adopted March 2024) includes Policy JP-P6 Health. *New development is required, as far as practicable, to Maximise its positive contribution to health and wellbeing, whilst avoiding any potential negative impacts; Support healthy lifestyles…; and Be supported by a Health Impact Assessment for all developments which require to be screened for an Environmental Impact Assessment.*

5.164 It is considered that the method proposed for the Human Health chapter constitutes an established approach to HIA applicable to new development in an urban context – and thus, satisfies the requirements of the Policy JP-J6 Health for an HIA.

Limitations and Assumptions

5.165 The Health Chapter will consider the findings relevant to human health of each technical impact assessment scoped into the Environmental Statement and, as such, any key assumptions or limitations associated with each technical impact assessment are addressed within the individual chapters. The overall approach for collating, assessing, and reporting impacts on human health and wellbeing is considered to be appropriate and proportionate such that there are no limitations. The assessment will be desk-based and with professional judgment using published information.

Socio-Economic

Consultation

5.166 No consultation has taken place to date.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Socio-economic Baseline Analysis	Desk-based research drawing on local authority and local scale datasets published primarily by the Office for National Statistics ('ONS') including the Census (2021 and 2011), Annual Population Survey ('APS'), Claimant Count	26 June 2024

	and Business Register and Employment Survey ('BRES').	

Baseline

5.167 In the ONS 2021 Census estimates, Manchester City Centre (comprising the Deansgate and Piccadilly wards) had an estimated population of 25,354[20]. The local demographic for the same year is characterised by a high proportion of working age (16-64) residents (95%), which is substantially higher than the rates in Manchester (70%), the North West (62%), and England (63%)[21].

5.168 In 2022, there was a total of 184,825 jobs in the local area, which accounted for almost half (44%) of the total employment of Manchester. Within the local area, the composition of the employment structure is weighted heavily towards office-based, professional service economy sectors. A quarter (24%) of total employment is within the 'Professional, scientific and technical' sector (compared with 9.5% across England), with a further 17% accounted for by 'Business administration & support services', 8% in the 'Information & communication' sector, and 9% in the 'Financial & insurance' industry. These professional services account for approximately 58% of all employment in the local area, which is more than double the proportion in the North West (23%) and England (27%). As a subsequent result of this concentration of office-based activities, 'Retail' (6%) and 'Accommodation & food services' (11%) also provide significant employment[22].

5.169 In 2022, the construction sector provided an economic output (Gross Added Value) of over £4 billion in Greater Manchester[23]. This equates to an average GVA contribution per full time equivalent (FTE) construction job of approximately £92,000 per annum, which exceeds the all-sector average for Greater Manchester by around £17,000 per FTE job. The average economic output per FTE in the 'Information and Communications' and 'Financial and Insurance Activities' sectors in Greater Manchester is very strong (£94,167 and £154,697 respectively), however the 'Professional, Scientific and Technical' sector currently sits beneath behind the all-sector average.

5.170 The local area benefits from a low rate of unemployment (3%), which is lower than the wider rates in Manchester (4%) and Greater Manchester (3.2%) but is higher than the regional and national rates at (2.8%) and (2.9%) respectively[24]. The claimant count in the impact area as at June 2024 was 1.2%, which is significantly lower than that of Manchester (6.2%), Greater Manchester (4.7%), the North West (4.1%), and England (3.7%). This is complemented by a high proportion of residents in employment (72%), particularly within professional, managerial and technical roles (SOCs 1-3). The proportion of people qualified to NVQ 4+ level (62%) is higher than that in any comparable area and the proportion of those without any formal qualifications (4.2%) is also lower than in Manchester, Greater Manchester, the North West, and England[25].

[20] Manchester City Council (2024), Census 2021 Microsoft Power BI
[21] Nomis (2021), Annual Population Survey
[22] Nomis (2021), Business Register and Employment Survey
[23] ONS (2022), Regional gross value added (balanced) by industry: all ITL regions - Office for National Statistics
[24] Nomis (2021), Census 2021, Unemployment
[25] Nomis (2021), Census 2021, Qualifications

5.171 The local area is served by 5 local authority run primary schools within a 1 mile radius of the Site and 9 secondary schools within 2 miles of the Site[26]. The demand for secondary school places within the Manchester Local Authority area is significantly high. Just 5 out of a total 32 secondary schools have unfilled places for September 2024, meaning approximately 84% of year 7 places were made for the upcoming academic year[27]. The latest data shows that a quarter (24.7%) of all mainstream state schools in Manchester are at or in excess of capacity[28]. Whilst the additional population growth arising proposed development may to some increased demand for school places, this effect is likely to be suppressed due to the high proportion of working age residents in the City Centre area.

5.172 The Site is within 1 mile walking distance of 6 GP practices, all of which are accepting new patients at June 2024. The nearest GP surgery is The Arch Medical Practice, which is 0.4 miles away[29]. There are also 9 dentists within 1 mile of the Site, with the nearest, 207 Dental Care, being just 0.3 miles walking distance from the Site[30].

5.173 The Site is located within a 20 minute walk of Sugden Sports Centre, and also benefits from close proximity to other recreational areas such as St. John's Gardens and Castlefield Urban Heritage Park and recently regenerated Castlefield Viaduct. The central location also provides easy access to a plethora of leisure sites, including the Great Northern complex, an Odeon cinema, Manchester Opera House, and the HOME entertainment complex. The rest of the City Centre can be reached by foot and the nearby Deansgate Metrolink station offers easy access to the wider city. Manchester Oxford Road railway station can be accessed in under a 15 minute walk, providing train services beyond Manchester.

5.174 Revenue from council tax and business rates support the majority of Manchester City Council's budget for council services across 2023/24, accounting for 81% (£600m) of total budgeted spend. This contributes to the provision of essential local services such as the emergency services, waste collection, local libraries, and public transport[31].

Identification of Effect/s which are Not Significant

Effect	Crime Reduction and Community Safety	**Applicable Development Phase (C / O)**	[C / O]	**Receptor**	Resident Population
Discussion of Effect					
Potential for increased crime during the construction phase. The proposed uses have the potential to lead to reduction in crime and fear of crime through 'Secured by Design' compliance which promotes and incorporates good design quality, layout and lighting.					
Mitigation Committed to in order to Avoid or Reduce Effect					

[26] GOV.uk (2024), Get Information about Schools - GOV.UK (get-information-schools.service.gov.uk)
[27] Manchester City Council (2024), The demand for secondary school places | The demand for secondary school places | Manchester City Council
[28] GOV.uk (2024), School capacity, Academic year 2022/23 - Explore education statistics - GOV.UK (explore-education-statistics.service.gov.uk)
[29] NHS (2024), Find a GP - NHS (www.nhs.uk)
[30] NHS (2024), Find a dentist - NHS (www.nhs.uk)
[31] Manchester City Council (2024), Budget for council services 2023/24 | Budget for Council services 2023/24 | Manchester City Council

To minimise the potential for crime and to maximise community safety it is important for sites to be appropriately secured during the construction phase. In this respect it would be expected that site security conforms to the Construction (Design and Management) Regulations 2015 during the construction phase. Once operational developments should 'design out' the potential for crime and anti-social behaviour, with a benefit to the resident population. The Proposed Development will be designed to reflect 'Secured by Design' principles to include appropriate lighting, secure building entry systems and layouts to minimise crime or fear of crime and promote increased community safety.
Concluding Statement
Whilst beneficial, the effects are not expected to be significant in EIA terms and are recommended to be scoped out of the EIA.

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Construction Phase (Temporary) Employment uplift (Scenario 2 + 3)	Local labour force	C
Net change in direct Operational Employment (Scenario 2 + 3)	Local labour force	O
Uplift in GVA (Productivity) (Scenario 2 + 3)	Local economy	O
Uplift in household Expenditure (Scenario 2 + 3)	Local economy	O
Council Tax and Business Rates (Scenario 2 + 3)	Public Services Budget	O
Additional demand for Healthcare Facilities (GP services and dentists) as a result of the uplift in population (Scenario 2 + 3)	Primary Healthcare Facilities	O

Additional demand for Education Places (Scenario 2 + 3)	Education Facilities	O
Additional demand for Access to Open Space, Recreation and Children's Play Space (Scenario 2 + 3)	Users of Open Space and Children's Play Spaces	O

Assessment Methodology for Likely Significant Effects

Assessment Scenarios

5.175 The relevant scenarios to be assessed are as follows:

- Scenario 1: Existing Baseline (Site)
- Scenario 2: Baseline + Proposed Development
- Scenario 3: Baseline + Proposed Development + Cumulative

Defining the Study Area

5.176 There is no national guidance or policy that prescribes the definition of an appropriate study area in respect of socio-economics. The determination of study areas should be linked to the relevant receptors with this informed by reference to the extent of socio-economic effects across an appropriate range of spatial geographical scales.

5.177 The study area comprises the following:

- The Proposed Development's local impact area, which represents the Site's immediate local catchment, and is defined as the Deansgate electoral ward in which the Site is located and the neighbouring Piccadilly ward, which in combination represent Manchester City Centre.

- A wider impact area comprises the administrative area of Manchester City Council, against which all effects are assessed, and the Greater Manchester Combined Authority area (comprising the 10 districts within Greater Manchester).

5.178 For some receptors, a smaller study area may be required; for instance, with respect to the demand for social and community infrastructure within close proximity to the Proposed Development (i.e. within a certain distance radius from the Site).

Baseline Surveys

5.179 The baseline has been derived via desk-based research drawing on the most recent local authority and local scale datasets published primarily by the Office for National Statistics ('ONS') including the Census (2021 and 2011), Annual Population Survey ('APS'), Claimant Count and Business Register and Employment Survey ('BRES'), Department for Education School Census.

Impact Assessment Methodology

5.180 The assessment of the likely effects of the Proposed Development on the Study Area will have regard to relevant methodological guides including the following:

- Homes and Communities Agency (HCA) (2014) Additionality Guide (4th Edition)
- HCA (2015) Employment Density Guide (3rd Edition)

5.181 Analysis will be quantitatively driven where possible and will have regard to the latest statistical datasets published by relevant bodies, where relevant to the assessment of socio-economic effects.

5.182 An assessment of construction phase employment will draw upon the above guidance documents and will utilise construction expenditure forecasts and annual turnover per construction industry employee data to calculate the average estimated number of jobs supported throughout the construction phase.

5.183 An assessment of operational phase employment will utilise the HCA's Employment Density Guide to estimate the number of jobs supported on site and off-site. The estimated GVA uplift will utilise the output of this calculation in conjunction with the ONS Business Register and Employment Survey ('BRES').

5.184 Household expenditure will draw on the above estimate, the Family Expenditure Survey published by ONS, and a calculation of the new resident population on the Site residing within the Proposed Development derived from analysis of the volume of residential dwellings, accommodation mix, and average household size and age structure / employment status.

5.185 The effect on the public services budget arising from Council Tax uplift will draw upon the calculation of the increased resident population arising from the Proposed Development. The scale and intended use(s) of commercial floorspace within the Proposed Development will be utilised to estimate the effect on the public services budget arising from increased Business Rates.

5.186 Drawing on the estimated increased resident population, the effect of the proposed development on demand for healthcare facilities, education places, and access to open space and children's play space will be undertaken.

5.187 This methodology will be applied consistently when assessing effects under all scenarios including when addressing cumulative effects reflecting committed developments within a 500m radius of the site.

Significance Criteria

5.188 In the absence of industry guidance on assessment of the significance of socio-economic effects, receptor sensitivity is therefore addressed on an individual basis based on professional judgement, reflecting the principles set out the "Methodology for Determining Sensitivity" Table provided in Table 3.4.

5.189 The magnitude of socio-economic effects will be determined in accordance with the approach presented in the "Methodology for Determining Impact Magnitude" Table provided in Table 3.3. This will also take into account the estimated likely duration of the change from baseline conditions, with this ranging from temporary short-term effects to longer term or permanent effects.

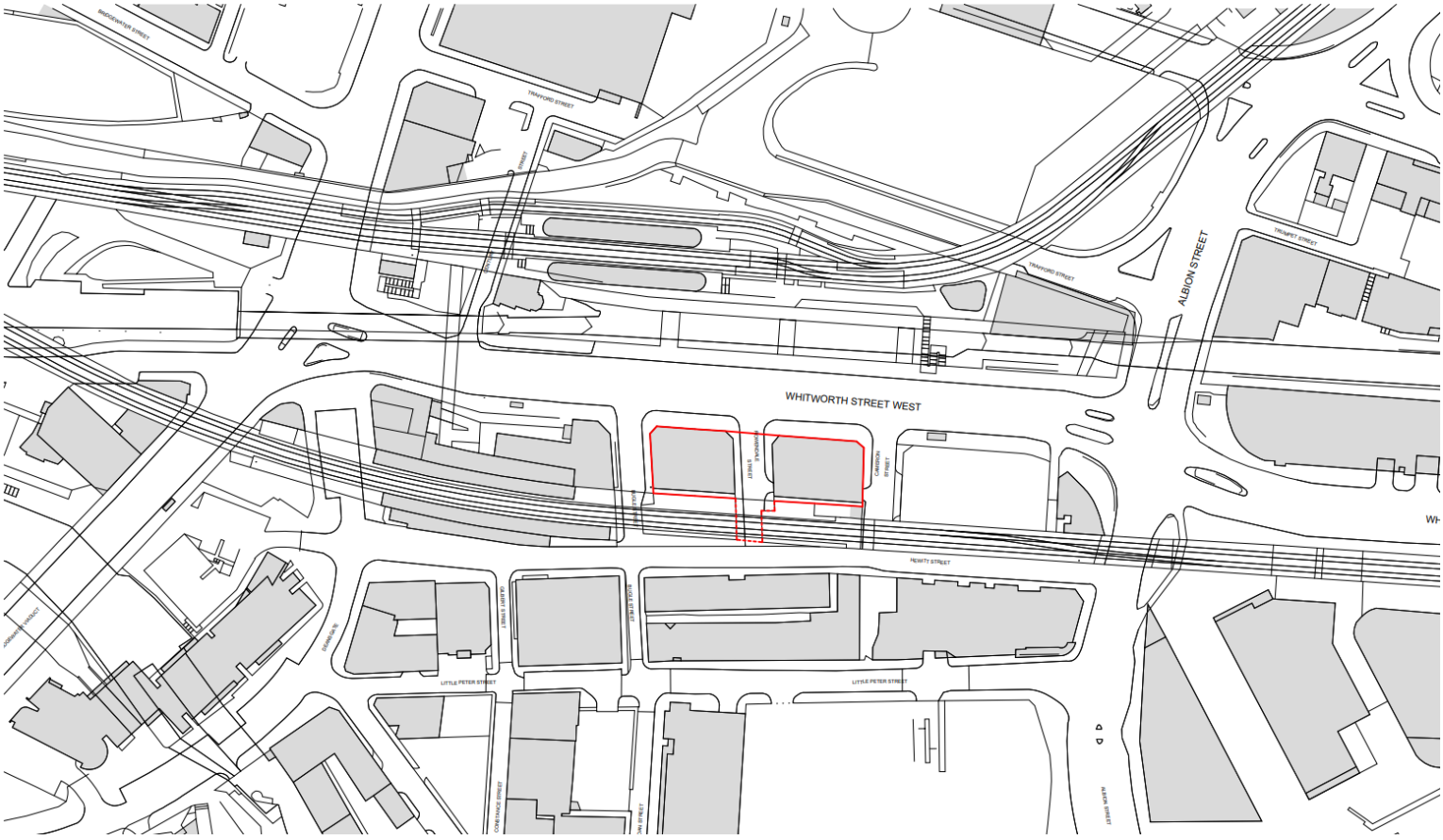
5.190 The level, or significance, of effect will be informed by the interface between both the sensitivity of the relevant receptor and the magnitude of change, with changes being beneficial, adverse or neutral and will be informed by professional judgement and experience. The framework for assessment of significance is set out in the Impact Significance Matrix within Table 3.5.

Limitations and Assumptions

5.191 In preparing the baseline analysis CBRE has obtained and utilised the most up-to-date available secondary data published by official third-party sources. The data sources have methodological limitations, there are limitations to the spatial area across which data is aggregated and reported, a time-lag in reporting dates, and the data will only report a socio-economic context at a specific point in time.

5.192 To mitigate, as far as possible, CBRE has clearly referenced the date of data publication and has utilised spatial datasets that permit analysis to be aggregated or disaggregated as closely as possible to the relevant technical study area.

Appendix 1: Site Location Plan



Appendix 2: Committed Developments

	Site/Location	Planning Permission Ref:	Description of Development	Status
Existing Baseline				
1.	70 Great Bridgewater Street (Havelock)	129081/FO/2021	Partial demolition and reconfiguration of 70 Great Bridgewater Street to create a new office building (Use Class E), including the replacement of building facades, a 2-storey rooftop extension and alterations to the internal layout including the infilling of the central atrium, servicing and cycle parking, access and associated works.	Approved 23 April 2021 Construction commenced May 2022
2.	Square Gardens	125573/FO/2019 138831/FO/2023	Construction of four buildings of heights varying from 10 storeys to 45 storeys together comprising Co-living bedspaces (use class sui generis) and associated amenity facilities, with ground floor commercial units (Use classes A3 (Café / Restaurant and D2 (Gym)), private amenity space and public realm comprising hard and soft landscaping, car parking and cycle facilities and other associated works.	Approved 9 March 2021 Construction commenced March 2022 Drop-in Planning Application Submitted: 18 December 2023. To be monitored as awaiting approval.
3.	Plot 9a First Street	132600/FO/2021	Erection of a nine-storey building with rooftop plant and basement comprising office accommodation (Use Class E(c)) with ancillary facilities for occupiers including	Approved 14 April 2022 Construction commenced October 2022

	Site/Location	Planning Permission Ref:	Description of Development	Status
			roof top terrace, winter gardens, gym/ yoga studio, basement car parking (26 spaces) and cycle parking (130 spaces) landscaping and other associated works.	
4.	St.Michaels	114664/FO/2016 137873/JO/2023 (Amendment App)	Partial demolition of existing buildings. Development up to 171.6m AOD comprising residential (Use Class C3), offices (Use Class B1), hotels (Use Class C1), place of worship (Use Class D1) and leisure/food and drink uses (Classes A1, A3, A4, A5 and D2). Creation of public spaces and new public realm, provision of basement car parking, highway alterations, landscaping and associated works. Variation of planning conditions 2 and 7 attached to planning permission 135827/JO/2022 to allow increase in height of building by two floors to facilitate the increase in the number of residential apartments from 213 to 229, reconfiguration of level 6 hotel, amendment to basement cycle store and other associated elevational alterations	Approved 20 June 2018 Construction commenced July 2022
5.	StayCity Deansgate	125804/FO/2019	Demolition of existing buildings and structures on-site and erection of 22-storey building comprising apart-hotel (Use Class C1) with flexible commercial uses at ground floor and within existing viaduct arches	Approved 26 June 2020 Construction Commenced August 2023

	Site/Location	Planning Permission Ref:	Description of Development	Status
			(Use Class A1, A2, A3, A4, D2), access, landscaping and other associated works	
6.	Plot 10b First Street	136170/FO/2023	Land Bounded By River Street To The North, River Street And Vacant Lane To The East, Hulme Street To The South And Plot 10A Of The First Street Masterplan To The West Manchester	Approved 1 June 2023 Construction commenced August 2023
7.	Deansgate South	129406/FO/2021	Full planning permission for a 28-storey purpose built student accommodation building (Sui Generis)	Approved 18 May 2022 Groundworks Commenced September 2023 Construction Started February 2024
8.	Barclay House	118033/P3OPA/2017&128804/FO/2020	Erection of a two-storey rooftop extension to form 9 duplex apartments and the conversion of the existing redundant internal car park to create a further 4 duplex apartments at Barclay House, Whitworth Street West, Manchester	Approved 8 October 2021 Under Construction.
9.	Contour	132199/FO/2021	Full planning permission for the demolition of existing structures and the erection of two 51-storey residential buildings (Use Class C3) across two phases, including residential amenity facilities, basement car parking, landscaping and public realm, servicing and access arrangements, highways alterations, and associated works.	Approved 1 July 2022 Started construction September 2021 (Tower 1) Started Construction February 2024 (Tower 2)
10.	Viadux Phase 1	133998/JO/2022	Erection of a 40 storey building to form 375 residential apartments (Use Class C3a) and	Approved 6 April 2017

	Site/Location	Planning Permission Ref:	Description of Development	Status
			the erection of a 14 storey building for form offices (Use Class B1) (31,756 sqm) together with ground floor commercial space (Use Class A1, A3 or A4) (1010 sqm) with associated enclosed service yard, public realm including staircase and lift to connect with viaduct, car and le parking, landscaping and other associated works	Construction Commenced October 2020 Phase 1 residential development approaching completion. Phase 1 Office Development Implemented.
Committed Development				
11.	Vision Tower	111003/FO/2016/C1	Demolition of existing building at 10 - 12 Whitworth Street West, and redevelopment of the site for a new 35 storey residential building (Use Class C3) comprising 327 apartments, with associated residents' services, facilities and communal spaces: servicing, highways, public realm and associated works.	Approved 11 April 2016. Construction Commenced February 2024, but time limiting condition means consent expires 31 October 2024 if no contract agreed. Note: Developer has now gone into administration so likelihood and timescales for delivery unknown.
12.	Bridgewater House Great Jackson Street	134694/FO/2022	Restoration and conversion of the Grade II listed Bridgewater House and redevelopment of car park area to create a ground plus three storey apartment building; overall providing 53 residential units, including landscaping to courtyard, bike storage and associated works	Approved 6 February 2023 Permission expires 6 February 2026
13.	1 City Road	128002/FO/2020	Full Planning Application for demolition of existing structures on site, erection of one 11-storey plus basement office building	Approved 26 January 2021

	Site/Location	Planning Permission Ref:	Description of Development	Status
			(Use Class E) and one 14-storey plus basement office building with ground floor commercial unit (Use Class E), landscaping, highways works, and associated works	Demolition took place in January 2024, implementing the consent; however, no evidence of further works taking place on-site as yet.
14.	Land Bounded By Deansgate, Great Bridgewater Street, Watson Street & Peter Street	135565/FO/2022	Demolition of the central atrium, car park ramps, and other elements, retention of casino (Sui Generis), bowling alley and existing food and drink unit (Use Class E) alongside to allow refurbishment, restoration and re-use of the Great Northern Car Park to provide office accommodation, retail and/or food and drink uses (Use Class E) and ancillary areas; and Refurbishment, restoration, partial demolition and erection of a 3-storey extension to Deansgate Terrace (northern section) and Goods Yard Entrance to form office, retail and / or food and drink use (Use Class E) and drinking establishments / hot food takeaway (Sui Generis), with associated public realm works comprising the reconfiguration of Great Northern Square and the introduction of additional public realm with associated hard and soft landscaping, highways works, access and servicing facilities, rooftop plant and other associated works; and	Approved subject to S106 agreement in February 2023, Decision Notice not yet issued but Draft S106 uploaded to portal in Feb 2024.

	Site/Location	Planning Permission Ref:	Description of Development	Status
			Partial demolition of the existing leisure box to erect three residential buildings (ground plus 16, 27 and 34 storeys) to provide 746 residential apartments (Use Class C3), reconfiguration of existing car parking together with the creation of office, retail and / or food and drink use (Use Class E), or Sui Generis (drinking establishments / hot food takeaway) at ground floor and level 3, hard and soft landscaping, together with highways works, access and servicing facilities, rooftop plant and other associated works; and, External alterations and restoration of Deansgate Terrace (southern section) to provide office, retail or food and drink use (Use Class E) or Sui Generis (drinking establishments / hot food takeaway / live music venue), along with delivery of associated public realm, highways works, plant, and associated works	
15.	Land Bounded By Trumpet Street, Albion Street & Great Bridgewater Street	133172/FO/2022 & 133176/FO/2022	Erection of a 26 storey residential tower for 72 apartments (Use Class C3) with associated car parking, cycle parking, servicing, and associated landscaping works. Erection of a 7-storey building with commercial floorspace (Use Class E/Sui Generis) to first and second floors and	Validated 9 March 2022 Note: Application to be determined imminently. Deloitte to liaise with MCC on the approach to be taken and to revert back to the team

	Site/Location	Planning Permission Ref:	Description of Development	Status
			residential use to floors three to six containing 4 no. apartments (Use Class C3) with associated parking and servicing	
16.	One Medlock Street	135419/FO/2022 CDN/24/0491	Demolition of the existing hotel building and structures and redevelopment of the site to comprise two separate buildings: one 13 storey office building with commercial unit (Use Class E) at ground floor; a part 11, part 38 storey building comprising 1,014 purpose built student accommodation units (sui generis) with ground floor office/community uses (Use Class E, F1 or F2); and associated ancillary internal and external amenity space, hard and soft landscaping and associated highway works.	Planning Application Approved 1 June 2023 Construction contract submitted to LPA to address condition requirements. Awaiting determination.
17.	First Street Plot 10a	136043/FO/2023	Erection of 13-storey office building (Use Class E) with associated public realm, external roof terraces (floors 11 and 12) and other associated works including external amenity spaces (Plot 10A)	Planning Application Approved 12 May 2023. Expires 12 May 2026
18.	The Green	137226/FO/2023	Full planning permission for the demolition of existing structures and the phased construction of four residential buildings (two at 47 storeys and two at 51 storeys) to provide 1,746 homes (Use Class C3), flexible commercial, leisure, food and drink uses (all Use Class E) and / or drinking establishment	Validated on 26 June 2023 Note: Application to be determined imminently. Deloitte to liaise with MCC on the approach to be taken and to revert back to the team

	Site/Location	Planning Permission Ref:	Description of Development	Status
			(Sui Generis), basement car parking, cycle parking, landscaping and public realm, servicing and access arrangements, highways alterations and associated works.	
19.	The Lighthouse	137227/FO/2023	Full planning permission for the demolition of existing structures and the erection of one residential building to a height of 71 storeys comprising 642 homes (Use Class C3) with food and drink uses (Use Class E) and / or drinking establishment (Sui Generis); and one office building (Use Class E); with basement car parking, cycle parking, landscaping and public realm, servicing and access arrangements, highways alterations and associated works.	Validated on 26 June 2023 Note: Application to be determined imminently. Deloitte to liaise with MCC on whether to include and revert back to the team.
20.	Viadux Phase 2	139715/FO/2024	Phased construction of 3 buildings to include: Plot 2a: residential building (Use Class C3a) with flexible commercial units (Use Class E) and basement, Plot 2b: residential building (Use Class C3a) with flexible commercial units (Use Class E); and Plot 2c: commercial building (Use Class E) (Plot 2c), landscaping and public realm, servicing and access arrangements, with associated highways alterations, and other associated works	Validated on 19 April 2024 . Note: Application to be determined prior to this development coming forward. Deloitte to liaise with MCC on the approach to be taken and to revert back to the team.

	Site/Location	Planning Permission Ref:	Description of Development	Status
21.	Hotspur House	138805/FO/2023	Partial demolition of the former Hotspur Press Complex (Medlock Mill) and redevelopment of the site to provide Purpose Built Student Accommodation (Sui Generis Use Class) above ground floor commercial or community uses (Use Classes F(e), F2(a)(b) and E(b)),within a part 4/5-storey and part 37-storey building plus roof parapet level above basement level, associated ancillary internal and external amenity space, public realm (including a new public square), hard and soft landscaping and associated highway works.	Approved at Committee on 30 June 2024. Awaiting Decision Notice following agreement to S106.

Appendix 3: Archaeological Desk Based Assessment



SALFORD ARCHAEOLOGY
University of Salford

Glenbrook WWS Ltd

Issue: v1

SA/2024/33

18/06/24

2-4 Whitworth Street West, Manchester

Archaeological Desk-based Assessment

Built / Historic / Natural

Salford Environmental Consultancy

REGISTERED ORGANISATION CIfA

QMS ISO 14001: 2015 45001: 2018

QMS ISO 9001: 2015

Document Information	
Document Title:	Archaeological Desk-based Assessment of land at 2-4 Whitworth Street West, Manchester
Location	Centred NGR 383517 397521
Version:	Version 1
Report Number:	SA/2024/33
Client:	Glenbrook WWS Ltd
Issue Method:	By email only
Digital location	VDrive/Research/SalfordArchaeology/General/Projects

Document Revision History

Date	Author	Summary of Changes	Version	Checked
26/06/24	Katie Fletcher	Edited	1.0	KF
13/06/24	Natalie Poundall	Edited	1.0	NP
03/06/24	Katie Fletcher	Document Creation	1.0	KF

Contact

Name	Position	Email	Phone
Adam Thompson	Director	a.thompson@salford.ac.uk	0161 295 3818 07970 471181
Correspondence Address	Salford Archaeology, University of Salford, Peel Building, Salford, Greater Manchester, M5 4DW		

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1. Summary

Glenbrook WWS Ltd is devising proposals for the redevelopment of land at 2-4 Whitworth Street West, Manchester City Centre (centred on NGR 383517 397521). In order to support the planning applications for the scheme Glenbrook WWS Ltd have commissioned Salford Archaeology to carry out an archaeological desk-based assessment for the proposed development site. This was intended to establish, as far as possible, the nature and significance of the sub-surface archaeological resource in order to enable informed recommendations to be made for the designs of the proposed schemes and the future treatment of any surviving remains.

The proposed development site lies within the Castlefield Vicus, Area of Roman Manchester. Several excavations and findspots have yielded evidence of Roman activity in the vicinity of the site.

No medieval activity is known within the site, and it lies beyond Manchester's medieval core. The site was most likely agricultural land during the post-medieval period.

The River Mersey and Bridgewater Canal were utilised for industry during the 18th century. By the late 18th century, much of the site had been developed into housing to accommodate workers in the area. Housing types included small, terraces with back yard plots and cellars, and a row of single-depth dwellings. The south-east corner of the Site remained undeveloped, consisting of a small plot of allotment gardens.

All vacant plots of land had been infilled with further housing by 1824-51. This included plots of back-to-backs and single-depth dwellings. In addition, by 1848-9 the Manchester South Junction and Altrincham railway viaduct had been constructed to the south of the site by David Bellhouse. A small section of the viaduct falls within the site but will not be directly impacted by the proposals. The viaduct is a Grade II Listed Building.

The entire Site had been cleared by 1908, and by 1922 had been redeveloped into two warehouse buildings, which are currently extant within the Site.

The potential for the site to contain buried archaeological remains is considered to be high. Remains may include Roman activity, post-medieval relict soils, and various types of worker's housing dating from the 18th century to early 19th century. Any remains that do exist within the Site are likely to be of low (local) and medium (regional) significance, and without a programmed of mitigation, the scheme could damage or destroy these remains.

Following consultation with Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as archaeological advisor to Manchester City Council, it is anticipated that, in the first instance, an archaeological evaluation will subsequently be required (in the form of trial trenching or a strip, map and record) to establish the presence or absence of buried archaeological remains and, if present, their extent and significance. The exact scope and extent of any such further investigation of the Site will be determined by GMAAS.

Should significant archaeological remains be encountered during the archaeological evaluation, further excavation may be required to offset the harm of the development to the buried archaeological resource, in line with the guidance provided by the National Planning Policy Framework. The scope and extent of any such further investigation will be determined

by the Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as archaeological advisor to Manchester City Council.

2. Introduction

Glenbrook WWS Ltd have prepared a planning application for the redevelopment of land at 2-4 Whitworth Street West, Manchester City Centre. The proposed scheme will comprise of the construction of a BTR residential tower to provide a mix of one, two and three bed apartments over 44 floors. The Proposed Development comprises the demolition of 2 and 4 Whitworth Street West and development of a high-rise residential development, including ground floor amenity and back of house uses and public realm works.

2.1 Site location

The proposed development area (centred on NGR 383517 397521; herein referred to as the 'Site') is in Manchester City Centre and is bounded by Whitworth Street to the north, Cameron Street to the east, the Manchester and Ordsall Lane Junction Branch and Hewitt Street to the south, and Bugle Street to the west. The Site is currently occupied by two former warehouse buildings: 4 Whitworth Street West, also known as Whitworth House, and 2 Whitworth Street West, known as Wrendal House. These two structures are separated by Rowendale Street and represent typical examples of the warehouse/office architecture prevalent in the area during Manchester's industrial expansion and infrastructure development in the early 20th century. Both buildings predominantly feature traditional redbrick masonry, with regular window openings on the facades.



Plate 1 Extract from Google Satellite, showing the Site boundary

2.2 Topography and geology

Topographically, the Manchester conurbation as a region lies within an undulating lowland basin, which is bounded by the Pennine uplands to the east and to the north. The region as a whole comprises of the Mersey River valley, whilst the rivers Irwell, Medlock and Irk represent

the principal watercourses in Manchester. The Site lies at a height of approximately 32.3m above Ordnance Datum (aOD) and is relatively level.

The Site is located on a band of solid geology comprising the sandstone of the Chester Formation, formed between 250 and 247.1 million years ago during the Triassic Period. The solid geology of the Site is overlain by Glaciofluvial Sheet Deposits of Devensian sands and gravels, which formed between 116 and 11.8 thousand years ago during the Quaternary Period (British Geological Society, 2024).

2.3 Designations

The Site boundary overlaps with a small section of the Manchester South Junction and Altrincham Railway Line, which is a designated Grade II Listed Building (HER 11681.1.0; Table 1). The Listed Building will not be directly impacted by the proposed scheme.

Description	Designation	HER Number	Location
Manchester South Junction And Altrincham Railway Viaduct	Grade II Listed Building	11681.1.0	Centred SJ 8382 9770 (2031m by 487m)

Table 1 Listed Building partly within the Site

The Site does not contain any further heritage assets that are afforded statutory protection, such as, Scheduled Monuments, or any Registered Parks and Gardens and does not lie within a Conservation Area. The nearest Conservation Area is Castlefield, which lies *c* 105m to the north-east of the Site (see 2.3.1).

The Site is located within 100m of four statutory Listed Buildings and within 250m of 18 Listed Buildings (Table 2). The proposed development will not have a physical impact on these designated heritage assets, and so they are not considered further in this report; however, it may have an indirect impact on the setting of the designated heritage assets. A detailed consideration of the above-ground historic environment is not considered within this assessment, which is focused on below-ground heritage assets.

Description	Designation	HER Number	Location
Deansgate Station	Grade II Listed Building	15574.1.0	SJ 83430 97525
Lock-Keeper's Cottage at Lock No. 91 Next to Gaythorn Tunnel	Grade II Listed Building	8586.1.0	SJ 83430 97571
Rochdale Canal Lock No. 91 (Tunnel Lock) east end of Gaythorn Tunnel	Grade II Listed Building	12089.9.0	SJ 83450 97571

Rochdale Canal Lock No. 90, west of Albion Bridge	Grade II Listed Building	12098.8.0	SJ 83592 97557
Castlefield	Conservation Area	415.2.0	SJ 8333 9768 (centred at)

Table 2 Designated sites within 100m radius of the Site

2.3.1 Castlefield Conservation Area (DGM1554):

History

Roman soldiers, led by General Agricola, marched into the north-west of England in 79AD. For strategic reasons they selected the Castlefield location for a fort, called Mamucium, which they built on a rocky outcrop protected by the Rivers Irwell and Medlock. This is the first definite record of human settlement in Manchester.

The original timber fort was rebuilt and enlarged, and later rebuilt again, this time in stone. A village (called a 'vicus') grew up nearby to supply the needs of the soldiers, but after the Romans left (circa 410AD) it declined and was abandoned.

In later years the new village of Manchester was established a kilometre to the north-east, in what is now known as the Cathedral Conservation Area.

The site of the vicus became known as Aldport or The Old Town. A house and park in Aldport became the home of the Mosley family in 1601. Aldport Lodge, as it was known, was used by Lord Strange in 1642 as the Royalist headquarters during the Siege of Manchester. It was burned down by the victorious Parliamentarians.

The River Irwell was made navigable in the 1720s, allowing access to Liverpool via the River Mersey, and in 1734 Edward Byrom financed the first quay on the Irwell for loading and unloading goods. This led to the construction of Quay Street between Deansgate and the river. The Roman fort was more like a grass-covered mound than a ruined castle when, from 1758 to 1761, the Duke of Bridgewater employed James Brindley to construct the first canal in Britain, its purpose being to transport coal from the Duke's mines at Worsley to Manchester.

The success of this venture, which halved the price of coal, was enormous and prompted the construction of the Rochdale Canal, which although planned by Brindley was carried out by John Rennie. It was opened in 1804 and made Castlefield the hub of the canal network which subsequently developed.

A large number of warehouses were also built to supply the needs of the rapidly growing population of Manchester, the fastest growing city in the world in the 19th century. It soon became apparent that canals could not move goods quickly enough, and this led to the construction of railways, the world's first railway station being opened on Liverpool Road in 1830.

Soon devoted to goods traffic, it became the centre of a network of railway lines, several of which crossed Castlefield on viaducts. These were concentrated over the site of the Roman fort, where four viaducts converge. The castellated design of some of the supporting piers was a homage to the fort. Further viaducts were constructed, extending as far as Central Station, which opened in 1879.

The remains of the old town of Aldport, although very densely populated, were demolished at the end of the 19th century to make way for the construction of the Great Northern Warehouse, the ultimate transport interchange building.

During the 20th century, both canal and rail transport declined to the point where these facilities were used chiefly for leisure purposes. The railway complex at Liverpool Road was sold to a conservation group for £1 and became the Greater Manchester Museum of Science and Industry, the centrepiece of Britain's first Urban Heritage Park. The principle of an Urban Heritage Park was established in December 1982, along with the decision to reconstruct part of the Roman Fort on the excavated foundations.

Tourism and leisure are now growth industries which have transformed Castlefield from a neglected corner of the city, with buried remains, to a thriving major attraction with frequent popular events.

Castlefield and its buildings today

The recent revival of interest in Castlefield is having a significant impact on the refurbishment of buildings. Warehouses have been converted to flats, offices, galleries and studios. The various buildings in the Liverpool Road Station complex have undergone extensive repair and modification to house the exhibits in the Museum of Science and Industry. The buildings are exhibits in themselves and provide an ideal setting for the smaller items within.

Liverpool Road Station was a pioneering and speculative venture, as no one knew in 1830 if the railways would be a successful means of transport. The station, constructed inexpensively in the Classical style, is a very modest building when compared with the great train sheds of Piccadilly, Victoria and Central stations. The 1830s warehouse to the north of the station is a long, curved building with five bays, each with two roof ridges. It was not completed until after the opening of the station, but enough of it was built by then for it to house the lavish opening ceremony.

It then assumed its normal role as a store and interchange between rail and road transport. The different levels for servicing road and rail were crucial to its functioning. Railway waggons could be easily unloaded by being tipped into trucks on the lower level. These buildings and viaducts were the first of their type, and consequently are vital artefacts in the history of Manchester and the railways.

The Merchants and Middle warehouses also had interchange facilities. Canal arms allowed barges to enter the buildings and be off-loaded directly on to horse-drawn carts.

The Grocers Warehouse, Manchester's first (c.1775), also had water-powered lifting machinery which could hoist coal from barges to the street level high above. Unfortunately, this building was demolished in 1960. As far as is known, measured drawings were not made before this occurred, and the partial reconstruction of 1986 was very basic.

Trains were operated at high level, to prevent them from obstructing road and canal traffic, and this involved the construction of bridges and viaducts. The first of the railway viaducts was built across the River Irwell in 1830 by George Stephenson, the locomotive designer.

Acres Fair, which had been held in St. Ann's Square (and later at Shudehill) annually since 1222, moved to Castlefield in 1872 and remained there for four years. When it was abolished, the attendant market traders remained. The site they originally occupied was known as Lower

Campfield Market, from which, in 1878, they expanded into the Higher Campfield Market. Both areas were covered over by large, glazed buildings with cast-iron frames.

The larger of the two, Lower Campfield, was used as the City Exhibition Hall for many years and is now the Air and Space Gallery. St. Matthew's Church, designed in 1825 by Sir Charles Barry, the most eminent British architect of the time, was built on Liverpool Road between what later became Higher and Lower Campfield Markets. It was demolished in 1951, but its Sunday School, now called Gunn House, still exists and has been converted to offices.

The most significant church still standing in Castlefield is the Church of St. George on Chester Road. It has been vacant for many years but current negotiations for commercial re-use will ensure the future of the building. It was designed by Francis Goodwin in the Neo-Gothic Perpendicular style and was built between 1826 and 1828.

Castlefield is still developing, and older buildings - particularly warehouses - are being adapted to other uses. New buildings include a stadium with a tensile skin roof for viewing spectacular events. A curvilinear footbridge across the Bridgewater Canal, the walkway suspended from an angled and counterbalancing arch, is an adventurous structure.

Townscape

The Castlefield area has evolved bit by bit over a very long period of time. Innovations have proliferated here and artefacts have been constructed where they were needed. The Romans built their fort on elevated ground, partly protected by the rivers Irwell and Medlock. Canals were dug where natural water courses could be diverted to maintain water levels. Canal basins and wharves were so numerous by the time the railways were built that the only practical means of introducing railway transport was by building viaducts. The result is a multi-level environment which is unique in the world.

By 1850 there were distinct zones devoted to housing, warehouses and transport. Liverpool Road was an important highway, sloping gently down to the River Irwell, whilst the area occupied by the Roman road, connecting the fort with the north, had been re-developed for other uses. Deansgate now occupies the site of this road. At the east end of Liverpool Road the small-scale buildings on the south side are the residue of housing, most buildings having now been converted to commercial uses. Late 18th and 19th century housing to the north of Tonman Street has been replaced by modern housing.

Although the variety of building materials used in Castlefield is very wide, it tends to be more rugged and industrial in character than in other parts of the city centre. Stone, brick and slate are used extensively, but the most impressive building components are the massive cast-iron columns supporting the railway viaducts and, of course, the viaducts themselves, which are constructed of iron lattice beams. When the quays and canal branches were used for loading, unloading and transporting goods, they needed to be durable and resistant to the heavy pounding of horses' hooves and the iron rims of wagon wheels. Granite setts were therefore used as they were the most durable material available. After many years of use, the top surfaces became smooth and rounded.

3. Method statement

3.1 Introduction

The assessment considers the potential impact of the proposed development upon any buried archaeological remains within the Site, and comprises a desk-based study. The production of the assessment followed the Chartered Institute for Archaeologists (CIfA) standard and guidance for undertaking archaeological desk-based assessments (*Standard and Guidance for Historic Environment Desk-based Assessment*, 2017).

3.2 Research sources

The desk-based assessment made use of the following sources:

- Published and unpublished cartographic, documentary and photographic sources;
- The Greater Manchester Historic Environment Record, maintained by the Greater Manchester Archaeological Advisory Service;
- Manchester Local Archives and the Greater Manchester Record Office in Manchester Central Library;
- The National Heritage List for England;
- Salford Archaeology's extensive library of archaeological work carried out in the vicinity of the Site.

The aim of the research was to provide the relevant historical and archaeological background relating to the development of the Site. The available sequence of historical mapping was the principal source of information, as this provides evidence for the development of the Site since the late eighteenth century.

3.3 Site Inspection

The aim of the site inspection was to relate the findings of the desk-based study to the existing land use of the application area, in order to identify any evidence for surviving below-ground remains.

3.4 The document

The following presents the historical and archaeological evidence for the Site. Chapter 5 discusses the previous archaeological investigations that have taken place within the Site. A gazetteer (Chapter 6) is presented of heritage assets and sites of potential archaeological interest identified within the Site and this information, along with a map regression (Figs 3-10), is used to assess the significance of the remains (Chapter 7) and impact of the proposed development (Chapter 8). A mitigation strategy is outlined in Chapter 9, based on the assessment presented in the previous chapters.

3.5 Significance assessment methodology

An accepted methodology for assessing archaeological significance is the Secretary of State's criteria for the scheduling of ancient monuments, outlined in Annex 1 of 'Scheduled Monuments: identifying, protecting, conserving and investigating nationally important

archaeological sites under the Ancient Monuments and Archaeological Areas Act 1979' (DCMS, 2013). These criteria have all been utilised in this assessment and are listed below:

- Archaeological interest
- Historical interest
- Period
- Rarity
- Documentation
- Group value
- Survival/condition
- Fragility/vulnerability
- Diversity
- Potential

The significance assessment also uses the approach to assessing heritage value contained within '*Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*' issued by the International Council on Monuments and Sites (ICOMOS) in January 2011 (ICOMOS, 2011). This document states that an archaeological asset's significance can be assessed as very high, high, medium, low, negligible or unknown.

3.6 Impact assessment methodology

The impact assessment assesses the potential impact of the proposed development upon the significance of the archaeological resource within the Site. Mitigation is then recommended to reduce the level of impact on the significance of the identified assets.

4. Planning and legislative background

This assessment accords with National, Regional and Local Planning Policies which relate to the historic environment. National planning policies relevant to heritage asset management are contained within the National Planning Policy Framework (NPPF 2023).

4.1 National Planning Policy Framework (NPPF)

The significance of the archaeological resource identified within this report has been assessed as recommended in the revised *National Planning Policy Framework* (Department of Levelling Up, Housing and Communities, Dec 2023). The NPPF sets out the Government's planning policies and outlines the presumption in favour of sustainable development, which is defined by three principles: economic, social and environmental. Of the core planning principles underpinning decision making, conserving heritage assets 'in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations' is one. Section 16 deals specifically with this historic environment (paragraphs 195-214), and states that local planning authorities should consider:

- the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;
- the desirability of new development making a positive contribution to local character and distinctiveness; and
- opportunities to draw on the contribution made by the historic environment to the character of a place.

Paragraph 200 states that "local planning authorities, when determining applications, should require the applicant to describe the significance of any affected heritage assets, including any contribution made by their setting. 'The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation".

Paragraph 209 states that the effect of a proposal on non-designated heritage assets (designated assets are covered in paragraphs 200-204) should be taken into account in determining a planning application.

Paragraph 211 states that local planning authorities should require developers to record and advance understanding of any heritage assets to be lost, in a manner appropriate to their importance and impact, and to make this evidence publicly accessible.

4.2 Local Development Framework

The NPPF outlines the need for local planning policies to create local plans and frameworks to implement the NPPF at a local level. Manchester City Council adopted a Core Strategy in 2012, which is scheduled until 2027 (Manchester City Council, 2012) . The heritage strategy is outlined in *Objective 6: Environment* and summarises the approach the local authority will take in determining planning applications which may affect the historic environment (Manchester City Council, 2012, p. 164).

Policy EN3 states:

'Throughout the City, the Council will encourage development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods, including those of the City Centre.

New developments must be designed so as to support the Council in preserving or, where possible, enhancing the historic environment, the character, setting and accessibility of areas and buildings of acknowledged importance, including scheduled ancient monuments, listed buildings, registered parks and gardens, conservation areas and archaeological remains. Proposals which enable the re-use of heritage assets will be encouraged where they are considered consistent with the significance of the heritage asset.'

4.3 Places for Everyone

Places for Everyone (PfE) has been adopted and the Site forms part of the Development Plan. In relation to the historic environment, Policy JP-P2: Heritage: '*We will proactively manage and work with partners to positively conserve, sustain and enhance our historic environment and heritage assets and their settings. Opportunities will be pursued to aid the promotion, enjoyment, understanding and interpretation of heritage assets, as a means of maximising wider public benefits and reinforcing Greater Manchester's distinct character, identity and sense of place. Local Plans will set out the key elements which contribute to the district's identity, character and distinctiveness and which should be the priority for conserving and enhancing in the future and demonstrate a clear understanding of the historic environment and the heritage values of sites, buildings or areas and their relationship with their surroundings. This knowledge should be used to inform the positive management and integration of our heritage by:*

1. Setting out a clear vision that recognises and embeds the role of heritage in place-making;

2. Ensuring that the heritage significance of a site or area is considered in accordance with national planning policy in the planning and design process and opportunities for interpretation and local engagement are optimised;

3. Integrating the conservation and enhancement of heritage assets and their settings, with creative contextual architectural responses that contribute to their significance and sense of place;

4. Delivering positive benefits that sustain and enhance the historic environment, as well as contributing to the economic viability, accessibility and environmental quality of a place, and to social wellbeing; and

5. Exploring opportunities to reduce greenhouse gas emissions that restoration of historic buildings offer.

Particular consideration will be given to ensure that the significance of key elements of the historic environment which contribute to Greater Manchester's distinctive identity and sense of place are protected from harm. These include historic town centres, places of worship, historic transport routes including the canal network, industrial buildings and structures including textile mills, farmsteads and other sites, buildings, and areas of identified archaeological, architectural, artistic and/or historic value. Development proposals affecting designated and non-designated heritage assets and/or their settings will be considered having regard to national planning policy. Where heritage assets have been identified as being at risk, Local Plans should identify specific opportunities for them to contribute to regeneration and placemaking, and they should set out strategies for their repair and re-use. Development proposals which will help safeguard the significance of and secure a sustainable future for Greater Manchester's heritage at risk will be supported in principle, provided they are not contrary to national policy or other policies in the development plan. Proposals should be informed, as necessary, by the findings and recommendations of the appropriate heritage assessment(s) in the development plan evidence base and/or any updated heritage assessment submitted as part of the planning application process' (Greater Manchester combined authority, 2024, pp. 192-4).

In addition, Policy JP-Strat2: City Centre states: '*The new functions within the City Centre will be delivered in a way that complement, rather than displace the area's non-residential functions and will seek to protect and enhance the city centre's historic environment and assets'* (Greater Manchester combined authority, 2024, p. 49).

Manchester City Council is advised on archaeological matters by the Greater Manchester Archaeological Advisory Service (GMAAS).

5. Historical background

The following section provides a framework to the present study, working chronologically through the periods listed below (Table 3).

British archaeological periods		
Period	**Sub-period**	**Date range**
Prehistoric	Palaeolithic	Pre-10,000 BC
	Mesolithic	10,000 – 3500 BC
	Neolithic	3500 – 2300 BC
	Bronze Age	2300 BC – 700 BC
	Iron Age	700 BC – AD 43
Historic	Romano-British	AD 43 – AD 410
	Early Medieval	AD 410 – AD 1066
	Late Medieval	AD 1066 – AD 1540
	Post-medieval	AD 1540 – *c* 1750
	Industrial Period	*c* AD1750 – 1914
Modern	Modern	Post-1914

Table 3 Summary of British archaeological periods and date ranges

5.1 Prehistoric period

The current understanding of human activity in the Manchester region during the prehistoric period is poor, although it is reasonable to suggest that several areas in the city centre, such as Castlefield, the area that now contains Manchester Cathedral and Chetham's School and Ardwick, may have been conducive for late prehistoric settlement on account of the natural topography and the abundance of natural water sources (i.e. rivers) (Gregory, 2007).

Evidence of prehistoric activity in the vicinity of the Site comes from several chance finds and excavation off Liverpool Road. An archaeological excavation that was targeted on a plot of land adjacent to Liverpool Road in Castlefield yielded two Mesolithic flints, a Neolithic/Bronze Age waste flake, and a single fragment of late Bronze Age/Iron Age pottery were recovered, although none was found in securely stratified deposits (Gregory, 2007, p. 181). Excavations at Barton Street in 2006 discovered a late Neolithic/early Bronze Age flint side scraper from the construction trench of a Roman building, located *c.* 250m north-west of the Site (HER 13944.1.0). In addition, a late Neolithic to Early Bronze Age barbed arrowhead was found at Tonman Street (HER 126.1.0) in the 19th century, *c.* 260m north-west of the Site.

The nearest evidence of prehistoric activity to the Site was discovered during an open area excavation that took place in 2020 at the Viadux scheme. Finds included two potential prehistoric pits, situated approximately 115m to the north of the Site (Salford Archaeology, 2023).

5.1.1 Archaeological potential

There are no known prehistoric findspots within the Site, however, the presence of nearby prehistoric evidence may suggest that buried prehistoric remains may survive within the Site, most likely in the form of unstratified finds.

5.2 Romano-British period

Archaeological evidence for Romano-British activity in Manchester is focused on the Roman fort of Mamucium, which was established on a sandstone bluff within Castlefield (Gregory, 2007). Archaeological excavation has shown that in the late 1st century, the fort comprised a turf rampart and timber gates, covering an area of *c.* 1.2ha, and was of a size compatible with holding a 480-man infantry unit. The fort was rebuilt to similar dimensions in stone c. AD 200 (ibid).

During the 2nd century, the fort was developed in association with a substantial extramural settlement, or vicus (Grealey, 1974, p. 11). Civilians occupied the extramural settlement, attracted by the security and commercial benefits of the nearby fort. Based on archaeological excavations and the distribution of Roman finds, the limits of this civilian settlement appear to have extended south-eastwards along Chester Road, terminating somewhere in the vicinity of Great Jackson Street, northwards from the fort to approximately Quay Street, westwards along Liverpool Road for *c*. 100m from the north-west corner of the fort, eastwards across Deansgate to the area now occupied by the Beetham Tower.

The Site falls mostly within Castlefield Roman Vicus and Area of Roman Manchester (HER 415.2.0). Excavations at the site of the vicus, in 1972 and 1981, revealed that the ditch system surrounding the fort was abandoned during the Flavian period. A road and associated buildings were built in the Hadrianic period. A hostelry, of timber structure, was uncovered, its function ascertained from large quantities of glass and gaming chips. After AD 250 the vicus experienced considerable decline, paralleling the decline of the fort (HER 415.2.0).

The most recent excavations to unearth Roman remains have taken place on Great Bridgewater Street, *c* 125m north-west of the Site. In 2020, an excavated trench uncovered a Romano-British pit or linear feature, overlain by post-Roman plough soils. The post-Roman plough soil sealed the Romano-British pit, which contained four sherds of Romano-British pottery and a fragment of ceramic building material (Salford Archaeology, 2020). The *in-situ* Roman remains were excavated at a depth of *c.*1.8m below the modern ground surface. Post-medieval buried soils overlay the post-Roman relict soil. Following the evaluation, Trench 3 was extended into an open area excavation. Further archaeological features were excavated and have been interpreted as being Roman based on their stratigraphic positions, although none of the features were securely dated.

A second archaeological excavation at Great Bridgewater Street, at the Viadux scheme, also uncovered several Roman features (Salford Archaeology, 2023). The excavation exposed the remains of Roman occupation layers, a series of pits, gullies and a number of linear features that have been provisionally interpreted as part of the defensive ditch that marked the boundary of the vicus. Many of the excavated features are associated with the expansion and the decline of the civilian settlement.

The most significant evidence for Roman settlement in Castlefield has been provided by open-area excavations to the west of the Site, at 73-83 Liverpool Road, Barton Street, 340 Deansgate and the site of the Beetham Tower. Whilst most evidence from this period has been lost to 18th- and 19th-century industrial development, pockets of undeveloped land have provided important evidence for Roman activity. Successive planes of timber-framed buildings and associated occupational features, deposits and finds have been uncovered. The sequences reveal in places evidence that earlier defensive ditches were backfilled and built over in the early 2nd century with timber-framed buildings, aligned to roads and corresponding boundary ditches. These residential areas lasted in places until the 3rd century AD. Some evidence of small-scale industry in the form of hearths, metalworking and potential tanning pits occurred in discrete areas of the *vicus*, though it has been suggested this activity would be found more frequently outside the main settlement. Most activity within the *vicus* was of a domestic or commercial nature. A timber and stone building excavated at 340 Deansgate has a large ground plan, with remnants of a sandstone wall, and has been put forward as a potential high-status dwelling or commercial centre, market hall or inn (Gregory, 2007): most structural evidence has been in the form of postholes, construction trenches and beam slots of timber-framed houses.

The most relevant archaeological sequence comes from the site of Beetham Tower at the junction of Deansgate, Great Bridgewater Street and Trafford Street, *c* 120m north-west of the Site (HER 13938.1.0). An excavation was undertaken there in 2004, in advance of the 47-storey tower development. This site was formerly occupied by Great Northern Railway viaduct, and it was considered likely that the construction of this viaduct would have resulted in the destruction of buried archaeological remains. However, important archaeological remains dating from the Roman period were identified in three evaluation trenches that were placed across the site, leading to a programme of further excavation. The remains were interpreted as being associated with the civilian settlement attached to the Roman fort, situated *c.*12m to the south-west. The earliest phase of Roman activity was characterised by a group of substantial gravel pits likely to have been associated with construction of roads in the settlement, with some evidence for tree clearance, the laying out of boundary ditches, and timber-framed buildings. The area appeared to have been abandoned in *c.*120-60AD, although a subsequent phase of activity saw the most intense occupation in the Roman period with structures built on a grid-like layout fronting onto a road or street, with commercial premises, possibly roadside shops. The final phase of activity comprised a single substantial pit from which pottery dating to *c.*200-50 AD was recovered (Pre-Construct Archaeology, 2005).

Roads from the fort linked Manchester with Buxton to the south-east, Chester to the south, Wigan to the north-west, Ribchester to the north and Castleshaw and York to the north-east. The settlement was well connected in terms trade and consequently lasted until the late 3rd century AD. The nearest section of the projected route of the Roman road from Manchester to Buxton (Levenshulme section) lies *c* 15m to the north-west of the Site (HER 28.1.3), orientated east to west. In addition, the road from Manchester to Ribchester ran in a northerly direction *c.*90m west of the Site (HER 14.1.0).

In the early 20th century, a section of a Roman road was revealed to the south of the Central Railway Station, *c* 85m north-east of the Site (HER 415.6.0). The section consisted of “three

inches of stiff clay on the surface, covered by five inches of burnt brick, small stones, charcoal, fragments of pottery and nails, on which boulders were bedded, about eight inches in thickness, and eight inches of gravel, with two inches of stone and clay over it, making a total of 26 inches. The road passed within 100 yards of the Roman fort, which it entered by a short branch road, leading to the Eastgate" (HER 415.6.0). The remains could be associated with one of two Roman roads; either the Manchester to Oldham road or the Manchester to Buxton, but it is thought to most likely be the latter.

A grid-system of major and minor roads have been identified to the west of the Site. Archaeological evidence included substantial gravel roads identified during the White Lion Street and Tonman Street excavations in the 1970s (Arrowsmith, 2016, pp. 15-16). These uncovered sections of a *c.*6.5m wide road and series of smaller metalled surfaces, representing significant investment in resources and labour. The excavation conducted at Barton Street recorded properties aligned to this grid-system (*ibid*), implying yet more streets were built as the *vicus* expanded. In addition to the actual roads were a large number of pits, which have been recorded during almost all the excavations in Castlefield (Gregory, 2007). These pits have been interpreted as means of gravel extraction, sunk into deposits of glacially deposited pebbles, extracted for road building then quickly refilled. The construction of major roads, preceded of course by extractive activity to acquire building materials represents some of the earliest activity outside the confines of the military complex.

Beyond the extent to the *vicus* lay the agricultural hinterland of *Mamucium*, a network of field systems, interspersed with villas and agricultural buildings. Recent excavations at Owen Street have identified a spread of relict plough soil, containing Roman pottery and a series of ditches, the longest with a total recorded length of 36.8m was lined on one side by a row of post holes, cut into the bedrock (Salford Archaeology, 2016). It is possible this constituted a field boundary, delineating a plot of agricultural land. There has also been evidence from this part of Castlefield suggesting the road leading south from the fort to Chester was utilised for other practices.

Several features were excavated at the Owen Street site in 2016 (*c* 250m south-west of the Site), which have indicated non-agricultural activities, the most significant being a potential kiln. A 2.1m by 0.94m linear feature, later interpreted as the firing chamber was cut into natural, running northeast/south-west. This was up to 0.24m in depth and contained a number of different fills, comprising sands and clays, many of which showed signs of burning and a number of which contained charcoal. The area of natural at the south-west end of the pit was also burned. At its north-east end this pit was cut by an oval-shaped pit. Only part of this pit had survived, most of it having been truncated by 18th century activity. The fill of the pit showed signs of heating and burning and also contained a large number of red sandstone fragments. These fragments appeared to be structural, possibly the collapsed remains of kiln superstructure.

Several Roman findspots have been recorded within the immediate vicinity of the Site, the nearest of which includes pottery, iron nails, charcoal, lead, broken tiles, and fragments of glass that were found along the railway arches of the Manchester South Junction and Altrincham Railway (HER 415.4.15), *c* 30m to the south-west of the Site, in the late 19th century. A hoard of 1600 coins that were discovered in 1852 when the foundations of Knott Mill were being constructed (HER 415.4.1), *c* 45m to the south-west of the Site. The coins

ranged from Sabina (wife of Hadrian) AD 128 to 136 to Valens AD 364–378. A great deal of pottery was found by Mr Roeder at this site. The coins were mainly from the House of Constantine in the 4th century, deposited probably between AD 375 and 380. A coin was also discovered in 1788, *c* 50m west of the Site (HER 415.4.16). The neck of large amphora was found at Trafford Street in 1903, *c* 65m north-east of the Site (HER 415.4.28).

During the rebuilding of the Crown Inn, Deansgate, in 1904, pottery, charcoal, iron, a piece of oak and coins, one of them gold, were found. A Roman pit was also found, 6ft square, cut into rock, containing rubbish, three brass coins and a piece of thick gold wire (HER 415.4.0), *c* 110m north-west of the Site. A hoard of 200 coins was found adjacent to the Roman pit in 1840 (HER 415.4.23). In addition, a Roman urn and three Samian Ware dishes (HER 415.4.26) were discovered in 1903, *c* 150m east of the Site.

5.2.1 Archaeological potential

The Site lies within an area of intense Roman activity, therefore, there is potential for Roman archaeological remains to survive *in-situ* within the Site.

5.3 Medieval period

There is very little archaeological evidence in the region as a whole that represents the period between the end of the Roman occupation and the Norman Conquest of 1066. The area around Manchester came under the control of several kingdoms during this period. In AD 620, Edwin occupied Manchester, and it may have been at this time that settlement in the town was established around the cathedral (Farrer & Brownbill, 1911).

In AD 919, the Anglo-Saxon king Edward the Elder established a fortified base, or burh, at Manchester, which was then part of Viking Northumbria. It has been suggested that the burh lay within the area around the cathedral, which had become a focus for settlement by the late 11th century. The site occupied presently by Chetham's School is thought to have been the site of a castle founded by Manchester's Norman barons. This early settlement at the confluence of the Rivers Irwell and Irk seems to have been bounded on the landward side by Hanging Ditch, whose curving line ran between the two rivers, taking a line that was followed subsequently by Toad Lane, the forerunner of Todd Street and Corporation Street.

Although the Site likely lay beyond the Saxon settlement a small number of finds have been discovered within proximity of the Site. These include a small hoard of Saxon coins (HER 123.1.0) that was discovered whilst digging the foundations for Campfield Library in 1899. The hoard included eight sceattas dating to AD 450-600 located *c* 200m north-west of the Site. A gold finger ring (HER 9916.1.0), discovered in antiquity, has been traced to the Castlefield area (*c.*290m to the south-west of the Site), providing rare physical evidence for human activity in Manchester during this period.

Following the Norman Conquest, William I assigned most of the land between the Ribble and Mersey rivers to Roger of Poitou, who retained the manor of Salford demesne (Tupling, 1962), but divided his other newly acquired land into several fiefdoms (Kidd, 1996). The largest of these was the landholding centred on Manchester, created by the grant of extensive lands in the hundreds of Salford, Leyland and West Derby to Albert Grelley (Tupling, 1962, p. 116).

By the 13th century, the Grelley family had established a manor house at the confluence of the rivers Irwell and Irk and the medieval town grew up around it (Hartwell, et al., 2004, p. 256). It

was from this hall that they governed both the manor and the extensive barony. In 1222 Manchester was granted an annual fair, and in 1301 Thomas Grelley was granted the Great Charter of Manchester by Edward I, and thus it became a free borough (*ibid*).

A survey of the medieval layout of the city was undertaken in the 1980s by GMAU, which led to the designation of a zone defined as the Area of Medieval Manchester (Morris, 1983). The survey demonstrated that in addition to the manorial and ecclesiastical heart of the town, streets radiated out from the centre, with Deansgate being one of the main thoroughfares. The Site lies *c.*95m east of Deansgate but is over *c.*1km to the south of Manchester's medieval core.

A deer park, named Alde-Parc (Aldport Park; HER 112.1.0) was located towards the south end of Deansgate, bordered to the north by modern day Peter Street and Quay Street, and to the south by the River Medlock (*c.* 165m to the north of the Site). The park is documented from the late 1282 and is thought to have still been existence in the 16th century, before potentially being destroyed during the Civil War. Aldport may refer to the old Roman settlement site replaced by medieval Manchester, one mile upstream at Hunts Bank. In 1473 Over Aldport was a close of pasture and Nether Aldport was a park. Aldport Lodge or New Park is mentioned in 1567–88, occupied by the Derbys (HER 112.1.0). All Port Town is noted as a street name on Casson and Berry's 1741 plan in the same location as the former park (Plate 2).

5.3.1 Archaeological potential

The Site may have lay within an area of low-level medieval activity, though the potential for buried archaeological remains is considered to be low due to the extensive development that took place in the 18th and 19th centuries.

5.4 Post-medieval period

By 1539, John Leland was able to describe Manchester as the 'finest and busiest town in the whole of Lancashire, with the best buildings and the greatest population' (Chandler, 1993, p. 263), at a time when the textile industries in South Lancashire were beginning to flourish. Manchester emerged as a centre for the textile finishing processes, as woollen cloth was brought in from outlying areas for bleaching and dyeing. Most importantly, however, Manchester expanded its role as a market centre for textiles produced in the towns and hamlets of the surrounding district (Frangopulo, 1964, p. 26).

From the early 17th century, fustians produced in a network of towns with Manchester at their hub were being exported regularly to western and southern Europe, and the town became the principal commercial centre for the region (Hartwell, 2001, pp. 8-9). A flourishing business community developed, which was dominated by a few wealthy merchant manufacturers and fustian-dealing families, notably the Chethams, the Booths, the Wrigleys, and the Byroms. During this period, the Site presumably lay in a predominantly rural area that may have been used for agriculture.

In his tour of the country in the 1720s, Daniel Defoe (Defoe, 1727) noted that Manchester had 'extended in a surprising manner, being almost double to what it was a few years ago', reflecting the further expansion of the textile trade (Hadfield & Biddle, 1970). By the 1790s, Manchester's thriving export market was beginning to displace London as a centre of overseas

trade in cotton cloth, reflecting great improvements to the transport network across the North West.

Manchester underwent a rapid expansion during the post-medieval period. The population of Manchester increased from approximately 1800 people in 1563 to just over 3000 people in the year 1642 (Willian, 1980, pp. 38-9). The Hearth Tax Returns of 1664 listed 820 households, which suggests a population of approximately 3690. The population of Manchester roughly doubled between 1563 and 1664, despite an outbreak of plague in 1645 (Phillips & Smith, 1994, p. 7). By the census of 1773, the town's population had dramatically increased even further, with approximately 24,937 people living in the township of Manchester, 23,032 of which were living in the town itself. During the post-medieval period, Manchester changed from what had been a small market centre into the largest town in Lancashire (Nevell, 2003).

A layer of post-medieval soil was exposed during an excavation south of Great Bridgewater Street in 2020, *c* 125m north-west of the Site (Salford Archaeology, 2020). This layer overlaid post-Roman relict soil. Further post-medieval buried soils have been excavated during an archaeological evaluation undertaken in 1982, *c.*250m to the north-east of the Site (GMAU, 1982). The evaluation identified a deposit of dark sandy loam with charcoal flecks, which contained possible archaeological features. These features were located at shallow depths and were cut into the natural subsoil. The deposits were interpreted as pre-industrial soils, possibly dating to the post-medieval period (HER 415.1.3).

5.4.1 Archaeological potential

The Site was likely agricultural land during the post-medieval period and there is some potential for relict soils to survive in isolated areas of the Site, though any remains may have been impacted by the extensive development that took place in the 18th and 19th centuries.

5.5 Onset of the industrial revolution

Significant quantities of cotton began to be imported into south Lancashire from the early 17th century, firstly in linen/cotton fustians. By around 1750, pure cotton fabrics were being produced, and cotton had overtaken wool in importance. Textiles were generally manufactured in domestic-based workshops or weavers' cottages as part of the putting-out system, whereby merchants employed textile workers and supplied them with raw materials.

The second half of the 18th century was characterised by an accelerated pace of development, which was captured on the first detailed plans of the area, produced on four successive maps by Casson and Berry between 1741 and 1751 (Plate 2) The plans produced by Casson and Berry capture the expansion of Manchester and its suburbs. The growth of Manchester was enhanced by the development of waterborne transport. The first key development was the founding of the Mersey & Irwell Navigation Company in 1721, which aimed to provide a navigable route from the Mersey estuary to the Salford and Manchester by improving the course of the River Irwell and the River Mersey. The navigation opened in 1734, opening up trade from the growing port of Liverpool to Manchester and Salford (George & Brummond, 2002, p. 22).



Plate 2 Extract from Casson and Berry's map of 1741

The next major development was the construction of the Bridgewater Canal, the first true canal in the world, completed between the Duke of Bridgewater's coal mines at Worsley and Castlefield by 1765. The Manchester end of the Bridgewater Canal was fed by the River Medlock and is captured on Green's map of 1787-94 (Plate 3). The combination of competition and improved efficiency halved the cost of coal and transport cost of raw cotton, vital to the sudden growth of the textile industry.

Buildings associated with the canal, include the former Bridgewater Canal offices (HER 8331.1.0) and the Duke's warehouse (HER 9849.1.0). The Duke's Warehouse was the first major warehouse to be erected in association with the canal, which was built soon after 1765, *c* 145m south-west of the Site. The canal offices were likely to have been built at a similar time. The Grocer's Warehouse was also noted as one of the oldest warehouses on the canal (HER 9848.1.0), built before 1789, *c* 200m west of the Site.

Initially, the Bridgewater Canal served a group of lime kilns set into the natural slope at the southern end of the arm, in Castlefield shown on Green's map of 1787-94 (Plate 3). Other plans push the date of the canal arm and kilns back slightly further, with both shown on a Bridgewater estate plan surveyed in 1785 and on a plan of the Castlefield basin dated 1778 (HER 13980.1.0). A second 18th-century kiln, known as Castle Field kiln, dates to 1770 (HER 16846.1.0), and lay on the south bank of the River Medlock *c* 165m south-west of the Site. By 1794 Brodie and Co Iron Foundry had been constructed on the northern half of the kiln site with a dye works to the south, though the kiln may have been incorporated into the complex. This foundry was demolished after 1815 and replaced by Galloway's Knott Mill Iron Foundry by 1843 (HER 13924.1.0).

The River Medlock was utilised for early industry, and several industrial premises associated with the textile finishing industries had been established along its banks. These included

several dye works (HER 13693.1.0; HER 15503.1.0), including Knott Mill dye works (HER 16025.1.0) and printworks (HER 13692.1.0). In addition, a water-powered corn mill (HER 9865.1.0) was situated on the north bank of the River Medlock in the late 18th century, *c* 130m south-west of the Site. The corn mill lay near to an early fulling mill (HER 10530.1.0) which was excavated at Knott Mill bridge and was dated to the 18th century.

The success of the Bridgewater Canal acted as a catalyst for the construction of numerous canals, including the Rochdale Canal (HER 1386.2.0). The Rochdale Canal (HER 12089.9.0; 1386.2.0) had been planned in 1765 by James Brindley but was not completed until 1804 when it joined the Ashton Canal to the north of the city centre. Initially, the canal opened in stages as sections were completed beginning with the Manchester to Rochdale branch in 1798. The completion of the Rochdale canal in 1804 meant that a water transportation route now existed between the North Sea at Hull and the Irish Sea at Liverpool. In 1805, John Rennie engineered its connection to the Bridgewater Canal, to the south of the city centre, located c.420m to the west of the Site (DGM1553). As a result, Castlefield became the hub of the canal network in Manchester, bringing with it a surge in warehouse building. The Rochdale Canal lies *c* 20m to the north of the Site.

By the 1780s, the national demand for textiles, particularly cotton, began to rise, resulting in a dramatic increase in mill building that transformed Manchester into a centre of factory-based cotton manufacturing industry of international repute (Baines, 1835). Early steam-powered mills in the study area include Marsden's Mill (HER 17371.1.0), Havelock Mill (HER 2145.1.0) and Gaythron Mill (HER 15513.1.0) With textiles as the driving force, Manchester emerged as a complex industrial city, producing goods of every description.

5.6 The advent of Manchester's railway network

The world's first inter-city passenger railway was opened between Liverpool and Manchester in 1830, terminating at Liverpool Road in Castlefield (HER 11681.1.0), *c* 500m north-west of the Site. The line set the standard for modern railways and initiated a boom in railway construction in the 1840s. The advent of the railways meant that goods could be transported faster and in larger quantities than ever before. Several other railway lines were constructed, linking Manchester to other industrial towns, such as Leeds and Birmingham.

Store Street Station opened on the 8th May 1842 by the Manchester and Birmingham Railway, followed by the terminus at Hunts Bank in 1844, opened by the Manchester and Leeds Railway Company, in order to link their line to the Manchester and Liverpool railway line. Shortly after the Store Street Station opened, it became a joint terminus, which also served the Sheffield, Ashton-under-Lyne and Manchester Railway, and it was quickly realised that it would need to be connected to the other railway lines that served Manchester.

The Manchester & Birmingham Railway (later the LNWR) and the Sheffield, Ashton-under-Lyne & Manchester (later MSLR) companies proposed an extension of their lines, which would skirt the southern part of Manchester City Centre on a 2.4 km viaduct and join the Liverpool and Manchester Railway at Ordsall Lane in Salford. A branch line was also proposed, leaving the South Junction line at Castlefield (west of Deansgate Station) and following the Bridgewater Canal to Altrincham. The Manchester South Junction and Altrincham Railway (MSJ&AR) Act received royal assent on the 21st of July 1845 (HER 11681.1.0).

The MSJ&AR viaduct was one of the country's earliest suburban railways constructed by David Bellhouse in 1846-9. A through platform was built near the south-east corner of Store Street Station, which was also designed by Bellhouse. The MSJ&AR viaduct is currently designated as a Grade II Listed structure (HER 11681.1.0) and runs from Manchester Piccadilly Station via Oxford Road and Deansgate, following approximately the route of the River Medlock, before it branches into two at Castlefield, with the northern branch terminating on the north-west side of the River Irwell, and the southern branch terminating at the east side of Dawson Street. The Grade II Listed viaduct lies immediately to the north of the Site.

5.7 Development of the Site

The development of the Site since the late 18th century can be drawn from a sequence of available historic mapping. The first available map to capture the Site is Green's plan of Manchester and Salford 1787-1794 (Fig 3; Plate 3). This map captures the initial development of the southern fringe of Manchester during the late 18th century. Green's map shows that development in Castlefield was centred on the Bridgewater Canal and the River Medlock, with several warehouses, offices, wharfs and industrial buildings already established along the watercourses. A grid of streets had been laid to the east of Aldport Lane, between Gaythorn Street to the north and Little Peter Street to the south, which seems to have mostly consisted of workers' housing.

The west part of the Site seems to have contained houses with small back yards between Malkin Street and Betty's Row. A long narrow rectangular building was situated between the backyards of the houses, potentially functioning as a workshop. Larger gardens were present in the north-west corner of the Site, creating an opening along the Malkin Street frontage. The east of the Site seems to have been occupied by two or three slightly larger properties on the east side of Betty's Row. Beyond the properties, lay market or allotment gardens and the southern aspect of a large building or block of buildings that fronted Gaythorn Street, which may have functioned as a commercial or industrial building.

Land surrounding the Site consisted of a mixture of fields, industrial premises and land awaiting development. Fields to the east of the Site were owned by Messrs Cheetham, whilst land to the south was owned by Sir J. P Mosley Bar. Gaythorn Street led to a group of buildings owned by '*John Cheetham and Son, of Gaythorn, Manchester'*, who were dyers in the area (Manchester Mercury, 3rd January 1792).

Scholes directory of 1794 gives an insight into the types of businesses that were present along Gaythorn Street in the late 18th century. The street was occupied by a flour dealer, dyers, an engraver for calico printers, a bookkeeper and a printed calico manufacturer (Scholes, 1794).

Scholes trade directory of 1797 recorded a bookkeeper at Betty's row. The 1797 trade directory recorded multiple dyers and flour dealers along Gaythorn Street, as well as some additional trades which included a shopman, a cow-keeper, a bread baker, fruiterer, and a traveller (Scholes, 1797). In addition, the Rate Book of 1797 also recorded the head of the households along Betty's Row, Hewitt Street, Malkin Street and Gaythorn Street, although it provides no further detail (Rate Book of 1797, M 9/40/2/540).

Dean and Pigot's map of 1809 (Plate 4) captures the exact same footprint of buildings as Green's earlier plan (Plate 3), although Malkin Street was now known as Mount Street and

Betty's Row was renamed Rowe Street. The plan is the first available map that captures the Rochdale Canal (HER 1368.2.0), completed in 1804.

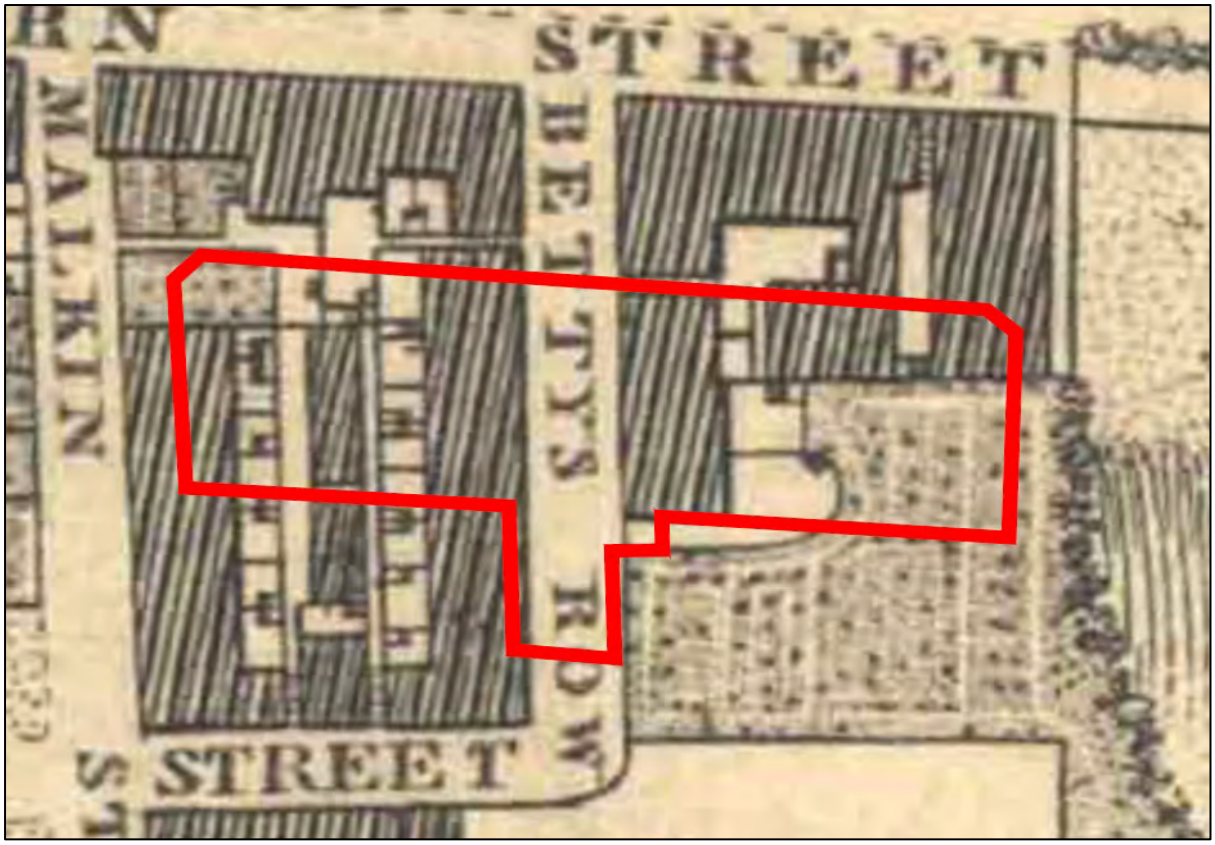


Plate 3 Extract from Green's map of 1787-94, showing the Site boundary

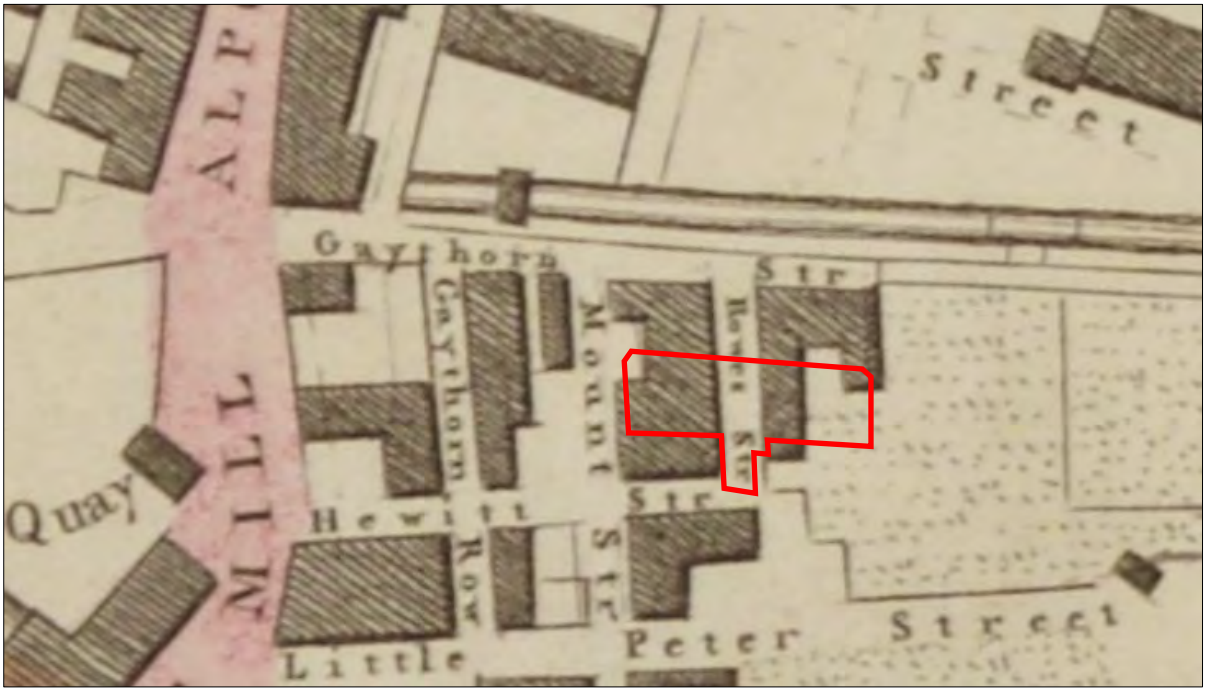


Plate 4 Extract from Dean & Pigot's map of Manchester, 1809, showing the approximate Site boundary

The next available map is that produced by Swire in 1824, although the plan does not capture details of the individual buildings within the Site (Plate 5). The Site and its environs had witnessed further development. The west of the Site remained unchanged, whilst the former area of gardens that occupied the southern end of the east of the Site had been developed.

Pigot and Dean's trade directory of 1821 recorded weavers, joiners, shopkeepers, carders, dyers, boot and shoemakers, a baker, a spinner, a bookkeeper, a packer, a boat builder and carters (Pigot, et al., 1821).

Plots of land, including all buildings along Gaython Street and adjacent to the Rochdale Canal were being sold off in 1820. Plots were listed separately and most contained at least one building or buildings (Manchester Mercury, 26th December 1820). Some premises were subject to yearly rents paid to Sir Oswald Mosely, who owned land in the vicinity of the Site in the late 18th century (Plate 3).

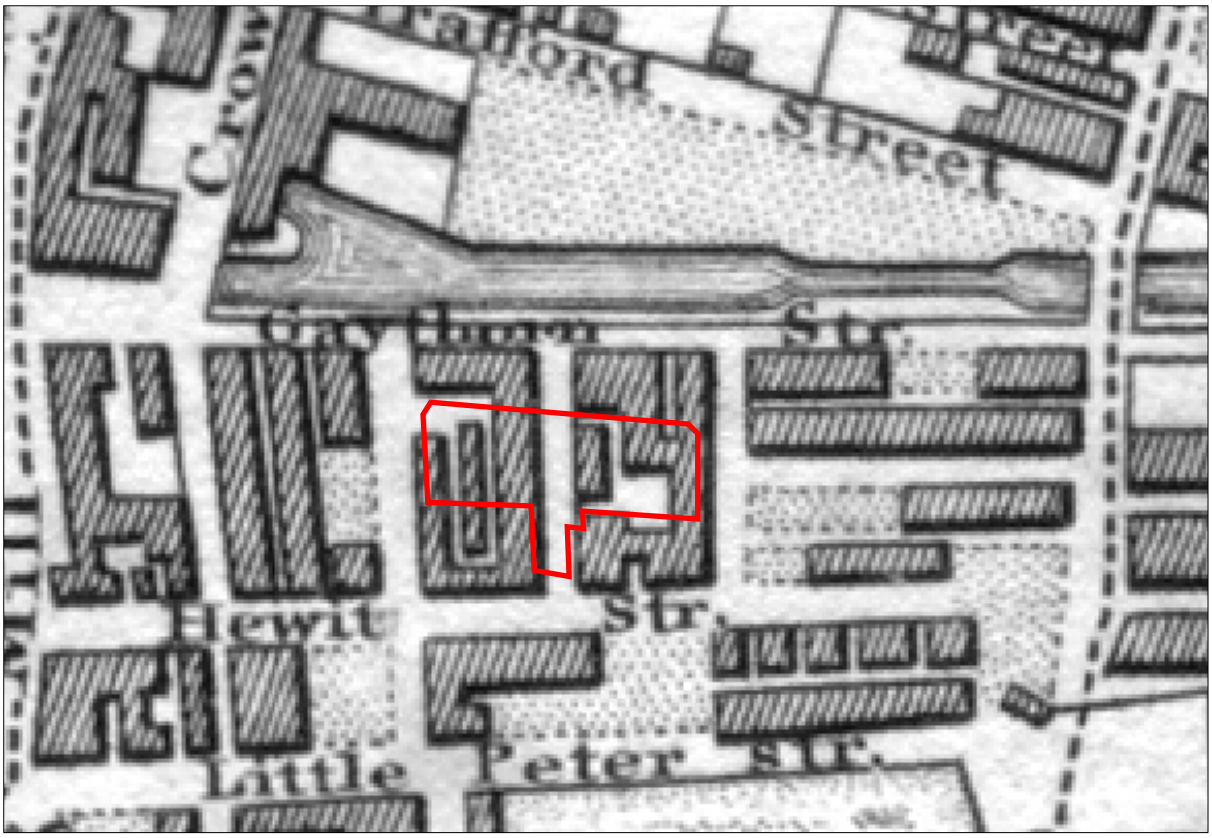


Plate 5 Extract from Swire's map of 1824, showing the approximate Site Boundary

Bancks and Co's map of 1831 (Fig 4; Plate 6) is the first available map that captures the individual detail of buildings within the Site. Bancks's map captures a similar array of buildings as shown on Green's (Plate 3) and Swire's (Plate 5) earlier maps, albeit in more detail. The plan shows that various types of workers' housing occupied the Site, including rows of terraces with small back yards, first shown on Green's plan. The plan also shows that the row of buildings between Mount Street (formerly Malkin Street) and Rowe Street (Betty's Row) were single-depth dwellings. The properties on the east side of Betty's Row were double-depth houses, whilst the eastern edge of the Site partly contained a block of back-to-backs that lay on the west side of Cheetham Street. The exact same configuration of buildings is captured

on the Ordnance Survey map of 1851 (Fig. 5). The only additional detail is the depiction of pavement lights and external staircases in front of the dwellings that lined Mount Street, and Rowe Street. The single-depth court dwellings and back-to-backs did not seem to contain cellars.

The census returns of 1841 recorded that many of the residents within the Site worked in the textile industry. Other occupations recorded included several porters, washerwomen, labourers and bricksetters (Census Returns of 1841, HO 107/570/17).



Plate 6 Extract from the Bancks & Co's map of Manchester and Salford, 1831, showing the Site boundary

Joseph Adshead's *Twenty-four Illustrated Maps of the Township of Manchester*, published in 1851 (Plate 7) and the Ordnance Survey map also published in 1851 (Fig 5) are the next available maps that accurately show the Site. Both 1851 plans (Plate 7 and Fig. 5) show that the Site remained largely unchanged, though they provided greater detail than the previous maps. The only notable change is the completion of the Manchester South Junction and Altrincham Railway line (HER 11681.1.0) that lies within the south of the Site. The railway viaduct was constructed over the streets in 1848–49, by David Bellhouse Junior. The building is currently a Grade II Listed Building.

Adshead's map clearly records the names of the small courts that lay behind the main streets, which included McDonald Street, Merrell's Court, Stewards Court and Pierce Tuns. The

Ordnance Survey map (Fig. 5) notes that the court of back-to-backs in the south-east corner of the Site was Mason's Court, and the row of single-depth dwellings between Mount Street and Rowe Street was Back Mount Street. Adshead's plan (Plate 7) shows that all of the buildings within the Site were residential. The Ordnance Survey map of 1851 (Fig. 5) shows that the dwellings along Mount Street and Rowe Street had external staircases and window lights, implying that they contained cellars.

The census returns of 1851 recorded that most of the cellars along Rowe Street were inhabited as separate residences (No's 1-14 Rowe Street had cellars that were inhabited). Like the previous census, the majority of the occupants worked in the textile trade. Some of the households, including those that occupied the cellars, took in lodgers (GBC/1851/30859_A008135/00339-42). A similar picture is painted by the census returns for Mount Street, McDonald's Court and Mason's Court (the census returns of 1851 are incomplete due to damage; GBC/1851/30859_A008135/00354-60).

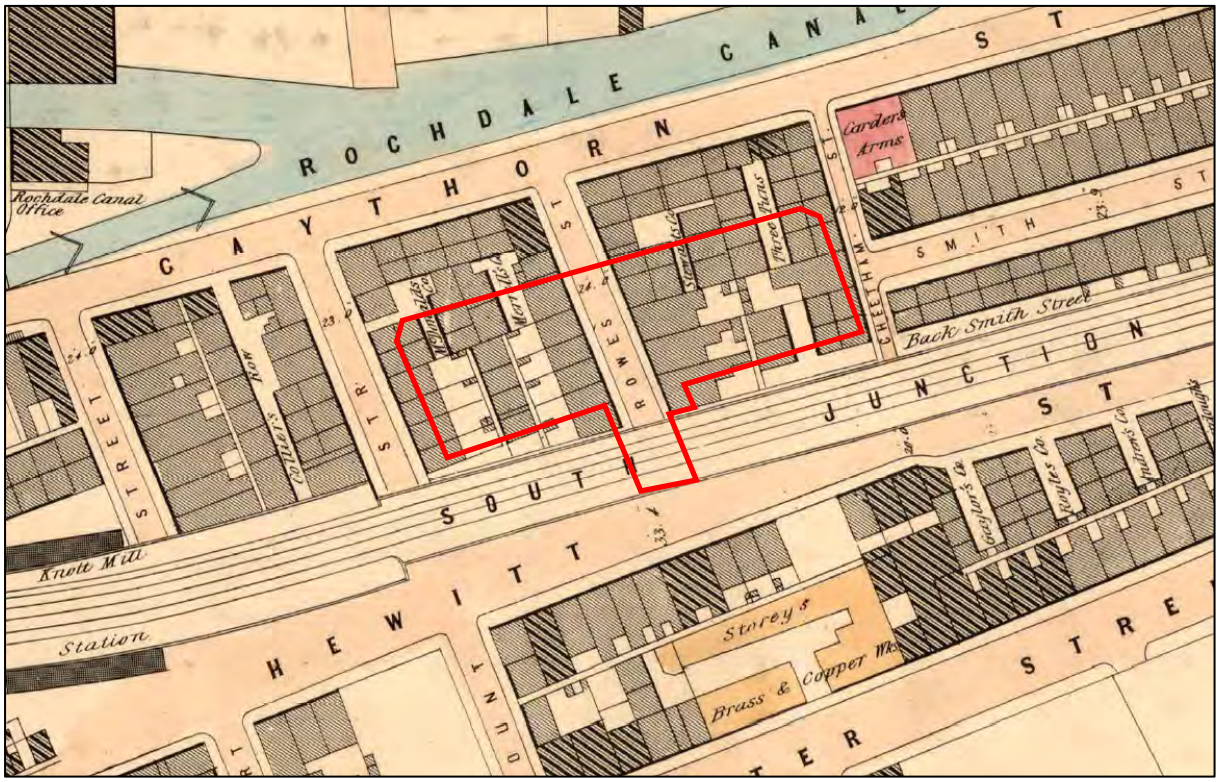


Plate 7 Extract from Joseph Adshead's map of 1851, showing the approximate Site boundary

The Ordnance Survey map of 1891 (Fig. 6) shows the same layout of buildings and recorded a similar demographic (Census Returns 1891, RG 12 3237). Rowe Street does not seem to have been recorded within the census returns of 1901, potentially implying that demolition was underway within the Site.

A series of photographs taken in 1896 show condemned houses along Bugle Street that may have been within the Site boundary (Plate 8 and Plate 9). The images show that the houses were two-storeys with basements and pavement lights. A photograph taken in 1905 shows that the houses within the Site had been cleared (Plate 10).



Plate 8 View of condemned houses on Bugle Street (formerly Mount Street), taken in 1896, courtesy of Manchester Local Image Collection



Plate 9 Condemned houses on Bugle Street (formerly Mount Street), taken in 1896, courtesy of Manchester Local Image Collection

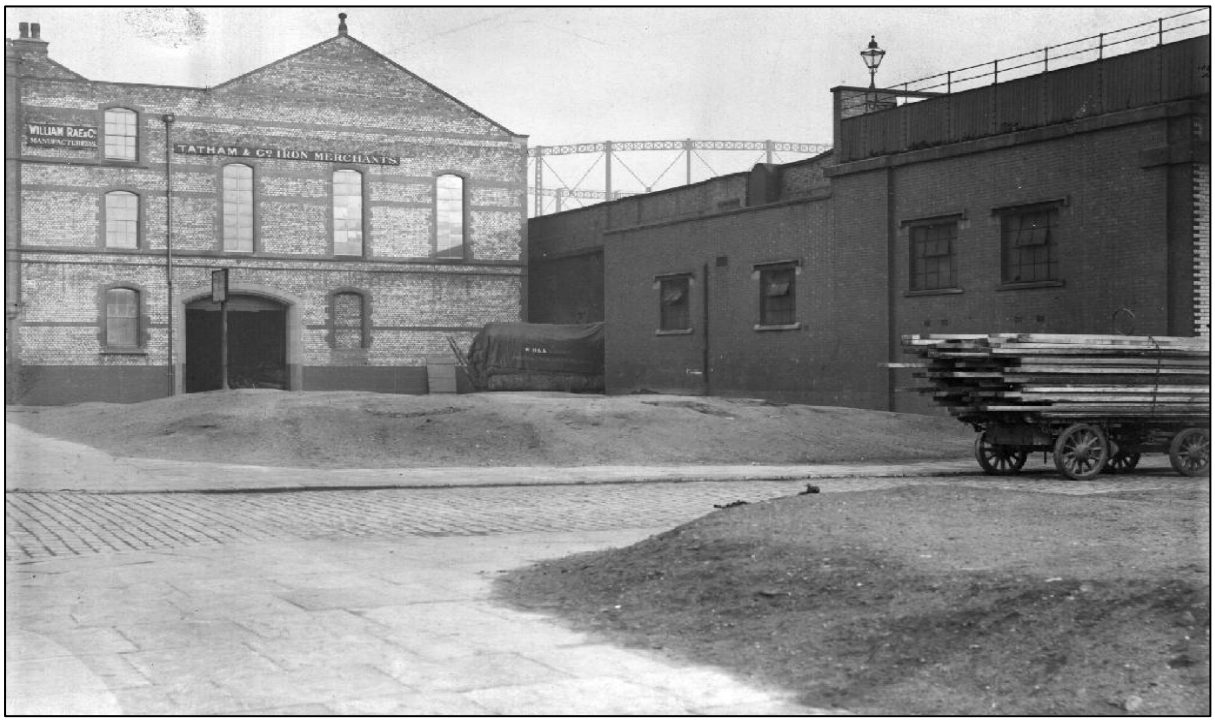


Plate 10 Vacant land between Cheetham Street, Rowe Street and Whitworth Street West in 1905, also showing viaduct windows, courtesy of Manchester Local Image Collection

By 1908 (Fig. 7) the entire Site had been cleared, however, by the time of the Ordnance Survey map of 1922 (Fig 8; Plate 11), the Site had been redeveloped into two warehouse buildings. Gaythorn Street had been renamed Whitworth Street West and had been widened, presumably to accommodate a tramway. The warehouses were situated at no. 2 and no. 4 Whitworth Street West.

Slater's trade directory of 1911 recorded the businesses along Whitworth Street West. No. 2 was occupied by Bell Brothers and Co, shipping merchants and Reliance Mill Co, cotton merchants (Slater, 1911, p. 753), which may suggest that Wrendal House had been established by 1911. Tatham & Co., steel merchants, Rae William. & Co., apron & skirt manufacturers, and Andrew L. & Co., India rubber merchants occupied a building or buildings between Albion Street and no. 2 Whitworth Street West. Plate 10 shows that Tatham & Co were situated immediately east of Whitworth House. It is unclear whether any of the other businesses correspond to Avon House, although it is tempting to place Andrew L & Co, India rubber merchants at Avon House.

Goad's fire insurance map of 1928 (Plate 12) provides greater detail, naming the western warehouse as Wrendal House and the eastern building as Avon House (currently Whitworth House). Goad recorded Wrendal House as a four-storey building with basement, functioning as various offices and warehouse. The building had two stone staircases and concrete floors. Avon House was annotated as a three-storey building that operated as a rubber tyre warehouse. The range of buildings to the rear was two-storeys high. The building had a steel truss roof and concrete floors, with glass skylights. Both buildings are currently extant, although they seem to have undergone some alterations (see Section 6); the rear aspect of Avon House may have been altered, whilst an additional storey seems to have been added to the rear bay of Wrendal House.

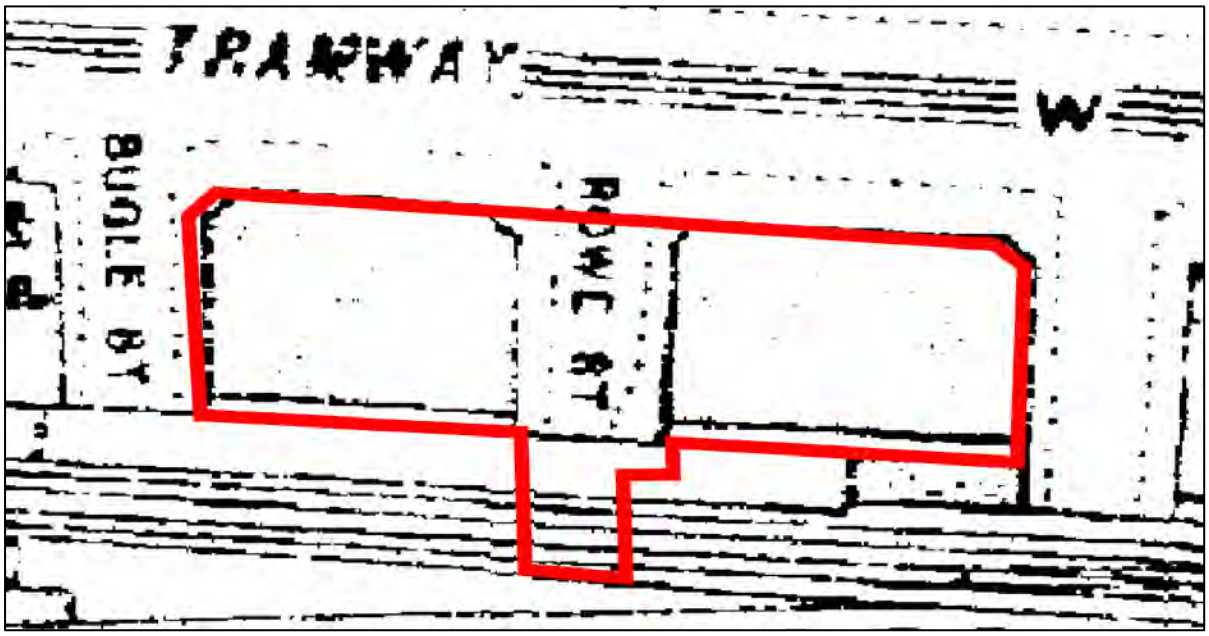


Plate 11 Extract from the Ordnance Survey Town Plan map of 1922, showing the Site boundary

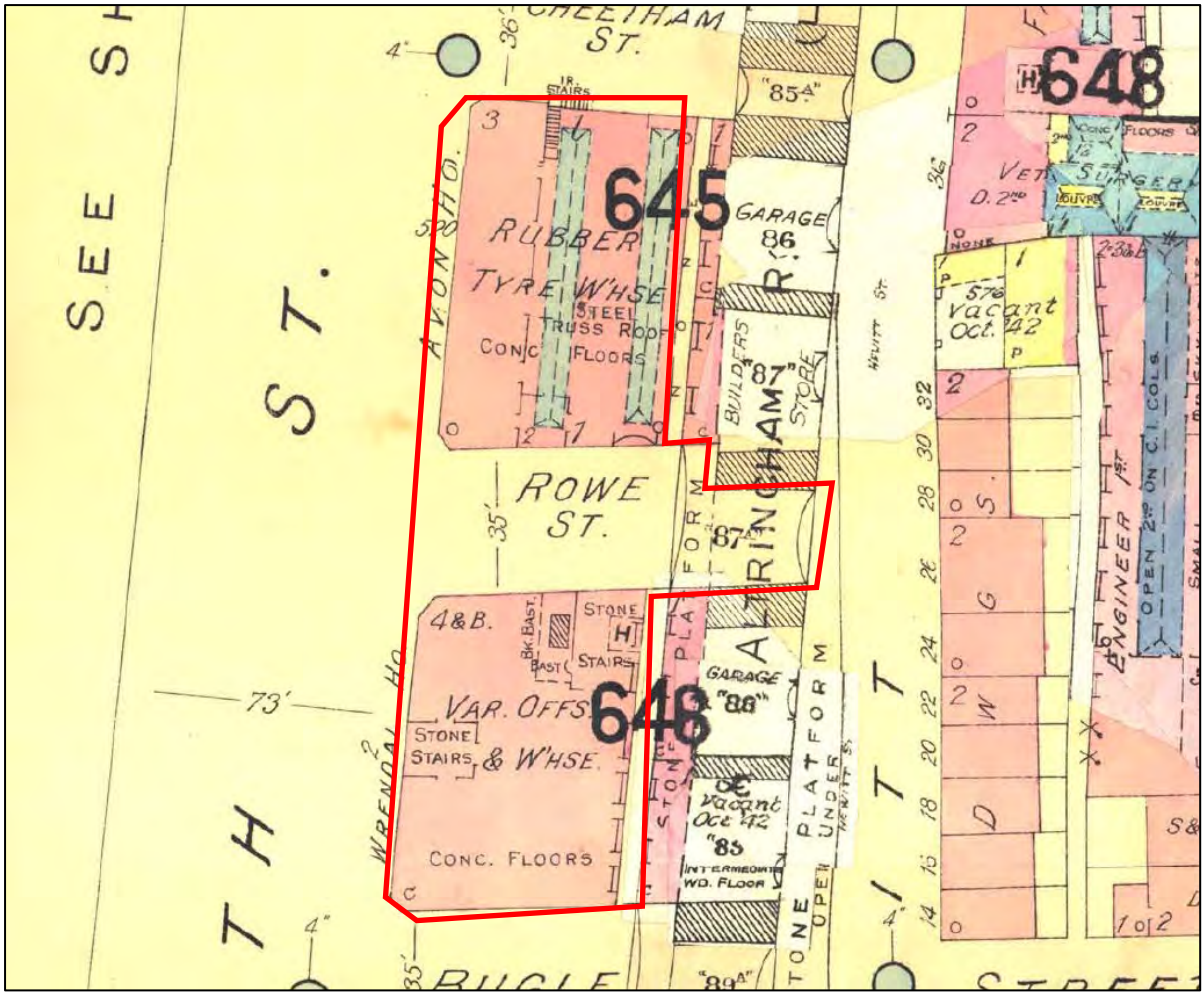


Plate 12 Extract from Goad's Fire Insurance Maps of Manchester, 1928, sheet 336, showing the approximate Site boundary

5.8 Previous archaeological work

In total, 62 archaeological events have been recorded within 250m of the Site. Non-intrusive events include 31 desk-based assessments, seven heritage statements, a heritage impact assessment and three building recordings. Intrusive archaeological investigations include seven watching briefs, eight evaluations and six excavations.

5.8.1 Previous archaeological work within the Site boundary

A desk-based assessment (EGM5062) covered the Site in 2018 by Kathryn Sather Associates (Kathryn Sather & Associates, 2018), which highlighted the archaeological potential of the Site, particularly in relation to workers' housing.

A desk-based assessment was produced for the Northern Hub Piccadilly / Oxford Road in 2018 (EGM 4229), which highlighted the site's potential to contain archaeological remains of local and regional significance (Parsons Brinckerhoff, 2014). The desk-based assessment included Cameron Street and Rownedale Street, which lie within the Site boundary. No sites of archaeological interest were recorded along either of the streets.

5.8.2 Previous archaeological work beyond the Site boundary

An excavation was undertaken in preparation for the Beetham Tower in 2005 (EGM3733) by Pre-Construct Archaeology, *c* 110m north-west of the Site. Due to the high level of intense activity across the site in the late 19th century, it was believed that not much remained from the pre-18th century landscape. However, important archaeological remains that dated to the Roman period were identified in three of the trenches. In light of the impending development programme, it was decided that the evaluation would be abandoned, and they would proceed straight to an open area 'rescue' excavation. The Roman remains within the site were interpreted as being part of the *vicus* to the Roman fort. It was concluded that there was no evidence of activity within the Beetham Tower site prior to the Roman period, or after the 3rd century AD. The absence of medieval activity may have been due to horizontal truncation associated with 19th century activity or more simply a change in settlement patterns after the 3rd century (Pre-Construct Archaeology, 2005).

An additional desk-based assessment undertaken in 2019 by Salford Archaeology, included the land at Viadux and the Central Station, *c* 75m north of the Site. The desk-based assessment concluded that there was potential for foundations of 18th- and 19th-century buildings, including the rare evidence for a windmill and workers' houses beneath Station Approach. There was also evidence of canal infrastructure beneath the footprint of the main station hall. The report also illudes to archaeological excavations that were carried out in 2004 on land a short distance to the south of the proposed development site, and that it yielded important evidence for Roman activity, indicating that the area had formed part of the civilian settlement associated with the Roman fort at Castlefield (Salford Archaeology, 2019).

An excavation took place in 2020 (EGM 5644), revealing evidence of two possible prehistoric pits and a series of Roman pits and ditches that likely relate to the extent of the Roman civilian settlement located outside of the fort wall. The remains of an 18th-century metalled surface were also observed, together with the remains of 19th-century workers' housing and the remains of part of an industrial building (Salford City Council, 2023).

An evaluation was also undertaken within the 'Slot Site', ahead of the construction of a stair tower and lift (see Figs 13-4) (Salford Archaeology, 2020). The evaluation contained a Romano-British pit or linear feature, post-Roman plough soils (excavated at a depth of 1.8m below the modern ground surface) and the wall of a late Georgian building. Trench 3 was extended into a small open-area excavation to record the extent of Roman remains in this area. Further archaeological remains were excavated and have been interpreted as being of Roman date due to their stratigraphy, though none of the archaeological remains could be securely dated (pers comms, Oliver Cook 2023).

A second desk-based assessment undertaken in 2023 by Salford Archaeology (EGM5645) highlighted the potential for further archaeological remains.

Other nearby intrusive archaeological investigations includes an evaluation at Knott Mill (EGM 2743). Trial trenching evaluation recorded a possible Roman post-hole, stone and brick foundations of west end of the Duke of Bridgewater's warehouse, and the head of a capped well (UMAU, 1998).

5.9 Summary of archaeological potential

No prehistoric activity is known to have taken place within the Site, though the Castlefield area is likely to have been conducive for late prehistoric settlement.

The Site lies within the Area of Castlefield Roman Vicus (HER 415.2.0) and therefore has high potential to contain Roman remains.

No medieval activity is known within the Site, and it lies beyond Manchester's medieval core, and *c* 165m south of Aldport Park (HER 112.1.0). The Site was most likely agricultural land during the post-medieval period.

The River Mersey and Bridgewater Canal were utilised for industry during the 18th century. By the late 18th century much of the Site had been developed into housing to accommodate workers in the area. The south-east corner of the Site remained undeveloped, consisting of a small plot of allotment gardens.

All remaining plots of vacant land had been built upon by 1824-51. The Site consisted of various types of workers' housing including cellar dwellings, back-to-backs, blind-backs and single-depth dwelling.

The entire Site had been cleared by 1908, and by 1922 had been redeveloped into two warehouse buildings, which are currently extant within the Site.

6. Site inspection

A Site visit was carried out as part of the archaeological assessment on 18th June 2024. The aim of the Site inspection was to relate the findings of the desk-based study to the existing land use of the application area, in order to identify any evidence for surviving below-ground remains.

The Site encompasses two early 20th-century red-brick warehouses (Plate 13 and Plate 14). Wrendal warehouse occupies the plot of land in the west of the Site, and is currently bounded by Bugle Street to the west, Whitworth Street West to the north and Rowendale Street to the east. The building is of four-storeys with a semi basement. The roofline of the building, along Rowendale Street (only), is slightly higher than the rest of the building, by about half a storey. All the windows have segmental arches, whilst the front entrance is a stone rounded arch design. The windows have been replaced with modern metal frames. The original street sign for Rowe Street (now Rowendale Street) is still attached to the building. Rowendale Street has been repaved in modern stone setts.



Plate 13 Photograph showing Wrendal House, looking south-west from Whitworth Street West

Whitworth House is a three-storey red brick building with rectangular windows at ground-floor and first-floor levels (Plate 14). The second floor has round arch windows. The windows potentially have the original wooden frames. There is a small amount of sandstone ashlar used for detailing on the coping of the parapet, the cills and the plinth. Entrances are present at each corner of the building, which are framed with dressed stone (Plate 15).

The rear of the building is approximately single storey with a pitched roof and seems to have been constructed in different coloured bricks (Plate 15). Vehicular entrances are present on both the east and west elevations.



Plate 14 Photograph showing Whitworth House, looking south-east from Whitworth Street West



Plate 15 View of Whitworth Street from Rowendale Street, looking east

Rowendale Street (formerly Rowe Street) runs broadly north to south through the centre of the Site (Plate 16). The road surface is of modern stone setts. The Site includes part of the road that extends beneath the Manchester South Junction and Altrincham railway viaduct (Plate 16).



Plate 16 View of Rowendale Stret, looking broadly south, showing the Grade II Listed Manchester South Junction and Altrincham railway viaduct

7. Gazetteer

The following gazetteer entries (GE) summarise the sites of potential archaeological interest within the Study Area and elements of the historic landscape. The identification of these heritage assets is drawn primarily from the historic map regression analysis, Historic England, and the HER data. The locations of the gazetteer entries are shown on Figures 11-13 within Appendix 1.

Gazetteer Entry 01

Site Name	Castlefield Roman Vicus (Area of Roman Manchester)
Designation	Non-designated heritage asset
HER Number	415.2.0
Site Type	Place (site of)
Period	Roman
NGR	Centred SJ 8333 9768 (530m by 745m)
Source	HER
Description	The HER states: *Early activity in the area outside of the Roman fort at Castlefield began with the first timber fort (see HER 415.1.2). Part of the vicus was excavated in 1972 and 1981. It was found that the ditch system surrounding the fort was abandoned during the Flavian period and covered by timber shops and houses. A road and associated buildings were built in the Hadrianic period. A hostelry, of timber structure, was uncovered, its function ascertained from large quantities of glass and gaming chips. After AD 250 the vicus experienced considerable decline, paralleling the decline of the fort*.
Assessment	The west part of the Site lies within Castlefield Roman Vicus and therefore has high potential to contain Roman remains that could be affected by the proposed development scheme.

Gazetteer Entry 02

Site Name	Market or allotment gardens
Designation	Non-designated heritage asset
HER Number	-
Site Type	Relict soils (site of)
Period	post-medieval
NGR	383543 397522
Source	Green's map (Fig.3)
Description	Green's map of 1787-94 (Fig. 3) shows that the south-west corner of the Site was occupied by market or allotment gardens to the rear of the houses within the Site. The gardens had been developed by the 1820s.
Assessment	Relict soils have potential to survive within the Site and could be affected by the proposed scheme.

Gazetteer Entry 03

Site Name	Workers' housing and backyards

Designation	Non-designated heritage asset
HER Number	-
Site Type	Terraced housing with cellars (site of)
Period	18th century
NGR	Various
Source	Green's map; Bancks & Co's 1831; OS mapping (Figs 5 and 6)
Description	Blocks of workers' housing are first shown on Green's map of 1787-94 (Fig. 3). The houses were situated along Mount Street (Bugle Street) and on both sides of Betty's Row (Rowe Street, currently Rowendale Street). All of the dwellings were rows of small, terraced houses with back yards and outbuildings. The same footprint of buildings is captured on Bancks's map of 1831 (Fig. 4) and OS mapping (Figs 5 and 6). The later maps confirm that these dwellings contained cellars. The census returns record that most of the cellars were inhabited as separate dwellings. The houses were demolished by 1908 (Fig. 7) and had been redeveloped into warehouses by 1922 (Fig. 8). The cellared remains of the houses are more likely to survive beneath Whitworth house, as it does not contain a cellar.
Assessment	Remains of workers' housing have the potential to survive *in-situ* within the Site as buried remains and could be affected by the proposed development scheme.

Gazetteer Entry 04

Site Name	Single-depth houses
Designation	No designation
HER Number	-
Site Type	Back Mount Street dwellings (Site of)
Period	18th century
NGR	383498 397523
Source	Green's map; Bancks & Co's 1831; OS mapping (Figs 5 and 6)
Description	A long, narrow rectangular building first appears on Green's map of 1787-94 (Fig. 3). Bancks's map (Fig. 4) captures the same footprint of buildings and shows that they consisted of a row of single-depth dwellings. The houses do not seem to have been cellared. The houses were demolished by 1908 (Fig. 7) and had been redeveloped into Wrendal Warehouse by 1922 (Fig. 8). Wrendal house contains a semi-basement, which may have impacted the survival of the houses.
Assessment	The footprint of the buildings lies within the Site, and therefore could be affected by the proposed development scheme.

Gazetteer Entry 05

Site Name	Back-to-backs
Designation	Non-designated heritage asset
HER Number	-
Site Type	Cheetham Street dwellings (site of)
Period	Early 19th century

NGR	383544 397522
Source	Swire 1824; Bancks & Co 1831; OS mapping (Figs 5 and 6)
Description	Cheetham Street had been developed by 1824 (Plate 5, p24). Bancks's map (Fig. 4) shows that development consisted of a row of back-to-backs. Later maps suggest that the buildings did not contain cellars. Demolished by 1908 (Fig. 7) and redeveloped into Whitworth House by 1922 (Fig. 8).
Assessment	The footprint of the building lies within the Site and could be affected by the proposed development scheme.

Gazetteer Entry 06

Site Name	Single-depth infill
Designation	No designation
HER Number	-
Site Type	Domestic properties (site of)
Period	Early 19th century
NGR	Various
Source	Bancks and Co's 1831; OS mapping (Figs 5 and 6)
Description	All remaining vacant plots of land within the Site were developed during the early 19th century, first shown on Bancks's map (Fig. 4), with later infill and the division of some of the terraces into single-depth buildings shown on the OS map of 1851 (Fig. 5). Demolished by 1908 (Fig. 7) and redeveloped into warehouses by 1922 (Fig. 8).
Assessment	The footprint of the building lies within the Site and could be affected by the proposed development scheme.

Gazetteer Entry 07

Site Name	Wrendal House
Designation	No designation
HER Number	-
Site Type	Warehouse
Period	Early 20th century
NGR	383499 397524
Source	OS mapping (Figs 8-10)
Description	Red, brick-built warehouse first shown on the Ordnance Survey map of 1922 (Fig. 8). Noted on Goad's plan of 1928 as functioning as various offices and warehouse. The building is four-storeys high with semi-basement and is currently extant.
Assessment	The warehouse will be demolished as part of the proposed scheme.

Gazetteer Entry 08

Site Name	Whitworth House (Avon House)
Designation	No designation
HER Number	-
Site Type	Warehouse

Period	Early 19th century
NGR	383535 397521
Source	OS mapping (Figs 8-10)
Description	Red, brick-built warehouse first shown on the Ordnance Survey map of 1922 (Fig. 8). Noted on Goad's plan of 1928 as functioning as a rubber tyre warehouse. The main part of the building is three-storeys high and is currently extant.
Assessment	The warehouse will be demolished as part of the proposed scheme.

Gazetteer Entry 09

Site Name	Manchester South Junction and Altrincham Railway Line Viaduct
Designation	Grade II Listed Building
HER Number	11681.1.0
Site Type	Railway viaducts
Period	Mid-19th century
NGR	Centred SJ 8382 9770 (2031m by 487m)
Source	OS mapping (Figs. 5 and 6)
Description	Manchester South Junction & Altrincham Railway viaduct was built in 1848–49, constructed by David Bellhouse Junior. Red-brick with some small sections of blue brick, sandstone dressings and cast-iron bridges. The railway viaduct is built over the streets, connecting to Manchester Piccadilly and various other Manchester railway stations. The road beneath the viaduct falls within the Site boundary.
Assessment	The viaduct will not be directly impacted by the proposed scheme.

8. Significance

8.1 Policy context for heritage assets

The archaeological resource of an area can encompass a range of assets, including below-ground remains, earthworks, and standing buildings and other structures. Some of these remains may have statutory protection, such as Scheduled Monuments or listed buildings. Others do not but may nevertheless be of archaeological significance. Under both national and local planning policy, as outlined below, both statutory and non-statutory remains are to be considered within the planning process.

The NPPF sets out the Government's planning policy and framework for England, and how these are expected to be implemented. The NPPF places particular emphasis on assessing the development proposals in line with an up-to-date local plan. Consequently, Manchester's Core Strategy (adopted July 2012) was consulted as the key Development Plan Document in the Local Development Framework (LDF), with particular reference to Policy EN3: Heritage. In determining applications, local planning authorities must be able to understand the significance of any heritage assets affected by a proposed development in order to assess its impact. This enables the conservation of heritage assets in a manner suitable to their significance so that they can be enjoyed for their contribution to the quality of life of this and future generations, or else they can be recorded and advance understanding of the significance of any heritage assets to be lost in a manner proportionate to their importance and the impact, and to make this evidence publicly accessible.

8.2 Designated heritage assets

The Site partly contains a designated heritage asset, comprising a small section of the mid-19th-century Manchester South Junction and Altrincham railway viaduct that is afford statutory protection as a Grade II Listed Building (HER 11681.1.0). The viaduct will not be directly impacted by the proposed scheme.

The Site is situated within 250m of four designated heritage assets. The proposed development will have a physical impact on these designated heritage assets and will be considered further in the heritage impact assessment. However, it will not be considered further in this desk-based assessment (see 2.3).

8.3 Significance of the archaeological resource

8.3.1 Historical and archaeological interest

Historical and archaeological interest

The Site lies partly within Castlefield Vicus; Area of Roman Manchester, which adds to the archaeological interest of the Site.

The Site lies near to the River Mersey and Bridgewater Canal which were utilised for early industry. As a result, the Site had been developed into blocks of housing by the late 18th century to accommodate workers in the nearby area. The early industrial period is significant to Manchester's history and therefore remains relating to these periods would be of historical and archaeological interest.

The Site was redeveloped into warehousing in the early 20th century, representing a shift to purpose-built warehouses, which occurred in later industrial period.

8.3.2 Baseline significance conditions

Period

No prehistoric, or medieval activity is known to have taken place within the Site, and the potential for such remains is considered to be very low. The Site, however, lies within Castlefield Vicus; Area of Roman Manchester (GE01) and likely witnessed intense Romano-British activity.

The most likely remains to be encountered within the Site would date to the industrial periods, which could include market or allotment gardens (GE02), 18th-century workers' housing (GE03-4) and early 19th-century housing infill (GE05-6).

The Site currently contains two early 20th-century warehouses (GE07-8) and a small section of the Grade II Listed Manchester South Junction and Altrincham railway viaduct. The viaduct will not be directly impacted by the proposed scheme.

The industrial period is significant to Manchester's history. Therefore, sites reflecting Manchester's industrial heritage may be considered significant due to period.

Rarity

Remains associated with Castlefield Vicus; Area of Roman Manchester could be considered significant due to rarity.

Buried remains associated with pre-19th-century Manchester may be considered significant due to rarity, as few remains survive within the area due to extensive development during the industrial period.

Documentation

The historical development of the Site can be traced reasonably well from cartographic and other primary sources. Further documentary research would undoubtedly furnish additional evidence, although this is unlikely to alter the outline and conclusions presented in this assessment.

Group value

Any Roman remains within the Site might contribute to the wider understanding of the development of Roman Manchester, and therefore would have group value with Castlefield Vicus; Area of Roman Manchester (HER 415.1.0).

Survival / condition

The survival, extent and condition of below-ground archaeological remains within the Site is presently unknown.

Fragility / vulnerability

Any buried archaeological remains, should they be present and survive *in situ*, are vulnerable to damage or destruction during any earth-moving works associated with the restoration scheme.

Diversity

The Site may be considered to be significant due to diversity as it has high potential to contain a variety of archaeological remains from different periods.

Potential

The Site lies within an area of known Roman activity, most likely associated with the *vicus*. The survival of remains associated with Roman activity may have some potential to address the research agendas outlined in the current *Archaeological Research Framework for North West England (*https://researchframeworks.org/nwrf/ roman-period; Table 4):

Roman	
R08	What evidence is there for the impact of Roman occupation on the environment?
R11	How can we identify typologies and the development of military sites and Roman road systems?
R14	What were the date, extent, function and changes over time of extra-mural settlement (vici) in the region?
R20	How can we identify regional types and patterns of distribution, despite low levels of material culture across the region?
R30	What can archaeology tell us about trade and exchange in late Roman and early post-Roman periods?
R32	How does military resourcing affect civilian sites?

Table 4 Roman research agendas

Roman remains have high potential to survive beneath road surfaces and beneath Whitworth House (see Fig. 14), therefore, the Site may address the research agendas listed above (Table 4). Roman remains are less likely to survive beneath Wrendal House, due to the construction of the semi-basement.

The Site contained market or allotment gardens during the late 18th century. The survival of former field boundaries and relict soils may have some potential to address the research agendas outlined in the current *Archaeological Research Framework for North West England (*researchframeworks.org/nwrf/postmedieval):

Post-medieval and industrial periods	
PM02	How does the transition from timber to stone or brick differ according to building types and across the region?
PM10	Where does pre18th century enclosure survive in the region?
PM13	Where do 16th and 17th century structures survive and how does this inform our understanding of the evolution of settlement patterns during this period?
PM15	How well recorded and understood are farming landscapes, field patterns, distribution of buildings and building types?
PM35	How do markets and their associated buildings develop during this period?
IND05	How well understood is change and development of the agrarian landscape in response to industrialisation and enclosure?

IND15	How well recorded and understood are farming landscapes and field patterns?
IND21	How did industrial period towns affect the pre-existing historic landscape?

Table 5 Post-medieval and industrial period research agendas

Buried remains of relict soils have some potential to survive in the south-west part of the Site (Fig. 14), therefore, the Site has the potential to address the research aims listed above (Table 5).

Various types of workers' houses that been erected across the Site by the late 18th century, with all remaining plots infilled during the early 19th-century. Remains of workers' houses have the potential to address the research agendas outlined in the current Archaeological Research Framework for North West England *(*https://researchframeworks.org/nwrf/industrial; Table 6):

Industrial	
Ind22	How can we take forward our understanding of the impact of industrialisation on the working class and their living conditions?
Ind26	How can we take forward our understanding of the impact of industrialisation on the middle class, particularly their housing and its location?
Ind30	How have buildings changed in response to planning regulations?
Ind33	How well studied and understood are the back yards of workers housing and what is their significance?

Table 6 Industrial Period research agendas

The 18th-century cellared houses have high potential to survive within the Site, particularly beneath Whitworth House, which is not cellared (See Fig. 14). There is low potential for workers' housing to survive beneath Wrendal House due to the construction of the basement. Therefore, there is potential for the Site to address the research agendas listed above (Table 6).

8.4 Summary of significance

It can be concluded from the information gained from the desk-based research that the Site is of archaeological interest and has potential to contain buried remains dating from the Roman to industrial periods (see Fig.14).

Using the above criteria and the ICOMOS guide for assessing value of heritage assets (the Site most likely contains non-statutory archaeological remains of low (local) significance and potentially medium (regional) significance.

The Site has high potential to contain Roman remains that would be of medium (regional) significance.

The Site has high potential to contain remains of various types of workers' housing, which are of low (local) significance.

The Site has limited potential to contain relict soils, which are of low (local) significance.

The Site currently contains two early 20th-century warehouses which are considered to be negligible.

The Grade II Listed Manchester South Junction and Altrincham railway viaduct will be retained within the scheme and will not be directly impacted (considered in a separate heritage statement, Kathryn Sather Associates, 2024).

9. Impact assessment

9.1 Development Proposals

Glenbrook WWS Ltd have prepared a planning application for the redevelopment of land at 2-4 Whitworth Street West, Manchester City Centre. The proposed scheme will comprise of the construction of a BTR residential tower to provide a mix of one, two and three bed apartments over 43 floors. The ground floor will include for residential amenity providing the main front of house entrance & reception area, private residents gym plus associated back of house facilities (bin storage, cleaners store etc). The ground floor will also include a small retail unit. The upper mezzanine floor will provide additional amenity and co-working space.

9.2 Impact upon archaeological resource within the Site

Delivery of the development proposals will necessitate ground-breaking and landscaping works across the Site, with potential to impact on buried archaeological remains (see Fig. 14).

This assessment has demonstrated that the Site has the potential to retain buried remains of Roman activity, post-medieval relict soils and various types of worker's housing dating from the 18th century to early 19th century. Any remains that do exist within the Site are likely to be of low (local) and medium (regional) significance and, without a programmed of mitigation, the scheme could damage or destroy these remains.

10. Recommendations

10.1 Heritage Assets

The NPPF makes clear that where the loss of the whole or a material part of a non-designated heritage asset's significance is justified by a development, the developer should be required to record that asset and advance understanding of its significance, and to make this evidence publicly accessible.

10.2 Further Investigation

Following consultation with Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as archaeological advisor to Manchester City Council, it is anticipated that, in the first instance, an archaeological evaluation will subsequently be required (in the form of trial trenching or a strip, map and record) to establish the presence or absence of buried archaeological remains and, if present, their extent and significance. The exact scope and extent of any such further investigation of the Site will be determined by GMAAS.

Should significant archaeological remains be encountered during the archaeological evaluation, further excavation may be required to offset the harm of the development to the buried archaeological resource, in line with the guidance provided by the National Planning Policy Framework. The scope and extent of any such further investigation will be determined by the Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as archaeological advisor to Manchester City Council.

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Date accessed: 11/06/2024

Acknowledgements

Salford Archaeology would like to thank the Glenbrook WWS Ltd for commissioning the project. Further thanks also given to Ian Miller and Lesley Dunkley of GMAAS for their advice and assistance.

The desk-based research and report were compiled by Katie Fletcher, and illustrations were provided by Sarah Mottershead. The report was edited by Natalie Poundall.

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Figure 6: Site boundary superimposed on the Ordnance Survey 1:500 Town Plan map of 1891

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Figure 8: Site boundary superimposed on the Ordnance Survey 1:2500 County Series Map of 1922

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Figure 11: Gazetteer sites superimposed onto modern mapping

Figure 12: Gazetteer sites superimposed onto modern mapping

Figure 13: Gazetteer sites superimposed onto modern mapping

Figure 14: Areas of archaeological potential superimposed onto modern mapping



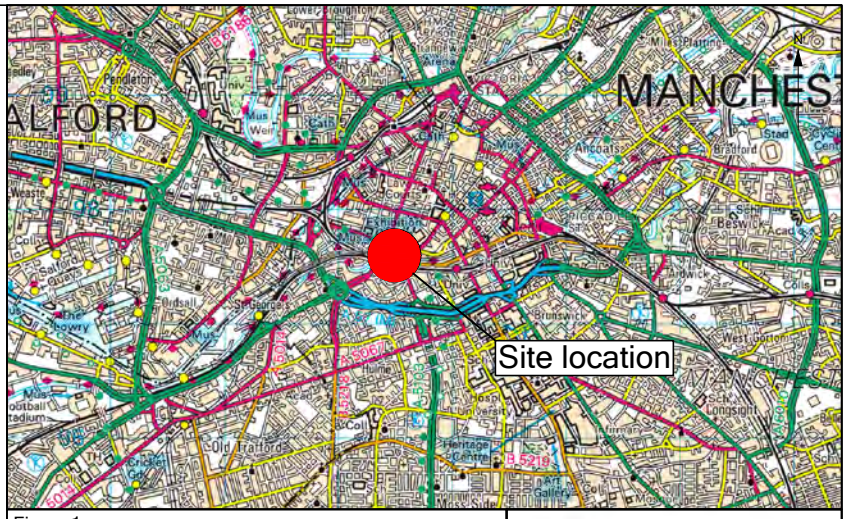
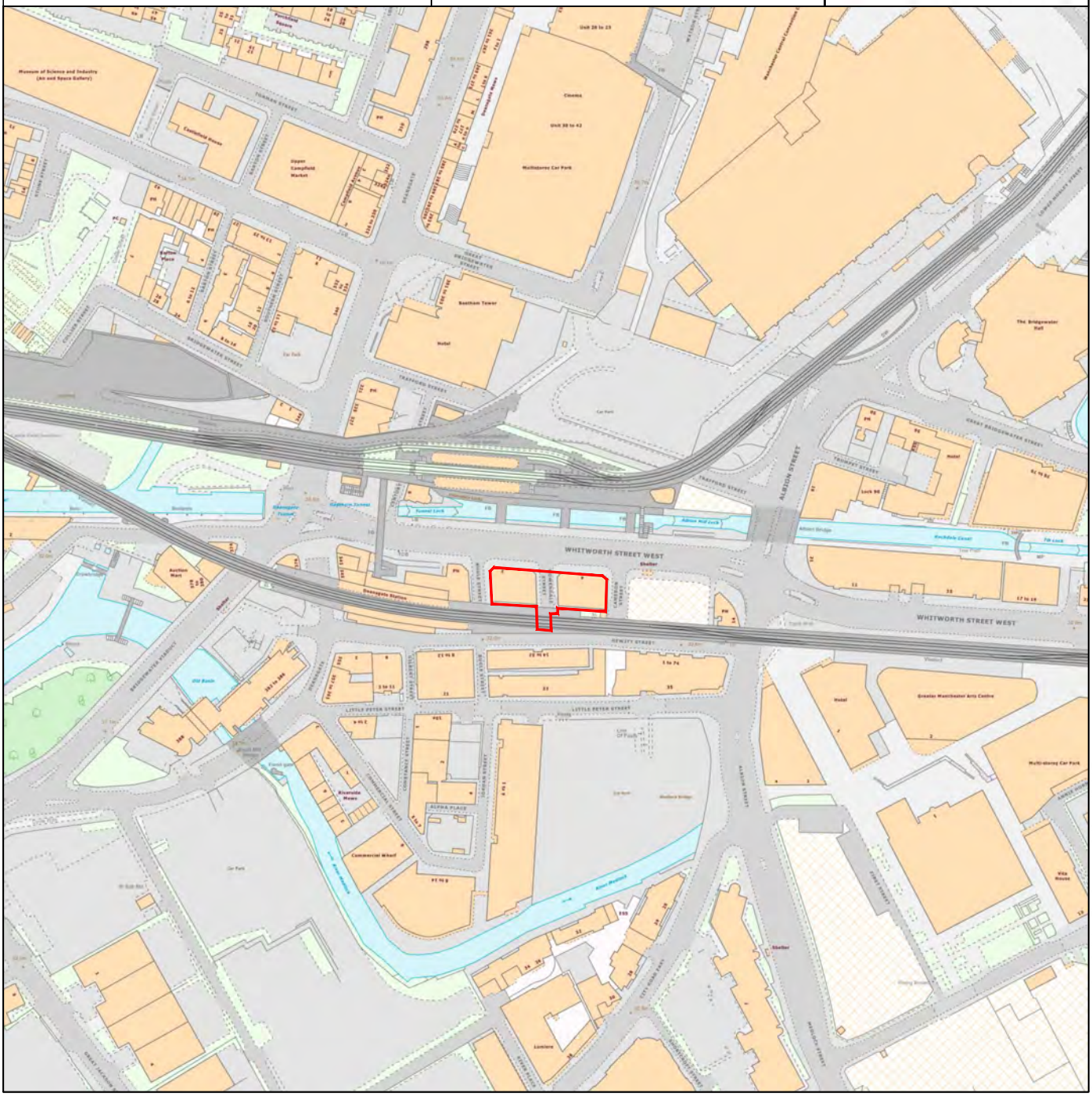


Figure 1:

Site Location

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SALFORD ARCHAEOLOGY



Salford Archaeology, Peel Building, The Crescent, Salford, M5 4WT

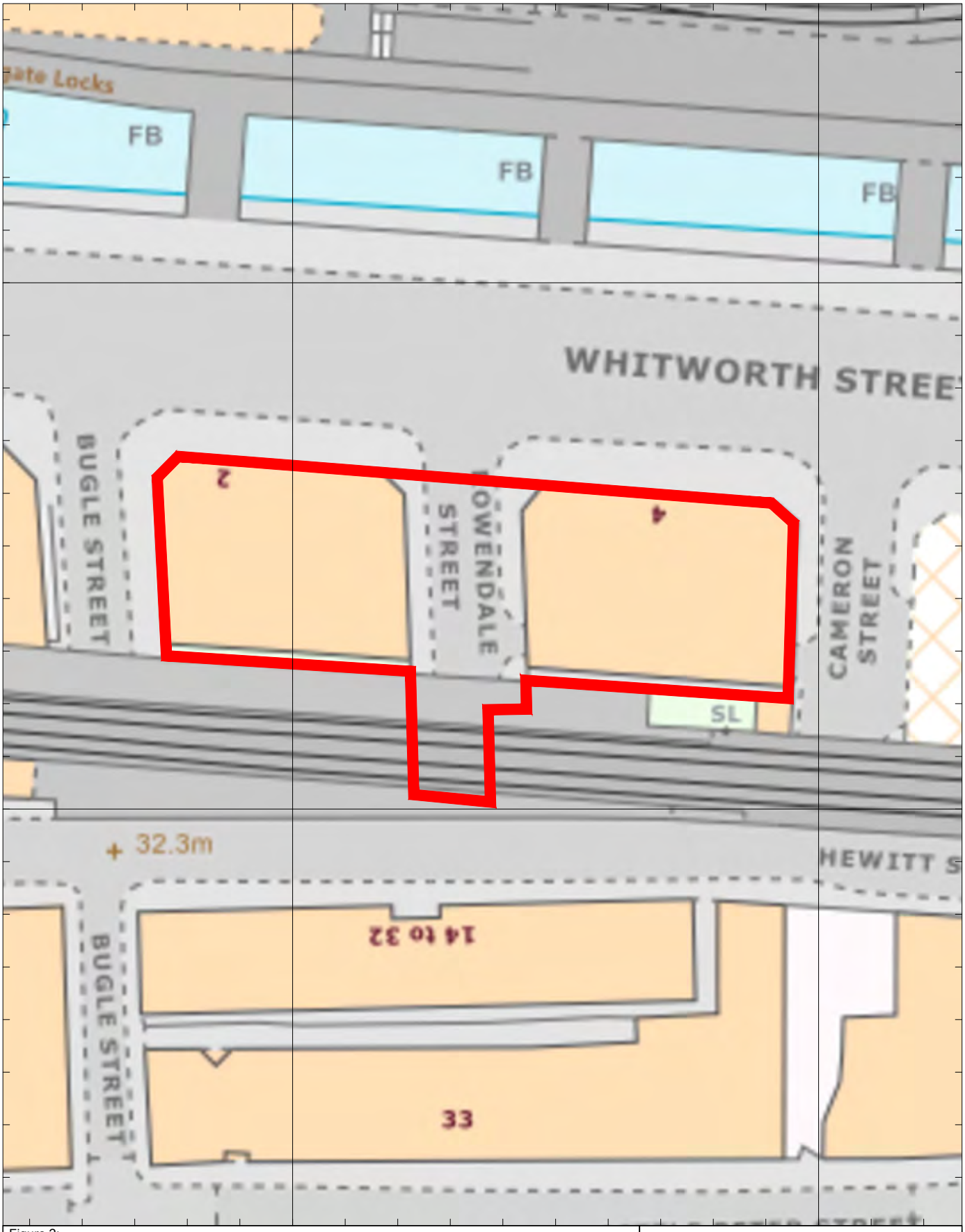


Figure 2:

Site Boundary Superimposed onto Modern Mapping

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N

Key:

Site Boundary

SALFORD ARCHAEOLOGY

0 20 m

Scale at A4 1:500

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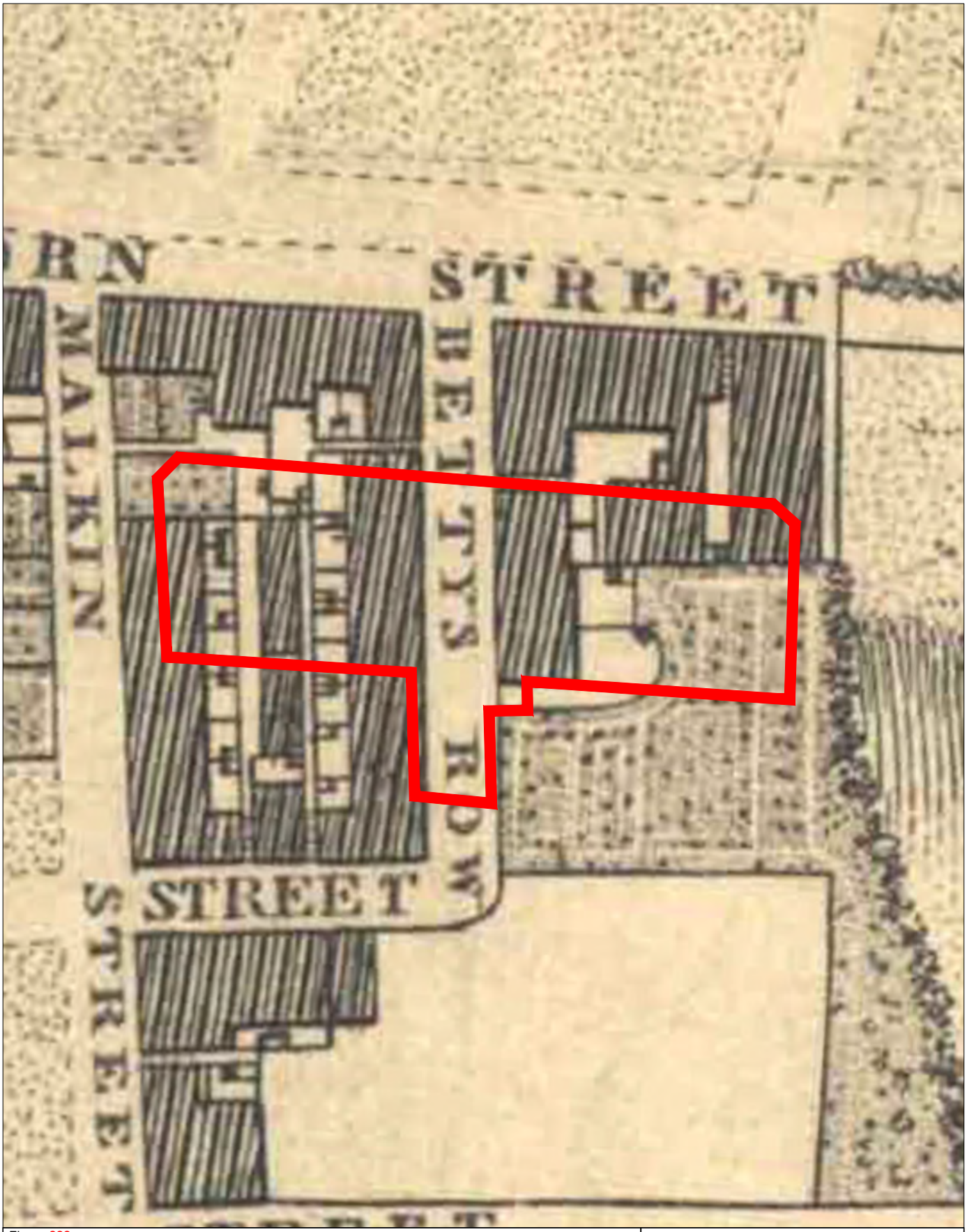


Figure ???:

Site Boundary Superimposed onto Green's Map of Manchester & Salford 1787-94

N

Key:

Site Boundary

SALFORD ARCHAEOLOGY

0 20 m

Scale at A4 1:500

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT



Figure ???:

Site Boundary Superimposed onto Bancks & Co's Map of Manchester & Salford 1831

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Key:

Site Boundary

SALFORD ARCHAEOLOGY

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Scale at A4 1:500

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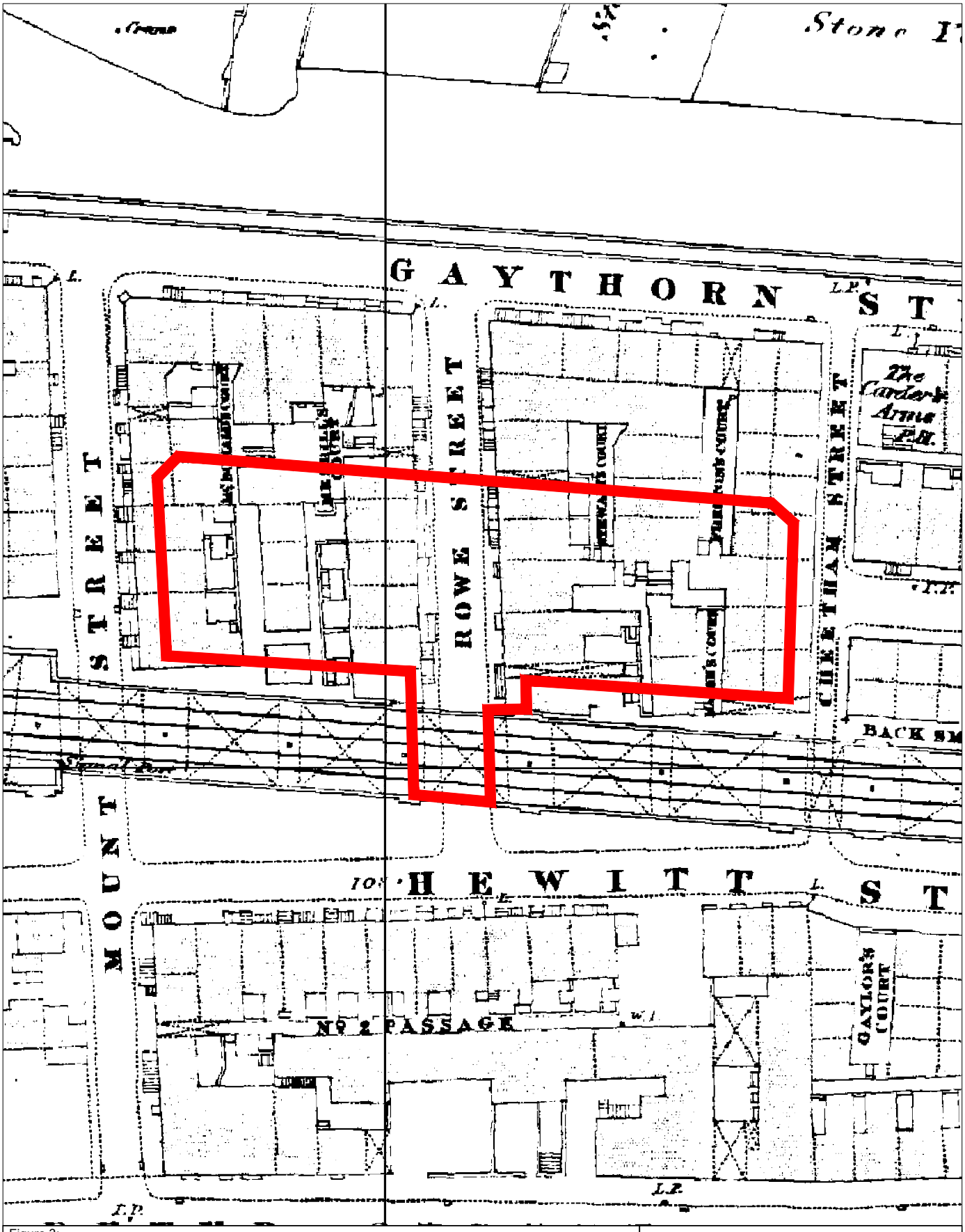


Figure 3:

Site Boundary Superimposed onto the 1:1056 Town plan of 1851

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Key:

Site Boundary

SALFORD ARCHAEOLOGY

0 20 m

Scale at A4 1:500

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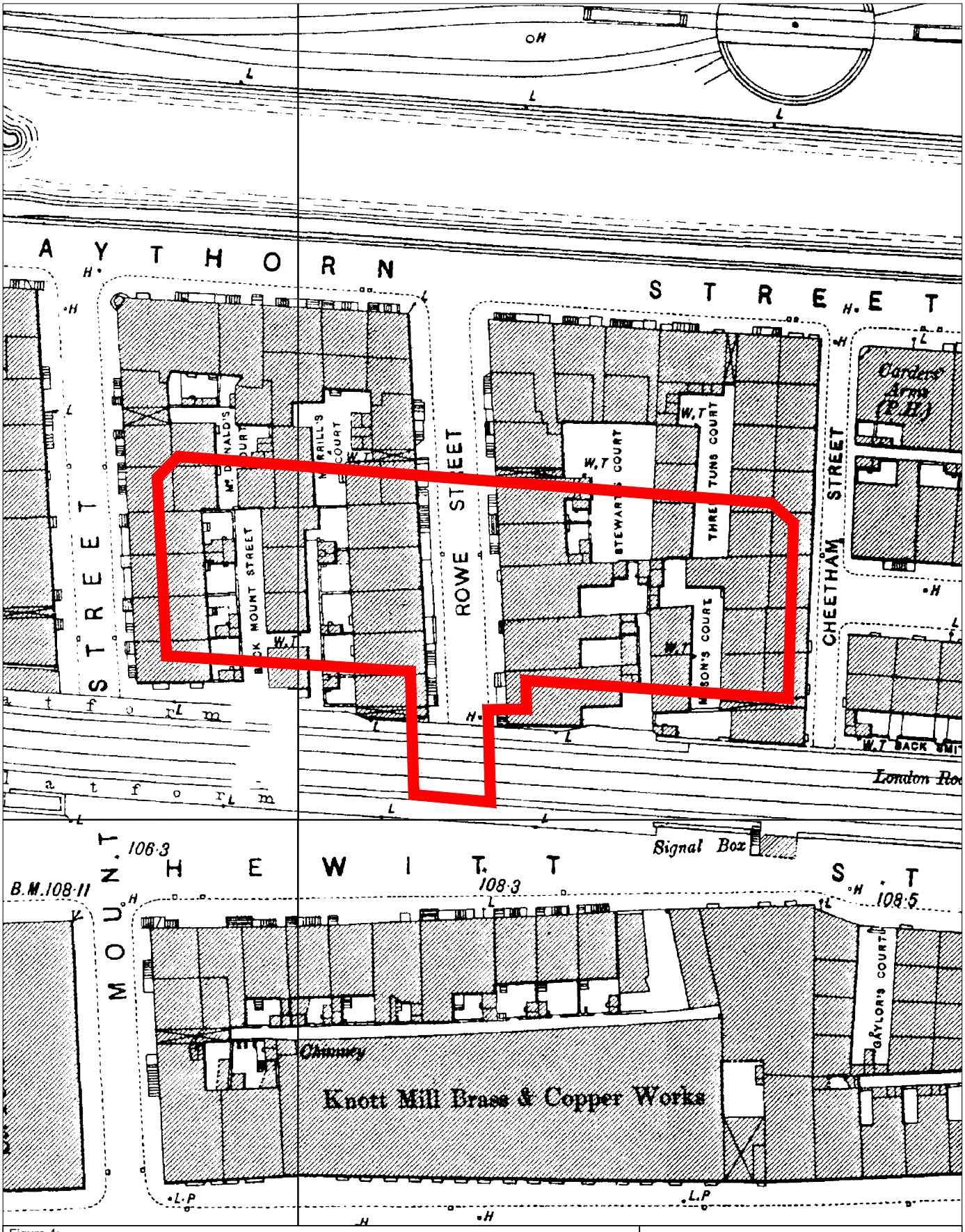


Figure 4:

Site Boundary Superimposed onto the 1:500 Town plan of 1891

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Key:

Site Boundary

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0 20 m

Scale at A4 1:500

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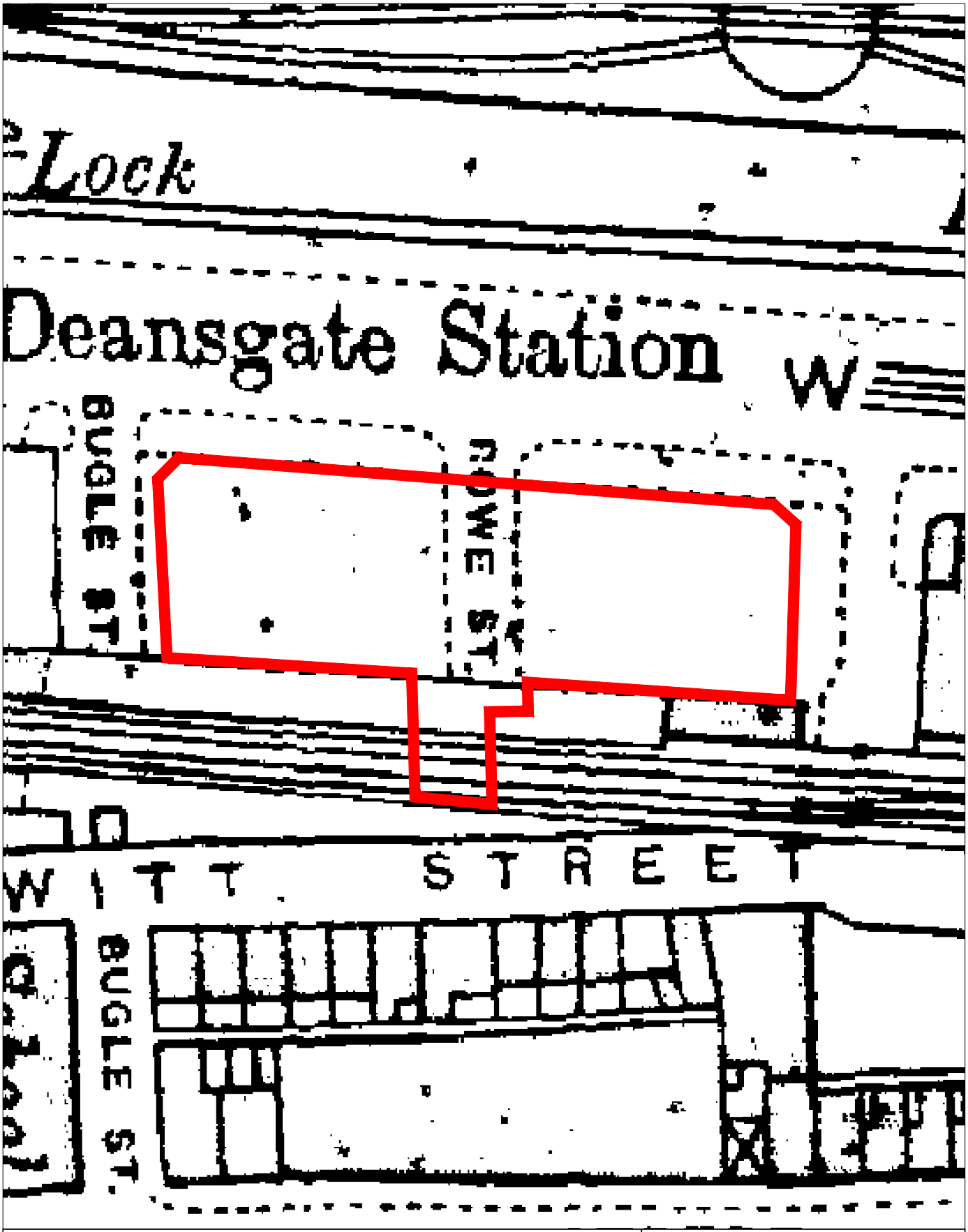


Figure 5:

Site Boundary Superimposed onto the 1:2500 County Series Map of 1908

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Key:

Site Boundary

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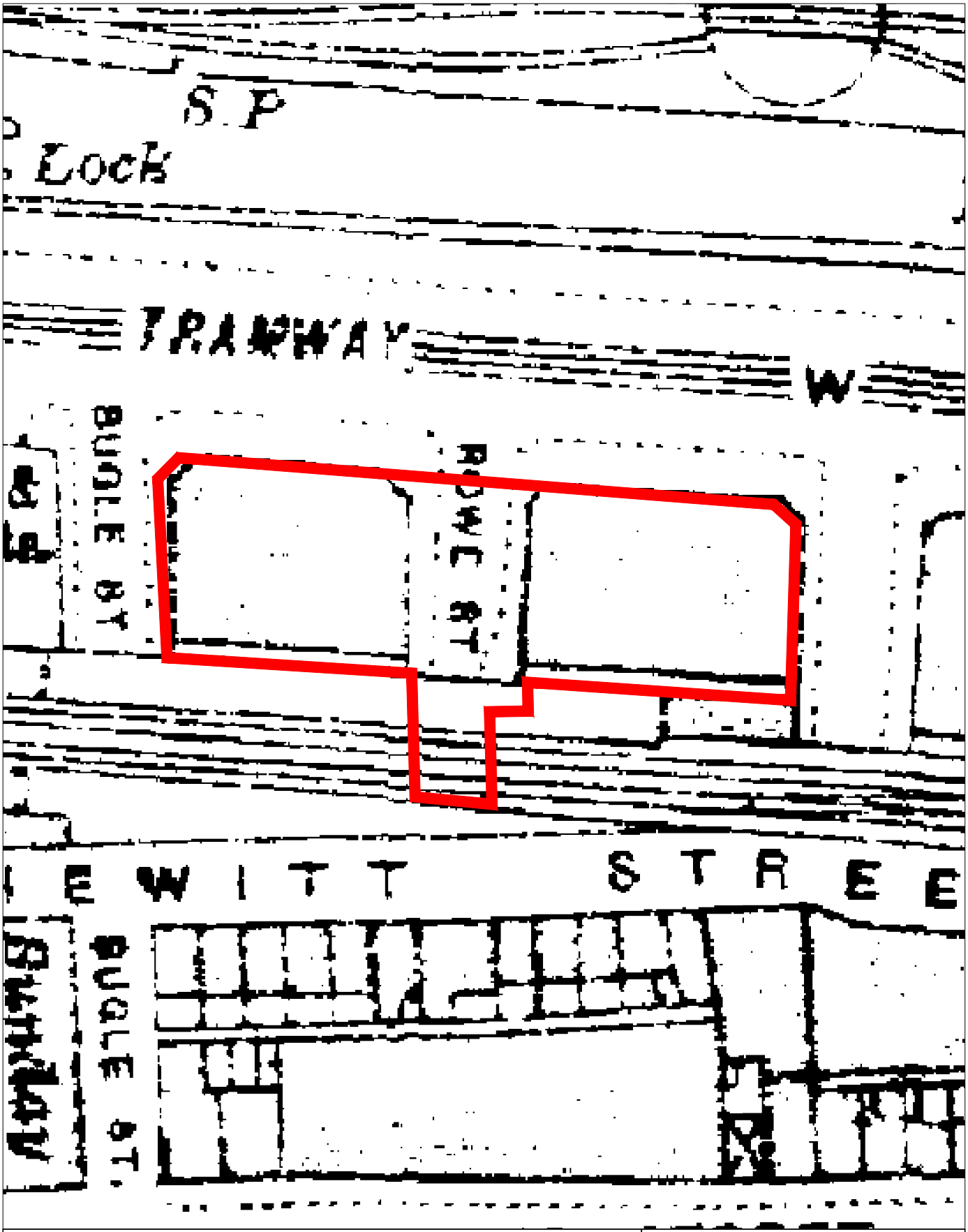


Figure 6:

Site Boundary Superimposed onto the 1:2500 County Series Map of 1922

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Key:

Site Boundary

SALFORD ARCHAEOLOGY

0 20 m

Scale at A4 1:500

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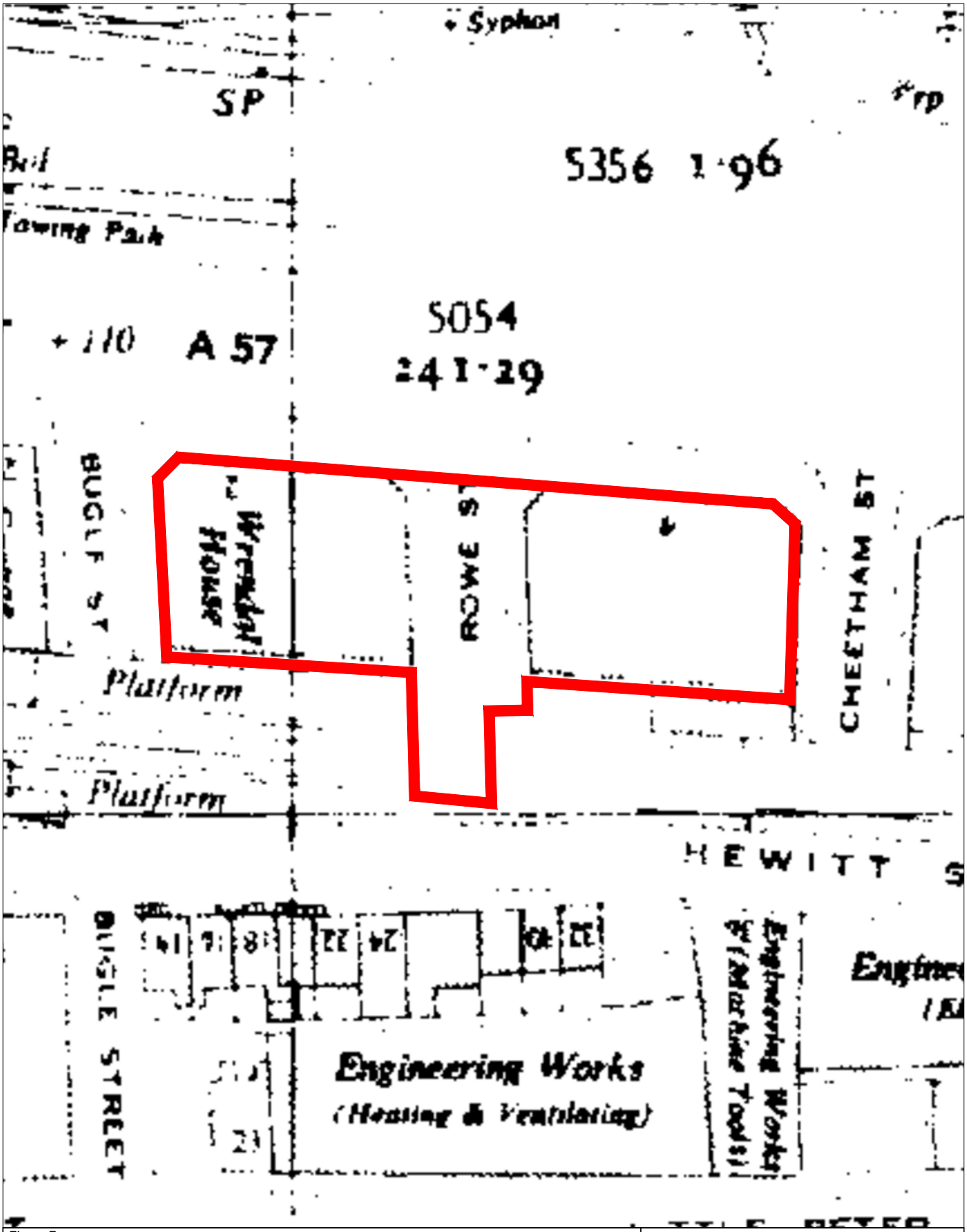


Figure 7:

Site Boundary Superimposed onto the 1:2500 National Grid Map of 1955

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N

Key:

Site Boundary

SALFORD ARCHAEOLOGY

0 20 m

Scale at A4 1:500

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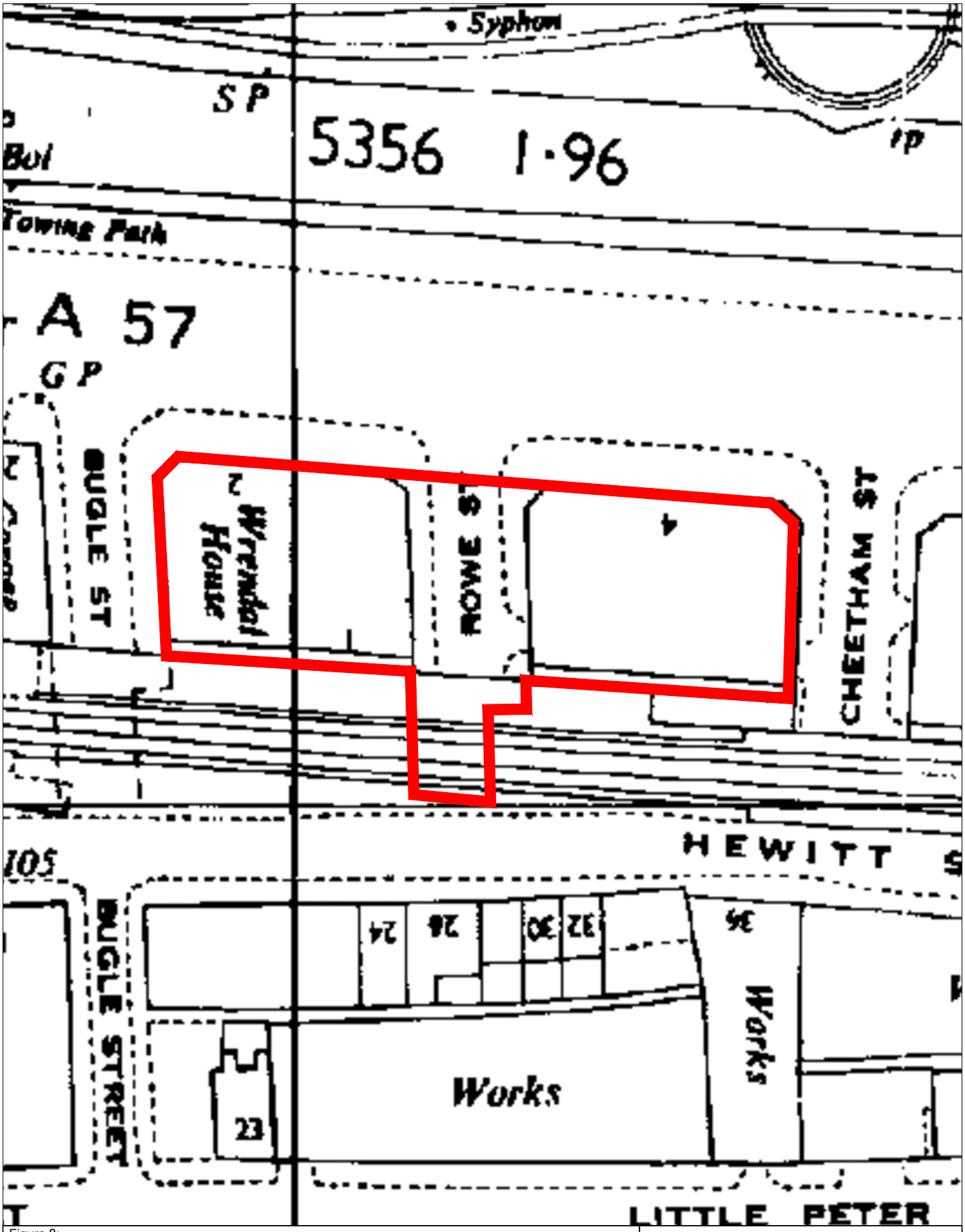


Figure 8:

Site Boundary Superimposed onto the 1:2500 National Grid Map of 1965

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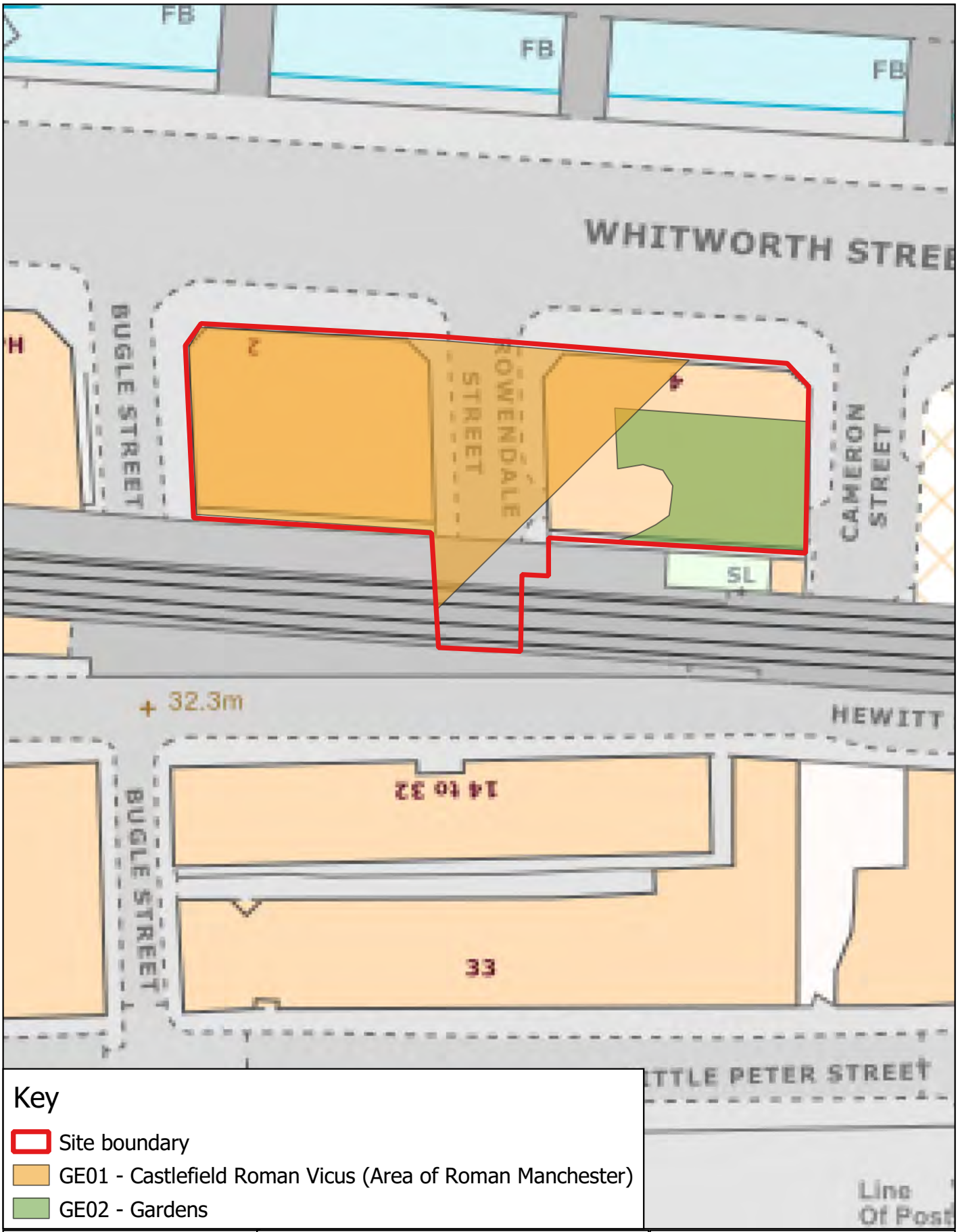
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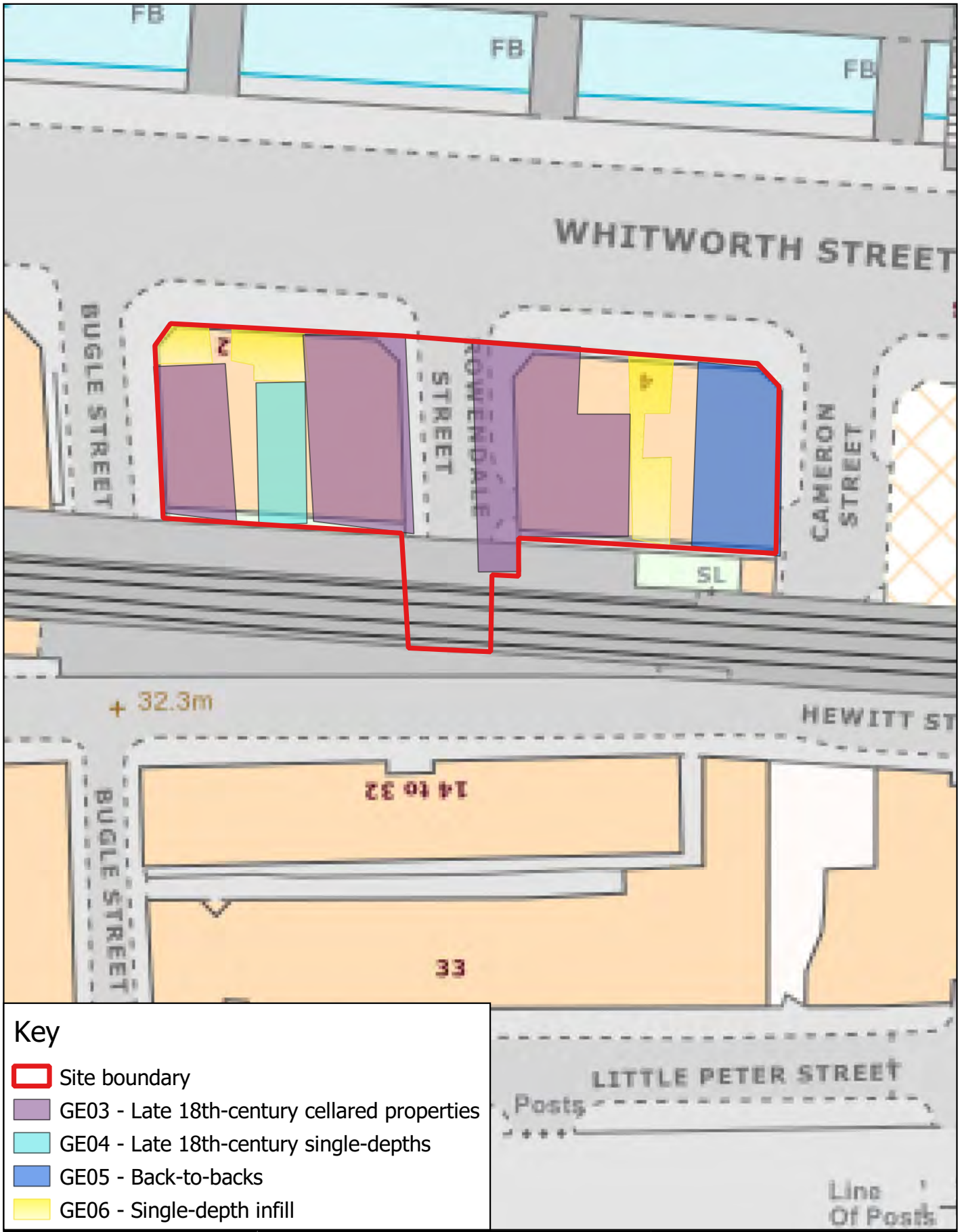
University of Salford MANCHESTER

SA SALFORD ARCHAEOLOGY

Figure 11: Locations of Gazetteer Entries

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0 7.5 15 m



Key

- Site boundary
- GE03 - Late 18th-century cellared properties
- GE04 - Late 18th-century single-depths
- GE05 - Back-to-backs
- GE06 - Single-depth infill

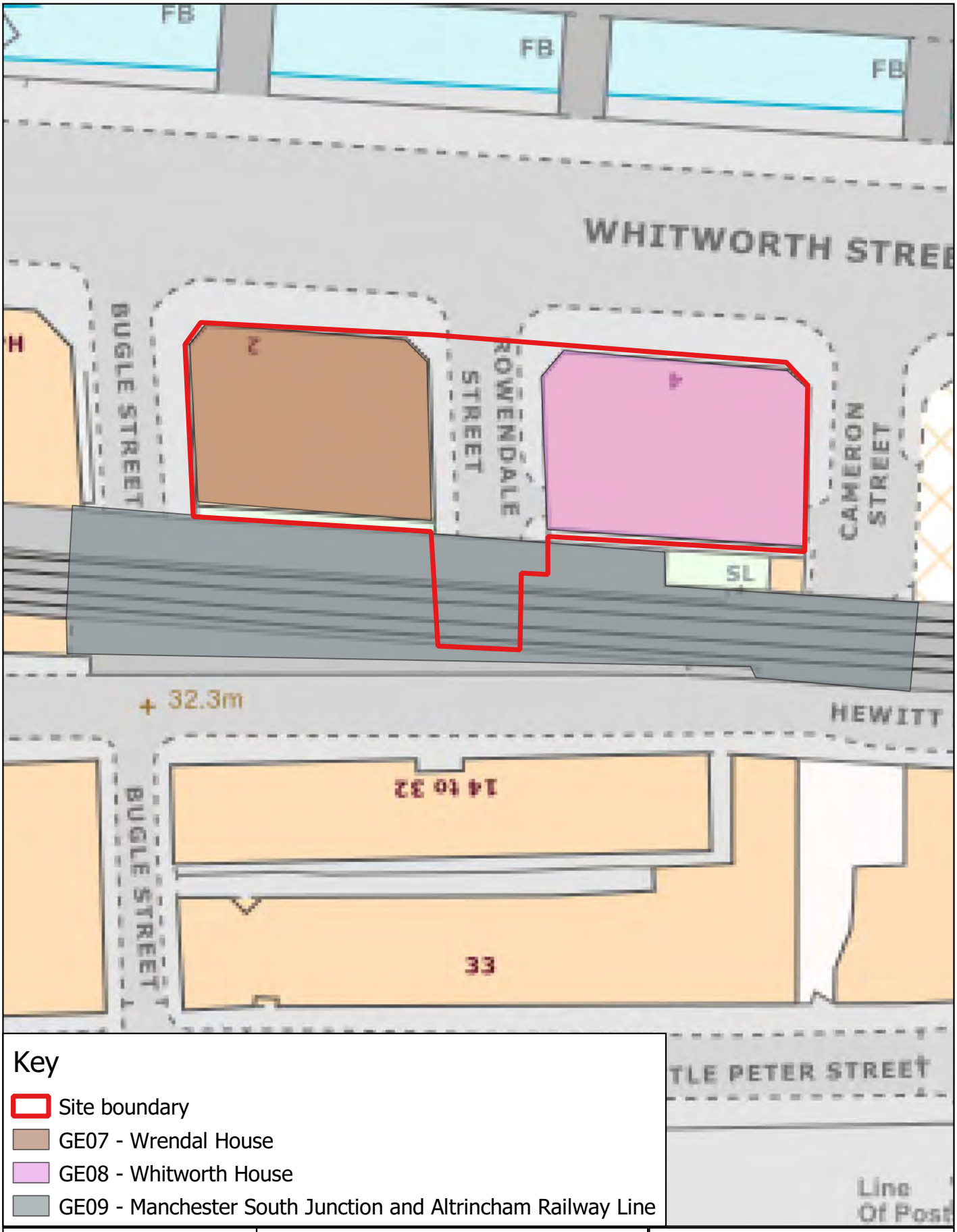
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SA SALFORD ARCHAEOLOGY

Figure 12: Locations of Gazetteer Entries

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Key

- Site boundary
- GE07 - Wrendal House
- GE08 - Whitworth House
- GE09 - Manchester South Junction and Altrincham Railway Line

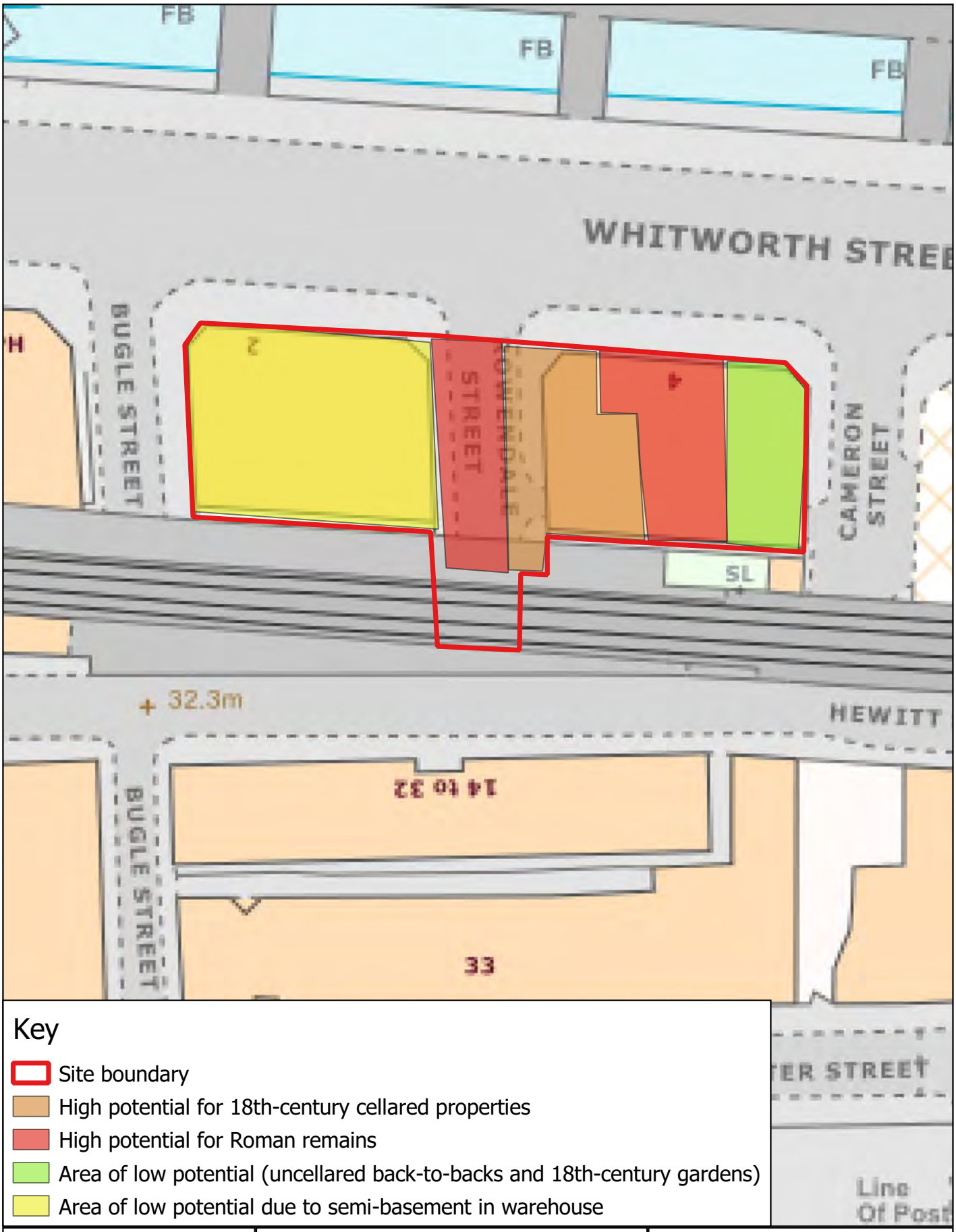
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Figure 13: Locations of Gazetteer Entries

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0 7.5 15 m



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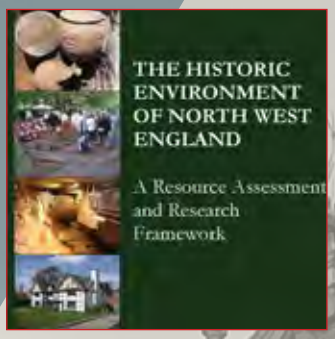
Figure 14: Areas of archaeological potential

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SALFORD ARCHAEOLOGY

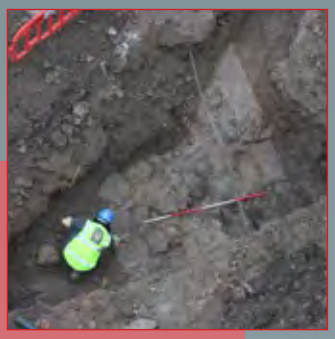
CONSULTANCY



DESK-BASED ASSESSMENTS



WATCHING BRIEF & EVALUATION



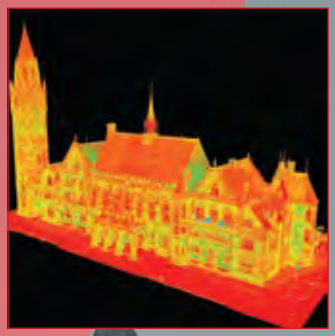
EXCAVATION



BUILDING SURVEY



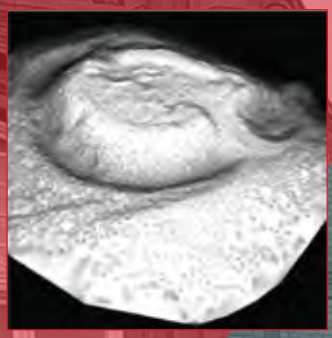
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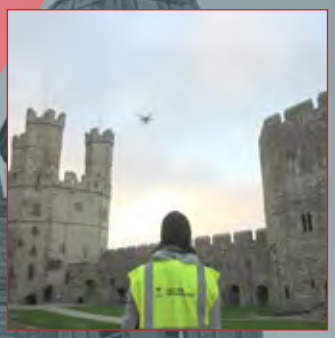
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LANDSCAPE SURVEYS



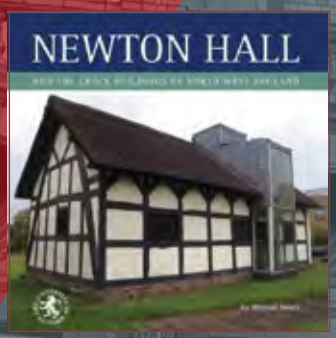
DRONE SURVEYS



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University of Salford, Manchester, M5 4WT
Telephone: 01612953818 Email: a.thompson@salford.ac.uk

Appendix 4: Phase 1 Geo-Environmental Investigation Report

IGE consulting

2-4 Whitworth Street West, Manchester

Phase 1 Geo-Environmental Investigation Report

For: Glenbrook Property

GLENBROOK

Job Number:	**4201**
Report Reference:	**4201-01A**
Issue Status / Revision:	**Revision A** (updates to the following Sections: 1.1, 1.2, 2.2, 3.2.1, 3.3.2, 3.13 and 4.2)
Date:	**August 2024**
Written By:	**Aga Stefanowicz** MEarthSci, FGS
Checked By:	**Liam McMahon** MESci, MSc, CGeol, FGS
Authorised By:	**Andrew Edwards** MSc, PIEMA, MIEnvSoc, FGS, CEnv
Previous Revisions and Date:	**First Issue – July 2024**

IGE Consulting Ltd, Office 16, Bartle House, Oxford Court, Manchester, M2 3WQ

Tel: 0161 914 9170

Email:contact@igeconsulting.co.uk

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QMS ISO 9001 : 2015 REGISTERED
QMS ISO 14001 : 2015 REGISTERED
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CHAS PREMIUM PLUS
BVC

APPENDICES

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1.0 INTRODUCTION

This Phase 1 Geo-Environmental Investigation report has been prepared at the request of Glenbrook Property. Instructions to proceed were received in June 2024. Phase 1 desk study work was undertaken in July 2024.

1.1 Site Location and Description

This report pertains to a c. 0.24 Ha site located at 2-4 Whitworth Street West, Manchester, c. 70m east of Deansgate Station, at the approximate post code M1 5WY. The National Ordnance Survey Grid Reference for the centre of the site is 383516E 397517N.

The site currently comprises 2 No. vacant 2-storey and 3-storey buildings separated by Rowendale Street running north to south through the centre of the site. The site is bound by Whitworth Street West to the north, Cameron Street and a vacant site of the planning permission for 10-12 Whitworth Street West to the east, Network Rail railway tracks and associated Deansgate Station platform to the south and Bugle Street and the Rebellion Club to the west. Access to both sections of the site is off Whitworth Street West and Rowendale Street. An aerial photo of the site is included below:



Figure 1: Aerial image of the site dated October 2022.

A site location plan is contained in Appendix 2.

Proposed Development

This Phase 1 Geo-Environmental Investigation is to be used for submission to the Local Authority as part of a planning application. It is the Client's intention to demolish the existing vacant buildings and develop the site into a high-rise combined residential and commercial 44-storey building.

A preliminary proposed site plan is included within Appendix 2 and as an extract below.

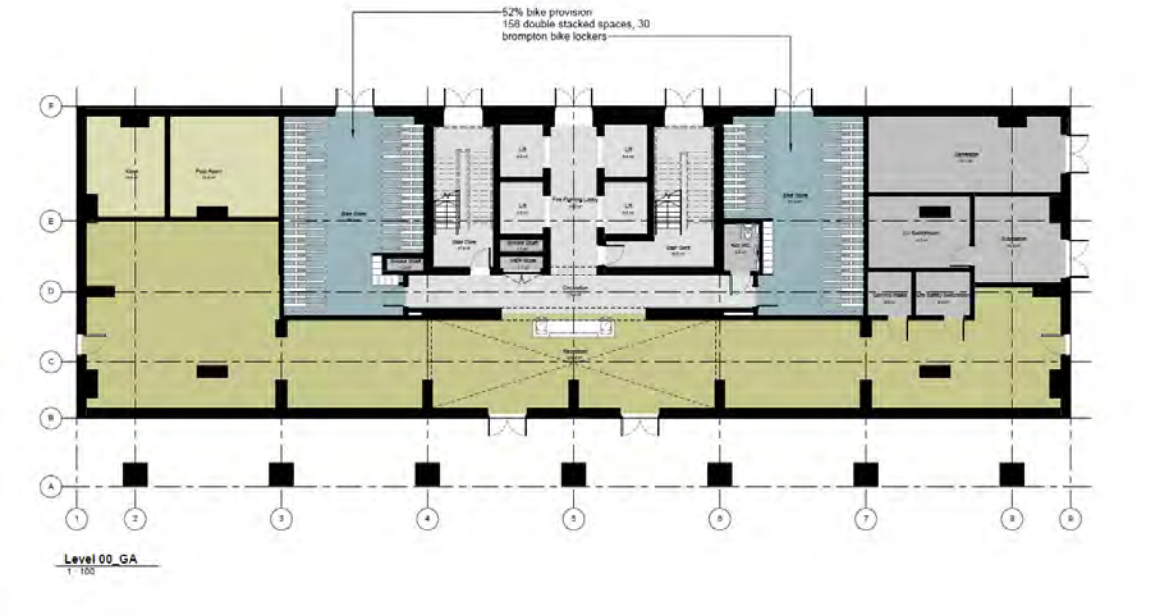


Figure 2: A proposed site plan (taken from Shepard Robson, General Arrangement Ground Floor Plan, 7196-SRA-ZZ-00-DR-A-20100, dated 13.06.2024).

1.2 Brief

The brief was to carry out a Phase 1 Geo-Environmental Investigation for the site based upon the proposed development outlined in Section 1.0. The site area is shown on the site location plan contained in Appendix 2.

The investigation was to include the following:

a) Assess the probable ground conditions and contaminated land conditions on and below the site based on existing and historical site uses and relevant off-site activities, including a site walkover.

b) Identify sources of contamination that may be present at the site using current contaminated land guidance and develop a conceptual site model for potential human health, ground gas and controlled waters receptors.

c) Undertake a Preliminary Risk Assessment which will determine the requirement for further environmental (contaminated land) investigation and assessment.

d) Design, on the basis of the anticipated ground conditions, appropriate ground investigation works and discuss potential development issues (i.e. sub-surface features – obstructions, unexploded ordnance (UXO), infilling, compressible ground, faulting, mineral extraction, mining and land instability).

A report was to be provided to summarise findings and to provide recommendations. The limitations of this investigation work and report are included in Appendix 1.

2.0 SCOPE OF INVESTIGATION WORKS

2.1 Walkover Survey

The site was visited on 2nd July 2024 in overcast weather conditions. Photographs were taken of the site during the walkover survey and these photographs, together with a plan indicating their location and direction, are contained in Appendix 3.

2.2 Documentation

A combined Enviro + Geo Insight report (Ref: GS-IJN-N3I-HCD-ZC5) was obtained from Groundsure, an environmental database company, which provides a list of recorded past and present activities at or adjacent to the site which could have an impact on the levels of contamination in the soils and groundwater at the site. As part of the desk study works, the below documents were obtained and examined. Unless otherwise stated, the documents are contained within the Groundsure Enviro + Geo Insight Report in Appendix 5:

a) Groundsure maps, all dated 2024 as follows:

- Historical Land Use map;
- Environmental Permits, Incidents and Registers map;
- Landfill and other Waste Sites map;
- Current Land Use map;
- Hydrogeology and Hydrology maps;
- Environment Agency / Natural Resources Wales flood maps;
- Designated Environmentally Sensitive Sites map;
- Geological maps and Ground Working map;
- Mining, Extraction & Natural Cavities map;
- Natural Ground Subsidence maps;
- Borehole Records map; and
- Railways and Tunnels map.

b) Aerial photographs of the site dated April 2019, June 2015, June 2009, and June 2000.

c) Historical Ordnance Survey maps dated between 1848 and 2024, at scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

d) The following sources were obtained and examined from the British Geological Survey. All items were copied under licence: [C18/01] British Geological Survey ©UKRI. All rights reserved:
   - The BGS 1:50,000 bedrock geological map (Sheet ref 85 dated 2010);
   - The BGS 1:50,000 bedrock and superficial geological map (Sheet ref 85 dated 2011); and
   - The BGS 1:10,560 solid and drift geological map (Sheet ref SJ89NW, dated 1976).

e) A Zetica UXO Risk Map was obtained and is included in Appendix 7.

f) A Preliminary UXO Risk Assessment Report was obtained from Brimstone Site Investigation Ltd. and is included in Appendix 7.

g) Coal Authority Consultants Mining Report (Ref: 51003432566001). The report is contained within Appendix 8.

h) Britain From Above aerial photographs, copied under Content Licence (Ref: EPW062697, EPW062700, EPW062708 and EPW062710, all dated 1939), included within Appendix 9.

i) Goad Fire Insurance Map of Manchester, Goad Old Street Map Sheet Number 336 Manchester III Jan 1928 Extension – a request of provision of the paper copy of the 366 Sheet was submitted to Goad Old Street Maps on the 2nd July 2024.

j) Manchester Historical Maps, accessed online at the following address on 1st July 2024: *https://manchester.publicprofiler.org*.

k) Old Maps Online, accessed online at the following address on the 1st and 2nd July 2024: *https://www.oldmapsonline.org*.

l) Manchester History article *Gaythorn Gas Works*, accessed online at the following address on the 2nd July 2024: *https://manchesterhistory.net/manchester/gone/gaythorn.html.*

m) Heritage Gateway records for the site, accessed online at the following link on the 2nd July 2024: *https://www.heritagegateway.org.uk.*

n) Historical records and plans made available to IGE by Kathryn Sather and Associates Heritage Conservation Consultants, supplied on 26th July 2024.

3.0 FINDINGS

3.1 Walkover Survey

The walkover survey was carried out on 2nd July 2024 during overcast weather conditions. During the walkover survey the following features were noted.

The site currently comprises 2 No. disused buildings at Whitworth Street West, a 3-storey western building and a 2-storey eastern building with associated industrial units at the rear of the building. Rowendale Street is located between the two buildings. The site is located immediately adjacent to Platform 1 of Deansgate railway station, which is raised above ground level and situated on a viaduct.



Figure 3: Photographs of the front elevations of the eastern buildings Whitworth Street West (left) and the western building (right).

Deansgate Station

The southern boundary of the site is located within c. 2m of the Network Rail Deansgate viaduct and Platform 1 which is located on the viaduct. The height of the viaduct and platform is approximately 10m and is level with the first floors of both disused buildings at Whitworth Street West. The Rowendale Street Bridge. Access to the rear of the buildings to assess the exact distance from the Network Rail assets and the ground conditions was not possible, as the area has been closed off to the public. A visual assessment of the rear area has been undertaken based on the limited view of the site from Platform 1. Liaison with Network Rail is recommended prior to the start of any intrusive works to delineate boundaries and establish any necessary ‘stand off’.



Figure 4: Photographs of the rear elevations of the eastern buildings (left) and the western building (right), as seen from Platform 1 at Deansgate station.



Figure 5: Photographs of the land between the site and Deansgate viaduct at the eastern building (left) and the western building, as seen from Platform 1 at Deansgate station.

Services

Evidence for multiple services, including underground service cupboards, street lighting, (disused) CCTV systems, parking meter machines, manholes and drainage grates, was noted across the site and the vicinity. As the site comprises private land, it is envisaged that unrecorded services are present around and on site and could be live.



Figure 6: Drain grates and manhole covers recorded adjacent to the eastern building (left) and western building (right).



Figure 7: A traffic light control and street lighting control access point in front of the eastern building at Whitworth Street West (left) and underground service cupboards located on the public footpath in from of the western building at Whitworth Street West (right).

Contamination

No evidence of contamination (i.e. spillages or leakages) or contaminative sources were identified. Possible evidence of combustion was recorded adjacent to the south-western corner of the western building near the Deansgate viaduct. Evidence for fly tipping was noted adjacent to the eastern site boundary along the eastern building; the discarded material comprised mainly plastic, metal and wood. The eastern site boundary is adjacent to another development site at 10-12 Whitworth Street, though access to that site was not available.



Figure 8: Suspected material combustion recorded near the south-western site corner of the western building (left) and fly tipping along the eastern site boundary at the eastern building (right).

Due to access restrictions, a walkover survey of the building interiors was not possible at the time of the writing of this report. Following liaison with the client, the walkover will be undertaken on 11th July 2024.

3.2 Site History

The site development history has been researched by reference to historical maps, street plans and aerial photographs. The historical maps are included in Appendix 4 to this report and the principal observations, which are divided into on-site history and off-site history, are summarised below:

3.2.1 On-Site History

Date	Site Feature
1787 – 1808	On the earliest historical map (William Green, A Plan of Manchester and Salford 1787-94 in 18 sheets) the site is recorded as pasture land situated to the south of Gaythorn Street. The site is noted to be located on a hill which slopes towards the south with a suspected hedge dividing the pastures running through the site.
1808 – 1908	Residential buildings are now constructed in place of the pasture fields with the Malkin Street running north-south through the centre of the site.
1908 - 1914	The buildings are no longer present and the site is now vacant land, with Malkin Street, now renamed Rowe Street running through the site. The Knott Mill and Deansgate railway station is now present to the south of the site.
1914 – 2024	2 No. multi-storey buildings (Avon House and Wrendal House) are now constructed on the previously vacant land. There is no significant change recorded to the site until present.

The following historical information regarding the site and the historical uses of the on-site buildings has been obtained from the Heritage Gateway website and the information shared by Kathryn Sather and Associates. The scans of historical plans of the site obtained from Kathryn Sather and Associates are included within Appendix 10.

Avon House (eastern building, 1908)

Based on the information obtained from the Heritage Gateway website, it is known that the buildings on site were both constructed by 1914. The eastern 2-storey building (Avon House) and the adjacent single-storey industrial extension were designed by Cyril Ayres Ainley and primarily used as a warehouse, garage, office spaces and workshops as part of Halley's Industrial Motors Ltd, as evident from the records at Heritage Gateway website and from the historical records made available to IGE by Kathryn Sather and Associates. It was recorded that internal alterations to the ground floor and the office spaces on the floors above were undertaken in the 1990s. It is anticipated that at least in the 2000s the building served as headquarters

for Hobs Repro Ltd, a printing and graphic design company and Union Cars (Deansgate), a taxi service.

The information obtained from Kathryn Sather and Associates confirms the usage of the building as detailed in the records from Heritage Gateway. The archive plans of the building interior and detailed foundation design were made available to IGE. The information available on the foundations of Avon House states that there is a basement present to c. 3.35m (c. 11ft) below the ground floor, c. 2.13m (c. 4ft) below the external ground level. The footings of the building are noted to extend to c. 1.68m (c. 5ft 6in) below the floor of the basement, equivalent to c. 3.83m below the external ground level. The thickness of the footings varies across the building, however, the thickest columns were measured at c. 0.95m (3ft 1in). It was also noted that the bedrock is present within c. 1.22m (c. 4ft) below the floor of the basement, equivalent to c. 3.35m (c. 11ft) below the external ground level. The railway passage width was not included on the provided plans, however it was noted to be approximately 1.50m wide during the walkover, which creates a pathway between the building and the railway arches.

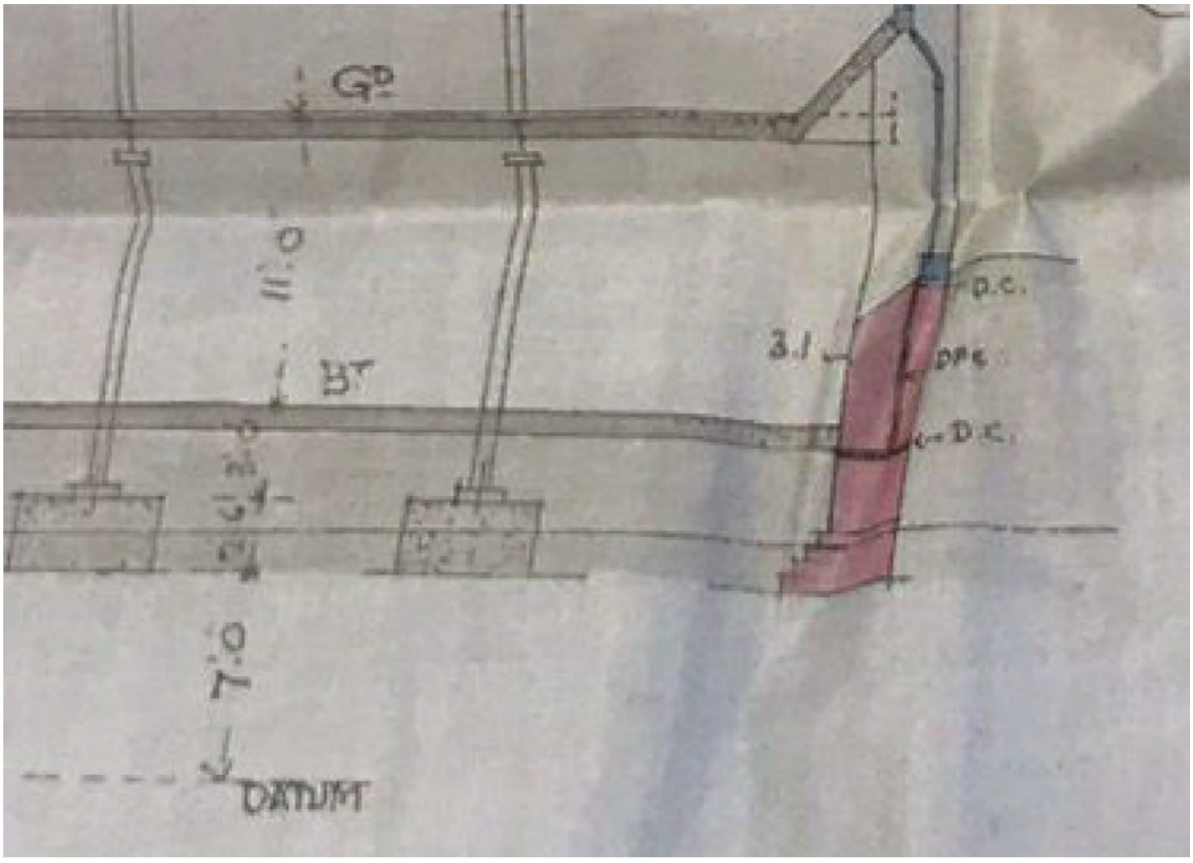


Figure 9: An extract of an architect's sketch of Avon House interior and foundation details from historical records, taken from Kathryn Sather and Associates.

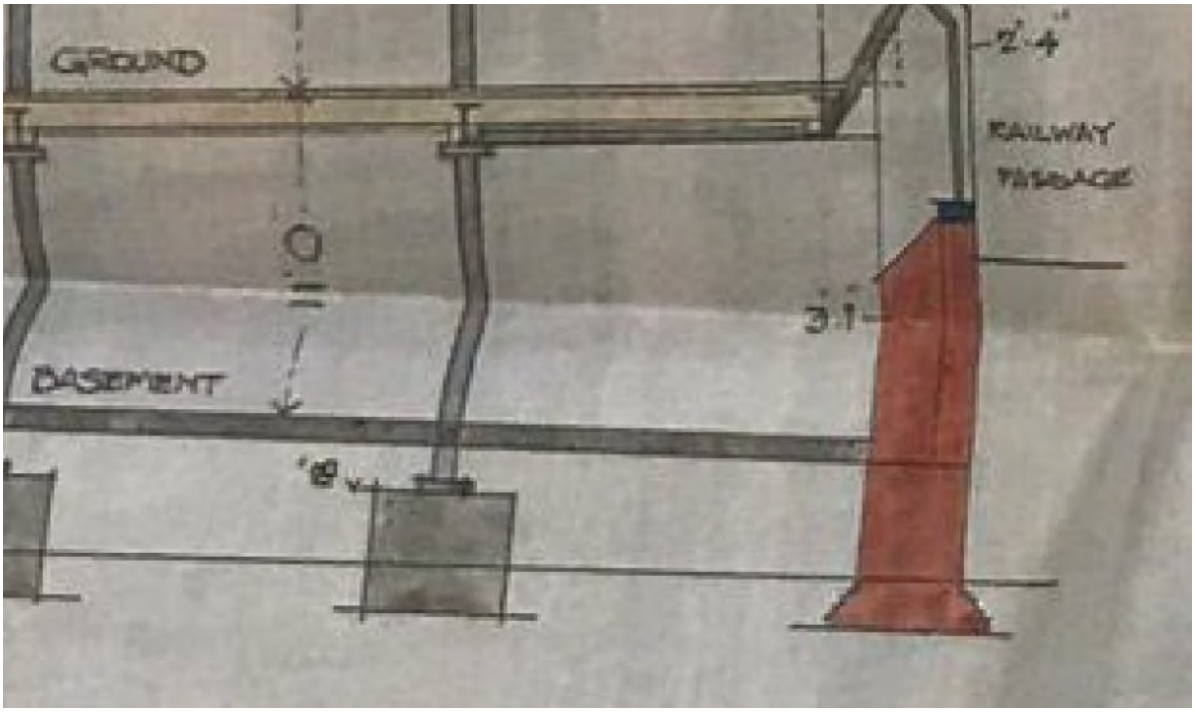


Figure 10: An extract of an architect's sketch of Avon House interior and foundation details from historical records, taken from Kathryn Sather and Associates.

Wrendal House (western building, 1914)

This building was constructed by 1914, with the Heritage Gateway website suggesting that the building was used primarily as a warehouse; a newspaper article indicated that George Henry Owen Milner, an export merchant, was using the premises by 1912. As above, it is anticipated that at least in the 2000s the building served as headquarters for Hobs Repro Ltd and Union Cars (Deansgate).

From the drawings provided by Kathryn Sather and Associates, it is possible to determine that the size of the footings varies between c. 0.76m (2ft 6in) and 1.22m (4ft) wide and c. 0.15m (12in) and c. 0.38 (15in) thick. on the two sides of the building facing Whitworth Street West in the north and the railway arches in the south. No information regarding the width of the railway passage was available from the drawings, however it is anticipated that it will not be dissimilar to the passage measured at the neighbouring Avon House (c. 1.50m wide), consistent with what was observed during the site walkover.

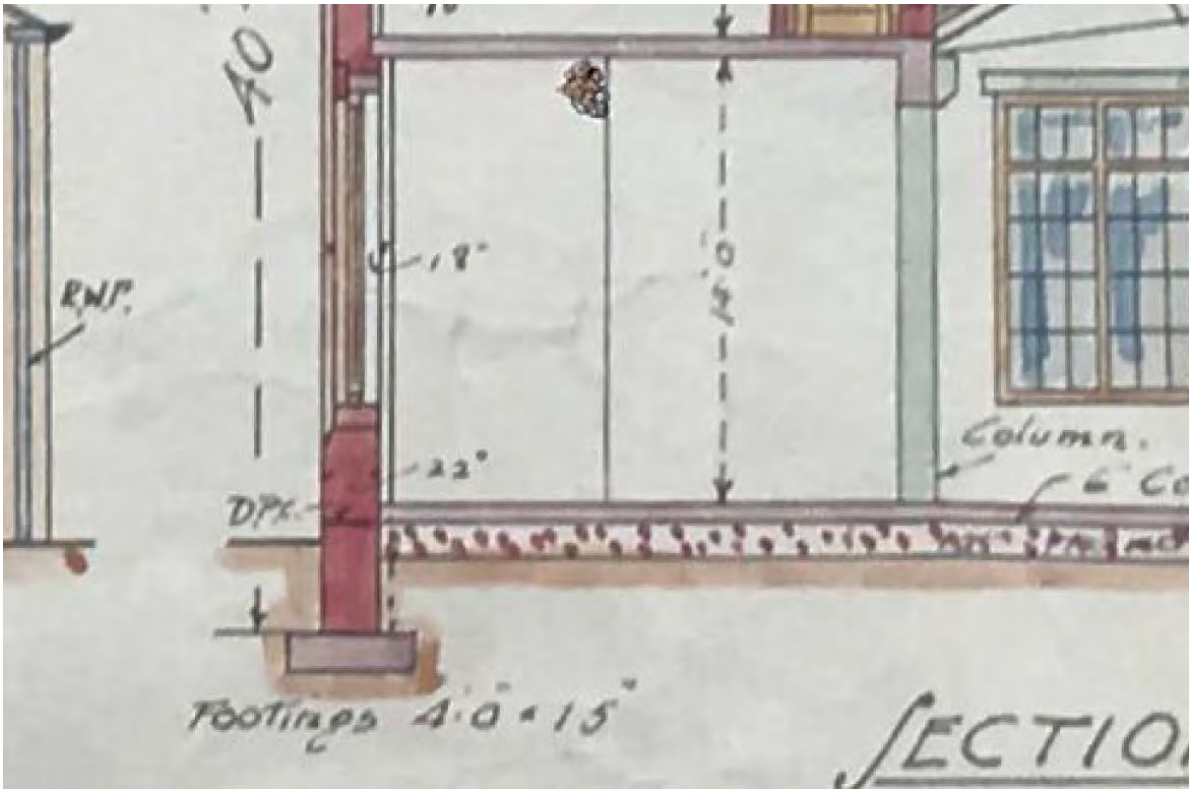


Figure 11: An extract of an architect's sketch of Wrendal House interior and foundation details from historical records, taken from Kathryn Sather and Associates.

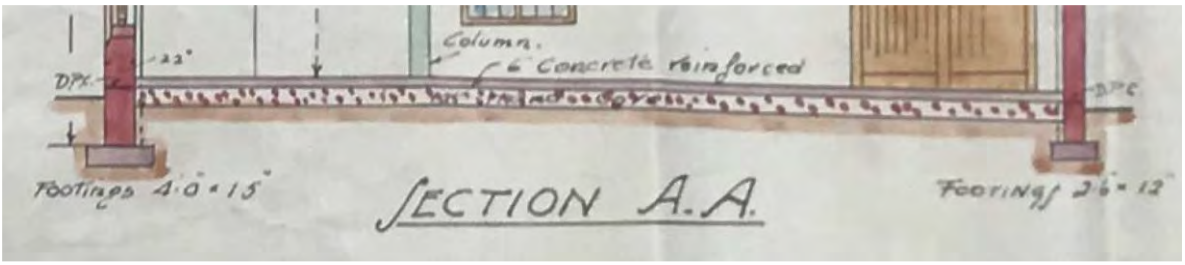


Figure 12: An extract of an architect's sketch of Wrendal House interior and foundation details from historical records, taken from Kathryn Sather and Associates.



Figure 13: An extract of an architect's sketch of Wrendal House interior and foundation details from historical records, taken from Kathryn Sather and Associates.

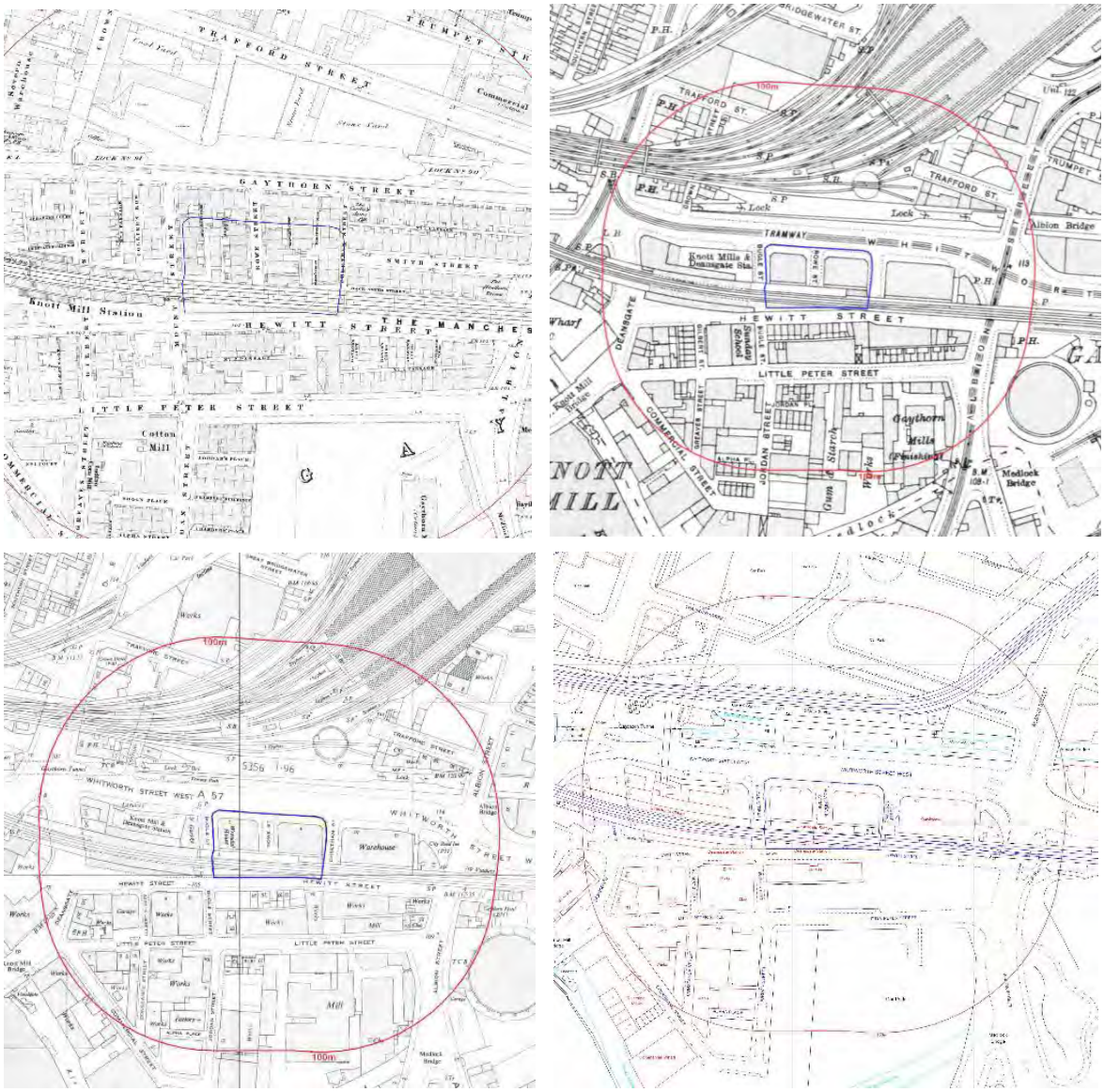


Figure 14: Extracts of the OS historical maps dated 1851 (top left),1922 (top right), 1963 (bottom left) and 2003 (bottom right).

4 No. historical aerial images of the site dated 1939 have been obtained from Britain From Above. The photographs show historical buildings on site and the surrounding environs. The site is highlighted in red on the below photograph (Ref: EPW062700). The 4 No. photographs are included within Appendix 9.

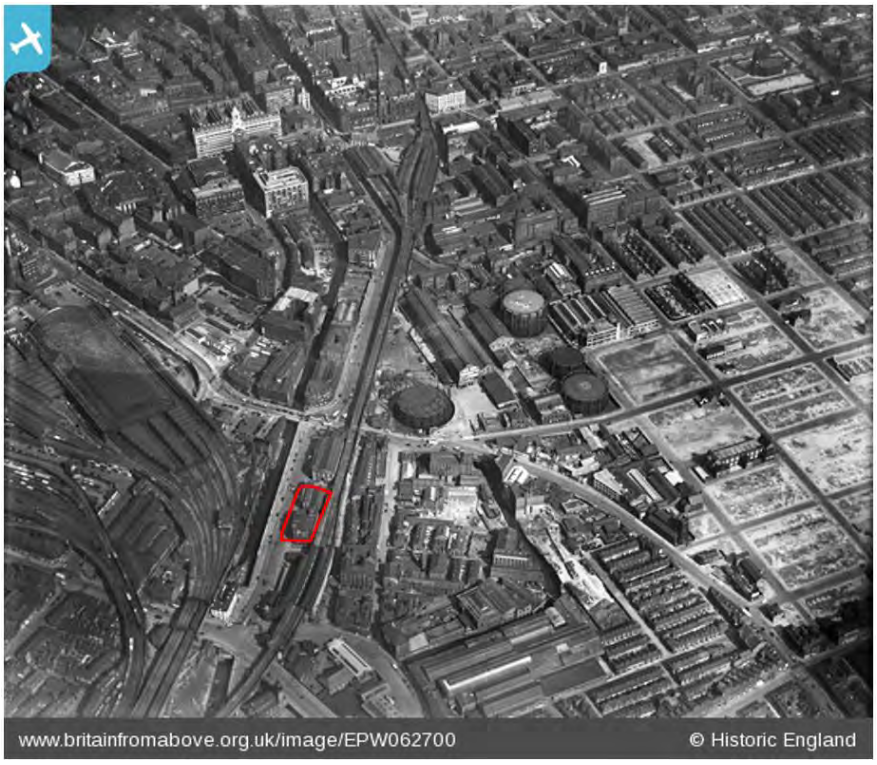


Figure 15: Britain From Above photograph including the site and its surrounding environs (Ref: EPW062700, dated 1939).

3.2.2 Off-Site History

Knott Mill (Deansgate) Railway Station (72m SE)

This railway station, located c. 72m to the south-west of the site, was opened in 1849 on the Manchester South Junction and Altrincham Railway, its ownership belonging to the London and North Western Railway and the Manchester, Sheffield and Lincolnshire Railway. The station was rebuilt from street level in 1896, when the main station building was constructed. This railway was electrified in 1931 and renamed as Deansgate in 1974. The station building, dating back to 1896, is a Grade II Listed Building.

10-12 Whitworth Street West (0m – 150m E)

The land at 10-12 Whitworth Street West was recorded as undeveloped land on the William Green 1794 Map of Manchester and Salford, likely a pasture field. It was first developed between 1818 and 1824 as workers' housing, demolished in 1899 to allow for the construction of Whitworth Street. In 1902 a warehouse building was erected to serve Tatham & Co, Iron and Steel Merchants; this building was recorded to have undergone modifications in the 1920s, 1960s and 1990s. It was primarily used as a warehouse with the upper floors being utilised as workrooms available for tenancy

(blouse factory, and apron and skirt manufacturers). The building changed ownership in 1911, then it was abandoned in 1992. It continued to be unoccupied until September 2017, when it was demolished.

Rochdale Canal Lock 89 – 91 (30m NW – 40m NE)

3 No. canal locks are present within 30m – 40m of the site, all 3 No. locks are recorded to have been constructed between 1804 and 1805. These locks connect the former Rochdale Canal Basin at Dale Street with the Bridgewater Canal at Castlefield, and all are currently operational. Lock 91 is noted to be located in the vicinity of a historical Keeper's Cottage.

Manchester Central Railway Station (50 – 150m NE)

From the information accessed at the Heritage Gateway website it is known that the Manchester Central station building was constructed between 1876 and 1879 to replace a former goods station. It began operations in 1880 under the ownership of the Cheshire Lines Committee. The station comprised 6 No. platforms and multiple sidings extending towards the south-west. It is recorded that the works on the interior of this buildings were never fully completed. The station was closed in 1969 and then converted into an exhibition centre. It is recorded to have an undercroft with intersecting tunnel vaults below ground. The site has been renovated in the 2020s, and it is currently operating as an event venue.

Gaythorn Gas Works (100m SE)

The works were constructed in 1825 by The Provincial Portable Gas Company of London. These works produced gas compressed into copper cylinders and sold to customers. Following a change in ownership in 1837, the works started to supply gas on a wider scale and became conventional gas works. The production of gas ceased in 1929 and converted into a gas distribution point. In 1937 the works were sold to Manchester Gas Directors. The works ceased to exist by the 1980s and the area was redeveloped following a significant programme of remediation works.

Manchester History States: '*Areas of concern were: five infilled gas-holders; two tar wells and contaminated deposits in the River Medlock. In all 60,000m^3 of soil were excavated and material contaminated with bitumen and asbestos was disposed of*

off-site. After the soil levels were stabilized, a 60mm site wide cover was constructed'. The area was generally used as parking spaces in the 1990s.



Figure 16: Britain From Above photograph showing the Gaythorn Gas Works and its surrounding environs (Ref: EPW062710, dated 1939).

The following additional significant industrial land uses that have not been summarised above were recorded within 250m of the site.

Date	Site Feature	Distance (m)	Direction
1955 - 2024	A Garage is recorded site-adjacent from 1955, from 1995 it is recorded as a Public House with no changes until present day.	20	W
1891 - 1893	Knott Mill Brass and Copper Works are recorded in 1891, no longer present on the historical map by 1893.	30	S
1992 – 2024	The Deansgate Castlefield tram stop is constructed in 1992 to the north of the site and it remains unchanged until present day.	30	N
1851 – 1891	Coal Yard with cranes is recorded to the north-west of the site from 1851, by 1891 it is incorporated into the Manchester Central Station.	50-100	NW
1908 - 2003	A Weaving Shed is recorded between 1851 and 1891, recorded as Gum and Starch Works by 1908 and Printing and Joinery works by 1932. The area is then noted to be Upholstery Works 1953, then recorded as Works and Factory in 1956. No longer recorded on maps after 2003.	50 - 100	S
1948 - 2003	Works and Corn Mill are recorded in 1948, the works are specified as Heating and Ventilating, Machine Tools, Wire and Cable and Sheet Metal in 1953; Corn Mill was no longer recorded by the same year. The area is recorded as Printing Works by 1973, then Works by 1985, and is no longer present by 2003.	50	SW, S and SE
1851 – 1893	A Pump is recorded from 1851, no longer present by 1893.	50	SW

1955 – 2003	Corn Mill is first recorded from 1955, then recorded as Garage and Works in 1956, no longer recorded by 2003.	50	SW
1851 – 1891	Stone Yard with weighing machines is recorded from 1851, incorporated into Manchester Central Station by 1891.	60	N
1851 – 2003	Cotton Mill and Indian Cotton Mill with a weighing machine are recorded in 1851, buildings are no longer labelled by 1891 with the exception of chimneys. The site becomes Globe Works (Window Blind) 1893, changed in 1955 into Raising and Sueding Works, Textile Factory and Clothing Works, no longer recorded by 2003.	60	SW
1851 – 1891	Union Foundry (iron) is recorded from 1851, by 1891 it is incorporated into the Manchester Central Station.	70 – 100	N
1948 – 1995	Works are recorded from 1948 to the north-east of the site, renamed as Engineering Works by 1953 and Works by 1963, they are no longer recorded by 1995.	75	NE
1955 – 2003	Printing Works are first recorded in 1955, renamed as works in 1956, they are no longer recorded by 2003.	75	SW
1851 – 1893	A Smithy is recorded between 1851 and 1893 to the south-west of the site.	90	SW
1932 - 2004	Gaythorn Tunnel is recorded from 1932 until the records from 2003. The tunnel is not recorded on the following maps, however it is anticipated that the tunnel is still located underground.	90	NW
1818 – 1888	Tannery is first recorded as an L-shaped building between 1818 and 1819, an extension to the building was noted by 1849. The building is demolished by 1888 and incorporated into the Gaythorn Gas Works.	100	SE
1851 – 1893	Commercial Mill (Cotton) is recorded from 1851, by 1891 it is incorporated into the Manchester Central Station.	100	NE
1851 – 1891	Medlock Bridge Mill (Cotton) and Gaythorn Small Warehouse are recorded adjacent to one another in 1851, by 1891 they are incorporated into the Gaythorn Gas Works.	100	SE
1851 – 1980	Gaythorn Mill (Cotton) was recorded from 1851, noted as Finishing Works by 1908, then Wire and Cable works by 1932. The building was expanded in 1948. As of 1980 the site has been a car park.	100	SE
1851 – 1891	Seven Warehouse was recorded in 1851, replaced in 1891 by railway sidings, becoming part of the Manchester Central Station.	100	NW
1851 - 1893	Trumpet Street Mill (Cotton) is recorded in 1851, by 1891 a chimney is recorded in place of the works. No longer recorded by 1891, when it was incorporated into the Manchester Central Station.	100	NW
1948 - 2024	Automobile engineering works are recorded adjacent to the Manchester Central Station, recorded as Works until 2001, converted into a car park by 2001, which it remains until present.	100	N-NW

Given the highly industrial nature of the area, numerous other mills, dye works, brick fields, engineering works, factories and works are located between 100m and 500m of the site however have not been summarised above.

3.3 Geology

3.3.1 BGS Geological Map

The BGS 1:50,000 Bedrock and Superficial Geological Maps of the area (Sheet No: 85, dated 2010 and 2011) indicate that the majority of site is underlain by superficial deposits comprising **Glaciofluvial Sheet Deposits** which typically comprise sand and gravel, locally with lenses of silt, clay or organic material. No superficial deposits are recorded on the map in the north-western site corner. The superficial deposits are underlain by bedrock of the **Chester Formation** comprising sandstone. A buried channel or valley margin is recorded 56m to the north-west of the site. The underlying bedrock is noted to be dipping to the south-west on the BGS 1:10,000 geological map (Ref: SJ89NW, dated 1976).



Figure 17: Extracts of the BGS 1:10,000 Superficial (left) and Bedrock (right) Geological Maps. Light blue = Glacial Till, Pink = Glaciofluvial Sheet Deposits, Grey = Chester Formation, Black dashed line = buried channel or valley margin

The BGS geological maps records **Made Ground** below the entire extent of the site, anticipated to be related to the construction of the Deansgate railways and the Manchester Central railway.



Figure 18: Extract showing the location of the Made Ground (Dark purple) on site and in the vicinity.

3.3.2 BGS Borehole Logs

There were no available BGS boreholes on site. There were 8 No. BGS boreholes available in close proximity to the site within a comparable geological setting. The pertinent information from the borehole logs is outlined below:

BGS Borehole Reference: SJ89NW116 – SJ89NW120

These boreholes are located approximately c. 20m – 45m west of the site and were excavated to depths of between 0.65m and 4.00m bgl at an unknown date. The logs recorded the following pertinent information:

- **Made Ground** comprising sand and clay with stones to a depth of between 3.66m and 4.57m bgl, underlain by:
- **Chester Formation** comprising sand and gravel (ballast) and sandstone to a depth of between 11.28m and 14.02m bgl.

A request to access confidential boreholes (Ref: SJ89NW604-5, SJ89NW4080-6 and SJ89NW4088) has been made to BGS by IGE Consulting on the 1st July 2024. The records have not yet been made available to IGE at the time of writing.

3.3.3 BGS Geohazards

Data Type	Details
Ground Stability Data	• The Potential for Shrinking or Swelling Clay Ground Stability Hazards is regarded as negligible. • The Potential for Running Sand Ground Stability Hazards is regarded as very low. • The Potential for Compressible Ground Stability Hazards is regarded as very low. • The Potential for Collapsible Ground Stability Hazards is regarded as very low. • The Potential for Landslide Ground Stability Hazards is regarded as very low. • The Potential for Dissolution Ground Stability Hazards is regarded as negligible.

3.3.4 BGS Estimated Soil Chemistry

The BGS have estimated that the superficial deposits across the site naturally comprise the following determinands:

- Arsenic: 15mg/kg – 25mg/kg
- Cadmium: 1.8mg/kg
- Chromium: 60mg/kg – 90mg/kg
- Nickel: 30mg/kg – 45mg/kg
- Lead: 100mg/kg – 200mg/kg
- Bioaccesible Lead: 60mg/kg – 120mg/kg

3.4 Mining

3.4.1 Coal Mining

The site lies within a Coal Authority Coal Mining Reporting Area. However, it does not lie within a Development High Risk Area. No mine entries, shafts, coal outcrops or collieries were recorded within at least 1000m of the site. The Groundsure Enviro + Geo Insight report indicates that a JPB coal mining area has been identified on site. Furthermore, the Groundsure report recorded an area which could be affected by past, current or future coal mining.

Coal Authority Consultants Coal Mining Report

A Consultant's Coal Mining Report was obtained from the Coal Authority (Ref: 51003432566001) which indicates that no coal outcrops are recorded on site.

The Coal Authority report also states that:

- No past underground mining is recorded beneath the site;
- No probable unrecorded shallow workings are anticipated beneath the site;
- No spine roadways are recorded at shallow depth;
- No mine entries are recorded on site or within 100m of the boundary. No abandoned mine plans are available for the site;
- No outcrops, faults, fissures or break lines are recorded on site;
- No open cast mines are recorded within 500m of the site;
- No Coal Authority managed tips are recorded within 500m of the site;
- No coal related site investigations are recorded within 500m of the site;
- No remediated sites are recorded within 50m of the site;
- The Coal Authority has not received a damage notice of claim for the subject property, or any property within 50m of the site since 31st October 1994;
- There are no current Stop Notices delaying the start of remedial works or repairs to the property;
- The Coal Authority is not aware of any request having been made to carry out preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991;
- No mine gas is recorded within 500m of the site boundary;
- No mine water treatment schemes are recorded within 500m of the site boundary;
- No future underground mining licenses are recorded;
- No court orders are recorded; and
- No notices have been given that the land is at risk of subsidence.

The Coal Authority Consultants Coal Mining Report can be found in Appendix 8.

3.4.2 Non-Coal Mining

The Groundsure Enviro + Geo Insight report indicates that no non-coal mining has been undertaken on site.

3.4.3 Salt Mining / Brine Extraction

The site does not lie within the Cheshire Brine Subsidence Compensation Board Compensation District or within a Consultation Area.

3.4.4 Historical Surface Excavations

The Groundsure Enviro + Geo Insight report identified that no historical surface excavations were present on site, however, 21 No. historical surface excavation features, including canals, quays and ponds, were identified in the vicinity of the site, as seen on the below extract of the Section 18. Based on the abundance of historical surface excavations in the vicinity of the site, their presence below site cannot be discounted.

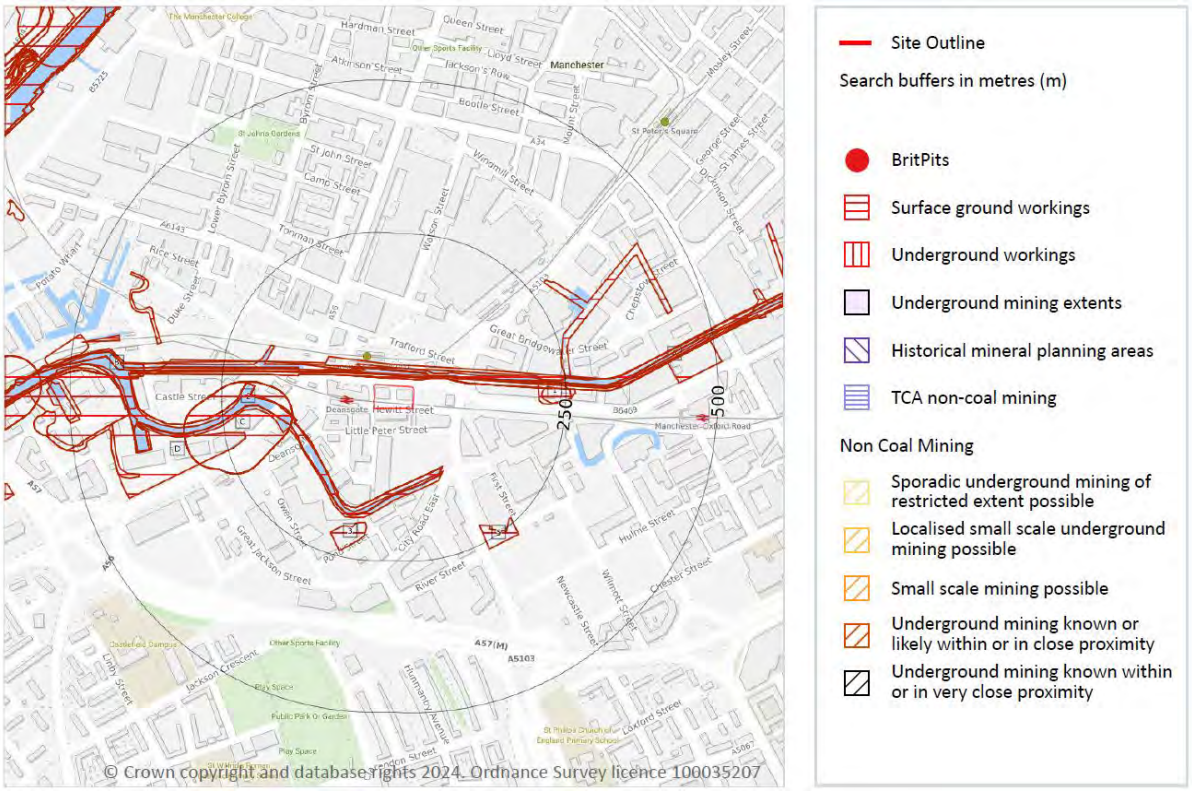


Figure 19: An extract of the Mining and Ground Workings map from Section 18 of the Groundsure Enviro + Geo Insight report.

3.4.5 Mineral Safeguarding

Where mineral resources are present the mineral planning authority may designate areas as Mineral Safeguarding Areas (MSA) and Mineral Consultation Areas (MCA). These are aimed to safeguard mineral resource areas from unnecessary sterilization by non-mineral development. The BGS Mineral Resources maps designate the areas of potential mineral resources and where active / lapsed planning permission was granted for mineral extraction.

The BGS Mineral Resources Map for Greater Manchester indicates that the site does lies within an area designated as containing mineral resources related to Glaciofluvial deposits and shallow coal. However, the site does not lie within a Mineral Safeguarding Zone.

3.5 Infrastructure

3.5.1 Railway Infrastructure

The following information relating to the railway infrastructure obtained from the Groundsure Enviro + Geo Insight report, published information and the walkover survey can be summarised as follows:

Data Type	Details
Historical railway and tunnel features	• 6 No. historical railway and tunnel features were recorded on site and pertain to railway sidings and railways. • A further 72 No. historical railway and tunnel features were recorded within 250m of the site, including railway sidings, railways and tunnels.
Historical railways	• No historical railways were recorded on site. • 3 No. historical railways were recorded within 250m of the site, all have been dismantled.
Railways	• 3 No. railways were recorded on site, 2 No. relate to Manchester and Ordsall Lane Junction branch, 1 No. is an unknown multi-track railway. • A further 24 No. railways were recorded within 250m of the site, including Manchester and Ordsall Lane Junction branch, Manchester and Allerton Junction line, light rails, unknown multi-tracks, and unspecified rails.

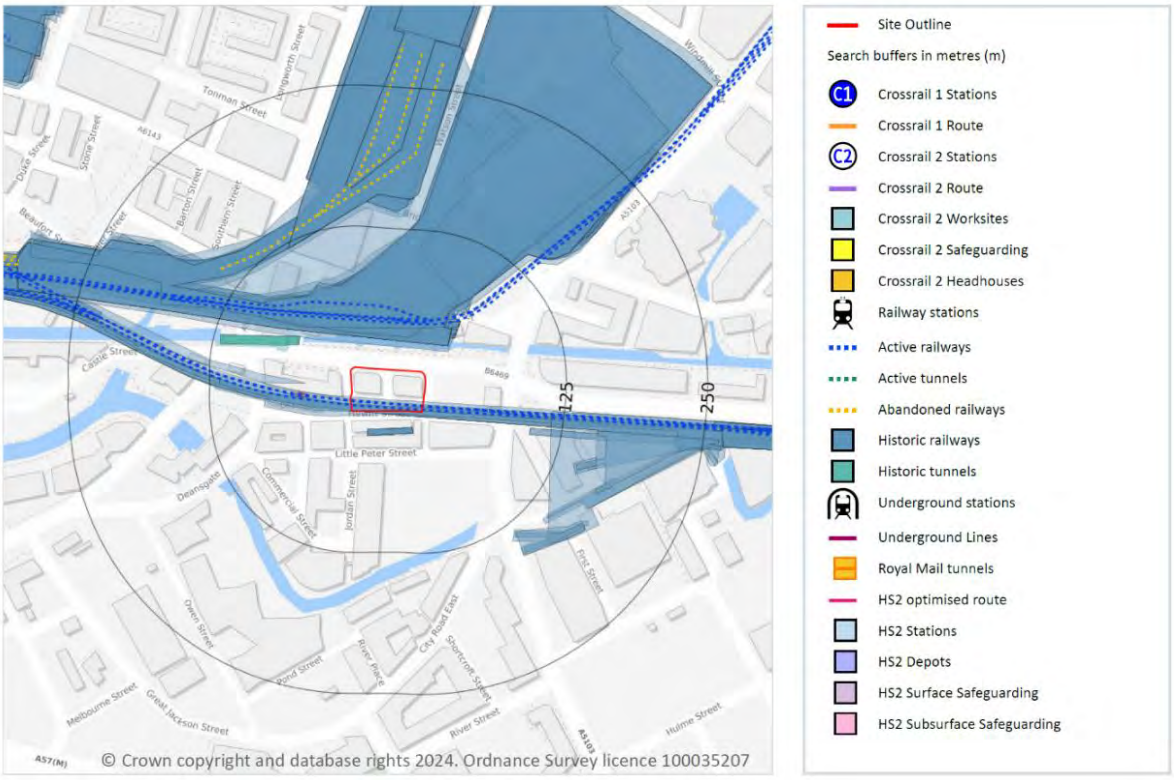


Figure 20: An extract of the Railway Infrastructure and Projects map from Section 22 of the Groundsure Enviro + Geo Insight report.

3.5.2 Designations

The following information relating to visual and cultural designations obtained from the Groundsure Enviro + Geo Insight report, published information and the walkover survey can be summarised as follows:

Data Type	Details
Listed buildings	• No listed buildings were recorded on site. • 19 No. listed buildings were recorded within 250m of the site. The buildings located within 150m of the site include Rochdale Canal Lock No. 90 and 91, Rochdale Canal Lock Keepers Cottage at Lock 91, Deansgate Station, 13-17 Albion Street, Boundary Stone on Knott Mill Bridge, Manchester South Junction And Altrincham Railway Viaduct, Floodgate On East Side Of Knott Mill Bridge.
Conservation areas	• No conservation areas were recorded on site. • 1 No. conservation area was recorded within 101m to the north-west of the site and relates to the area of Castlefield.
Scheduled Ancient Monuments	• No Scheduled Ancient Monuments were recorded on site. • 1 No. Scheduled Ancient Monument was recorded within 220m to the west of the site and relates to the remains of the eastern wall of the Roman fort.

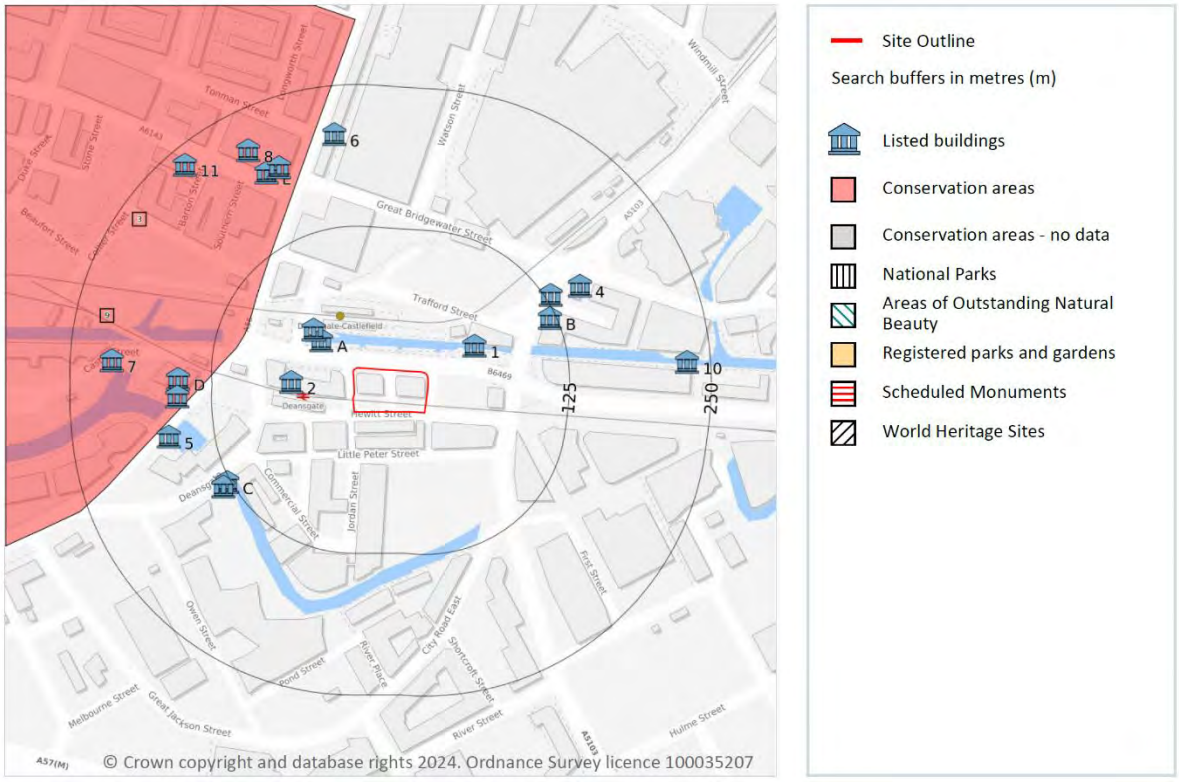


Figure 21: An extract of the Visual and Cultural Designations map from Section 11 of the Groundsure Enviro + Geo Insight report.

3.6 Hydrology and Hydrogeology

Environmental data relevant to the site and its immediately surrounding area has been obtained from sources available in the public domain. In addition, an environmental report was obtained from Groundsure. The Enviro + Geo Insight report and associated maps that have been inspected are presented in Appendix 5 and the principal observations in relation to waters and flooding can be summarised as follows:

Data Type	Details
Flooding	• With respect to rivers and seas, the site lies within Flood Zone 1. • Flood Zone 2 was recorded within 29m to the south of the site, anticipated to be related to the River Medlock. • With respect to the flooding risk from surface water, the site is at negligible risk. The highest risk recorded within 50m of the site is a 1 in 100 year event with the floodwater depth of greater than 1.00m. • The groundwater flooding risk on site is deemed to be moderate, and moderate to high within 50m of the site. • A BGS groundwater vulnerability was recorded on site; the risk was identified as high for the productive secondary superficial and principal bedrock aquifers.

Surface Water Features	• There are no surface water features recorded on site. • The nearest surface water features are the Rochdale Canal, located within 30m to the north of the site and the River Medlock, located within 150m to the south of the site. • There are no Water Network features recorded on site. • There are 21 No. Water Network features recorded within 250m of the site, including canals, lock or flight of locks and inland rivers. • Great Hey stream was historically present in the north western site section, which is now culverted beneath the site • 1 No. Water Framework Directive Surface Water Body Catchment was recorded on site, related to the River Medlock. • 2 No. Water Framework Directive Surface Water Bodies, pertaining to the Rochdale Canal and the River Medlock. • 1 No. Water Framework Directive Groundwater Body was recorded on site, pertaining to the Manchester and East Cheshire Permo-Triassic sandstone aquifers.
Surface Water Abstractions	• There are no licensed surface water abstractions located on site. • There are 2 No. licensed surface water abstractions located within 2000m of the site, both are historical and relate to the abstraction of water from the River Irwell at Irwell Works, Ordsall Lane, Salford for general cooling.
Superficial Aquifer	• The site is underlain by superficial deposits classified as a Secondary A Aquifer - *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.*
Bedrock Aquifer	• The underlying bedrock is classified as a Principal Aquifer - *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.*
Groundwater Abstractions	• There are no recorded groundwater abstraction licenses located on site. • There are 61 No. groundwater abstraction licenses located within 2000m of the site, the majority are historical. The nearest active license is located 752m to the south-east of the site and pertains to the abstraction of water from a borehole at George Street, Manchester for general cooling.
Source Protection Zones	• There are no recorded Source Protection Zones recorded on site. • There is 1 No. Source Protection Zone recorded or within 182m to the east of the site, pertaining to a Zone 3.
Nitrate Vulnerable Zones	• There are no Nitrate Vulnerable Zones recorded on site. • 3 No. Nitrate Vulnerable Zones were recorded or within 500m of the site, related to River Irk (Moston Brook to River Irwell) NVZ and Irwell / Man. Ship Canal (Kearsley to Irlam Locks) NVZ.
Licensed Discharge Consents	• There are no licensed discharge consents to controlled waters located on site. • There are 24 No. recorded licensed discharge consents to controlled waters located within 500m of the site. 20 No. have been revoked. The nearest active consent is located within 138m to the south-west of the site and relates to the discharge of overflow sewage to the River Medlock.
Pollution Incidents to Controlled Waters	• There are no recorded pollution incidents to controlled waters located on site or within 500m of the site.

3.7 Hazardous Installations, Landfill and Waste

The following information relating to hazardous installations, landfill and waste obtained from the Groundsure Enviro + Geo Insight report, published information and the walkover survey can be summarised as follows:

Data Type	Details
Environment Agency Recorded Active Landfill Sites	• There are no Environment Agency recorded landfill sites located on-site or within 500m of the site.
Environment Agency Recorded Historical Landfill Sites	• There are no Environment Agency recorded historical landfill sites located on-site or within 500m of the site.
BGS Recorded Historical Landfill Sites	• There are no BGS recorded landfill sites located on-site or within 500m of the site.
Local Authority Recorded Landfill Sites	• There are no Local Authority recorded historical landfill sites located on-site or within 500m of the site.
Local Authority Pollution Prevention and Control (Part A(1), A(2) and Part B Activities and Enforcements)	• There are no Local Authority Part A2 or Part B Activities or Enforcements located on site. • There are 4 No. Local Authority Part A2 or Part B Activity located within 500m of the site, all are historical. The nearest relates to a historical Part B permit for respraying of road vehicles at Tom Garner Motors, Chester Road, Manchester. • There are 2 No. Environment Agency recorded Part A1 Activities recorded within 500m of the site, pertaining to a combustion plant at Manchester Heat Network Tradeco Ltd, effective as of November 2023.
Registered Radioactive Substances	• There are no Registered Radioactive Substances recorded on-site or within 500m of the site.
Registered Waste Treatment, Transfer or Disposal Sites	• There are no waste exemption recorded on site. • There are 69 No. waste exemptions recorded within 500m of the site, the nearest is located 61m east and pertains to the use of waste in construction. • There are no licensed waste sites recorded on site. • There is 1 No. licensed waste site recorded within 467m to the east of the site, pertaining to Terra Vac (UK) Ltd at Little Ireland Phase B, Great Marlborough Street, Manchester. • There are no historical waste sites recorded on site. • There are 16 No waste sites recorded within 500m of the site, including scrap yards, a refuse destructor, recycling centre, and waste paper works.
Industrial Land Use	• There are no current industrial land uses recorded on site. • There are 25 No. recent industrial uses recorded within 500m of the site, the nearest is located directly adjacent to the southern site boundary and pertains to a vehicle repair, testing and servicing garage. • There is a single petrol / fuel station recorded within 500m of the site, located 300m to the south-west of the site, it is recorded as obsolete. • There are no historical industrial site uses recorded on site. • There are an additional 301 No. historical industrial land uses recorded within 500m of the site, including railway stations, railway sidings, railway buildings, disused stations, cotton mills, unspecified commercial and industrial buildings, gas works, unspecified works, unspecified tanks, gasometers, brewery, bus station, automobile works, quays, unspecified mills, goods stations, corporation yards, rubber works, disused goods stations, unspecified depots, warehouses, police stations, fire stations, goods sheds, hospitals, coal wharf, timber wharf and tanks. • There are 221 No. historical tanks recorded within 500m of the site, including tanks, gas works, unspecified tanks, gasometers and gas holders. • There are 110 No. historical energy features recorded within 500m of the site, including gas works, gasometers, electricity substations, electricity transformers, gas holder stations, disused gas holder stations, gas holders, hydraulic and power stations. • There are 60 No. historical garages recorded within 500m of the site.

Dangerous Substances	• There are no recorded discharges of dangerous substances on-site or within 500m of the site.
Hazardous Building Materials	• Following the findings of the Asbestos Management reports obtained by the Client (S_2 Partnership Ltd, *Asbestos Management*, dated December 2011 and April 2018), asbestos and asbestos products are anticipated to be present across the site, however, the overall risk from the presence of asbestos within both existing buildings was deemed low.
Control of Major Accident Hazards (COMAH) Sites	• A search of the HSE Planning Advice Web App has been undertaken by IGE, revealing that the site does not lie within a HSE Zone, HSE Zone of Interest or Site of Explosive interest.

3.8 Radon

A site-specific radon map is included in the Groundsure Enviro + Geo Insight report which finds that the site lies within an area where less than 1% of homes are above the Action Level and consequently, no radon protection measures are required.

3.9 Previous Site Investigations

RoC Consulting have previously undertaken a ground investigation of the adjacent 10-12 Whitworth Street site in April 2016. The ground investigation included the following exploratory holes:

- 4 No. dynamic sample boreholes undertaken to depths of between 2.24m and 3.90m bgl (WS101 to WS104, inclusive);
- 3 No. rotary core boreholes undertaken to depths of between 25.00m and 35.00m bgl (BH101 to BH103, inclusive);
- 6 No. trial pits undertaken to excavate the existing on-site foundations (FE101 to FE106, inclusive); and
- 4 No. hand dug foundation pits undertaken to excavate the existing railway viaduct foundations to depths of between 3.07m and 3.90m bgl (TH-1 to TH-4, inclusive).

The typical ground conditions encountered were as follows:

- **Made Ground** comprising very loose, light brown, very gravelly sand to depths of between 0.50m and 2.60m bgl, underlain by:
- **Glaciofluvial Sheet Deposits** comprising medium dense, dark brown, mottled light brown, gravelly sand to depths of between 3.35m and 3.70m bgl, underlain by:

- **Chester Formation** comprising very dense, reddish brown, gravelly sand (weathered sandstone) and reddish brown, thickly bedded, fine to coarse sandstone to a depth of at least 35.00m bgl.

Depth to bedrock was reported as between 29.99m and 30.49m AOD to weathered sandstone and 28.01m to 29.19m AOD to solid sandstone bedrock.

Geotechnical Testing

Standard penetration tests were undertaken in 1m intervals within the dynamic sample boreholes and dynamic sample boreholes which recorded variable N-values of between 0 and 50. Subsequent laboratory geotechnical testing was undertaken. 3 No. unconfined compressive strength tests were undertaken on the sandstone rock core samples. These tests recorded unconfined compressive strengths of between 7.60MPa and 15.90MPa. 3 No. point load tests were also undertaken which indicate that the sandstone strength varies between 2.40MPa and 23.28MPa. Following the completion of geotechnical testing, the strength of the sandstone was deemed to be very weak to weak with slight improvement with depth beyond 10m bgl.

Existing Railway Viaduct Foundations

Based on the information from the hand dug foundation inspection pits, the foundations of the viaduct were constructed upon the Glaciofluvial Sheet Deposits to depths of between 29.96m and 30.32m AOD. The foundations were noted to be straight and they were found to contain deep drainage runs throughout, as well as at the base of the structure; their origin and destination are unknown.

Foundations

RoC Consult state that conventional pad foundations may be possible in theory but were not recommended due to the depths required to be excavated to reach suitable sandstone, exceeding 5 metres, as well as due to the potential of undermining the foundations of the existing railway viaduct. Consequently, a piled foundation solution was recommended, specifically augered pile, subject to liaison with a piling contactor and a detailed risk assessment to the existing structures. The BRE SD1 testing of the soils on site revealed that the site falls under DS-2 and AC-2 concrete classification, consequently, consideration needs to be given to the choice of concrete for the future foundations, as well as any drainage solutions.

Chemical Testing and Ground Gas Monitoring

Chemical testing of the 6 No. soil samples revealed exceedances of the S4UL values for Naphthalene, Benzo(a)anthracene, Benzo(b)fluoranthene, Chrysene, Indeno(1,2,3-cd)pyrene and Dibenz(a,h)anthracene, all recorded within WS03 at 1.50m – 2.00m bgl, with the exception of Dibenz(a,h)anthracene, which was recorded at 1.00m – 1.50m bgl within the same borehole. Asbestos was also recorded within WS03 at 1.00m – 1.50m bgl in the form of amosite fibres. Consequently, RoC Consulting recommended undertaking appropriate measures to mitigate the risks associated with these contaminants. Due to the S4UL exceedances recorded, RoC Consult recommended a remediation strategy to be undertaken for the site.

2 No. combined ground gas and groundwater depth monitoring wells and 1 No. groundwater monitoring well were installed, and 4 No. subsequent monitoring visits were undertaken over a period of a month by RoC Consulting. No significant peak or steady concentrations of methane or carbon dioxide (max. concentration of 0.46% v/v) were recorded, consequently, the site was classified as Characteristic Situation (CS) 1 by RoC Consulting.

During the groundwater depth monitoring visits, no groundwater was recorded in the shallow monitoring wells, and between 8.90m and 10.00m bgl in the deep monitoring well installed within BH103.

E3P Remediation Strategy

E3P have undertaken a remediation strategy for the 10-12 Whitworth Street site in July 2022. Following the RoC Consulting site investigation, the E3P remediation strategy recommends the management of asbestos fibres in a controlled environment, the delineation of the naphthalene hotspot as well as further assessment of the presence of mercury across site. Furthermore, it is recommended that all structures, historical foundations and buried obstructions are to be removed according to the engineering specifications. Additionally, a clean cover system comprising 150mm topsoil and 300mm suitable subsoil to a total of 450mm total cover.

3.10 Services

As discussed in Section 3.1, evidence for multiple services, including underground service cupboards, street lighting, (disused) CCTV systems, parking meter machines, manholes and drainage grates, was noted across the site and the vicinity. As the site comprises private land, it is envisaged that unrecorded services are present around and on site and could be live. Full service plans should be obtained prior to any intrusive works. A detailed structural survey of the Deansgate railway bridge is recommended prior to any intrusive site works commencing.

Survey Operations have undertaken a utility scan of the adjacent 10-12 Whitworth Street site on behalf of RoC Consulting as part of their 2016 site investigation. The below extract illustrates the anticipated extent of the services below site along the footpaths and streets only. A full utility survey of the site is recommended following the demolition of the existing on-site buildings.

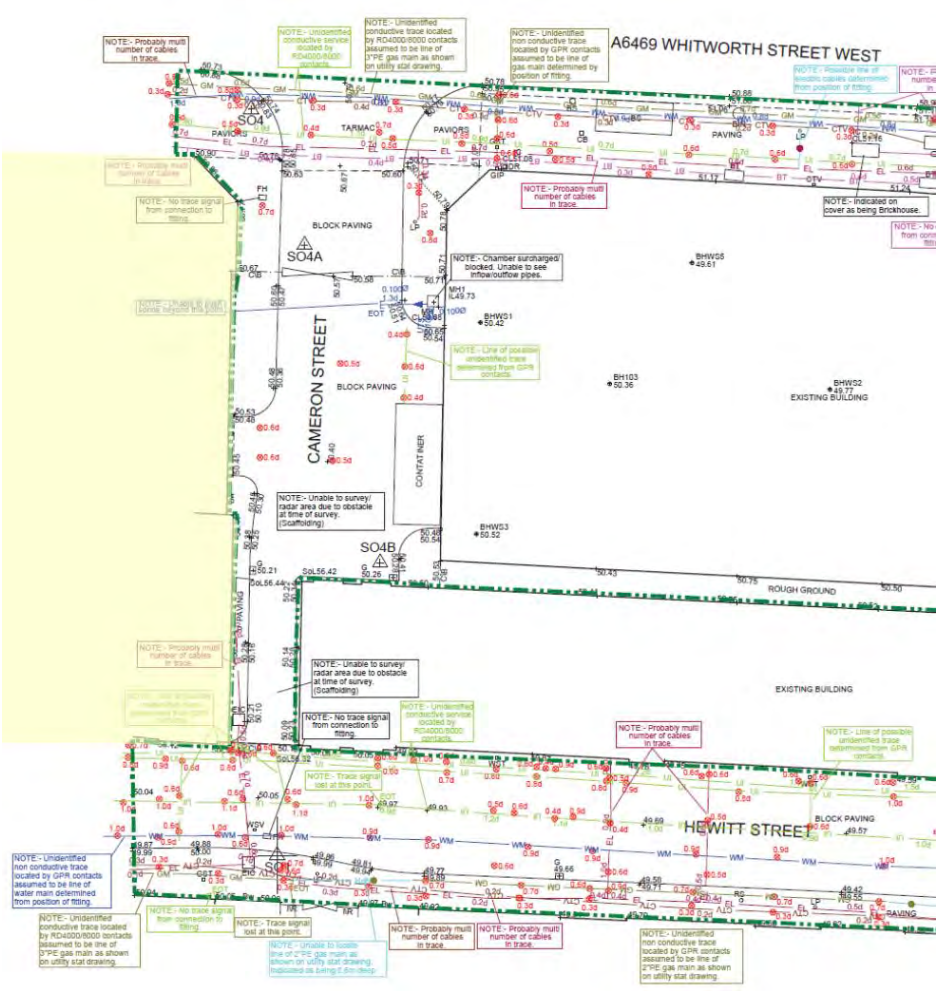


Figure 22: An extract of a utility survey obtained as part of the RoC Consulting Phase 2 Site Investigation report, (Ref: 15C205/001, dated 2015). Site extent is highlighted in light yellow.

3.11 Unexploded Ordnance (UXO)

The Zetica UXO risk map, contained in Appendix 8, indicates that the site lies within an area of low risk. The Zetica UXO risk map is included in Appendix 7. However, as Manchester is known to historically have been targeted by bombing, a Preliminary UXO Risk Assessment Report has been obtained from Brimstone Site Investigation Ltd. The report is included in Appendix 7 and is summarised below.

With respect to World War II German bombing of Manchester, the site was found to be located within an area of Manchester that sustained low to moderate bombing, with the nearest impact recorded within 75m to the south-west of the site, anticipated to be related to the Deansgate station buildings, which were also recorded to undergo repair works. Furthermore, the Manchester Central Station and the former Gaythorn Gas Works were identified as the local Luftwaffe bombing targets, however no evidence was noted that the site itself was targeted. Another WWII incident noted in the report pertains to an incendiary bomb 'shower' identified within 130m to the west of the site.

The report found that during WWII multiple Light and / or Heavy Anti-Aircraft (LAA / HAA) batteries were present in the vicinity of the site, consequently it is possible that an unexploded shell struck the site, as a large number of ammunition was stored in these facilities. However, a direct strike to site is considered unlikely, as the area was developed during WWII.

As the nature of the site is largely unchanged since the war period, based on the historical records, it is considered unlikely that the wartime soils were disturbed since, and no significant works were recorded on-site or in the vicinity. Consequently, the site may be at risk of buried UXO.

In conclusion, the report states *'A Stage 2 Detailed Risk Assessment is not considered necessary prior to SI works commencing. However, the possibility of UXO remaining on site cannot be completely ruled out at desktop stage. Therefore, a UXO Safety Briefing to all personnel conducting ground works would be considered prudent'*.

3.12 Animal Burial Sites

The Animal Health and Veterinary Laboratories Agency (AHVLA) no longer routinely respond to consultations relating to records of animal burial sites. Based upon a review of the site history it is considered unlikely that the site has been subject to recorded animal burials.

3.13 Archaeology

Heritage Gateway states that a hoard of Roman coins and numerous fragments of pottery were recorded when digging the foundations for Deansgate station in 1852, all dating to between the years 128 AD to 380AD. Additionally, a Roman urn and 3 No. dishes were found within the old course of the River Tib in 1903.

An Archaeological Desk-based Assessment report (Ref: SA/2024/33, dated June 2024) was obtained from Salford Archaeology at the University of Salford by the Client. Based on the findings of the archaeology report, the potential for the site to contain buried archaeological remains is considered to be high. The report states: *Remains may include Roman activity, post-medieval relict soils, and various types of worker's housing dating from the 18th century to early 19th century*.

4.0 CONCLUSIONS

4.1 General

The site comprises 2 No. multi-storey buildings used for commercial and industrial purposes. At the time of writing, the buildings are disused. The Deansgate railway station is located adjacent to the southern site boundary. Based on the history of the site and its surroundings deep Made Ground related to the railway activities may be present across site.

4.2 Ground Conditions and Geotechnical Hazard Identification

The anticipated typical ground conditions across the site are as follows:

- **Made Ground** of unknown composition, anticipated sands, gravel, clay and to a depth of up to between 3.00m and 5.00m bgl, underlain by:
- **Glaciofluvial Sheet Deposits** likely comprising gravelly sand to a depth of at least 4.00m bgl, underlain by:
- **Chester Formation** comprising sandstone, expected to a depth of at least 35.00m bgl.

Based on the historical records obtained from Kathryn Sather and Associates it is anticipated that the Made Ground may form localised deeper 'pockets' below the existing on-site buildings. This is likely due to the foundations of the 2 No. buildings bearing onto the underlying bedrock, consequently, deeper areas of Made Ground are expected immediately below the existing foundations.

4.2.1 Geotechnical Hazard Identification

Potential geotechnical hazards based on the expected ground conditions that may require further consideration at the site are outlined below:

Factors	Remarks	Considerations	Hazard
Made Ground	Made Ground could be deep across the site due to the historical site and site-adjacent uses, as well as the railway presence along the southern site boundary.	Made Ground may settle variably, have highly inconsistent bearing capacity and may suffer significant movements that may be problematic for foundations, externals and infrastructure elements without treatment. The presence of Made Ground may be problematic for foundations as there may be loose / soft spots within the Made Ground and it may not be suitable to utilise traditional foundations.	**Moderate**
Aggressive Ground and Groundwater	While the risk posed from the natural strata is anticipated to be very low, given the anticipated presence of site-wide deep Made Ground there is potential for aggressive ground conditions to be present on-site.	Acidic ground / groundwater and sulfate may attack the concrete and steel used in foundations and react with aggregates. The oxidation of pyrite and other sulfides can also occur due to geotechnical activities. This can lead to the generation of high concentrations of sulfate and low pH that attacks construction materials and may lead to the precipitation of gypsum resulting in the heave of foundations and floor slabs. Pyrite oxidation can also be triggered by mixing susceptible materials with lime or cement resulting in high pH that can lead to the expansion of some sulfates that cause heave of stabilised soils.	**Moderate**
Soft Spots	Soft spots may be present across the site associated with localised excavations i.e., historical on-site construction works.	Soft spots may cause differential settlement of foundations therefore there will be a requirement for localised deepening of foundations where soft spots are present.	**Low to Moderate**
Compressible Deposits	Given the anticipated presence of Glaciofluvial Sheet Deposits, there is potential for soft deposits to be present.	May cause significant settlement or differential settlement of foundations if foundations have been placed on compressible ground.	**Low to Moderate**
Obstructions	Following the proposed demolition of the existing on-site buildings and historical housing, remnants of the historical construction will require consideration prior to construction.	May act as obstructions to excavations and / or the chosen foundation solution or act as ‘hard spots’ within the ground if left in-situ.	**Moderate**
Railway	Railway structures (e.g. railway bridge and platforms) and any materials related to the Deansgate Station may provide additional obstructions in the construction process.	May act as obstructions to excavations and / or the chosen foundation solution or act as ‘hard spots’ within the ground if left in-situ. Furthermore, it could affect the proposed development due to constraints associated with the works undertaken near the railway structures. **Liaison with Network Rail prior to the start of any intrusive works on site required.**	**Moderate to High**
Canals	The site is located within c. 30m to the south of the Rochdale Canal. Unrecorded branches of the Canal and any structures related to the construction of this canal may act as additional obstructions during construction.	May act as obstructions to excavations and / or the chosen foundation solution or act as ‘hard spots’ within the ground if left in-situ. Furthermore, there is potential of unrecorded voids and water presence.	**Low**

4.3 Sources of Contamination and Probable Contaminants

Based on the desk study information the following potentially contaminative on-site sources have been identified:

Potentially Contaminative Source	Associated Determinands	Remarks
On-Site Made Ground	Unknown, anticipated to be metals, semi-metals, PAHs, TPH, asbestos. Ground Gas – carbon dioxide, methane, hydrogen sulfide, VOCs	Deep Made Ground is anticipated on site Made Ground, potentially reaching as deep as 5.00m bgl based on historical borehole records.

It should be noted that potentially contaminative unrecorded historical activities may have occurred (e.g. the use or deposition of Made Ground from off-site during historical on-site developments) and in this event, further contaminative sources may be present.

4.3.1 Unknowns

Following the desk study, the areas of uncertainty are summarised as follows:

- Depth of the Made Ground and superficial Glaciofluvial Sheet Deposits;
- Depth to bedrock; and
- Presence, location and extent of underground obstructions.

4.4 Identified Pathways of Contamination

Human Health		Ground Gas		Controlled Waters	
A	Ingestion of dust and soil	**A**	Migration through fractures and fissures in bedrock	**A**	Vertical migration through coarse Made Ground and coarse soils
B	Dermal contact with dust and soil	**B**	Preferential migration along foundations & service ducts	**B**	Lateral migration along low permeability natural soils & pooling at relative low points
C	Inhalation (dust)	**C**	Migration within groundwater	**C**	Lateral migration along historical drainage
D	Inhalation (vapours)	**D**	Ingress through cavity walls & floors	**D**	Vertical migration along future foundations and pooling at base
E	Inhalation and oral backgrounds	**E**	Inhalation	**E**	Migration through porous bedrock
-	-	**-**	-	**F**	Overland flow

4.5 Identified Receptors of Contamination

Human Health receptors include the following:

- End Users (residential land use scenario);
- Construction workers; and
- The general public and adjacent site users.

Controlled waters receptors include the following:

- Groundwater contained within the underlying Secondary A Aquifer in superficial deposits and Principal Aquifer in bedrock; and
- Surface Water – no surface water features on-site, off-site Rochdale Canal (30m N) and the River Medlock (150m S).

Other receptors include subsurface plastic (e.g. potable plastic water pipe) and building fabric (e.g. concrete foundations, etc).

4.6 Conceptual Site Model

4.6.1 Conceptual Model for Human Health Risk Assessment

A site conceptual model in the form of a linkage table for the purposes of a preliminary risk assessment for the human health of site occupants has been produced as a result of the probable contaminants, pathways and receptors identified above. A diagram of the site conceptual model is included within Appendix 2.

Conceptual Model for Human Health Assessment					
Sources of Contamination	**Pathway**	**Receptor**	**Hazard (severity)**	**Likelihood**	**Risk**
Possible Deep Made Ground	A B C E	End users General public	Effect on human health **(Medium)**	**Low Likelihood:** Deep Made Ground is anticipated to be present across site (c. 3.00m – 5.00m deep). Widespread contamination is not expected to be found across site, however, localised contaminative hotspots may be present. As the proposed development does not currently include soft landscaping or private gardens, contaminative pathway to the end users and general public are likely to be limited.	**Low to Moderate**
		Construction workers		**Low Likelihood, reduced to unlikely with best practice:** Construction workers will be at increased risk due to their acute interaction with soils and possible deep Made Ground across the site. However, the appropriate use of PPE, Good Practice and Health and Safety Measures will significantly reduce the risk.	**Low**
	D	End users and general public		**Unlikely:** No potential sources of VOCs have been identified. If localised contaminative hotspots of VOCs are present (i.e. from possible spillage from railway activities) given their relative mobility and volatility VOCs are unlikely to remain at significant concentrations.	**Low**
		Construction workers		**Unlikely:** Construction workers at increased risk if any disturbance of soil occurs as this may generate a temporary increase in the release of soil vapours, however risk remains low given the lack of a source of VOCs.	**Low**

4.6.2 Conceptual Model for Ground Gas Risk Assessment

A conceptual model in the form of a linkage table for the purposes of a preliminary risk assessment for ground gas has been produced as a result of the probable contaminants, pathways and targets identified above as follows:

Conceptual Model for Ground Gas Risk Assessment					
Source	**Pathway**	**Receptor**	**Hazard (severity)**	**Likelihood**	**Risk**
Possible Deep Made Ground	B D E	Human occupants Site Workers	Effect on human health **(Mild to Severe*)**	**Unlikely:** Deep Made Ground is anticipated to be present across the site, however it is likely to comprise granular materials and it is unlikely to contain significant organic-rich and putrescible materials. Consequently, the Made Ground is anticipated to be a very low ground gas generation source.	**Low**
		Building and Structures	Damage to building **(Mild)**		

*Due to the risk of explosion.

4.6.3 Conceptual Model for Controlled Waters Risk Assessment

A site conceptual model in the form of a linkage table for the purposes of a preliminary risk assessment for pollution of waters has been produced as a result of the probable contaminants, pathways and targets identified above as follows:

Conceptual Model for Controlled Waters Risk Assessment					
Source	**Pathway**	**Receptor**	**Hazard (severity)**	**Likelihood of Occurrence**	**Risk**
Possible Made Ground	A D E	Groundwater within the Secondary A and Principal Aquifers	Effects to controlled waters (**Medium**)	**Pre-Development Site** **Low Likelihood**: Deep Made Ground is anticipated to be present across site (expected to between c. 3.00 and 5.0m bgl), however, any contamination is likely to be localised and the concentrations are not anticipated to be significant. During RoC Consulting groundwater monitoring of the adjacent site, the groundwater table was identified at between 8.00m and 10.00m bgl, consequently, a contaminative pathway is unlikely. However, the potential contamination could potentially reach the sensitive aquifers via vertical migration through granular Made Ground and natural deposits. Based on the above discussion, the risk is deemed low due to the lack of feasible contaminative pathways.	**Low to Moderate**
				Post-Development Site **Unlikely:** Following development the site is likely to remain entirely hardstanding, therefore vertical migration will remain low. Furthermore, if any contamination is encountered, then remedial measures may be undertaken for (i.e. possible removal of source) further reducing the risk to controlled waters.	**Low**
	B C F	Surface water courses (none identified on site, Rochdale Canal (30m N) and River Medlock (150m S)	Effects to controlled waters: (**Mild**)	**Pre-Development Site** **Low likelihood**: As no surface water features are identified on site, no contaminative pathways exist, therefore the risk to site is deemed very low. However, a network of existing and relic drainage is anticipated on site associated with the historical site uses. Relict drainage may present a mode of migration for any potential contaminants to the sensitive receptors.	**Low**
				Post-Development Site **Unlikely**: Although sensitive surface water features are located in the vicinity of the site and hardstanding is present across the majority of the site, any contamination is believed to be present within the underlying site soils rather than above hardstanding. However, any contamination, currently present above the hardstanding, could reach directly into or through the existing drainage into the surface water courses.	**Very Low**

4.7 Preliminary Risk Assessment Summary

Human Health

Based on the human heath conceptual model the risk to human health is deemed low to moderate to end users. RoC Consulting identified elevated concentrations of PAHs on the adjacent site of 10-12 Whitworth Street West during their site investigation in 2016, consequently, the presence of similar concentrations of contaminants cannot be discounted. Although the risk to construction workers is increased due to their acute interaction with site soils, it is envisaged that with appropriate PPE and site management, risks to construction workers can be mitigated to low following a detailed risk assessment prior to the demolition and construction works commencing.

Ground Gas

Deep Made Ground is anticipated to be present across site, however it is anticipated to be granular and unlikely to contain organic-rich and putrescible materials. RoC Consult gas monitoring undertaken at the adjacent site revealed no significant concentrations of methane or carbon dioxide. Consequently, due to the lack of a reliable ground gas generating source, the risk is deemed low. It is likely that as part of the ground investigation, groundwater monitoring will be required. In this instance, ground gas monitoring could be completed as a matter of course to confirm the assessment of the risk as low.

If any organic rich Made Ground deposits are identified or if previously unrecorded potential ground gas sources are recorded during the ground investigation works, then ground gas monitoring may be required. The length and frequency of the ground gas monitoring regime and the sampling method, initial results and alterations to the conceptual model are subject to the findings of the ground investigation works and development constraints (i.e. development timescales and liaison with the local authority).

Controlled Waters

Sensitive receptors have been identified on site (Secondary A and Principal Aquifers) and sensitive off-site receptors have also been recognised (Rochdale Canal, 30m to

the south and the River Medlock, 150m to the south). Deep Made Ground is anticipated to be present across site (between c. 3.00m and 5.00m depth), however the contamination is not likely to be widespread and rather localised, and the concentrations of any potential contaminants are not expected to be significant. Groundwater monitoring undertaken by RoC Consulting for the adjacent 10-12 Whitworth Street West identified the bedrock groundwater table to be between c. 8.00 and 10.00m bgl; the risk to controlled waters is low to moderate.

If unrecorded contaminative sources are noted, the above conceptual models may require re-assessment.

4.8 Scope of Phase 2 Intrusive Geo-Environmental Ground Investigation

As a result of the preliminary risk assessment, a Phase 2 intrusive geo-environmental ground investigation is required to be carried out to quantify the identified risks. This intrusive ground investigation works should include the collection of appropriate samples across the site for appropriate chemical testing as detailed above.

Furthermore, to determine the geotechnical and geological properties of the underlying ground conditions, appropriate intrusive works and associated testing should be undertaken. The rationale and aims for these Phase 2 environmental, geotechnical and geological investigative works are detailed below.

In order to provide adequate assessment in terms of both environmental and geotechnical site parameters, ground investigation works will be required on a spatial basis and targeting the envelope of the existing on-site buildings as well as the area between the existing buildings and the existing Deansgate viaduct. Slot trenches constructed within the paved areas are also recommended to confirm the exact position of the on-site services.

It is likely that the ground investigation will require ‘staging’ given the potential access restrictions associated with the existing buildings.

The proposed initial ground investigation works should comprise a programme of deep boreholes (e.g. rotary core) and mechanically excavated trial pits.

The rationale for the exploratory holes is discussed below:

- To allow the collection of samples from the Made Ground and natural deposits for chemical laboratory testing (solid samples) for an appropriate suite of determinands and to determine the suitable concrete classification in associated with relevant guidance e.g. BRE Special Digest 1;
- To allow for the collection of bedrock core samples for appropriate chemical and geotechnical testing and to determine the depths to bedrock strata suitable for foundation construction;
- To determine the extent, composition and depth of any Made Ground deposits;
- To determine the nature, thickness and extent of superficial deposits;
- To determine depth to and condition of bedrock;
- To inspect the existing foundations of the on-site buildings to assess their extent and location;
- To enable geotechnical testing, including density testing (SPTs), hand shear vane (HSV) testing (if applicable) and undrained shear strengths of the underlying Made Ground and natural deposits for the purposes of sub-structure design; and
- To allow installation of ground water monitoring wells.

5.0 RECOMMENDATIONS

- As a result of the information gathered and the risks identified in this report, there is a low to moderate risk to human health on the basis that feasible contaminative linkages have been identified, likely to be located in localised areas. The risk to controlled waters is deemed low to moderate, due to feasible contaminative linkages identified via anticipated migration through existing and relic drainage present below site, as well as possible vertical migration through the granular Made Ground and Glaciofluvial Sheet Deposits.

- A low ground gas risk has been identified based on ground gas sources and previous RoC Consulting ground gas monitoring. On the basis that the site lies within an area where between less than 1% of homes are above the action level no radon protection measures are necessary.

- Due to geotechnical requirements and numerous potential geotechnical hazards, ground investigation works are required be undertaken in order to determine the ground conditions with a greater degree of certainty and allow design of the proposed development, drainage, services and immediate external areas to be undertaken. It is therefore recommended that exploratory holes are constructed. It may be necessary to 'stage' the investigation , dependant on where access is permitted across the site.

- From the results of the Phase 2 ground investigation work – if this report identifies a potential risk and / or a requirement for further detailed site-specific assessment, a Phase 3 environmental investigation report and / or a Remedial Strategy (informing on potential remediation solutions) may be required.

- The nature and extent of the proposed targeted chemical and environmental testing should be confirmed, if time / commercial constraints allow, with the relevant Local Authority Environmental Health Officer and the Environment Agency prior to

undertaking works on-site. Proceeding without agreement between regulatory authorities may result in further assessment being required.

- It should be noted that, if any visual or olfactory evidence of contamination is encountered during remediation or construction work, then the Local Authority Environmental Health Officer and Environment Agency should be contacted immediately in order to agree any necessary remediation measures.

- Given the anticipated widespread presence of services on-site, full service plans should be obtained and an underground utility survey should be undertaken. It is recommended that the presence and associated constraints of all site services are established prior to significant intrusive works beginning.

- It is recommended that the constraints of the Deansgate viaduct and delineating the southern site boundary are established prior to the construction works commencing. Furthermore, liaison with Network Rail should take place prior to the start of any intrusive works to establish any necessary ‘stand-off’ from Network Rail assets.

- A consultation with the country archaeologist is recommended due to items of archaeological interest being recorded historically in the vicinity of the site.

APPENDIX 1

LIMITATIONS OF INVESTIGATION WORK AND REPORT AND CONTAMINATED LAND LEGISLATIVE FRAMEWORK

LIMITATIONS OF REPORT

This consultancy report was compiled and carried out by IGE Consulting Limited ('IGE') for the client, as defined in the main report (the 'client'), on the basis of a defined programme and scope of works and the terms of a contract between IGE and the client. IGE undertook this with all reasonable skill and care, taking into account the limits of the scope of works required by the client, the prevailing site conditions, the time scale involved and the resources, including financial and manpower resources, agreed between IGE and the client. IGE cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices. This report may not be relied upon, or transferred to, by any other party without the written agreement of its author. If a third party relies on this report, it does so wholly at its own and sole risk and IGE disclaims any liability to such parties.

It is IGE's understanding that this report is to be used for the purpose described in the 'Brief' section of this report. That purpose was a significant factor in determining the scope and the services to be provided. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without IGE's review and advice shall be at the client's sole and own risk.

The information contained in this report is protected by disclosure under Part 3 of the Environmental Information Regulations 2004 pursuant to the provisions of Regulation 12(5) without the consent in writing of a Director of IGE.

This report is a function of the date it was written and should be read in light of any subsequent changes in legislation, statutory requirements and industry practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of IGE. In the absence of such written advice of IGE, reliance on the report in the future shall be at the client's own and sole risk. Should IGE be requested to review the report in the future, IGE shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between IGE and the client.

The observations and conclusions described in this report are based solely upon the scope of works agreed between the client and IGE. IGE has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report. IGE is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the agreed scope of works. For the avoidance of doubt, this report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species (e.g. Japanese Knotweed). It is recommended that the client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the suspected presence asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace full and proper surveys.

Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. The geo-environmental sections are written in broad agreement with BS 10175:2011+A2 2017.

LIMITATIONS OF INVESTIGATION WORK

Desk Study References

This report is based upon IGE's observations of existing physical conditions at the site gained from a walkover survey of the site together with IGE's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. Reliance has been placed on this publicly available data obtained from the sources identified in the main report. When using the information, it has been assumed that it is correct. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst IGE have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified. No responsibility can be accepted for errors within third party items presented in this report. IGE did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services. IGE is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to IGE and including the doing of any independent investigation of the information provided to IGE except when otherwise provided in the terms of the contract between the client and IGE.

Historical Mapping

Historical Ordnance Survey maps do not provide a comprehensive description of a site history. They provide details of the site from a date prior to the publication of the map (i.e. a snapshot in time). The period between map editions can be substantial (i.e. several decades). Not all map series are available for every date range in many areas of the UK and therefore there will be gaps in this mapped record for some sites. Potentially contaminative land uses could have been present and removed during such periods and may therefore not form a part of this particular record. In addition, there will be potentially contaminative land uses which are not identified on the map records such as small scale storage / use of hazardous materials, illegal / unlicensed waste disposal activities etc. Different map series identify different features utilising different symbols which can result in features that remain on-site being removed from maps. Some features are also not mapped for security reasons (e.g. airfields and other military installations). These areas are mostly shown as blank areas on historical maps.

Site Walkover

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

Flooding

Flooding in this report is defined as flooding caused by the sea, ditches, rivers, streams, ponds, lakes, reservoirs and the like. It does not extend to flooding caused by surcharged piped drainage systems and investigations into flooding of this nature are excluded from this report.

Extent of Contamination Studies

Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities. The conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the reporting in full. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

Intrusive Investigation

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations, the potential exists for ground conditions to be encountered which are different to those considered in this report. The explored extent of the site area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters, based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Exploratory Holes

Where exploratory holes have been carried out as part of this investigation, the spacing has been determined to provide a reasonable indication of the general ground conditions across the site, but the number has ultimately been limited by commercial constraints. The findings of the exploratory holes relate specifically to the exploratory hole locations and are no absolute guarantee of the ground conditions between such locations. Due allowance should be made for the possibility of variation in conditions between exploratory hole locations.

Extent of Contamination Testing

The extent of contaminated land testing carried out on samples obtained from the site has been determined in accordance with the latest legal guidance issued by the government to provide, with reasonable certainty, the probable general levels of contamination present on site that could pose a significant hazard to human health or waters. The extent of site investigation works including chemical testing has also been limited by reasonable commercial constraints. Although extensive testing of samples has been carried out, the volume of samples taken for testing are a minute fraction of the total volume of soils and groundwater present on site. Therefore, there is a residual risk that undetected pockets of contamination may be present on site, situated between testing locations.

When investigating or developing potentially contaminated land it is important to recognise that sub-surface conditions may vary spatially and temporally. The absence of certain ground, ground gas, contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

Extent of Geo-Environmental Studies

This report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species e.g. Japanese Knotweed. It is recommended that the Client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the identification asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace a full and proper survey. If an Unexploded Ordnance (UXO) report has been obtained within the report, it has been so on the basis of Health and Safety concerns and no assessment has been made other than transcribing the recommendations of the sub-contractor contained within the report. In terms of a potential contaminative source, unless ordnance has been manufactured / stored on site, UXOs will only be determined as a contaminative source following a positive identification on site.

PLANNING CONTEXT

The National Planning Policy Framework (NPPF, 2023) states that the purpose of the planning system is to contribute to the achievement of sustainable development. In order to do this the planning system has three overarching objectives, one of which directly relates to the potential for pollution and contaminated land:

- *'**environmental objective** - to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy'.*

In accordance with this environmental objective, Paragraph 124 clarifies that 'making effective use of land' includes to:

- *'give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land'*.

In accordance with this environmental objective, Paragraph 180 clarifies that' conserving and enhancing the natural environment includes:

- *'preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability*'; and
- *'remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate'.*

Paragraph 189 of the NPPF states that planning policies and decisions for developments should also ensure that:

- *'a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation)*'; and,
- '*after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990'*; and
- '*adequate site investigation information, prepared by a competent person, is available to inform these assessments'*.

This report has been prepared and authorised by staff that are competent as defined in the NPPF.

APPENDIX 2

FIGURES AND DRAWINGS

© COPYRIGHT
The copyright in this drawing is vested in Sheppard Robson and no license or assignment of any kind has been, or is, granted to any third party whether by provision of copies or originals or otherwise unless agreed in writing.

DO NOT SCALE FROM THIS DRAWING
The contractor shall check and verify all dimensions on site and report any discrepancies in writing to Sheppard Robson before proceeding work

FOR ELECTRONIC DATA ISSUE
Electronic Data / drawings are issued as "read only" and should not be interrogated for measurement. All dimensions and levels should read, only from those values stated in text on the drawing.

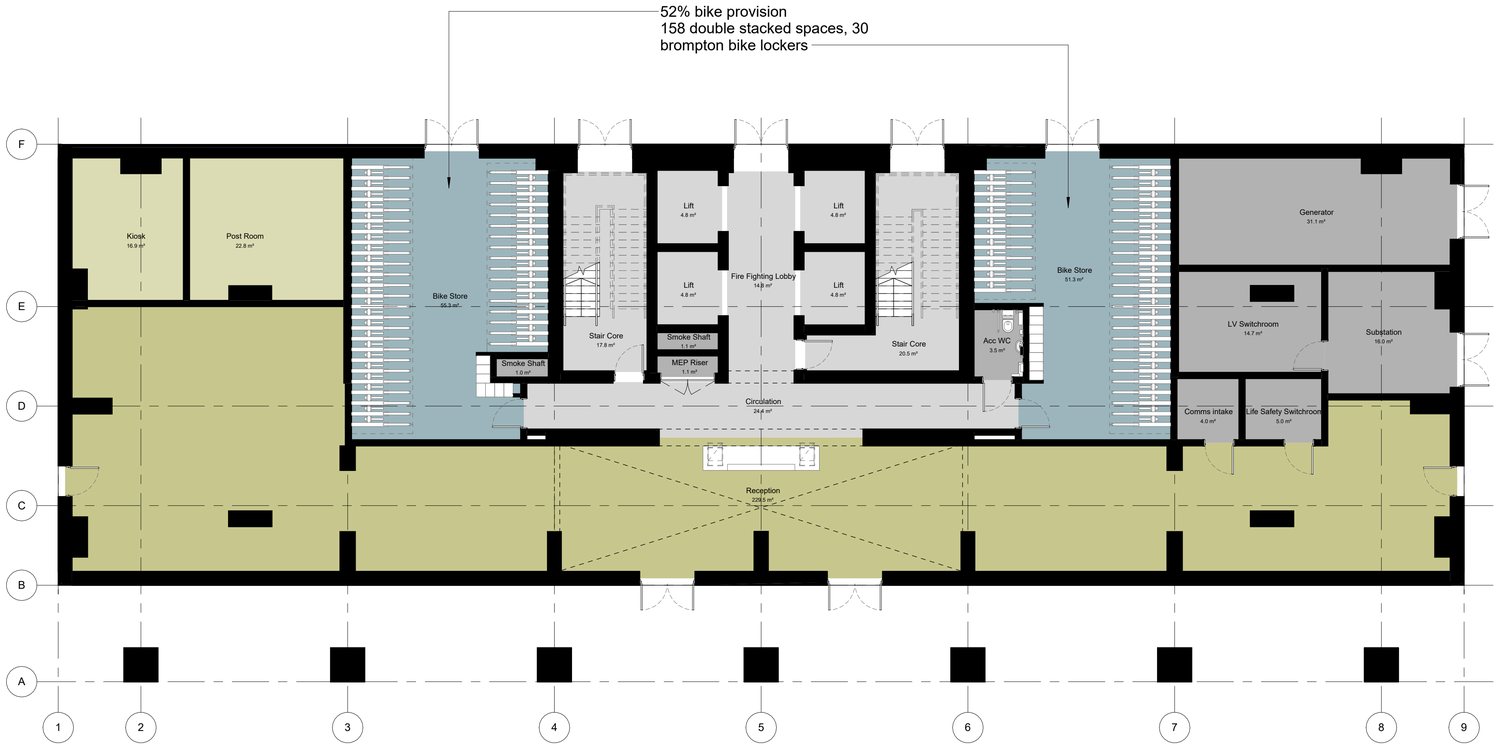
NOTES

This plan is intended to represent the general internal arrangement of a typical floor.

Structural and drainage strategy are depicated indicatively only. (TBC by SE & MEP)

Key

- Back of House
- Amenity
- Management
- Plant



Level 00_GA
1 : 100

REVISIONS

REV.	DATE	AMENDMENT
P01	17/05/24	First Issue
P02	13/06/24	Layouts updated in line with comments.

KEYPLAN

CLIENT
Glenbrook Property

SHEPPARD ROBSON

77 Parkway Camden Town London NW1 7PU
T: +44 (0)20 7504 1700 E: enquiries@sheppardrobson.co.uk

PROJECT
2-4 Whitworth Street

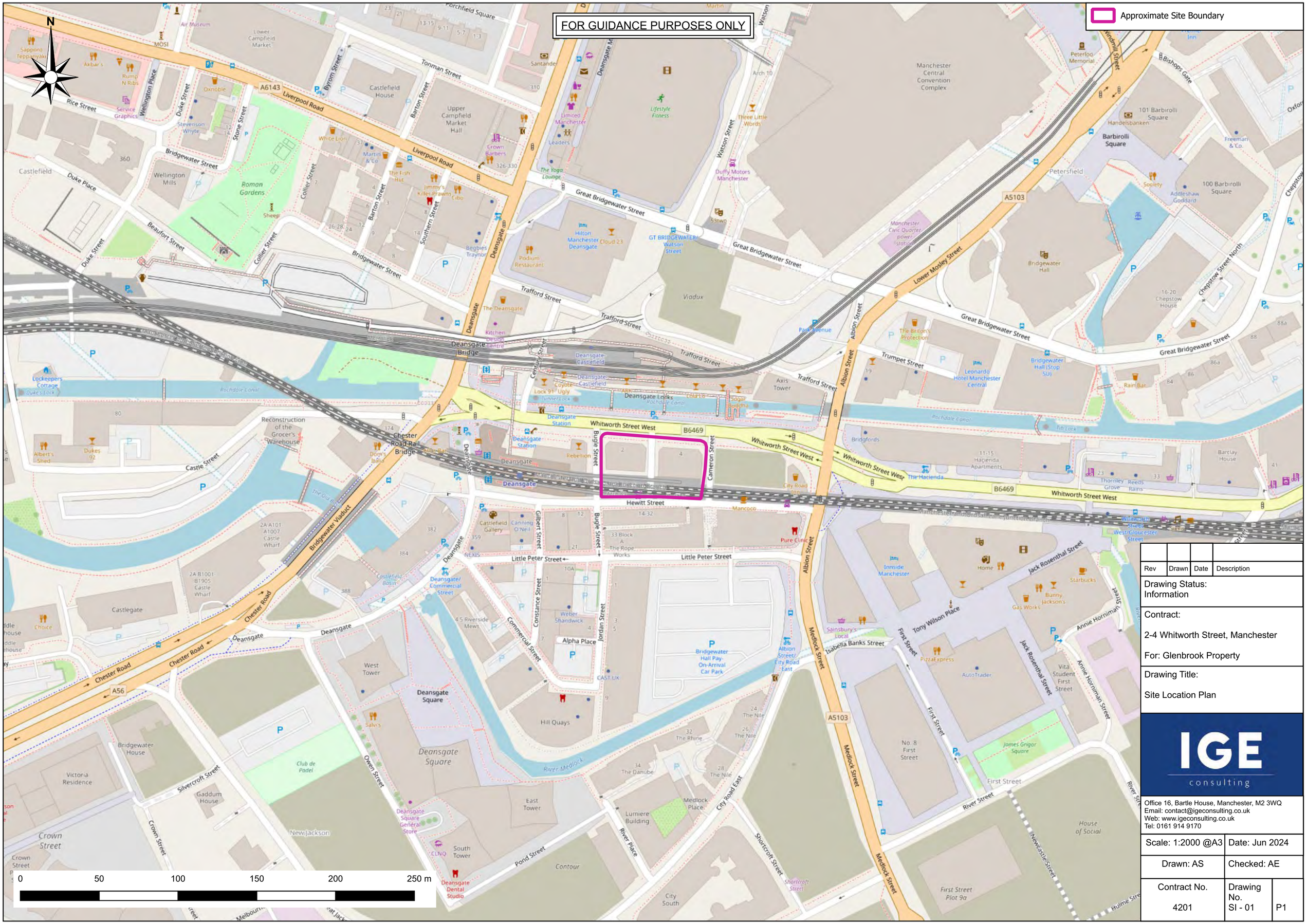
SCALE@A1	DATE	ORIGINATOR	CHECKED	AUTHORISED
1 : 100	**13/06/24**	**MT**	**PC**	**TOB**

DESCRIPTION
General Arrangement
Ground Floor Plan

STAGE
Stage 2

STATUS	PURPOSE FOR ISSUE	SR NO.
S2	**FOR INFORMATION**	**7196**

DRAWING NO.	REV.
7196-SRA-ZZ-00-DR-A-20100	**P02**



Rev	Drawn	Date	Description

Drawing Status:
Information

Contract:

2-4 Whitworth Street, Manchester

For: Glenbrook Property

Drawing Title:

Site Location Plan

IGE consulting

Office 16, Bartle House, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:2000 @A3	Date: Jun 2024	
Drawn: AS	Checked: AE	
Contract No. 4201	Drawing No. SI - 01	P1

FOR GUIDANCE PURPOSES ONLY

N

Approximate Site Boundary
Deansgate Railway Station (1849-2024)
Manchester Central Station and Goods Stations (1891-1990)
Garage (1955 - 1995)
Works (1932-2010)
Warehouses (1893-1992)
Gaythorn Gas Works (1891-1985)
Gaythorn Mill (1851-1980)
Automobile Engineering Works (1948-2003)
Gum and Starch Works (1908 - 1948)
Union Foundry (1851-1891)
Medlock Bridge Mill and Gaythorn Small Warehouse (1851 - 1891)
Commercial Mill (1851-1891)
Coal Yard (1851-1891)
Cotton Mill and Indian Corn Mill (1851-1995)
Trumpet Street Mill (1851-1891)
Stone Yard (1851-1891)
Smithy (1851-1893)
Historical Pumps (1891)

Rochdale Canal (1805-2024)

Open
Culverted
Rochdale Canal Locks (1805-2024)

0 20 40 60 80 100 m

Rev	Drawn	Date	Description

Drawing Status: Information

Contract:
Whitworth Street, Manchester
For: Glenbrook Property

Drawing Title:
Site Features Plan

IGE consulting
Office 16, Bartle House, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:1000 @A3	Date: Jul 2024	
Drawn: AS	Checked: AE	
Contract No. 4201	Drawing No. SI - 02	P1

SOURCES

Sources
1. Possible Made Ground

Secondary Sources
2. Pooling beneath current and / or future foundations
3. Pooling in relative low points above low permeability deposits
4. Pooling within granular lenses within low permeability deposits

Ground Gas Sources
1. Possible Made Ground

PATHWAYS

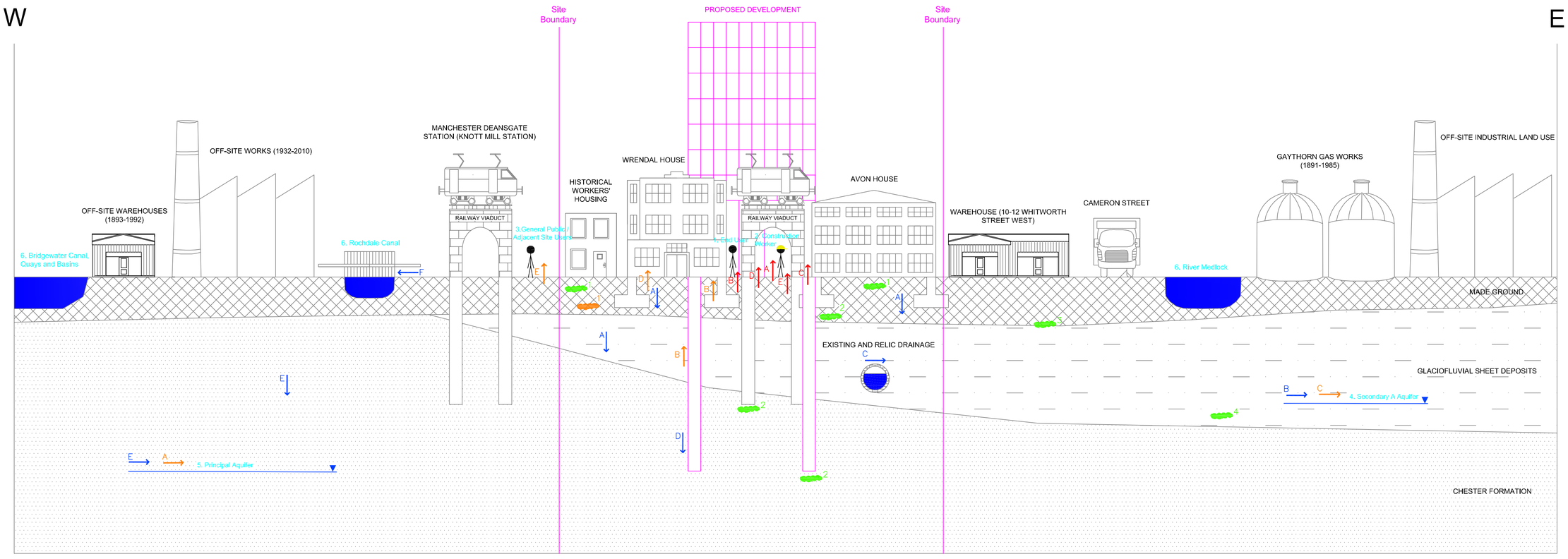
Pathways To Human Health
A. Ingestion of dust and soil
B. Dermal contact with dust and soil
C. Inhalation of dust
D. Inhalation of vapours
E. Inhalation and oral backgrounds

Pathways To Controlled Waters
A. Vertical migration athrough coarse Made Ground and coarse soils.
B. Lateral migration along low permeability natural soils & pooling at relative low points.
C. Lateral migration along historical drainage
D. Vertical migration along future foundations and pooling at base.
E. Migration through porous bedrock.
F. Overland flow.

Ground Gas Pathways
A. Migration through fractures and fissures in bedrock
B. Preferential migration along foundations & service ducts
C. Migration within groundwater
D. Ingress through cavity walls and floors
E. Inhalation of ground gas and vapours

RECEPTORS

Receptors
1. End user
2. Construction workers
3. General public / adjacent site users
4. Secondary A aquifer in superficial deposits
5. Principal aquifer in bedrock
6. Surface water - Rochdale Canal (30m N) and River Medlock (150m S)
7. Buildings and services



Notes

1 This drawings is indicative and not to scale.

2 This drawing is to be read in conjunction with all relevant Architects and Service Engineers drawings.

Key

Made Ground

Glaciofluvial Sheet Deposits

Chester Formation

Rev	Drawn	Date	Description

Drawing Status
INFORMATION

Contract
WHITWORTH STREET, MANCHESTER

FOR: GLENBROOK PROPERTY

Drawing Title
CONCEPTUAL SITE MODEL

IGE consulting

Office 16, Bartle House, Manchester, M2 3WQ
email: contact@igeconsulting.co.uk
web: www.igeconsulting.co.uk
tel: 0161 914 9170

Scale	Date	
NTS	JUL 2024	
Drawn	**Checked**	
AS	AE	
Contract No.	**Drawing No.**	
4201	SI-03	P1

APPENDIX 3

WALKOVER SURVEY PHOTOGRAPHS AND PHOTOGRAPH LOCATION PLAN

FOR GUIDANCE PURPOSES ONLY

Approximate Site Boundary

Site Walkover Photograph Locations

N

Whitworth Street West

B6469

Bugle Street

Cameron Street

Hewitt Street

Arch 89

Arch 87

2

4

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

0 10 20 30 40 50 m

Rev	Drawn	Date	Description

Drawing Status:
Information

Contract:

2-4 Whitworth Street, Manchester

For: Glenbrook Property

Drawing Title:

Site Walkover Photograph Location Plan

IGE consulting

Office 16, Bartle House, Manchester, M2 3WQ
Email: contact@igeconsulting.co.uk
Web: www.igeconsulting.co.uk
Tel: 0161 914 9170

Scale: 1:250 @A3	Date: Jul 2024	
Drawn: AS	Checked: AE	
Contract No. 4201	Drawing No. SI - 04	P1

SITE WALKOVER PHOTOGRAPHS – 2nd July 2024

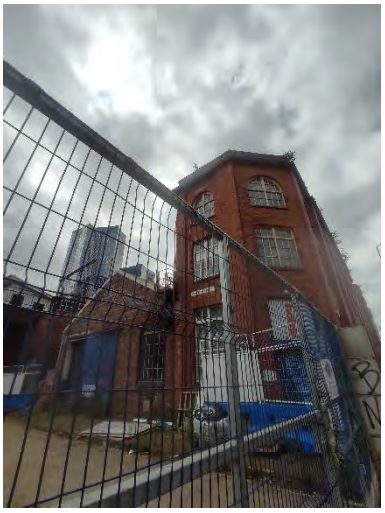


Figure 1 – The eastern site boundary and north-eastern site corner as seen from the corner of Whitworth and Cameron Street.



Figure 2 – The north-eastern site corner and the front of the eastern building with street lighting, looking south-west.



Figure 3 – The front of the eastern building at Whitworth Street West, looking south.



Figure 4 – A traffic light control and street lighting control access point in front of the eastern building, looking south.



Figure 5 – The eastern side of the western building at Whitworth Street West and the Rowendale Street bridge, looking south-west.



Figure 6 – The front of the western building at Whitworth Street West, looking south.

SITE WALKOVER PHOTOGRAPHS – 2nd July 2024



Figure 7 – Service cupboards on the public footpath in front of the western building, looking east.



Figure 8 – Manholes and drain grates along the western site boundary, looking south.

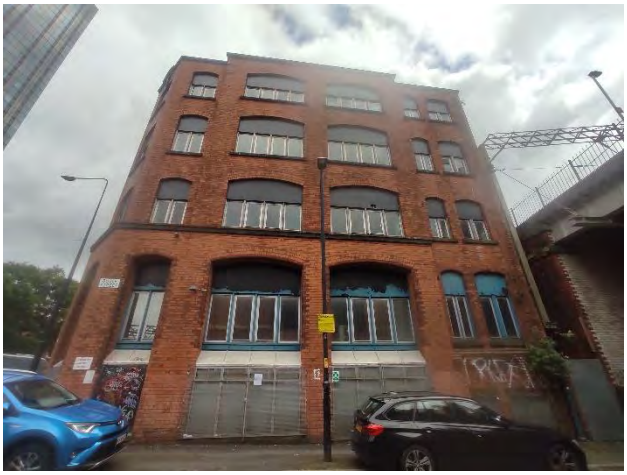


Figure 9 – The western building as seen from Bugle Street, looking east.



Figure 10 – Suspected material combustion near the south-western site corner, looking south-east.

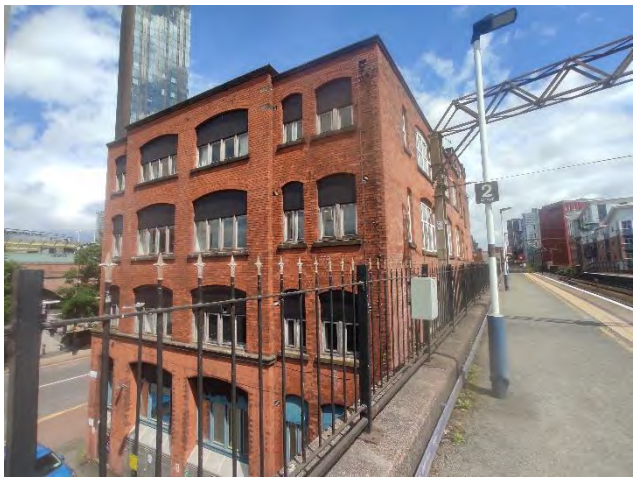
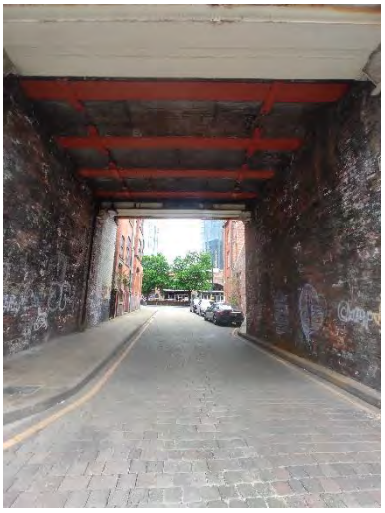
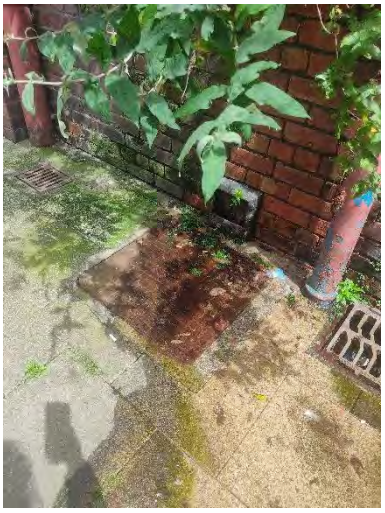


Figure 11 – The western building at Whitworth Street West as seen from Platform 1 at Deansgate station, looking north-east.



Figure 12 – The rear of the easter building at Whitworth Street West as seen from Platform 1 at Deansgate station, looking north-west.

SITE WALKOVER PHOTOGRAPHS – 2nd July 2024	
	
Figure 13 – Rowendale Street bridge as seen from Hewitt Street with the western and eastern buildings in the distance, looking north.	Figure 14 – The eastern side of the western building at Whitworth Street West as seen from Rowendale Street, looking north-east.
	
Figure 15 – Manholes and drain grates adjacent to the eastern building, as seen from Rowendale Street, looking north-east.	Figure 16 – The eastern building at Whitworth Street West as seen from Platform 1 at Deansgate station, looking north-east.
	
Figure 17 – The rear of the eastern building at Whitworth Street West as seen from Platform 1 at Deansgate station, looking north.	Figure 18 – Fly tipping along the eastern site boundary, looking north-west.

APPENDIX 4

HISTORICAL ORDNANCE SURVEY MAPS



Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: 1056 Scale Town Plan

Map date: **1851**

Scale: 1:1,056

Printed at: 1:1,056

N
W E
S

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

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Production date: 20 June 2024

Map legend available at:
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

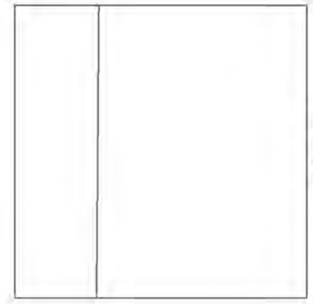
Map Name: County Series Town Plan

Map date: **1891**

Scale: 1:500

Printed at: 1:1,000

N
W E
S



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

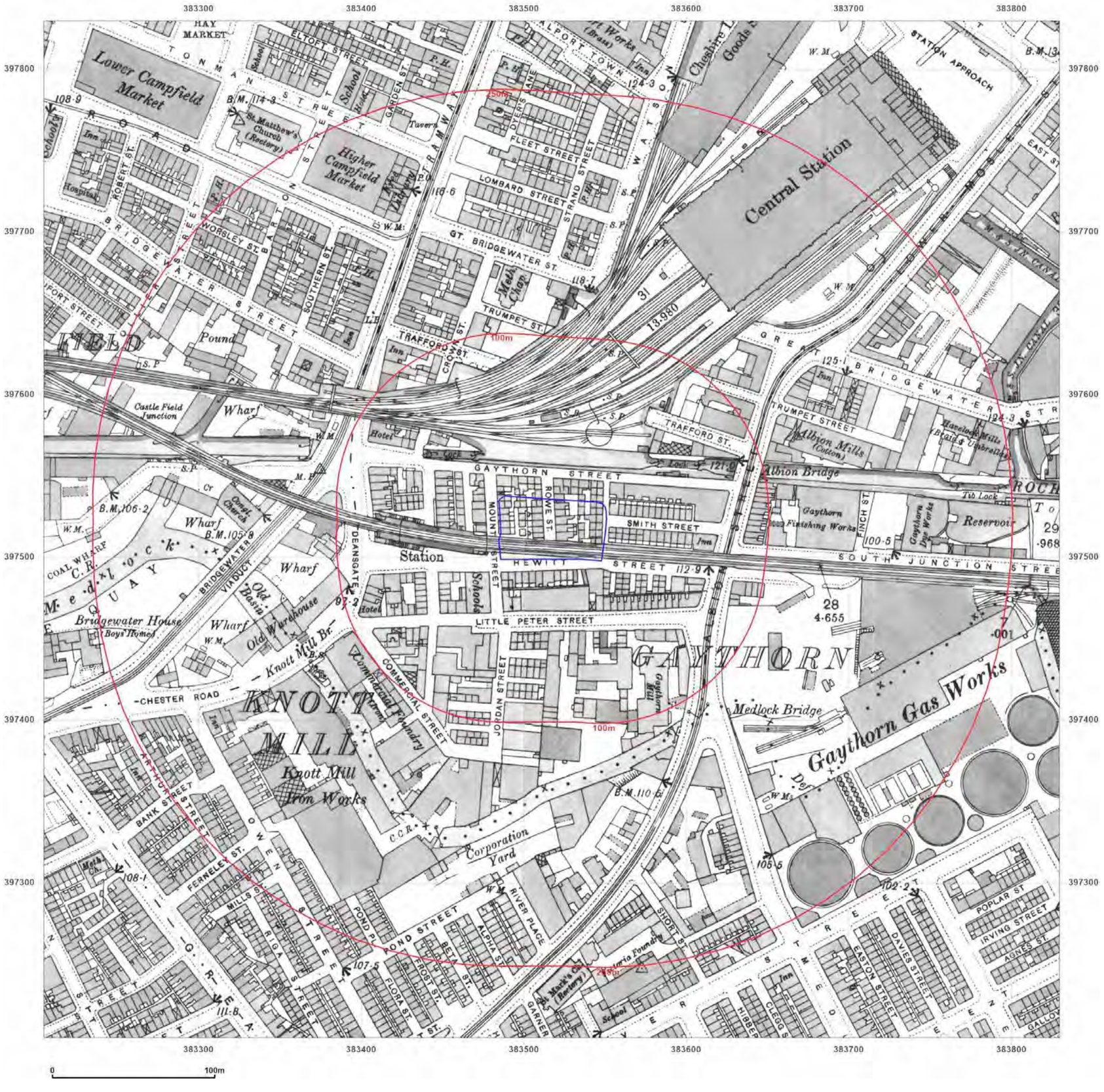
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

Map date: **1893**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1893
Revised N/A
Edition 1893
Copyright N/A
Levelled N/A

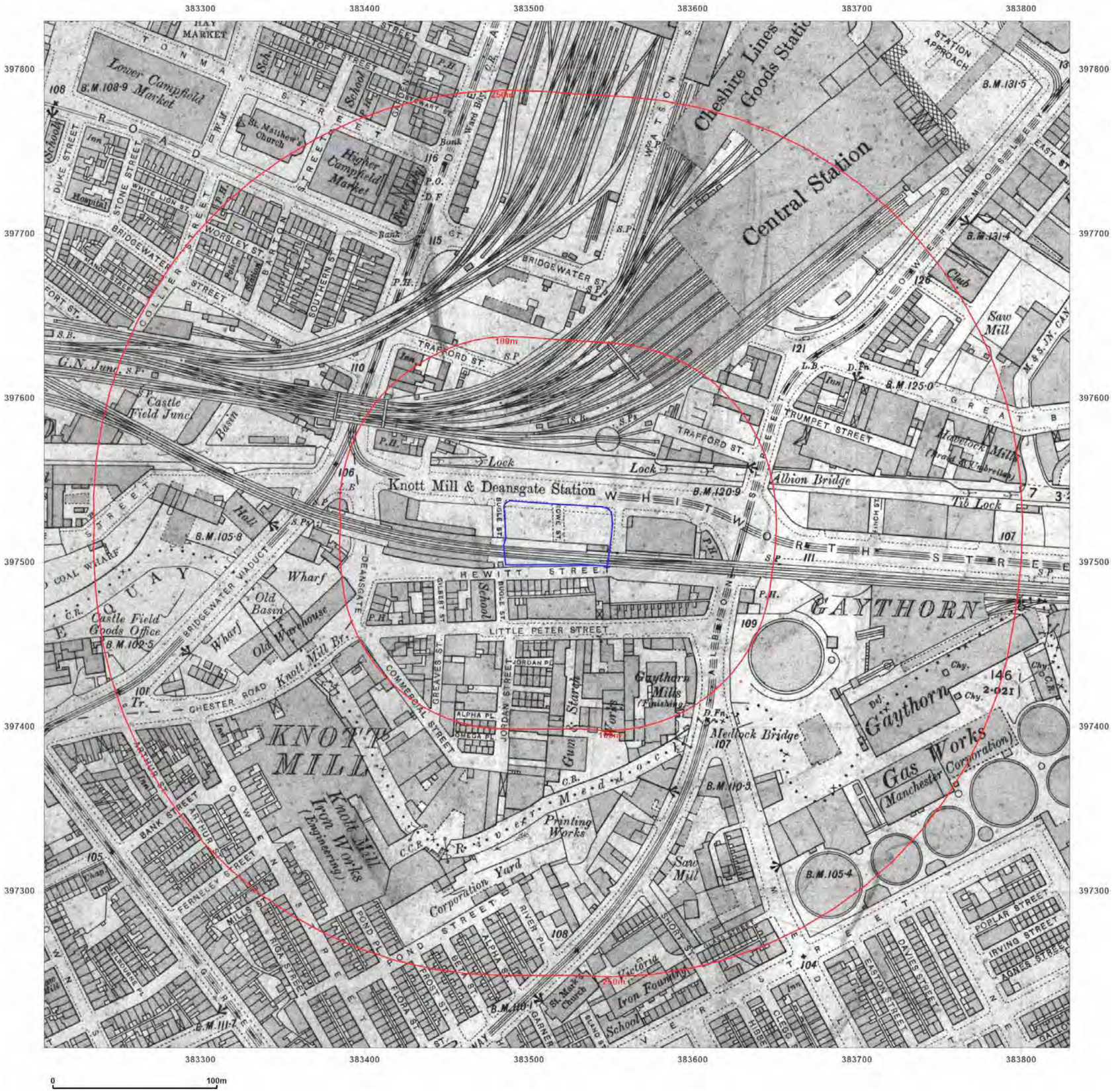
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

Map date: **1908**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1891
Revised 1905
Edition 1908
Copyright N/A
Levelled N/A

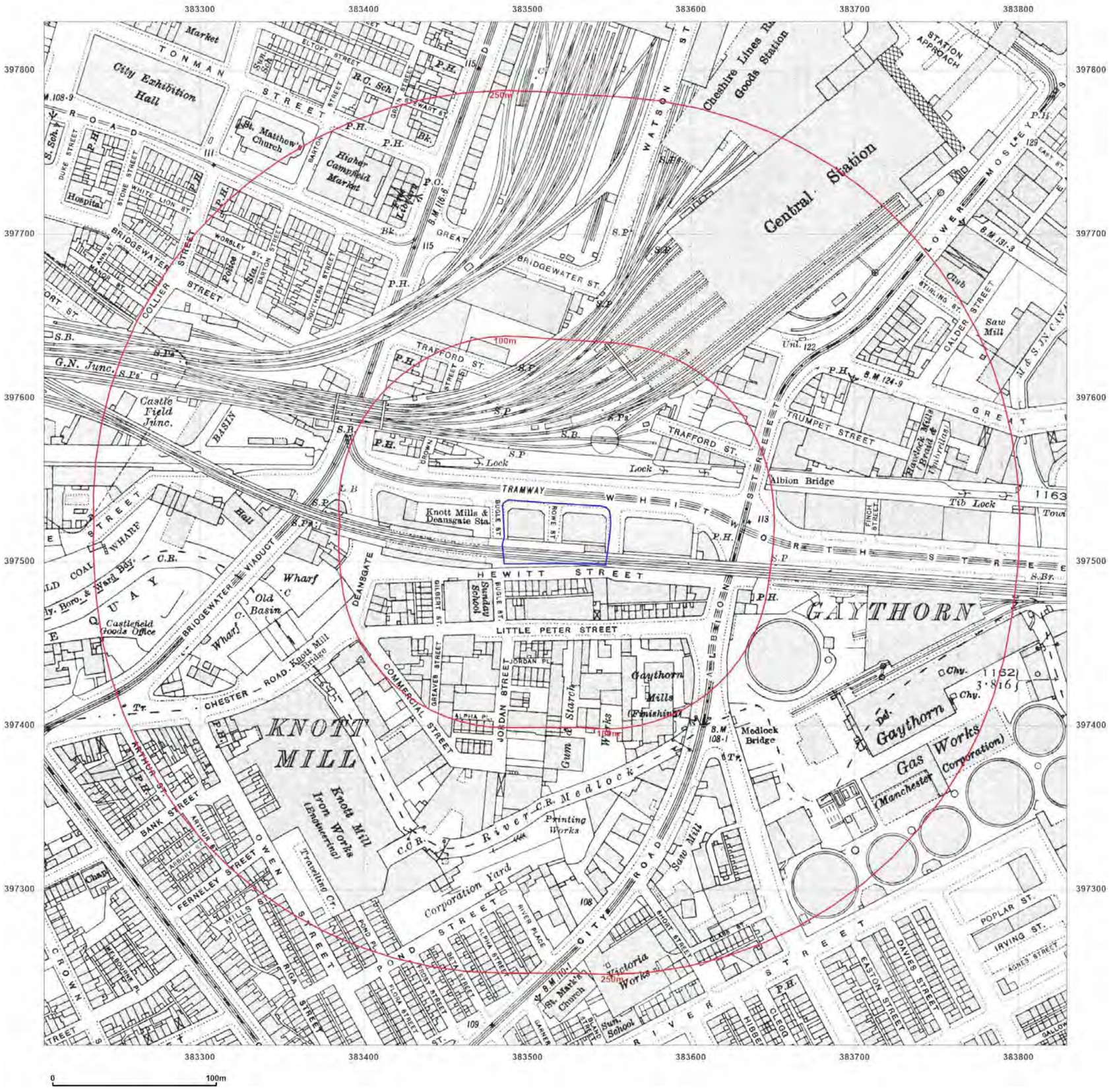
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Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915

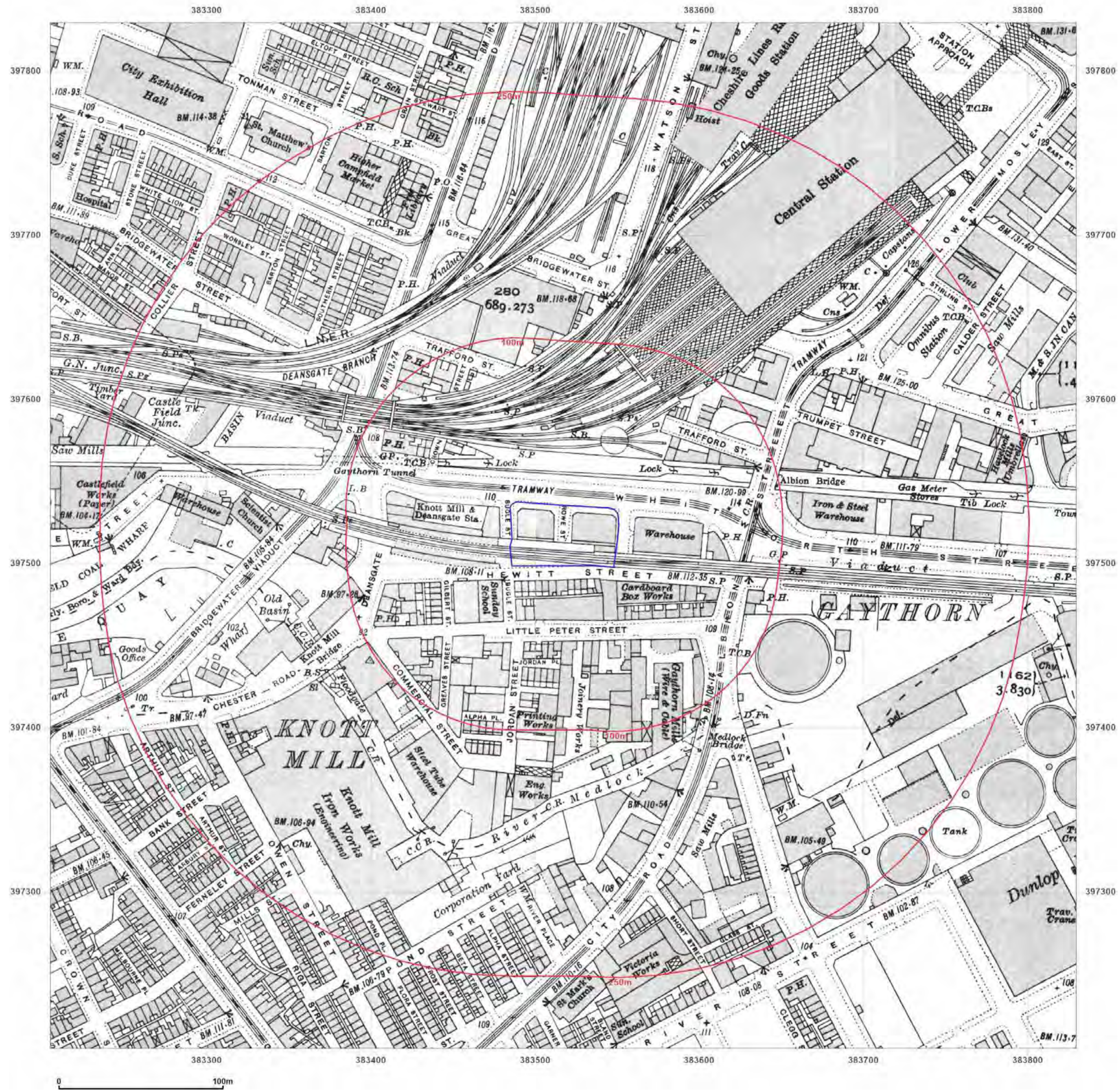
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Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1873
Revised 1932
Edition N/A
Copyright N/A
Levelled 1927

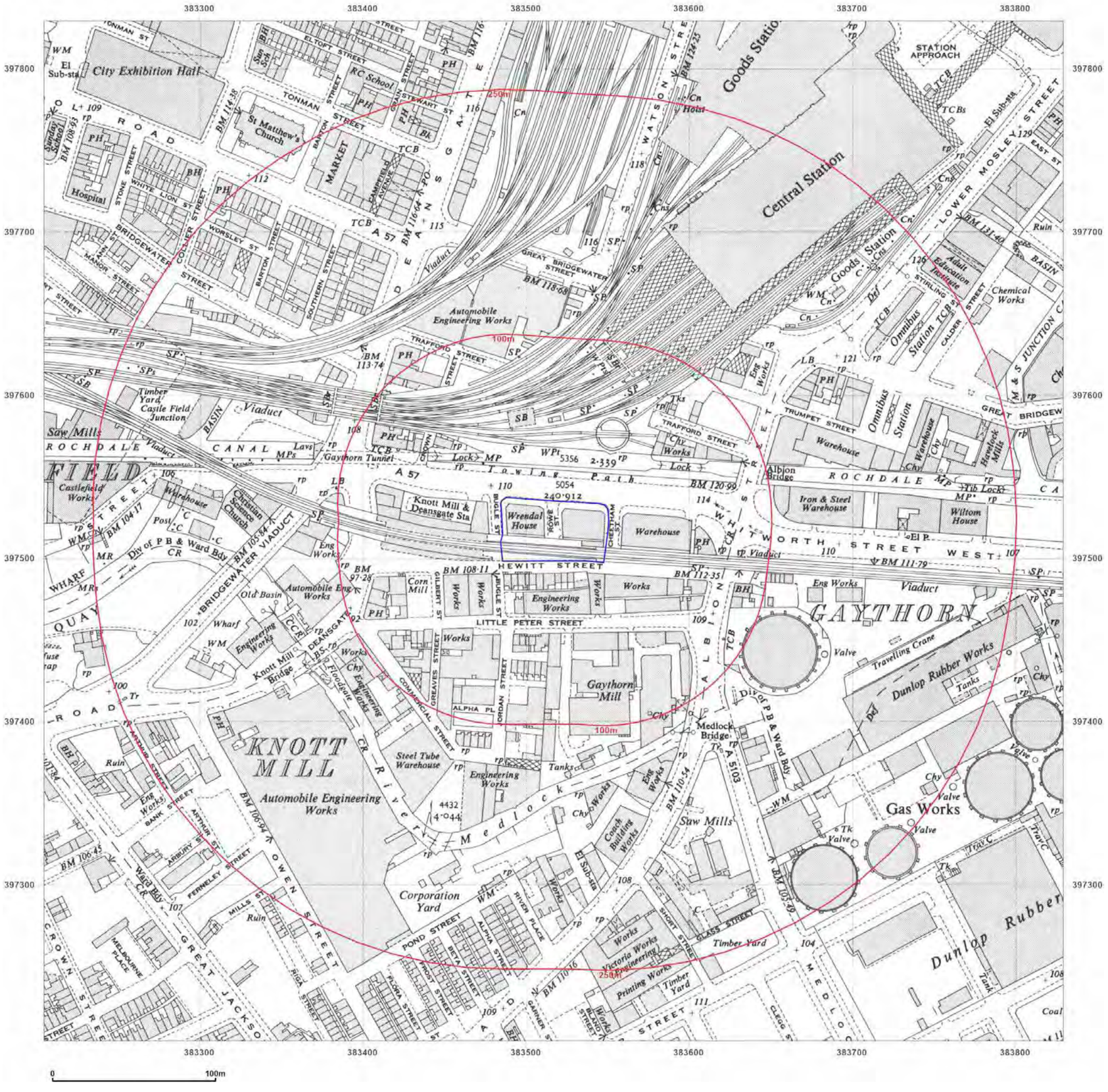
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Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1948**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1949
Levelled 1927

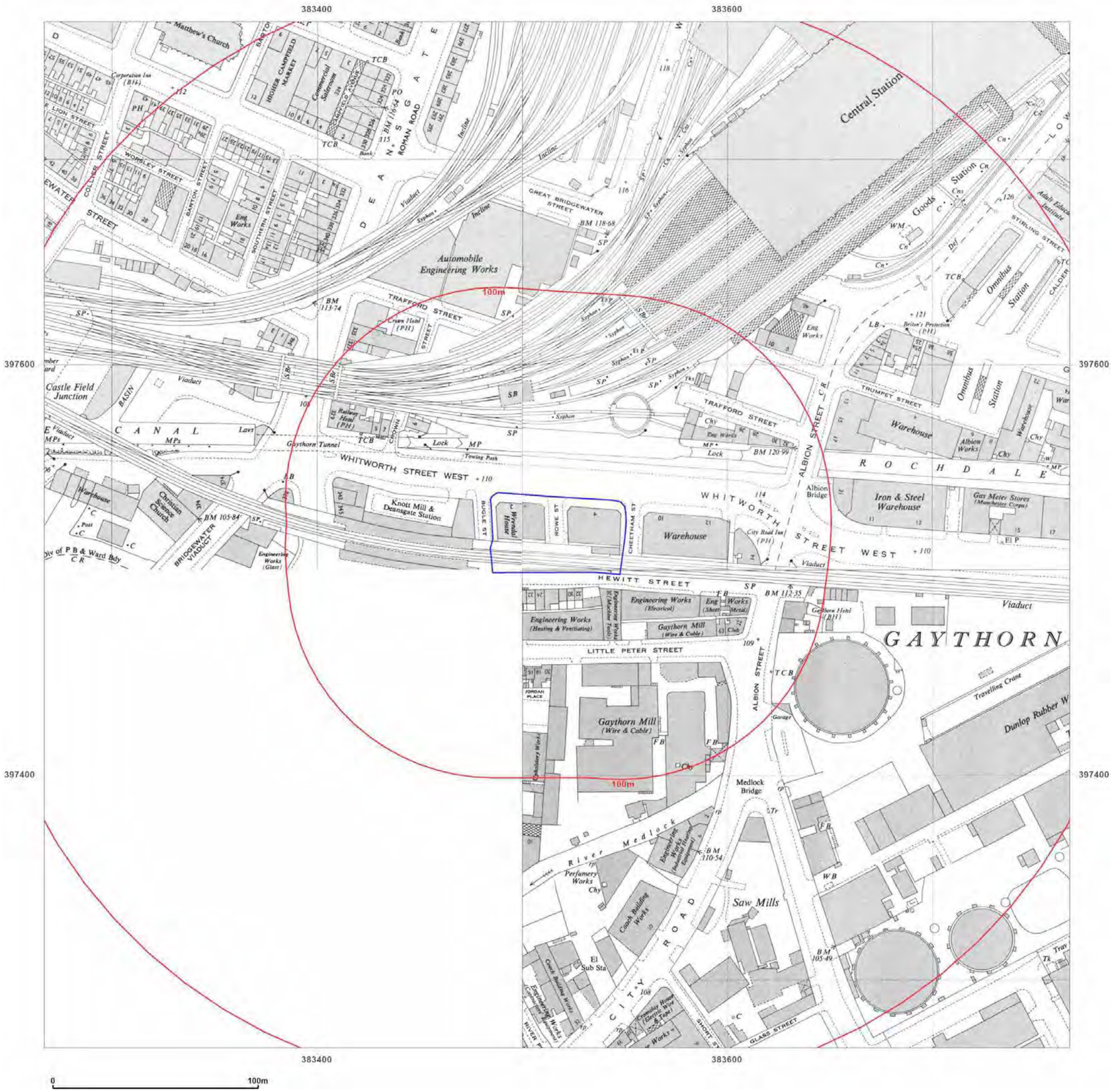
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

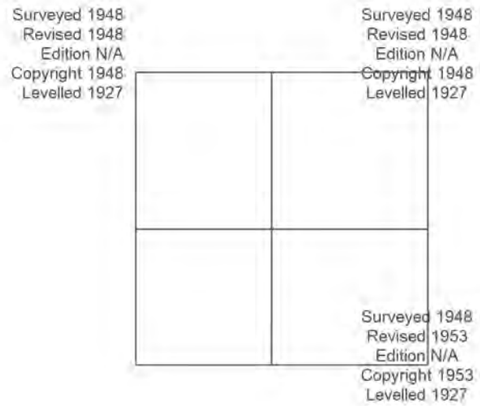
Map Name: National Grid

Map date: **1948-1953**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



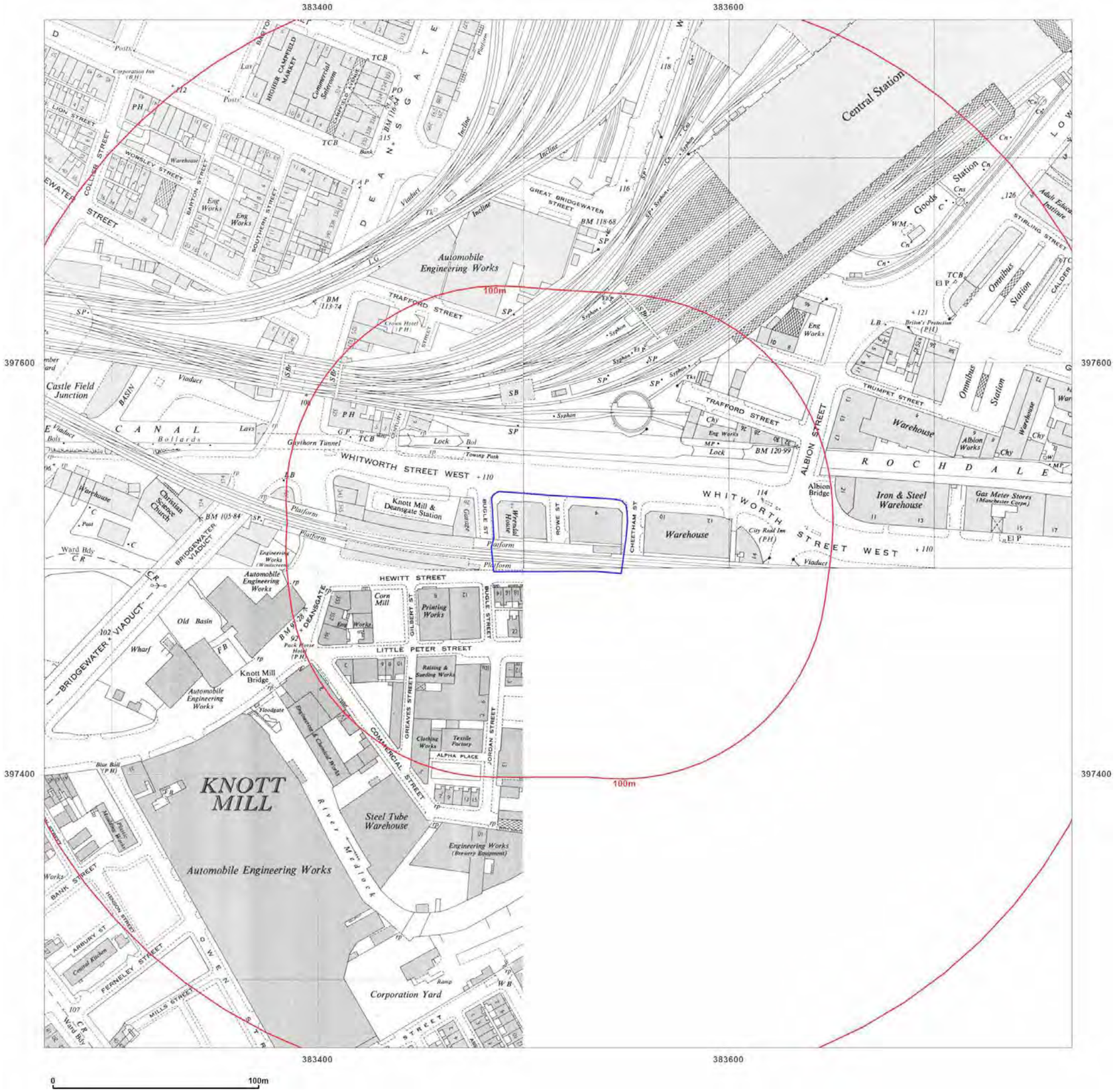
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Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1951-1955**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1948
Revised 1955
Edition N/A
Copyright 1955
Levelled 1927

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

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

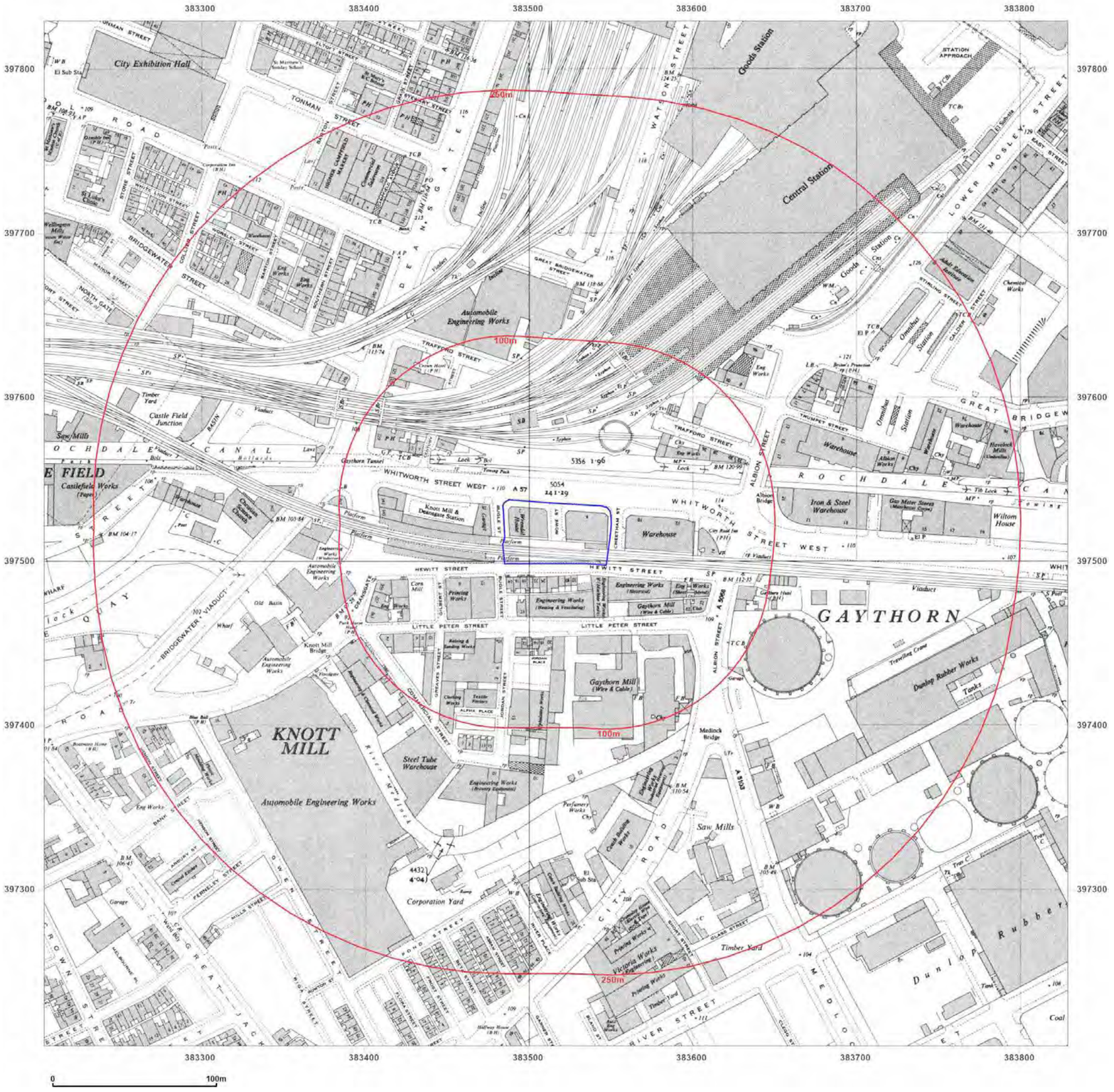
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Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1956**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1953
Revised 1953
Edition N/A
Copyright 1957
Levelled 1927

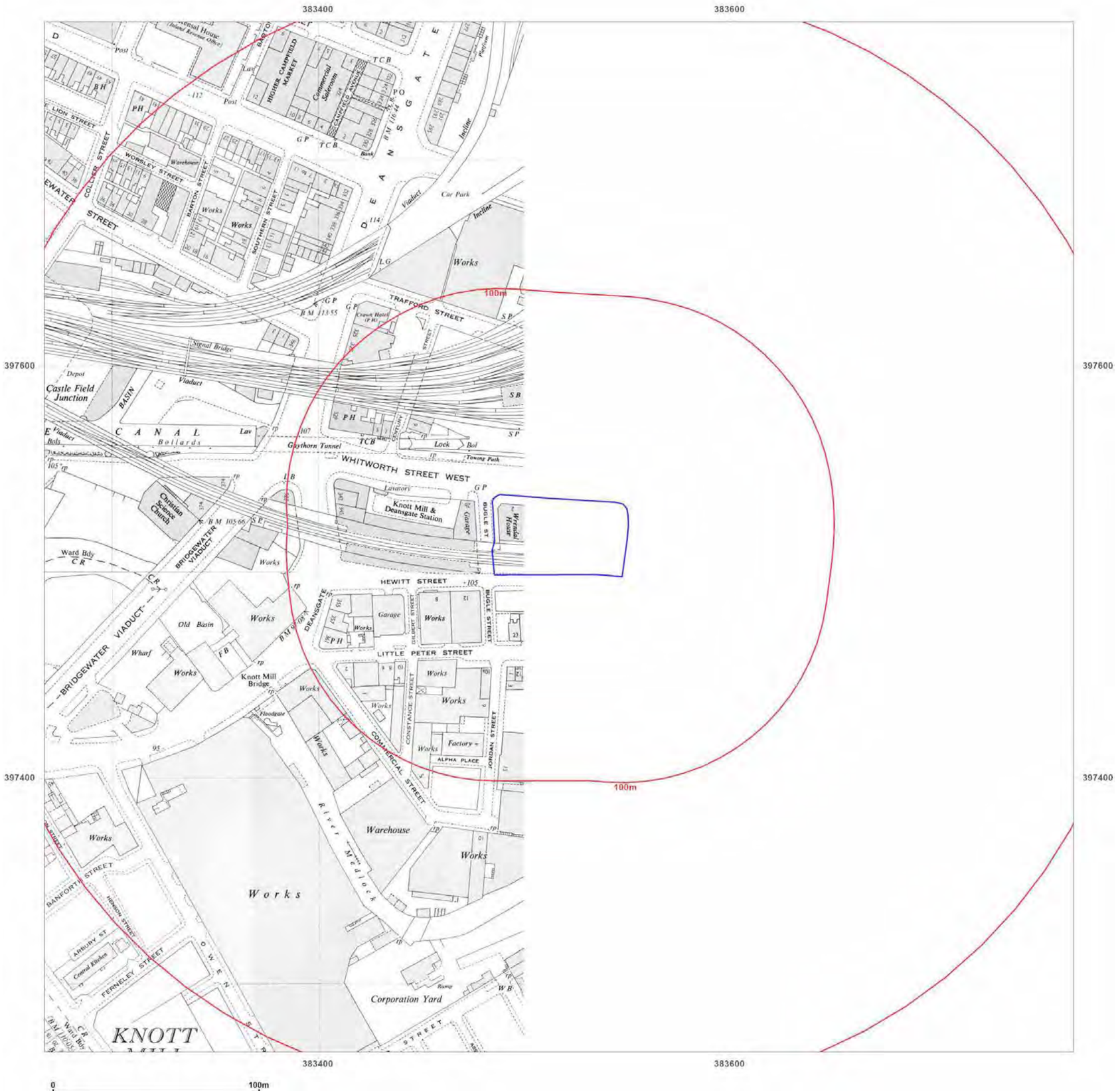
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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1960-1963**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1948
Revised 1962
Edition N/A
Copyright 1963
Levelled 1958

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

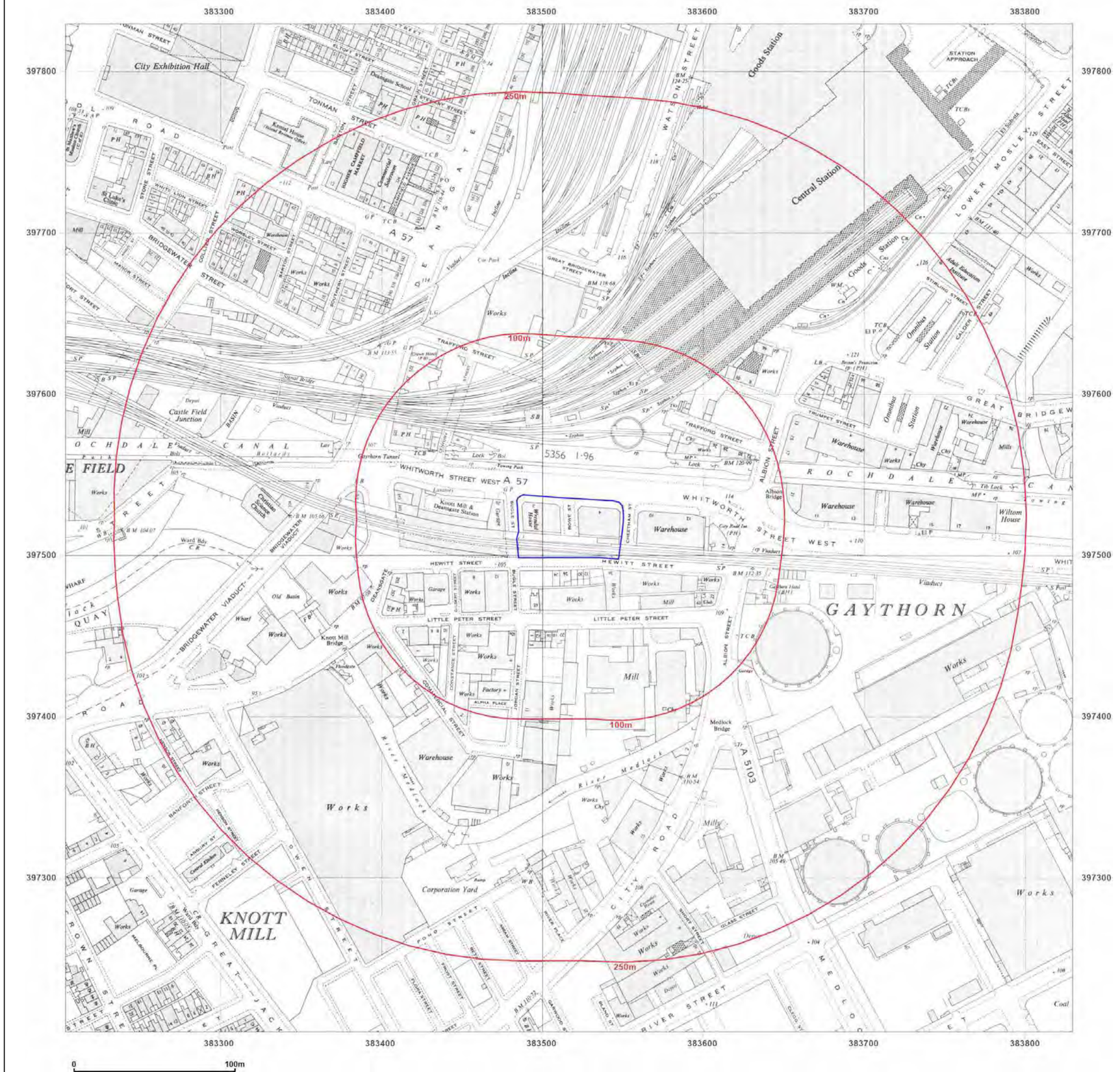
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Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

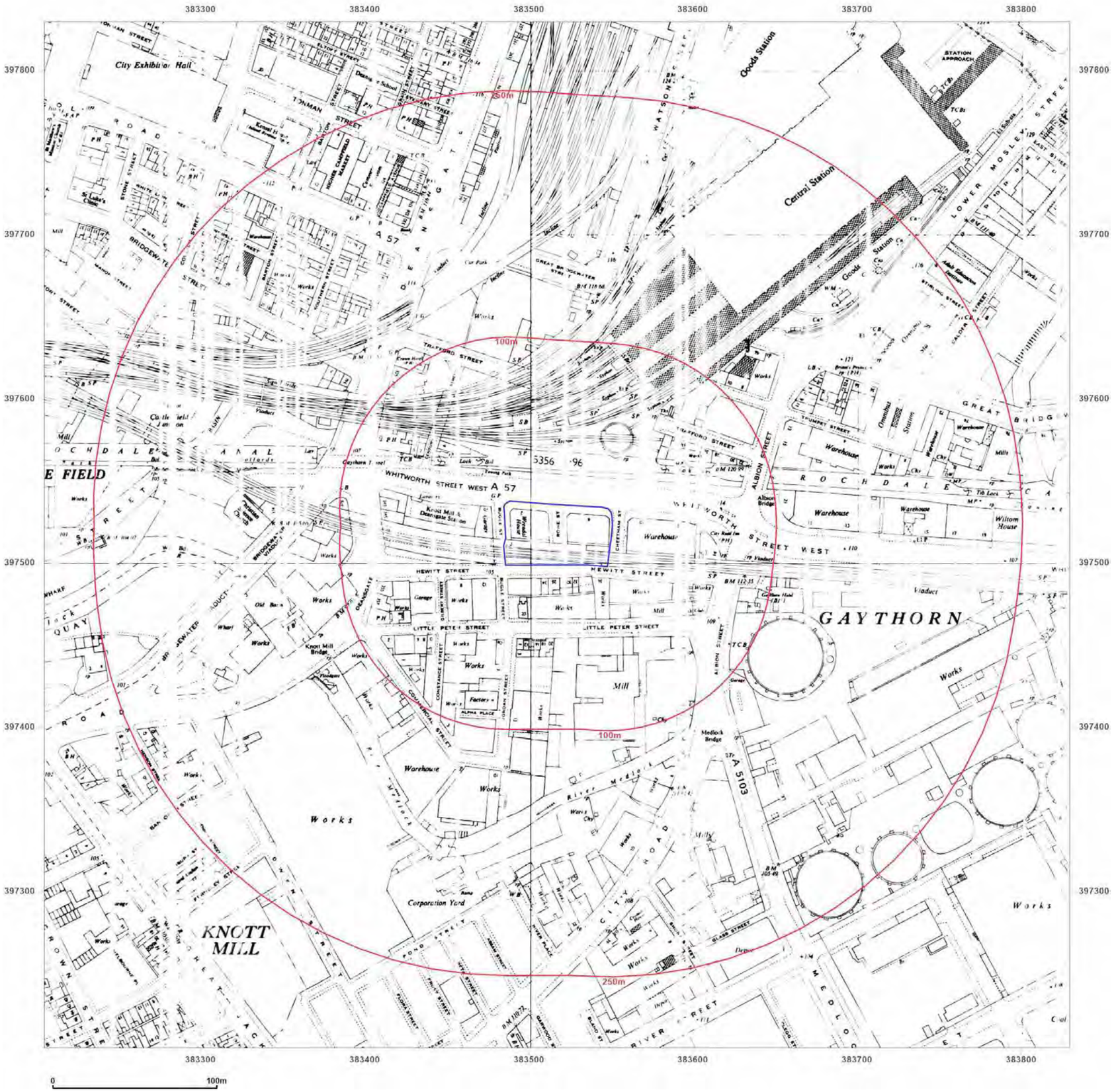
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Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

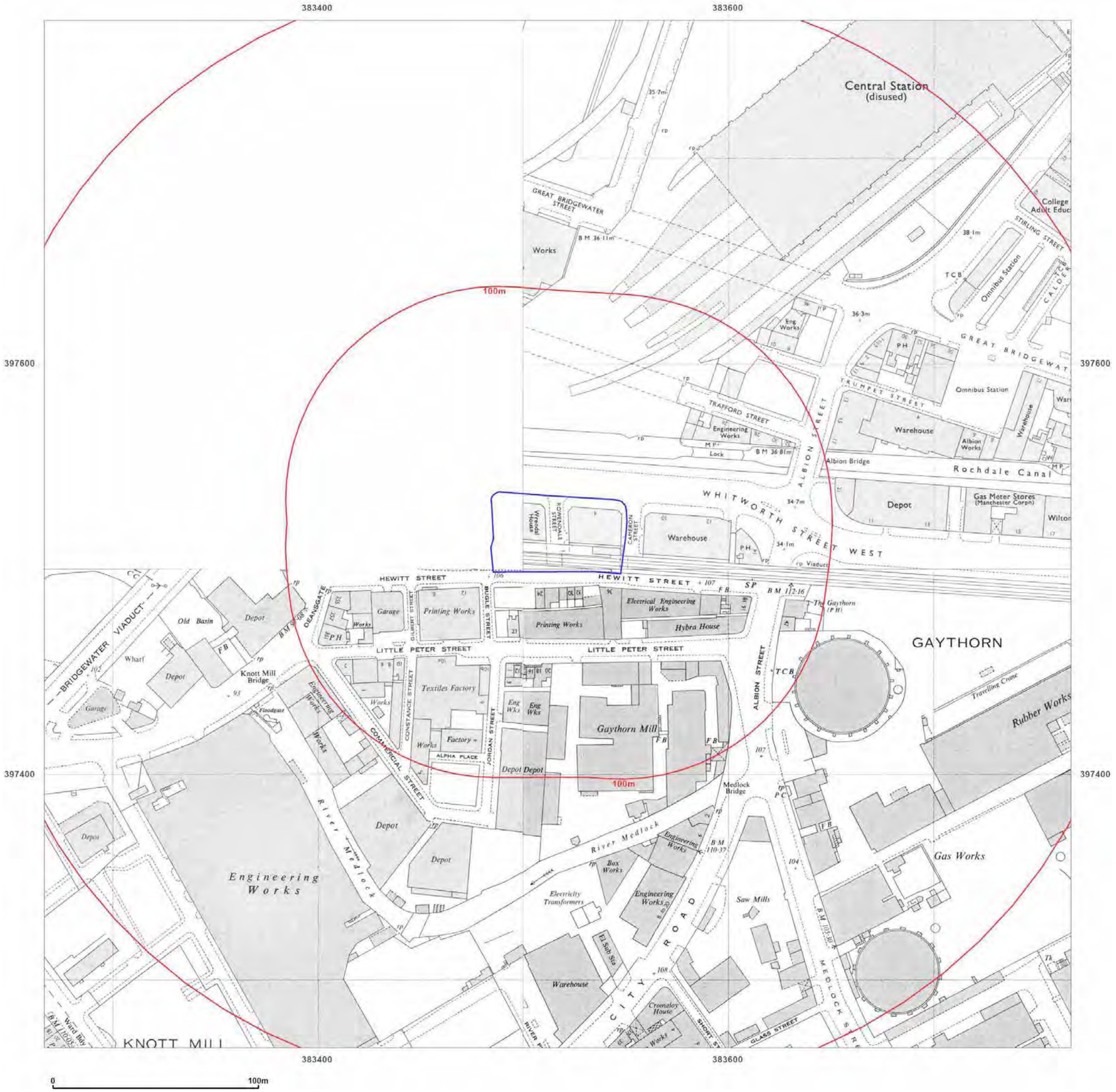
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Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

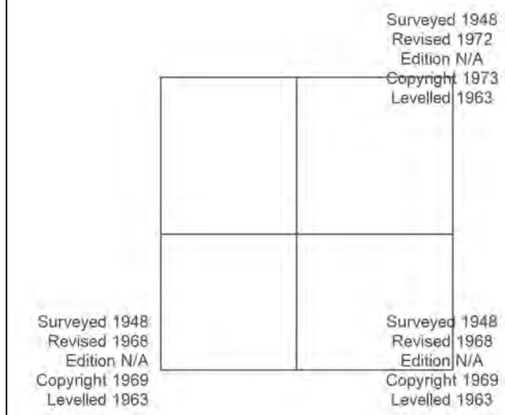
Map Name: National Grid

Map date: **1969-1973**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



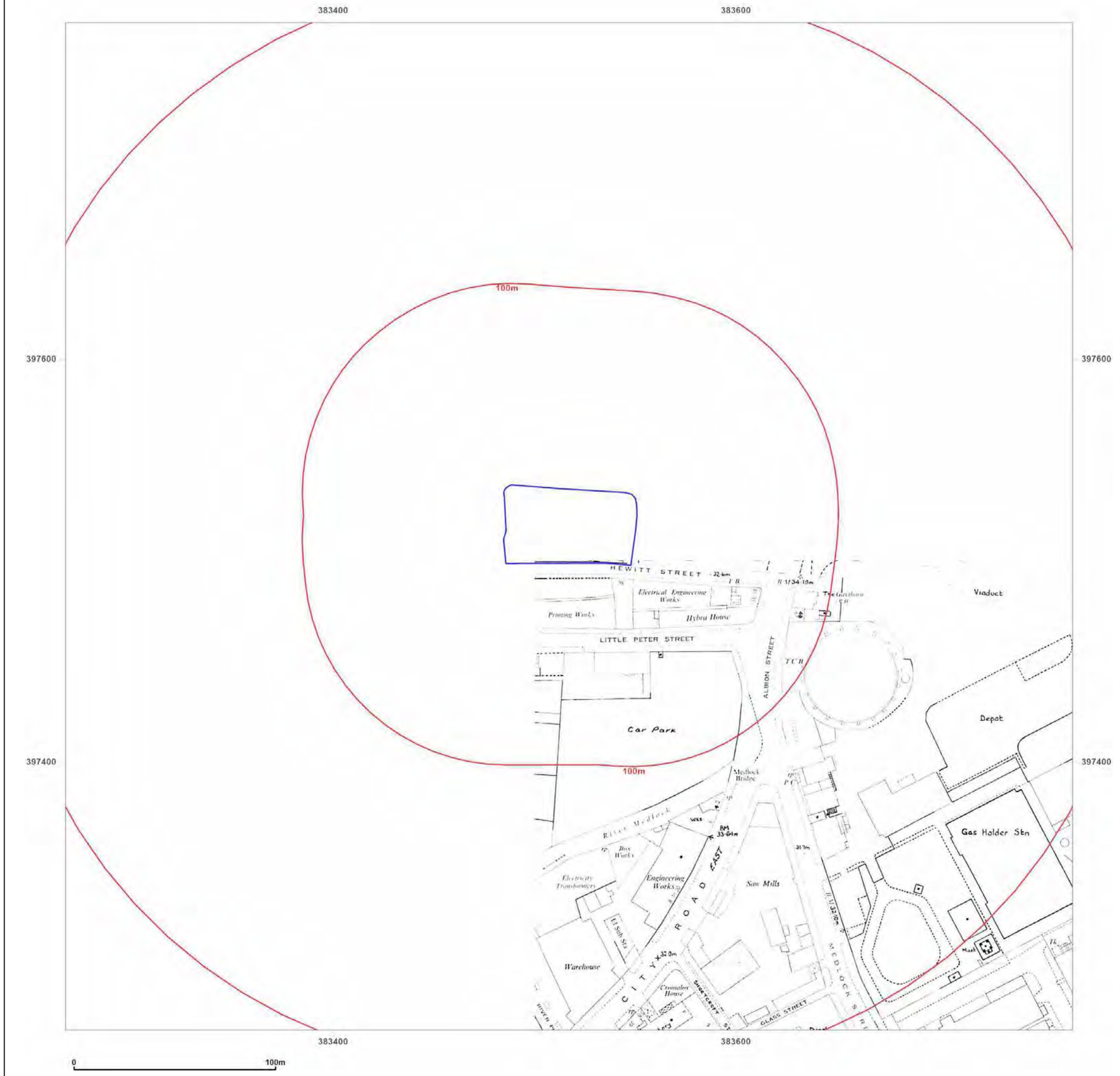
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Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

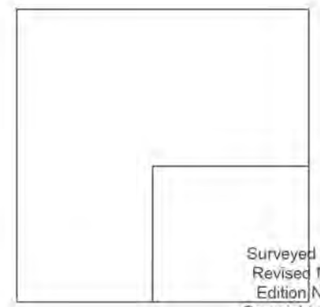
Map Name: National Grid

Map date: **1980**

Scale: 1:1,250

Printed at: 1:2,000

N
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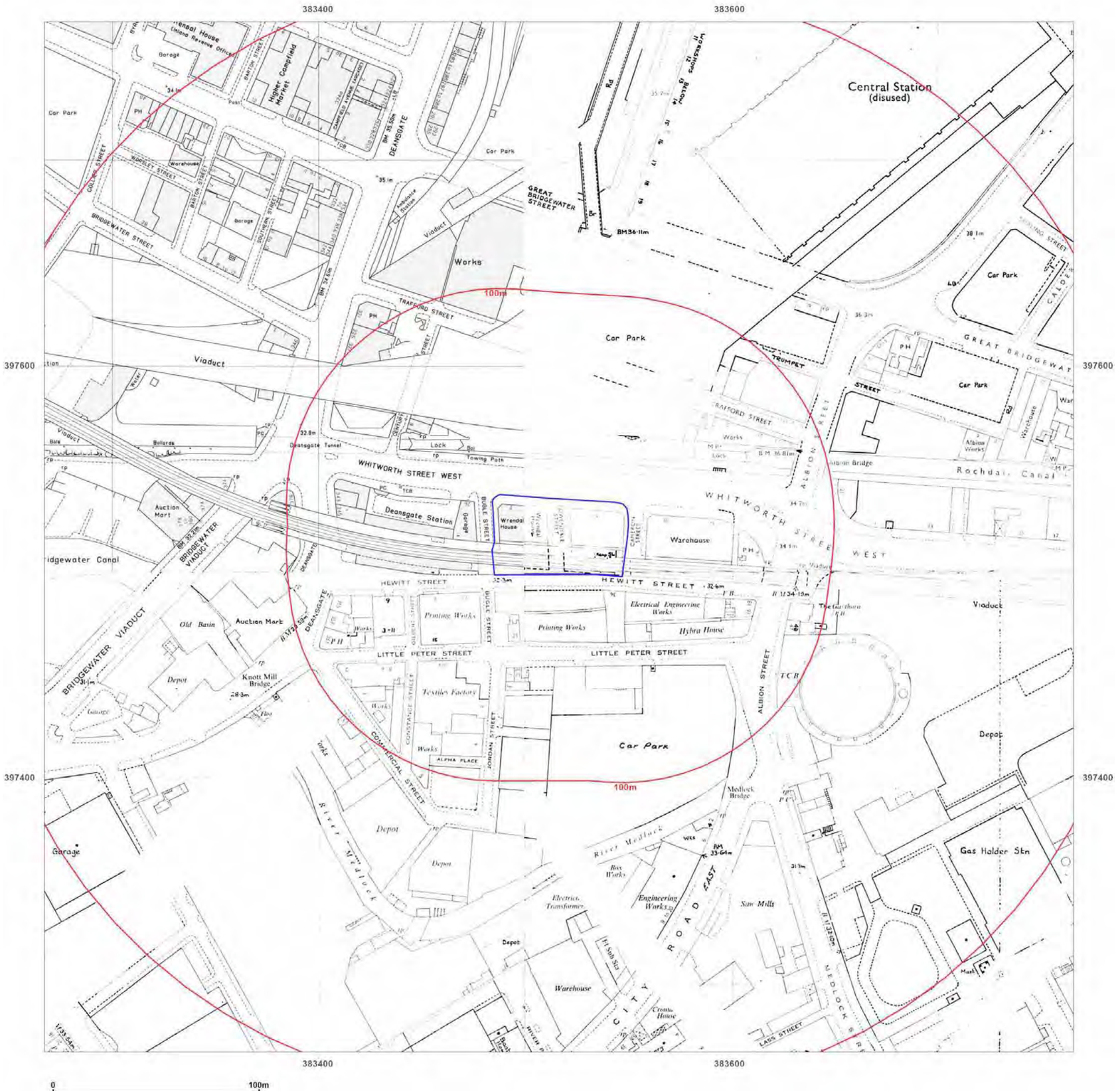
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

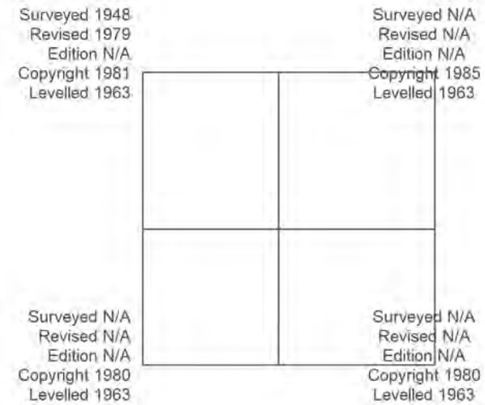
Map Name: National Grid

Map date: **1980-1985**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



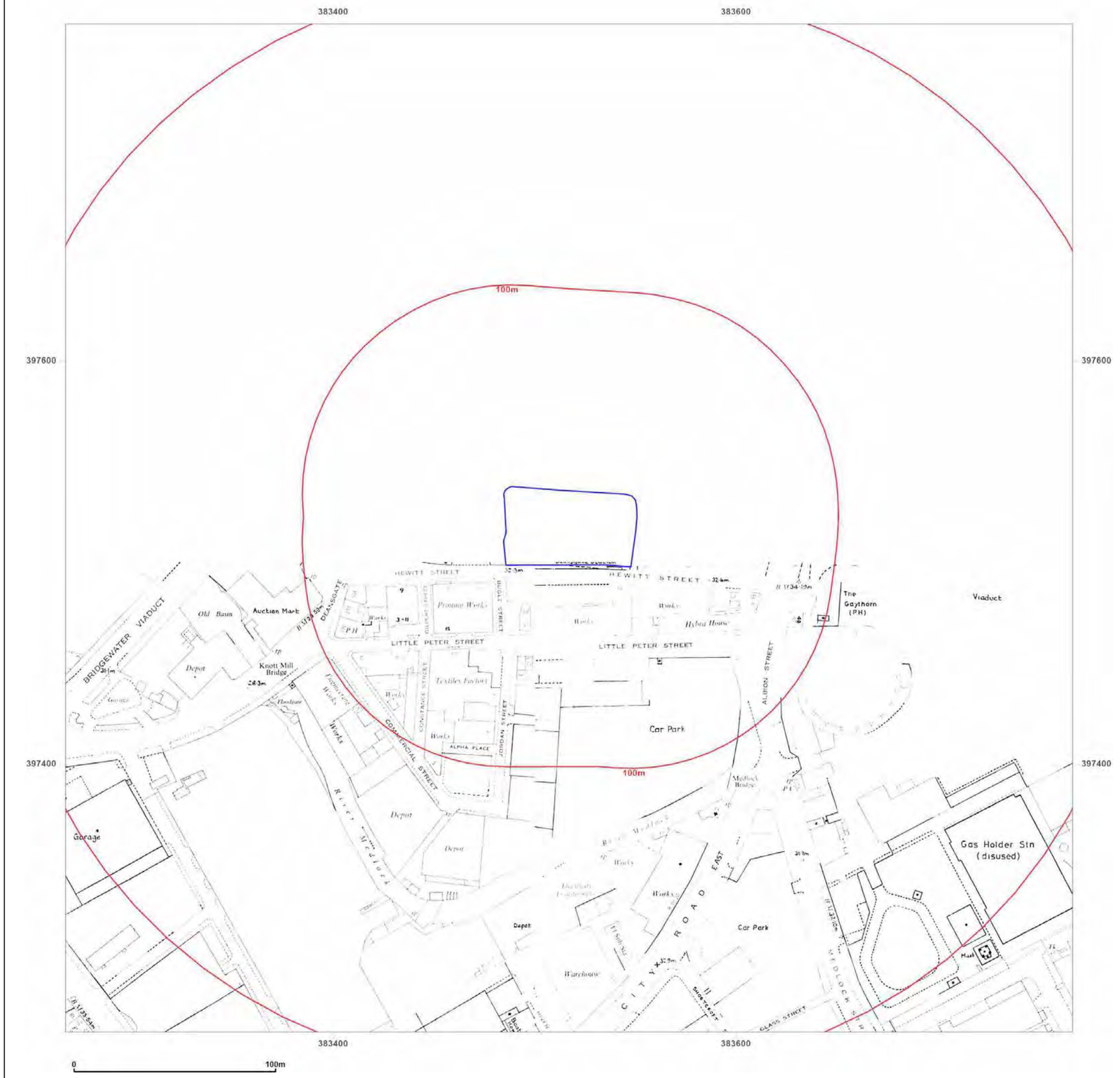
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Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

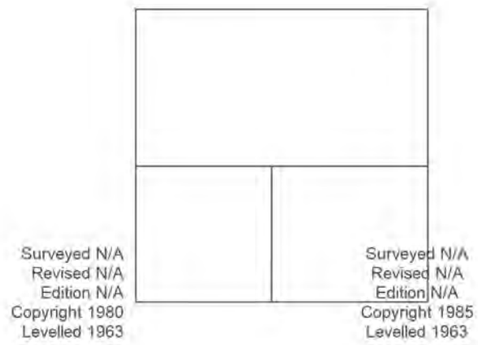
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Map date: **1980-1985**

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N
W E
S



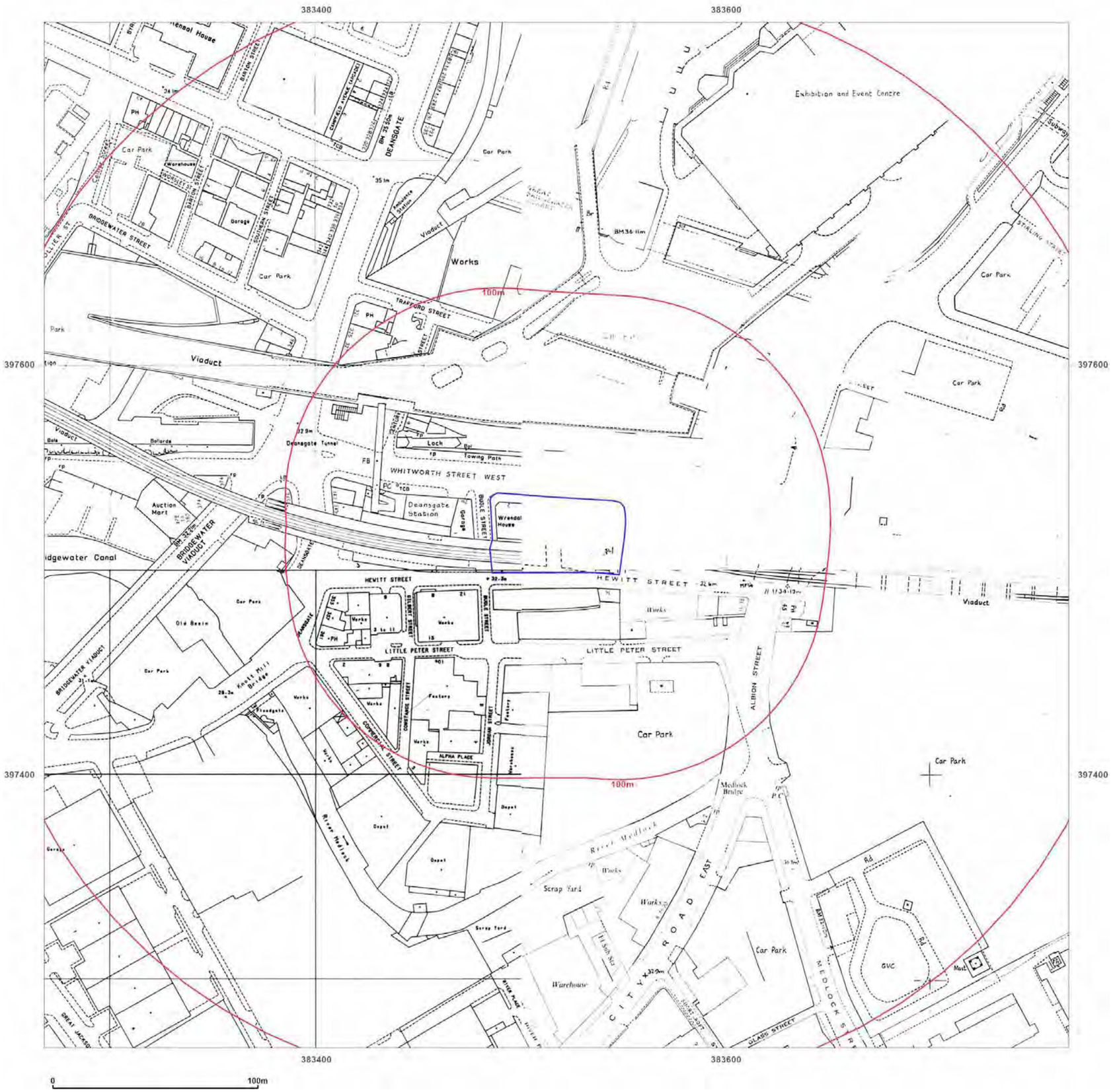
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1986-1990**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

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 1963
Revised 1987
Edition N/A
Copyright 1987
Levelled 1963

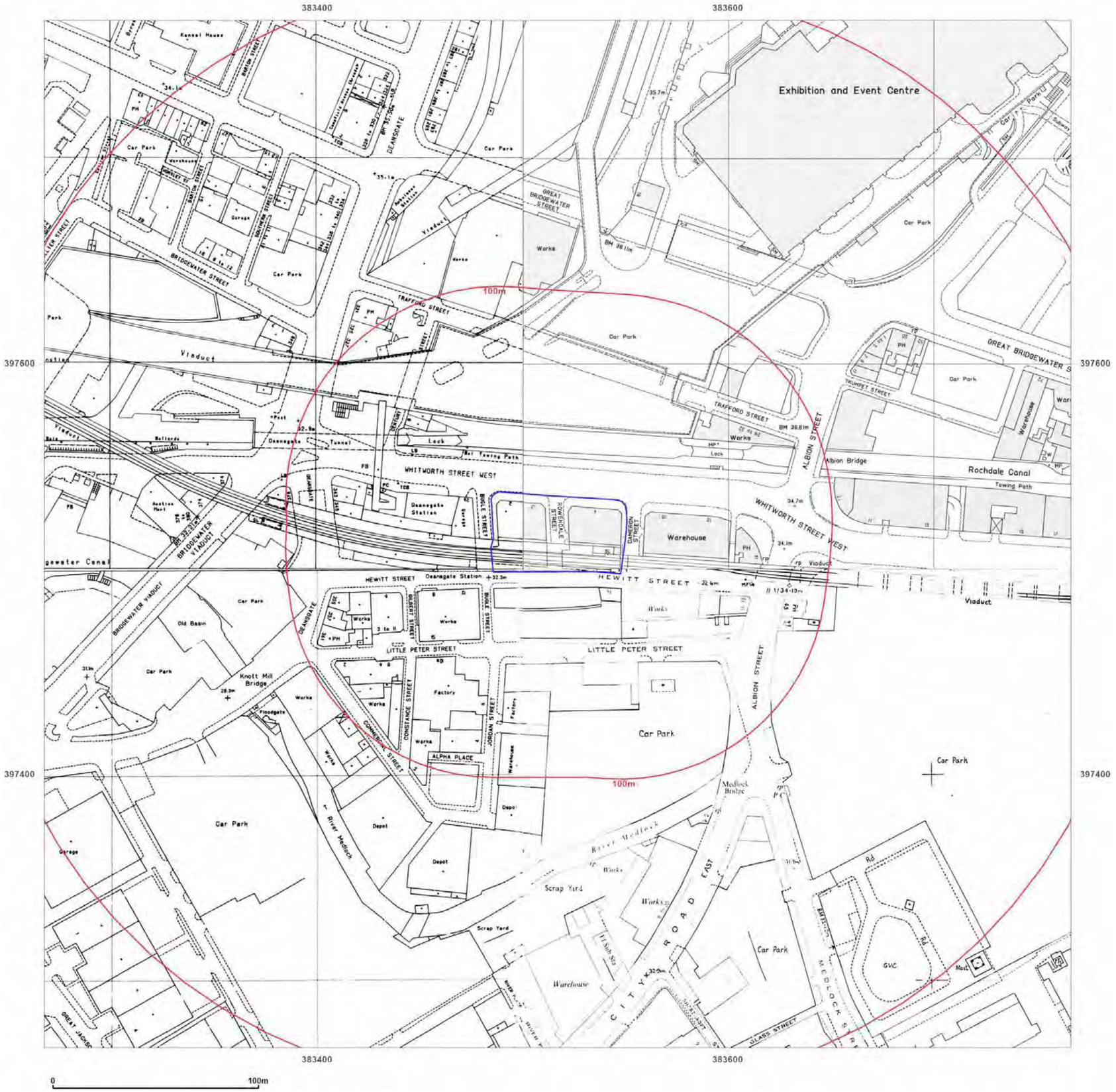
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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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 1992
Revised 1992
Edition N/A
Copyright 1992
Levelled N/A

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

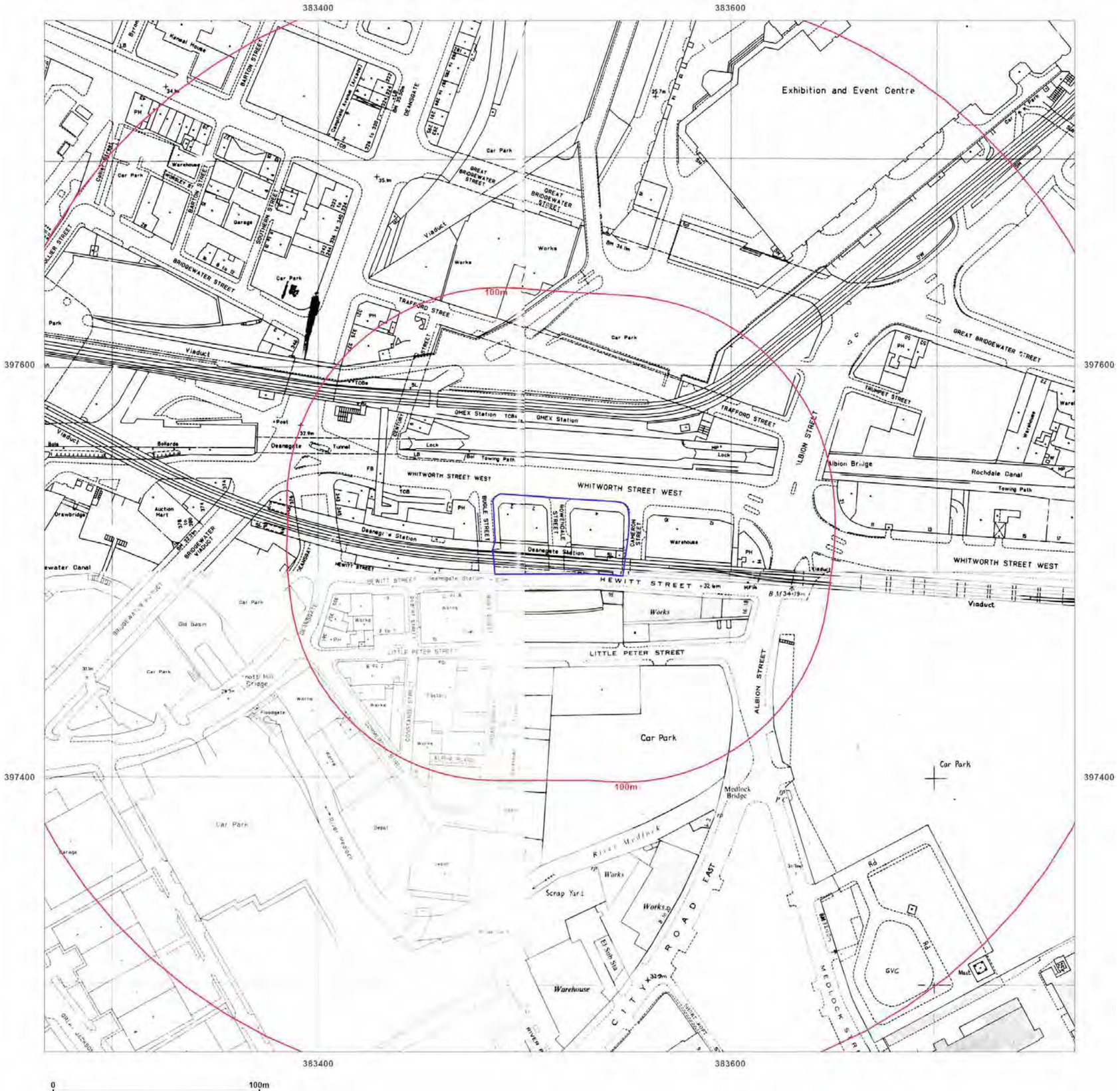
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Site Details:

4201 Whitworth Street,
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Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1990-1995**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

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

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

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

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

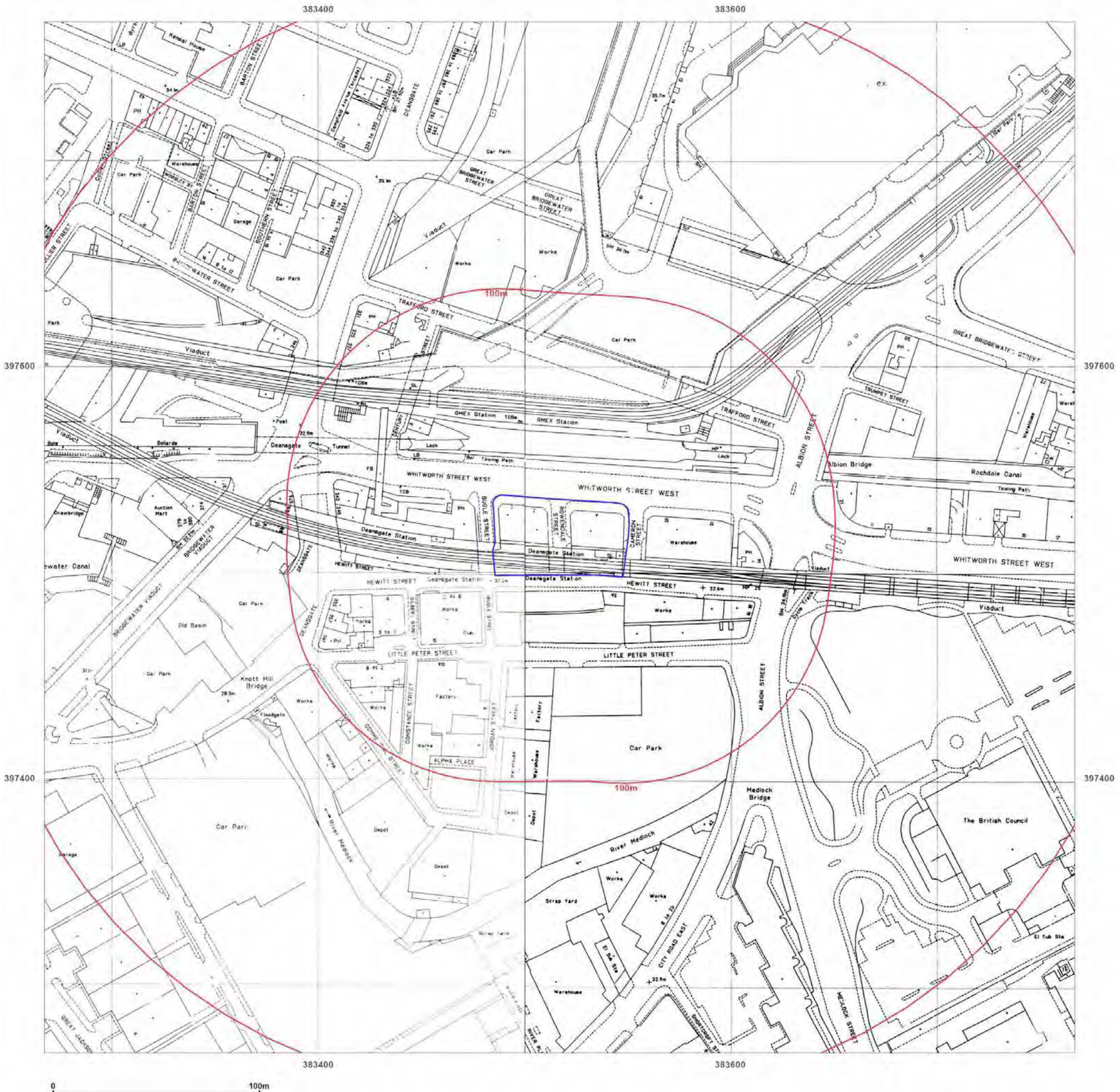
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

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 1995 Revised 1995 Edition N/A Copyright 1995 Levelled N/A	Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A

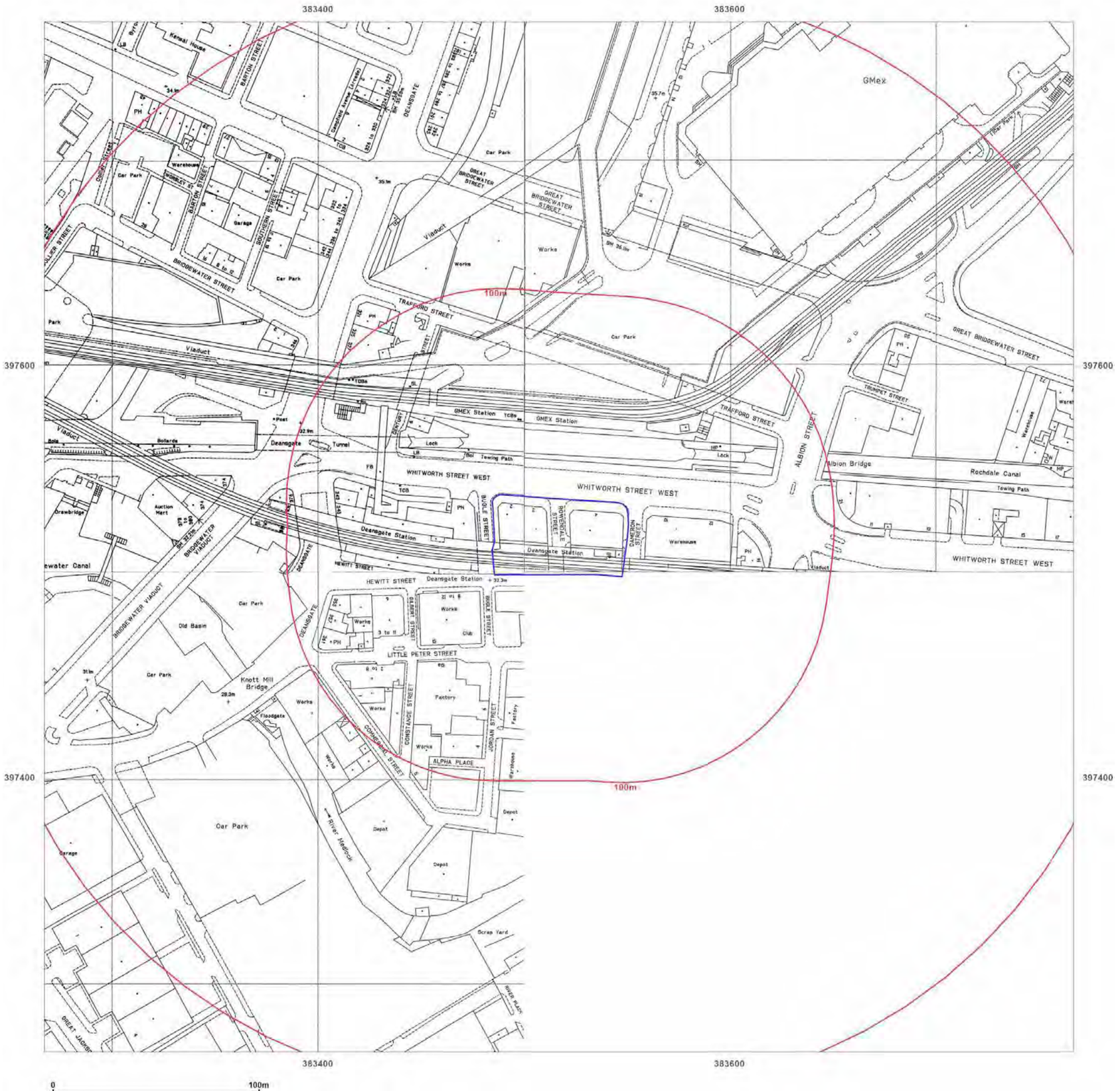
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1994-1995**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

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

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

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

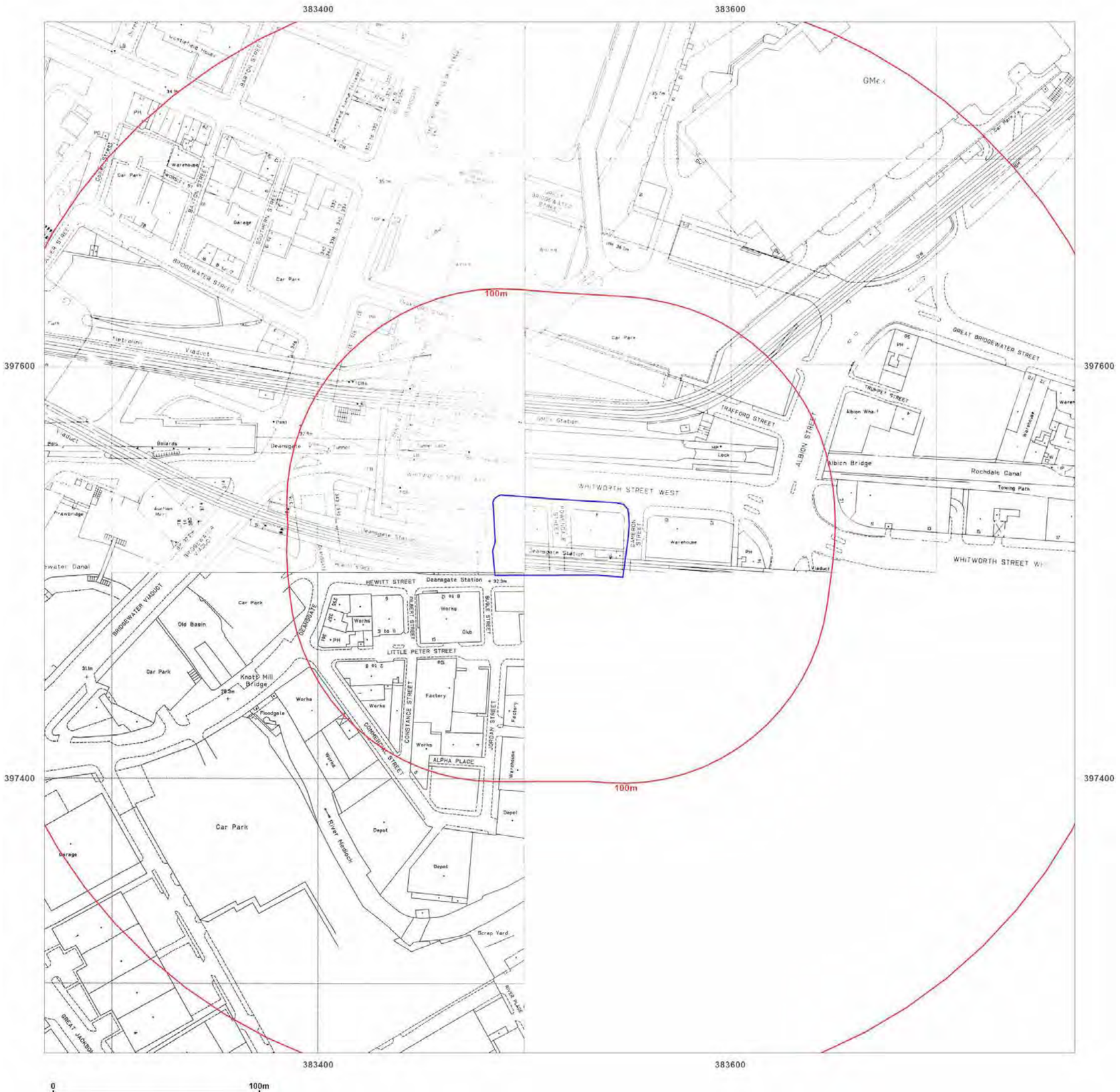
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

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

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

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

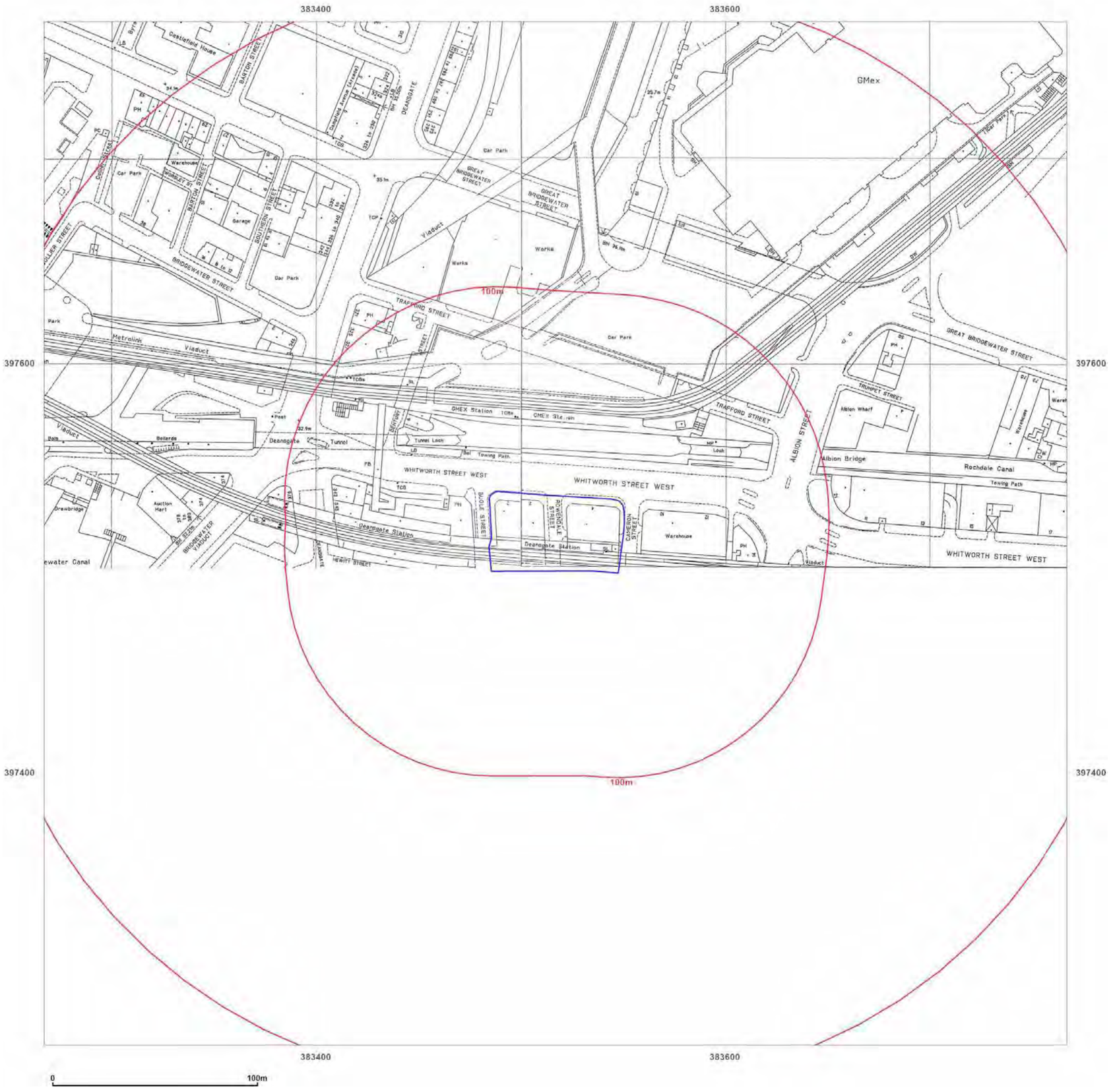
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Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

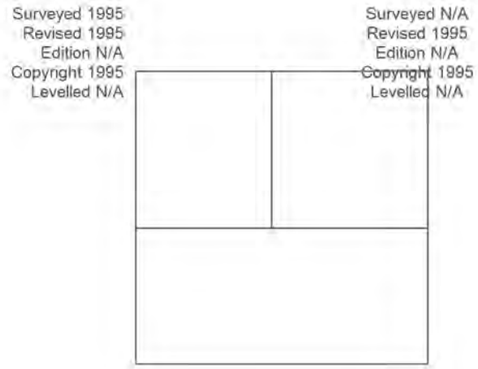
Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

N
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Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

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

N
W E
S



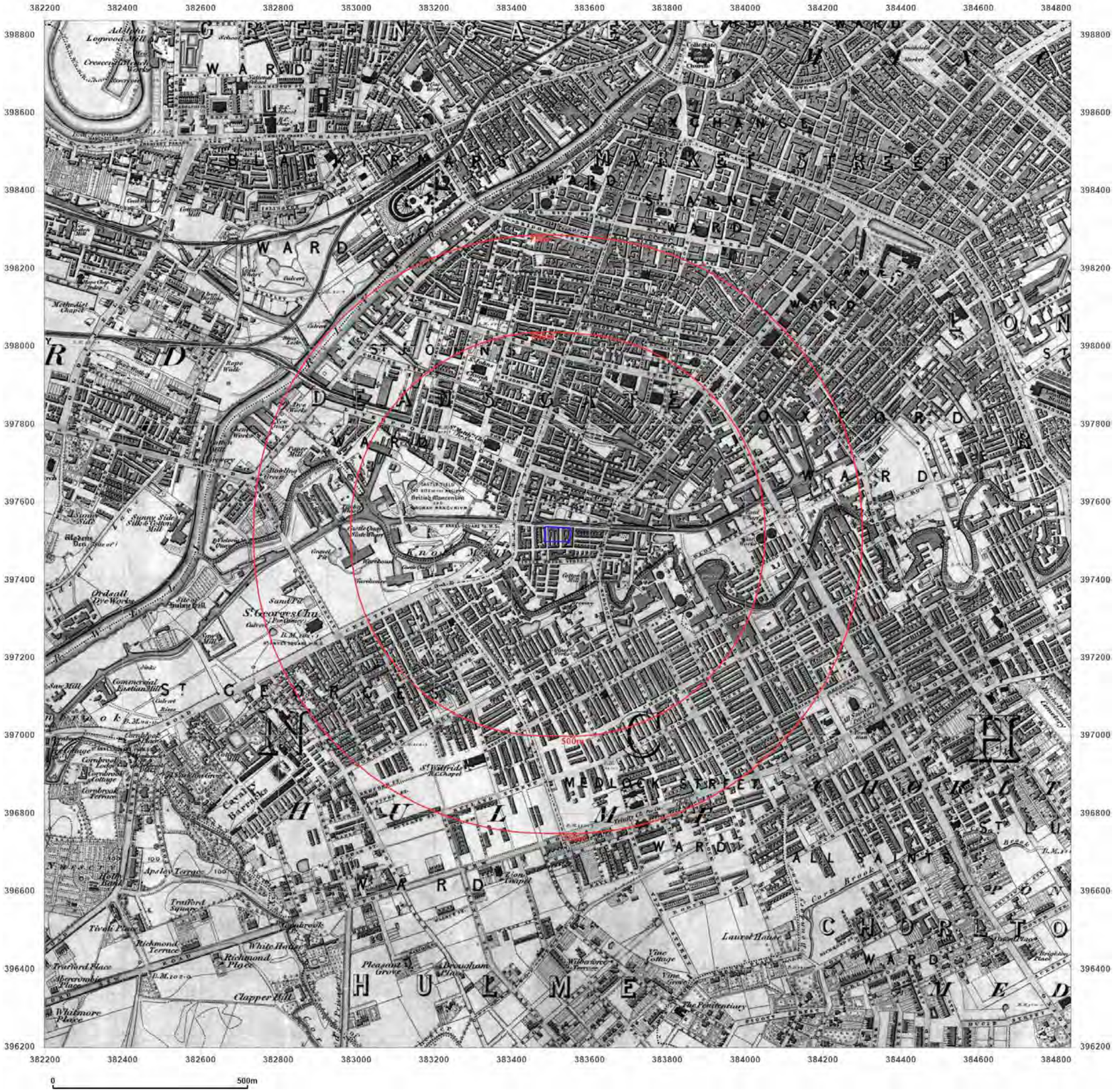
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Site Details:

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Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

Map date: **1848**

Scale: 1:10,560

Printed at: 1:10,560

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

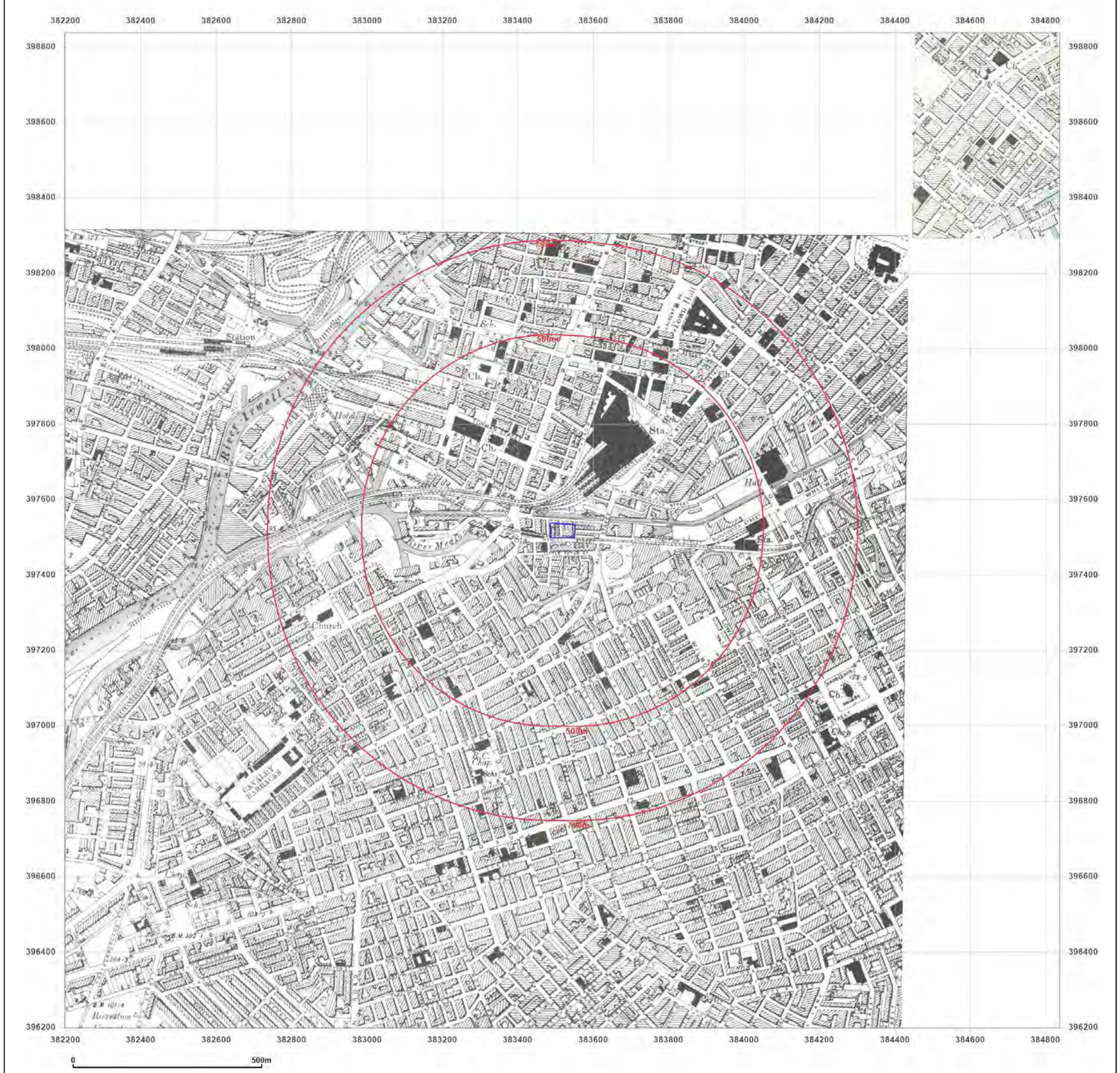
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Site Details:

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Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

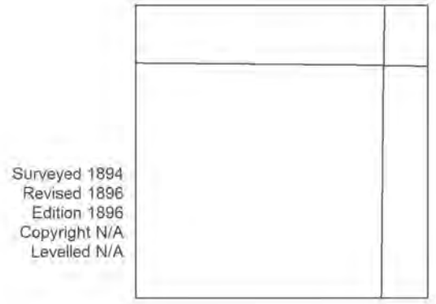
Map date: **1891-1896**

Scale: 1:10,560

Printed at: 1:10,560

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



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

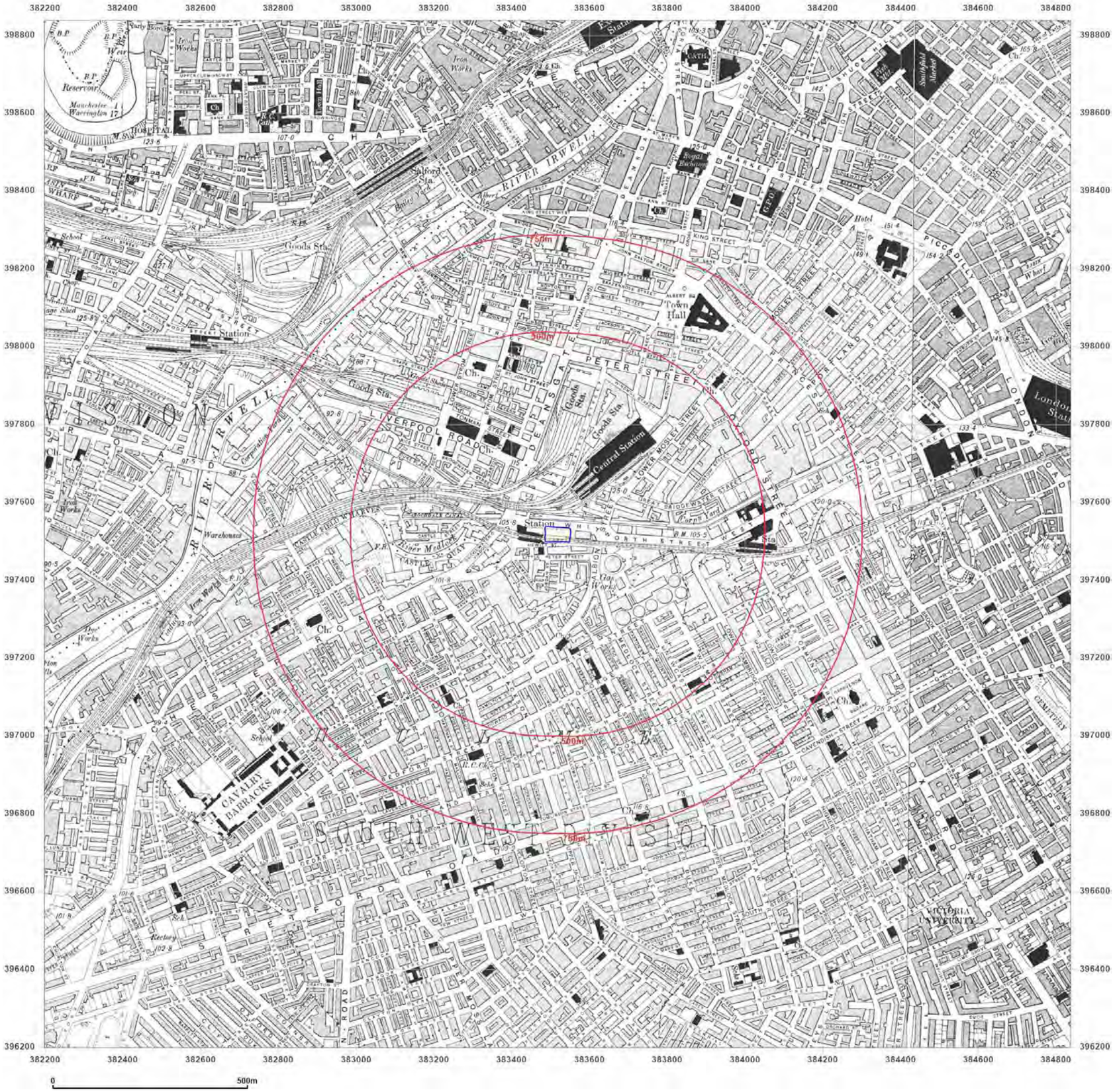
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Production date: 20 June 2024

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Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

Map date: **1905-1906**

Scale: 1:10,560

Printed at: 1:10,560

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

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

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

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

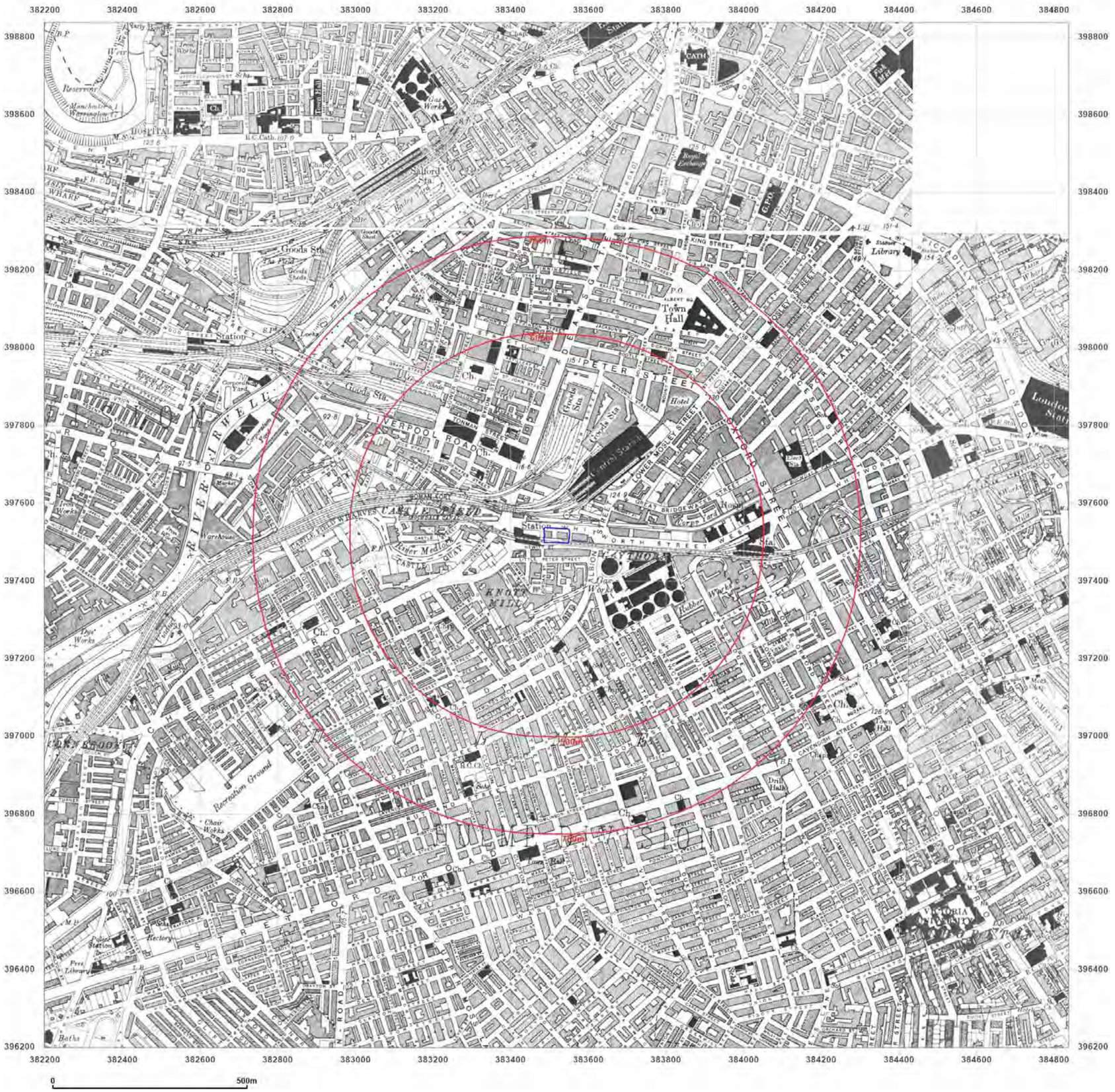
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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

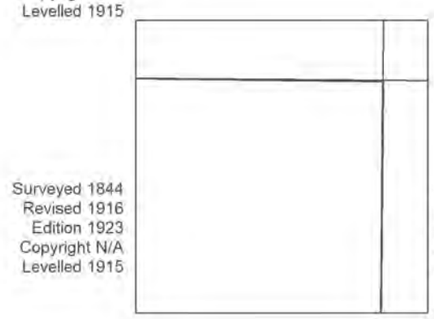
Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915



Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915

Surveyed 1844
Revised 1915
Edition 1923
Copyright N/A
Levelled 1915

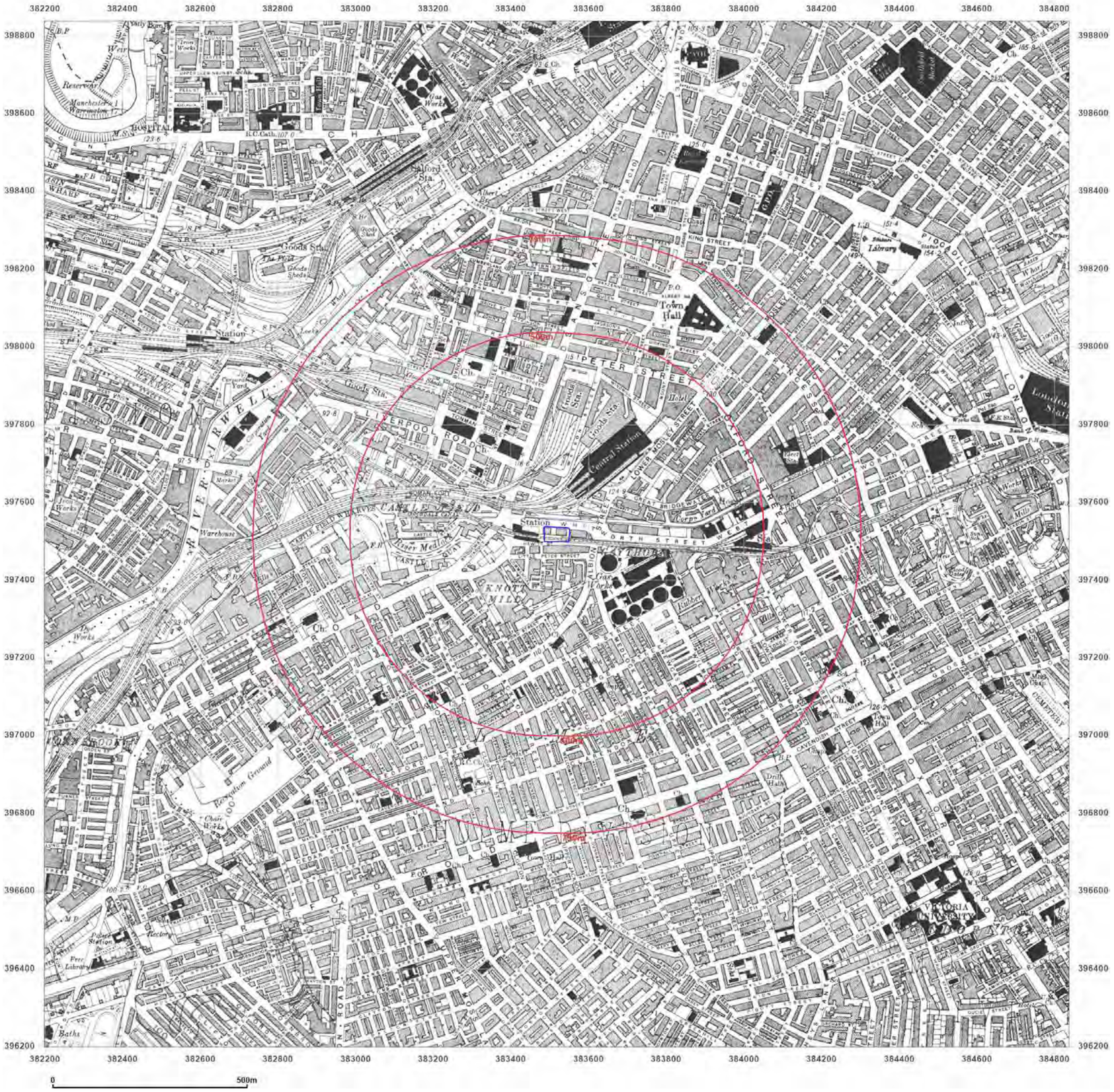
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Groundsure INSIGHTS

Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1844
Revised 1921
Edition 1923
Copyright N/A
Surveyed 1844 Levelled 1906
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915

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Groundsure INSIGHTS

Site Details:

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Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

Map date: **1931-1934**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1844
Revised 1931
Edition 1931
Copyright N/A
Levelled 1927

Surveyed 1844
Revised 1933
Edition 1933
Copyright N/A
Levelled 1927

Surveyed 1844
Revised 1932
Edition 1932
Copyright N/A
Levelled 1927

Surveyed 1844
Revised 1934
Edition 1934
Copyright N/A
Levelled 1927

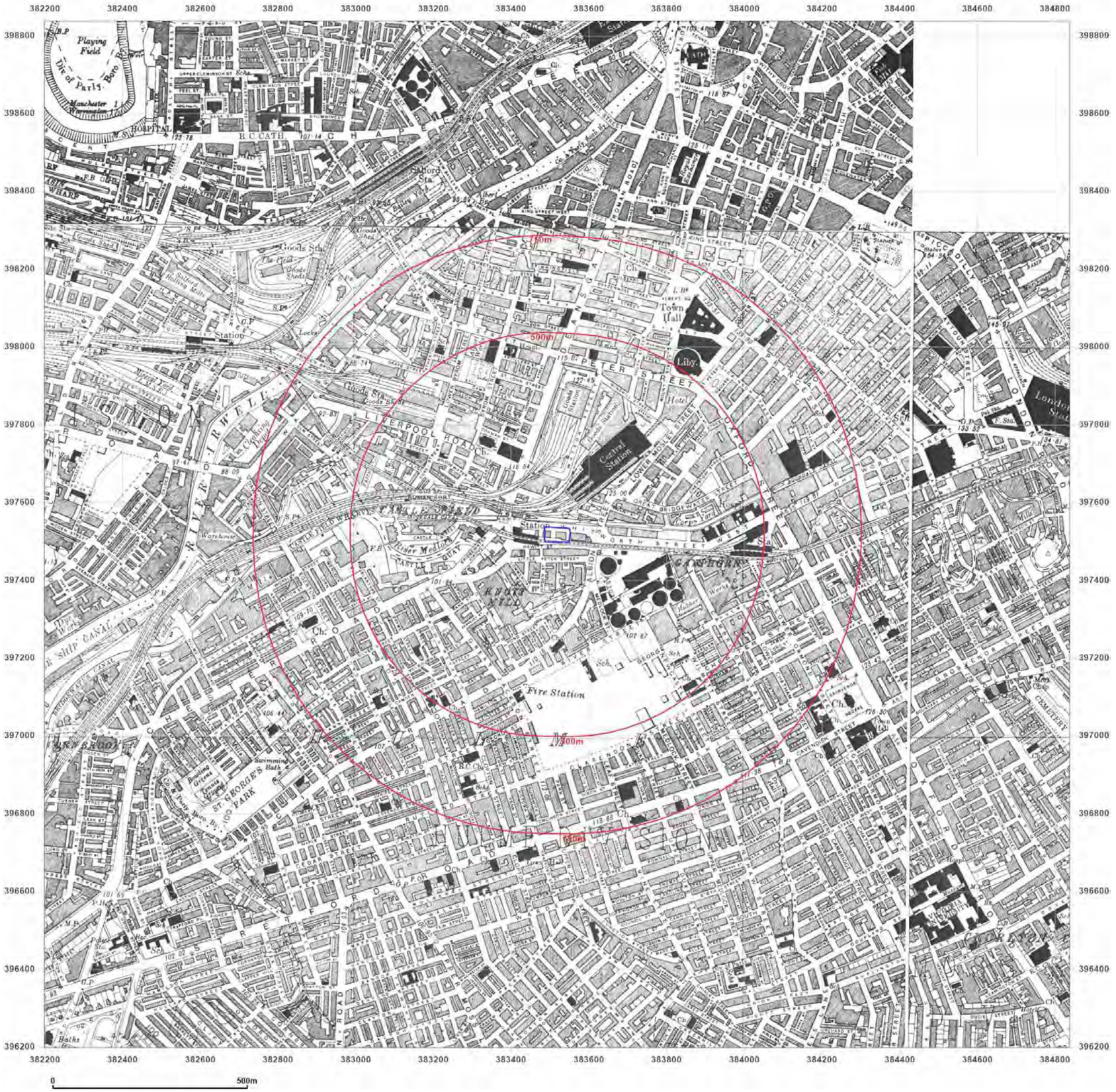
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Groundsure INSIGHTS

Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: County Series

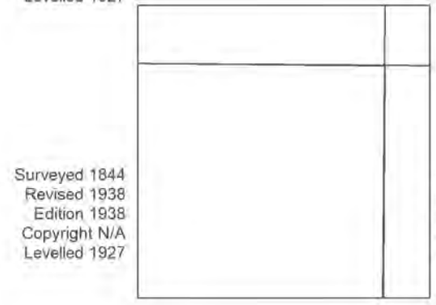
Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1844
Revised 1938
Edition 1938
Copyright N/A
Levelled 1927



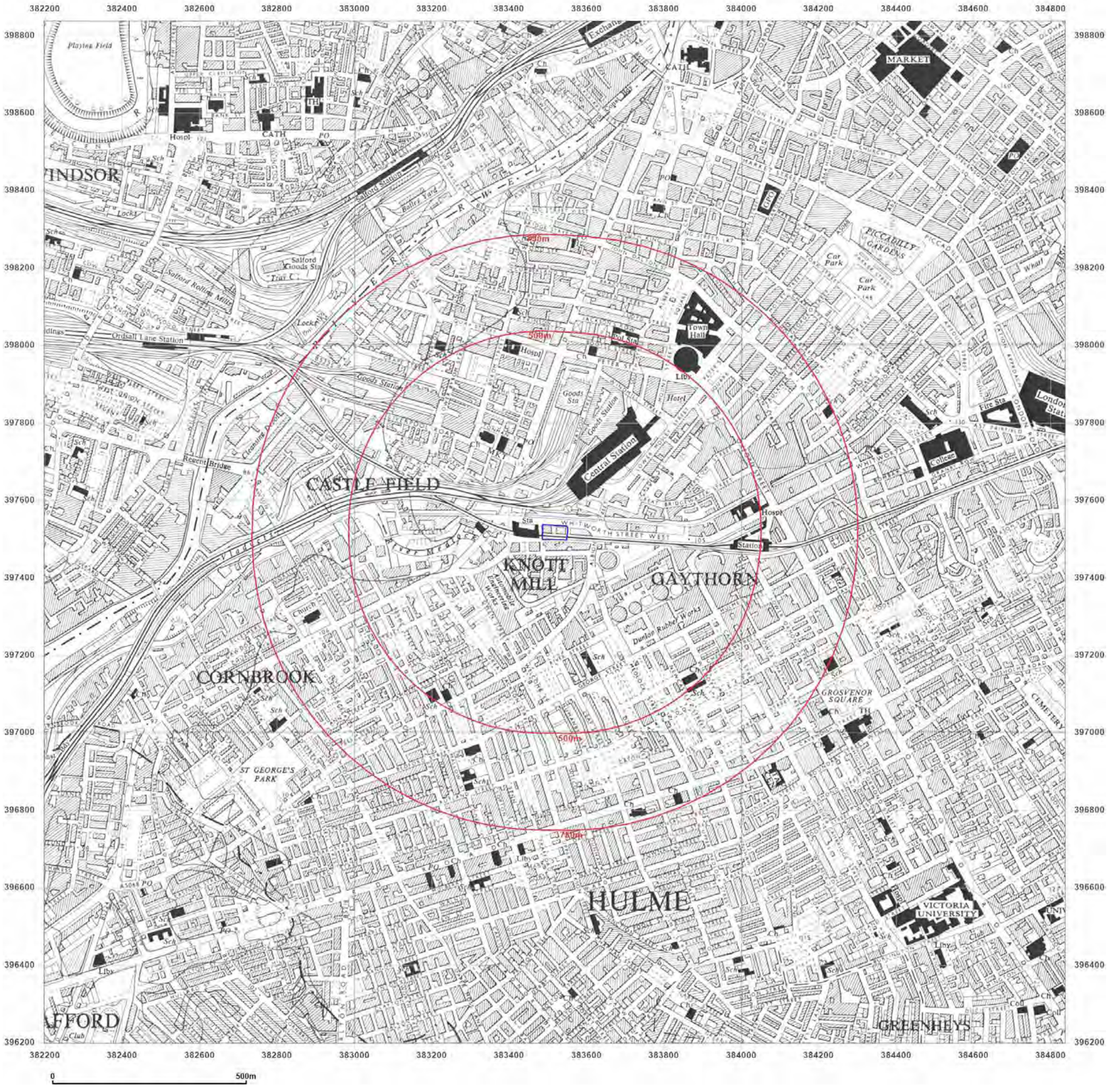
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Site Details:

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Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: Provisional

Map date: **1956**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1956
Revised 1956
Edition N/A
Copyright 1956
Levelled N/A

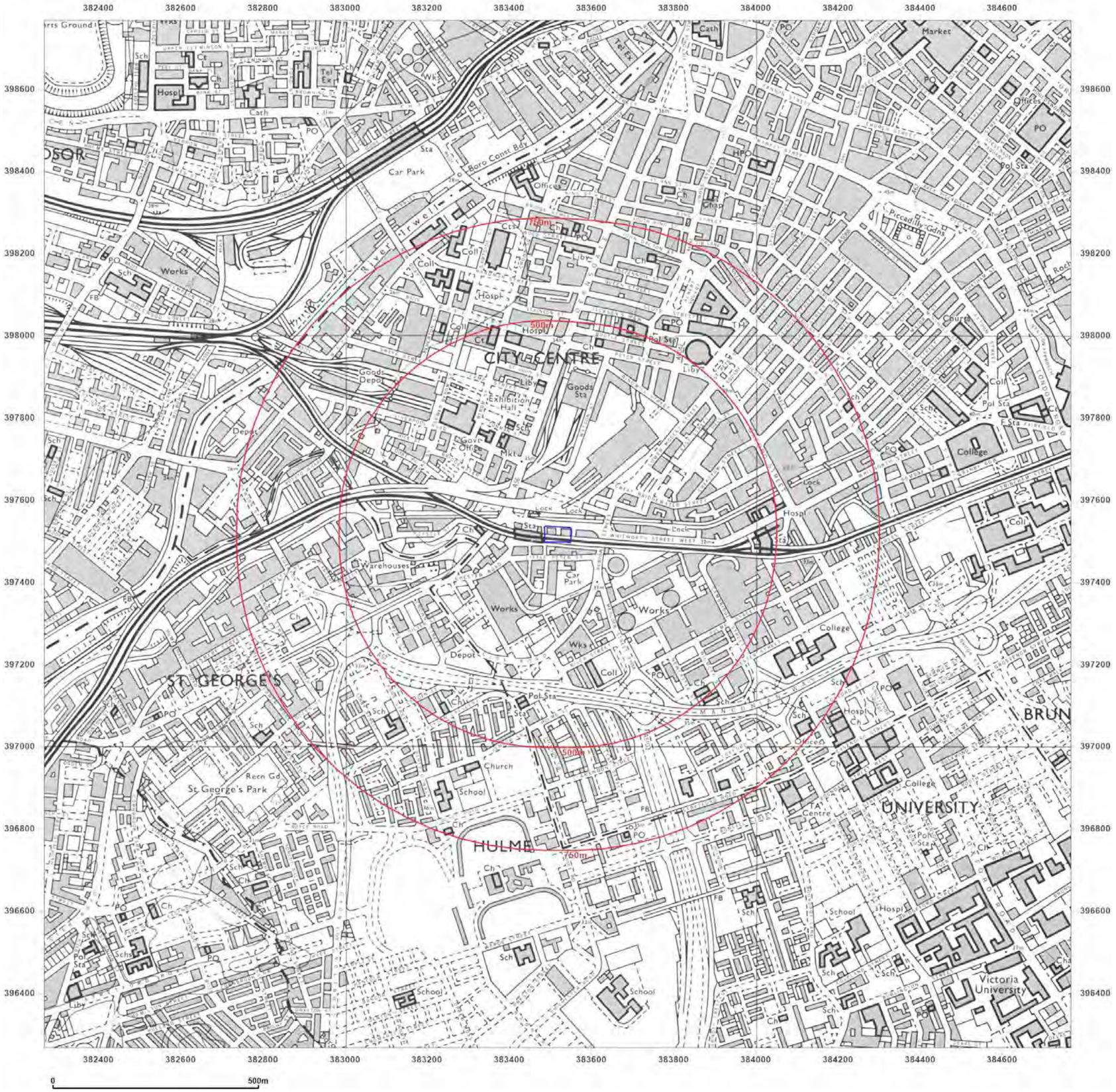
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1972**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1971
Revised 1972
Edition N/A
Copyright 1972
Levelled 1972

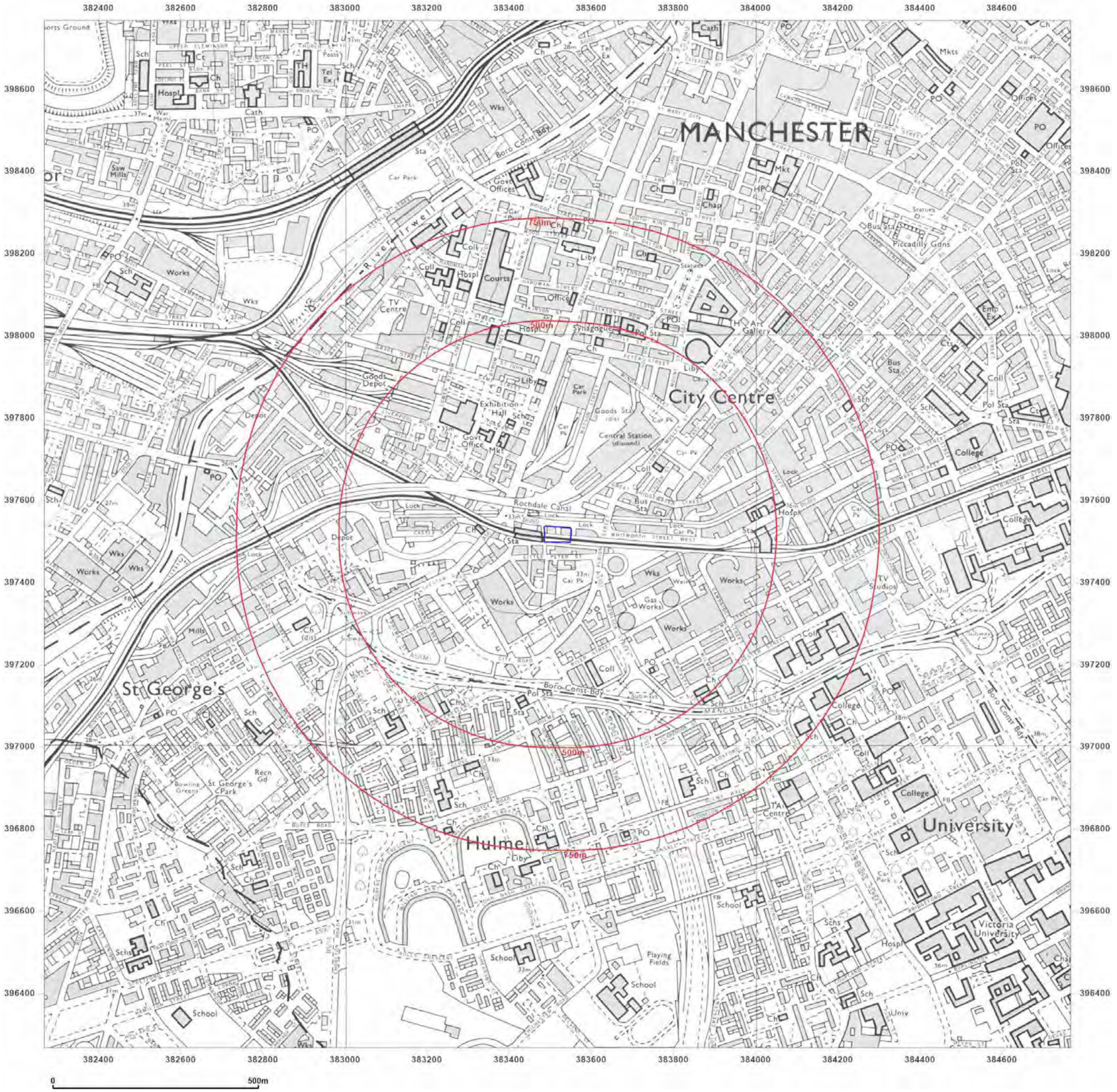
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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1980**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1976
Revised 1980
Edition N/A
Copyright 1980
Levelled 1976

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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1985**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Surveyed 1983
Revised 1985
Edition N/A
Copyright 1985
Levelled 1981

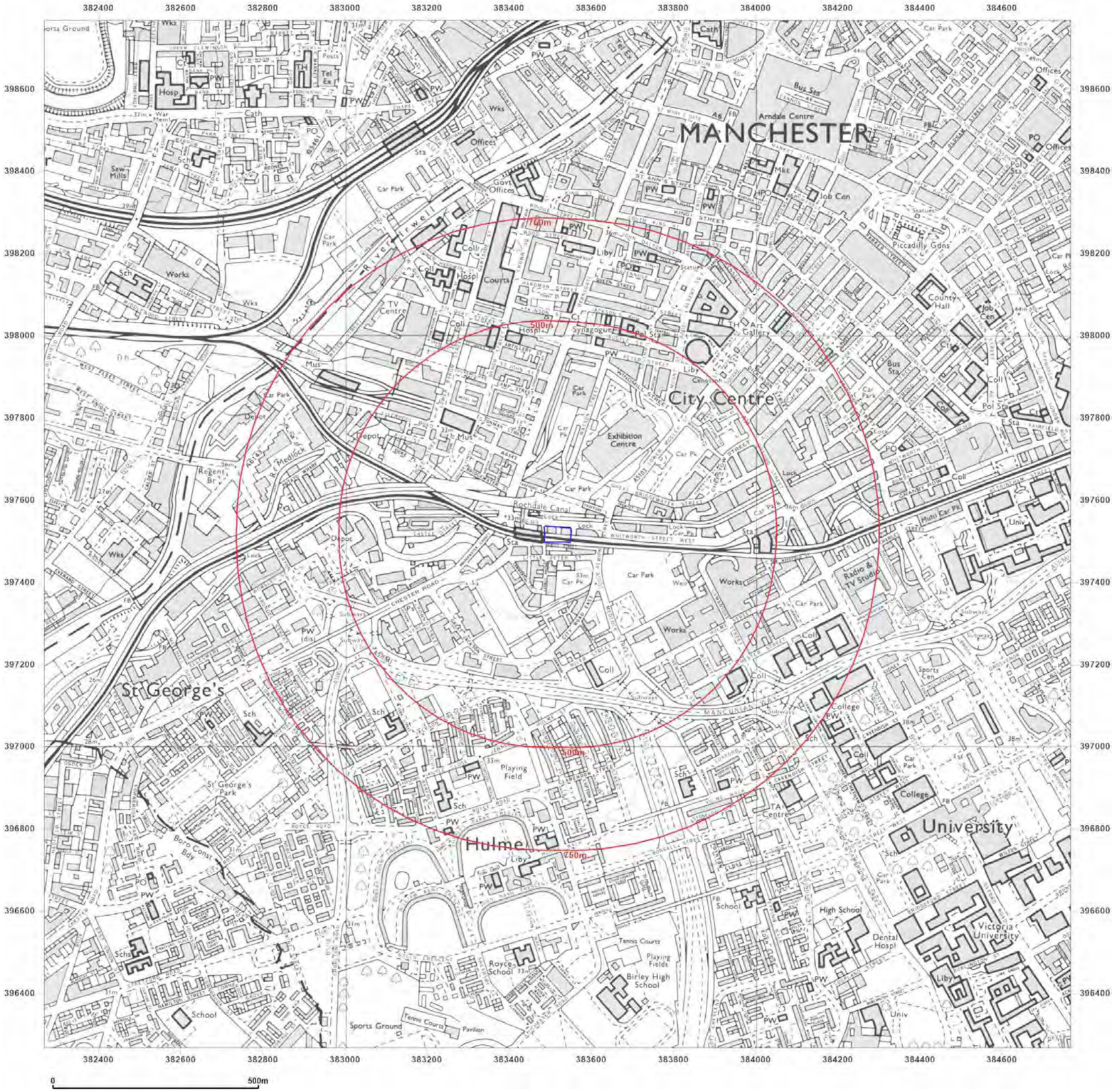
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Site Details:

4201 Whitworth Street,
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Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1988**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Surveyed 1986
Revised 1988
Edition N/A
Copyright 1988
Levelled 1981

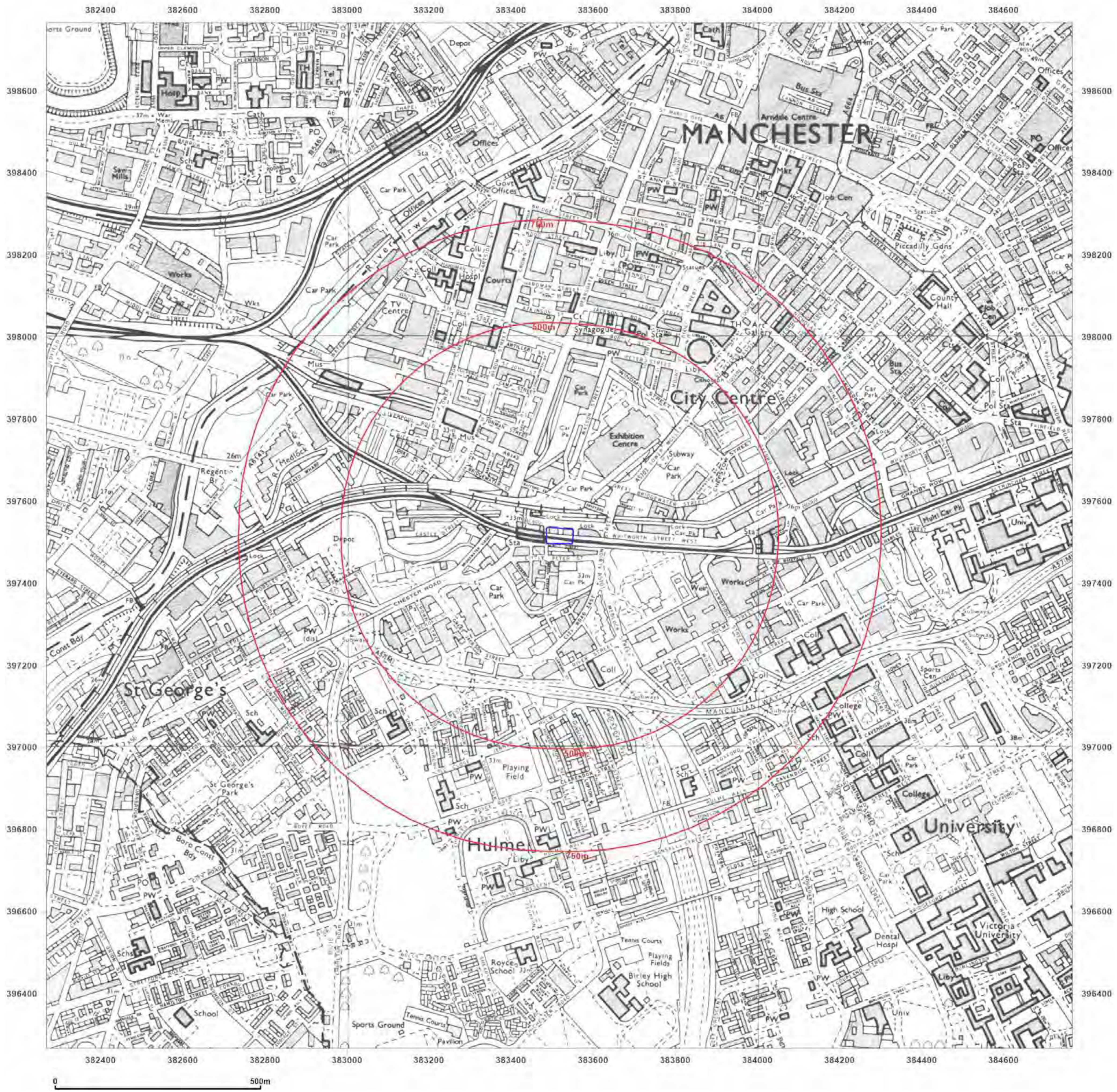
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Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **1994**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Surveyed 1986
Revised 1994
Edition N/A
Copyright 1994
Levelled 1981

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Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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W E
S

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Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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Groundsure INSIGHTS

Site Details:

4201 Whitworth Street,
Manchester

Client Ref: 4201-200624
Report Ref: GS-A18-3RL-F6M-9UY
Grid Ref: 383517, 397517

Map Name: National Grid

Map date: **2024**

Scale: 1:10,000

Printed at: 1:10,000

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APPENDIX 5

GROUNDSURE COMBINED ENVIRO + GEO INSIGHT REPORT

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

4201 Whitworth Street, Manchester

Order Details

Date: 20/06/2024

Your ref: 4201-200624

Our Ref: GS-IJN-N3I-HCD-ZC5

Site Details

Location: 383516 397517

Area: 0.24 ha

Authority: Manchester City Council ↗



Summary of findings p. 2 >

OS MasterMap site plan p.14 >

Aerial image p. 9 >

Insight User Guide ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

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	12	60	115	-
22 >	1.2 >	Historical tanks >	0	0	49	64	-
27 >	1.3 >	Historical energy features >	0	0	18	32	-
29	1.4	Historical petrol stations	0	0	0	0	-
29 >	1.5 >	Historical garages >	0	3	9	19	-
31	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
32 >	2.1 >	Historical industrial land uses >	0	25	96	180	-
43 >	2.2 >	Historical tanks >	0	0	81	140	-
52 >	2.3 >	Historical energy features >	0	0	35	75	-
56	2.4	Historical petrol stations	0	0	0	0	-
56 >	2.5 >	Historical garages >	0	10	20	30	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
59	3.1	Active or recent landfill	0	0	0	0	-
59	3.2	Historical landfill (BGS records)	0	0	0	0	-
60	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
60	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
60 >	3.5 >	Historical waste sites >	0	0	7	9	-
62 >	3.6 >	Licensed waste sites >	0	0	0	1	-
63 >	3.7 >	Waste exemptions >	0	0	19	50	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
69 >	4.1 >	Recent industrial land uses >	1	3	21	-	-
71 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
71	4.3	Electricity cables	0	0	0	0	-
72	4.4	Gas pipelines	0	0	0	0	-
72	4.5	Sites determined as Contaminated Land	0	0	0	0	-

72	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
72	4.7	Regulated explosive sites	0	0	0	0	-
72	4.8	Hazardous substance storage/usage	0	0	0	0	-
73	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
73 >	4.10 >	Licensed industrial activities (Part A(1)) >	0	0	2	0	-
73 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	0	4	-
74	4.12	Radioactive Substance Authorisations	0	0	0	0	-
74 >	4.13 >	Licensed Discharges to controlled waters >	0	0	14	10	-
78	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
78	4.15	Pollutant release to public sewer	0	0	0	0	-
78	4.16	List 1 Dangerous Substances	0	0	0	0	-
79	4.17	List 2 Dangerous Substances	0	0	0	0	-
79	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
79	4.19	Pollution inventory substances	0	0	0	0	-
79	4.20	Pollution inventory waste transfers	0	0	0	0	-
79	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
80 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
82 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
84 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
85	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
85	5.5	Groundwater vulnerability- local information	None (within 0m)				
86 >	5.6 >	Groundwater abstractions >	0	0	0	13	48
102 >	5.7 >	Surface water abstractions >	0	0	0	0	2
103 >	5.8 >	Potable abstractions >	0	0	0	0	9
105 >	5.9 >	Source Protection Zones >	0	0	1	0	-
105	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
106 >	6.1 >	Water Network (OS MasterMap) >	0	5	16	-	-

108 >	6.2 >	Surface water features >	0	1	6	-	-
108 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
109 >	6.4 >	WFD Surface water bodies >	0	1	1	-	-
109 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
111 >	7.1 >	Risk of flooding from rivers and the sea >	Low (within 50m)				
112	7.2	Historical Flood Events	0	0	0	-	-
112	7.3	Flood Defences	0	0	0	-	-
112	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
112	7.5	Flood Storage Areas	0	0	0	-	-
113 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
114	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
115 >	8.1 >	Surface water flooding >	1 in 1000 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
117 >	9.1 >	Groundwater flooding >	Moderate-High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
118	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
118	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
118	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
118	10.4	Special Protection Areas (SPA)	0	0	0	0	0
119	10.5	National Nature Reserves (NNR)	0	0	0	0	0
119	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
119	10.7	Designated Ancient Woodland	0	0	0	0	0
119	10.8	Biosphere Reserves	0	0	0	0	0
120	10.9	Forest Parks	0	0	0	0	0
120	10.10	Marine Conservation Zones	0	0	0	0	0
120	10.11	Green Belt	0	0	0	0	0
120	10.12	Proposed Ramsar sites	0	0	0	0	0

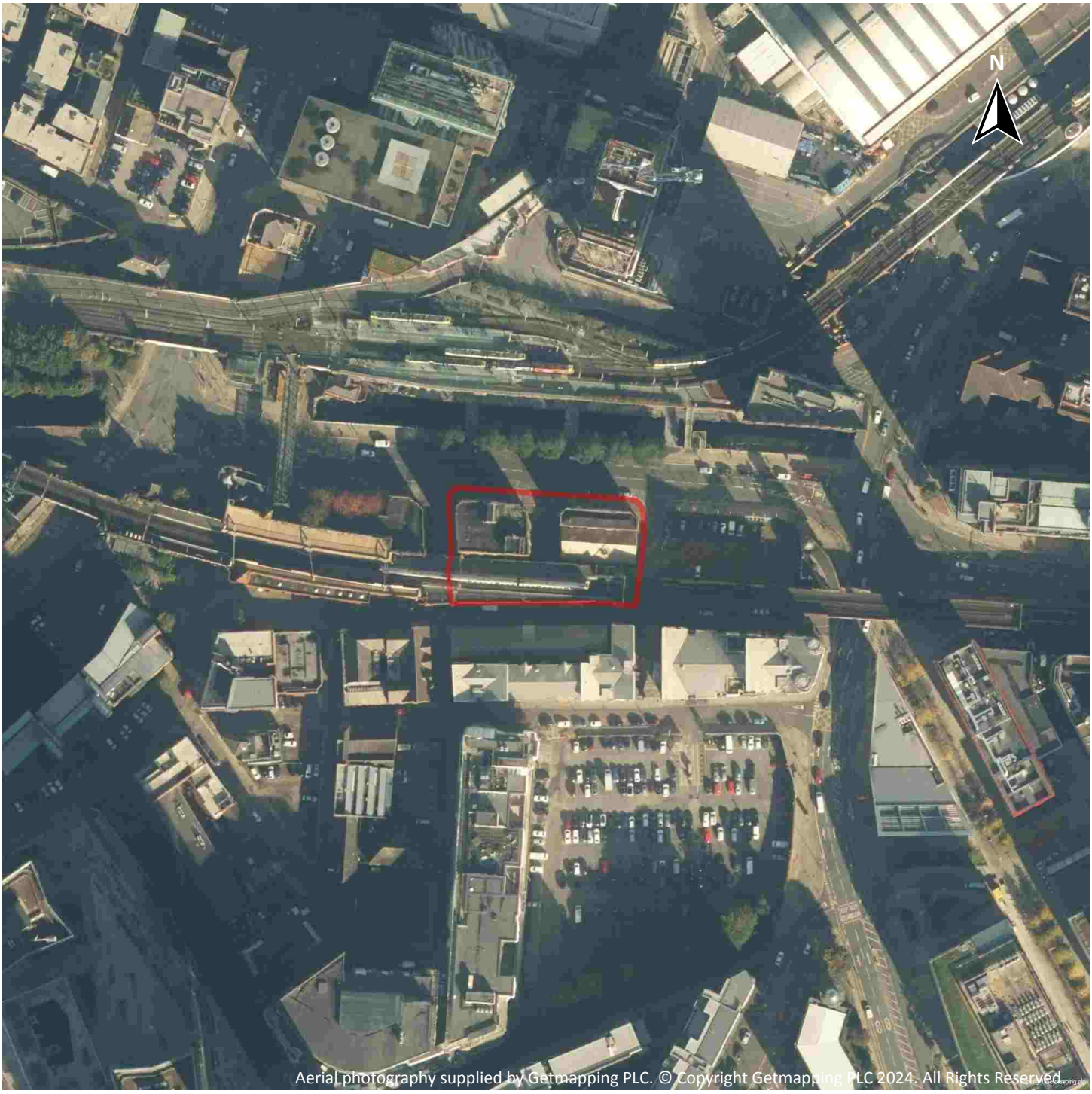
120	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
121	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
121	10.15	Nitrate Sensitive Areas	0	0	0	0	0
121 >	10.16 >	Nitrate Vulnerable Zones >	0	0	0	0	3
122 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
123	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
124	11.1	World Heritage Sites	0	0	0	-	-
125	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
125	11.3	National Parks	0	0	0	-	-
125 >	11.4 >	Listed Buildings >	0	2	17	-	-
126 >	11.5 >	Conservation Areas >	0	0	1	-	-
127 >	11.6 >	Scheduled Ancient Monuments >	0	0	1	-	-
127	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
128 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
129	12.2	Open Access Land	0	0	0	-	-
129	12.3	Tree Felling Licences	0	0	0	-	-
129	12.4	Environmental Stewardship Schemes	0	0	0	-	-
129	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
130	13.1	Priority Habitat Inventory	0	0	0	-	-
130	13.2	Habitat Networks	0	0	0	-	-
130	13.3	Open Mosaic Habitat	0	0	0	-	-
130	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
131 >	14.1 >	10k Availability >	Identified (within 500m)				
132 >	14.2 >	Artificial and made ground (10k) >	1	0	1	2	-
134 >	14.3 >	Superficial geology (10k) >	1	0	2	1	-

135	14.4	Landslip (10k)	0	0	0	0	-
136 >	14.5 >	Bedrock geology (10k) >	1	0	0	1	-
137 >	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
138 >	15.1 >	50k Availability >	Identified (within 500m)				
139 >	15.2 >	Artificial and made ground (50k) >	1	0	0	0	-
140 >	15.3 >	Artificial ground permeability (50k) >	1	0	-	-	-
141 >	15.4 >	Superficial geology (50k) >	1	0	2	1	-
142 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
142	15.6	Landslip (50k)	0	0	0	0	-
142	15.7	Landslip permeability (50k)	None (within 50m)				
143 >	15.8 >	Bedrock geology (50k) >	1	0	0	1	-
144 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
144 >	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
145 >	16.1 >	BGS Boreholes >	0	1	72	-	-
Page	Section	Natural ground subsidence >					
150 >	17.1 >	Shrink swell clays >	Negligible (within 50m)				
151 >	17.2 >	Running sands >	Very low (within 50m)				
152 >	17.3 >	Compressible deposits >	Very low (within 50m)				
153 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
154 >	17.5 >	Landslides >	Very low (within 50m)				
155 >	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
157	18.1	BritPits	0	0	0	0	-
158 >	18.2 >	Surface ground workings >	0	8	13	-	-
159	18.3	Underground workings	0	0	0	0	0
159	18.4	Underground mining extents	0	0	0	0	-
159	18.5	Historical Mineral Planning Areas	0	0	0	0	-

159	18.6	Non-coal mining	0	0	0	0	0
159 >	18.7 >	JPB mining areas >	Identified (within 0m)				
160	18.8	The Coal Authority non-coal mining	0	0	0	0	-
160	18.9	Researched mining	0	0	0	0	-
160	18.10	Mining record office plans	0	0	0	0	-
161	18.11	BGS mine plans	0	0	0	0	-
161 >	18.12 >	Coal mining >	Identified (within 0m)				
161	18.13	Brine areas	None (within 0m)				
161	18.14	Gypsum areas	None (within 0m)				
161	18.15	Tin mining	None (within 0m)				
162	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
163	19.1	Natural cavities	0	0	0	0	-
163	19.2	Mining cavities	0	0	0	0	0
163	19.3	Reported recent incidents	0	0	0	0	-
163	19.4	Historical incidents	0	0	0	0	-
164	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
165 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
167 >	21.1 >	BGS Estimated Background Soil Chemistry >	4	0	-	-	-
167 >	21.2 >	BGS Estimated Urban Soil Chemistry >	4	1	-	-	-
168	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
169	22.1	Underground railways (London)	0	0	0	-	-
169	22.2	Underground railways (Non-London)	0	0	0	-	-
170	22.3	Railway tunnels	0	0	0	-	-
170 >	22.4 >	Historical railway and tunnel features >	6	20	52	-	-
173	22.5	Royal Mail tunnels	0	0	0	-	-

173 >	22.6 >	Historical railways >	0	0	3	-	-
174 >	22.7 >	Railways >	3	10	14	-	-
175	22.8	Crossrail 1	0	0	0	0	-
175	22.9	Crossrail 2	0	0	0	0	-
175	22.10	HS2	0	0	0	0	-

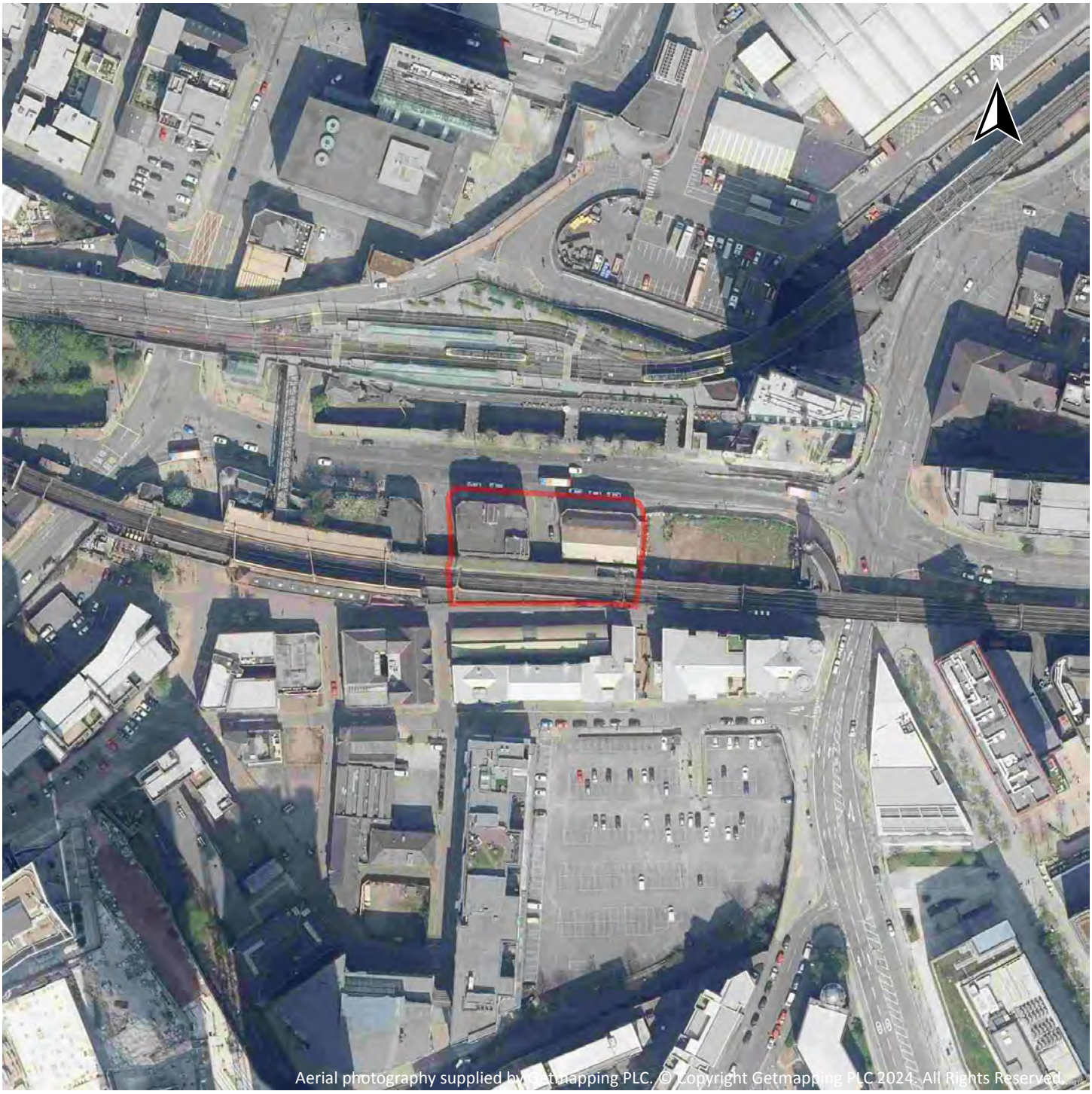
Recent aerial photograph



Capture Date: 18/10/2022

Site Area: 0.24ha

Recent site history - 2019 aerial photograph

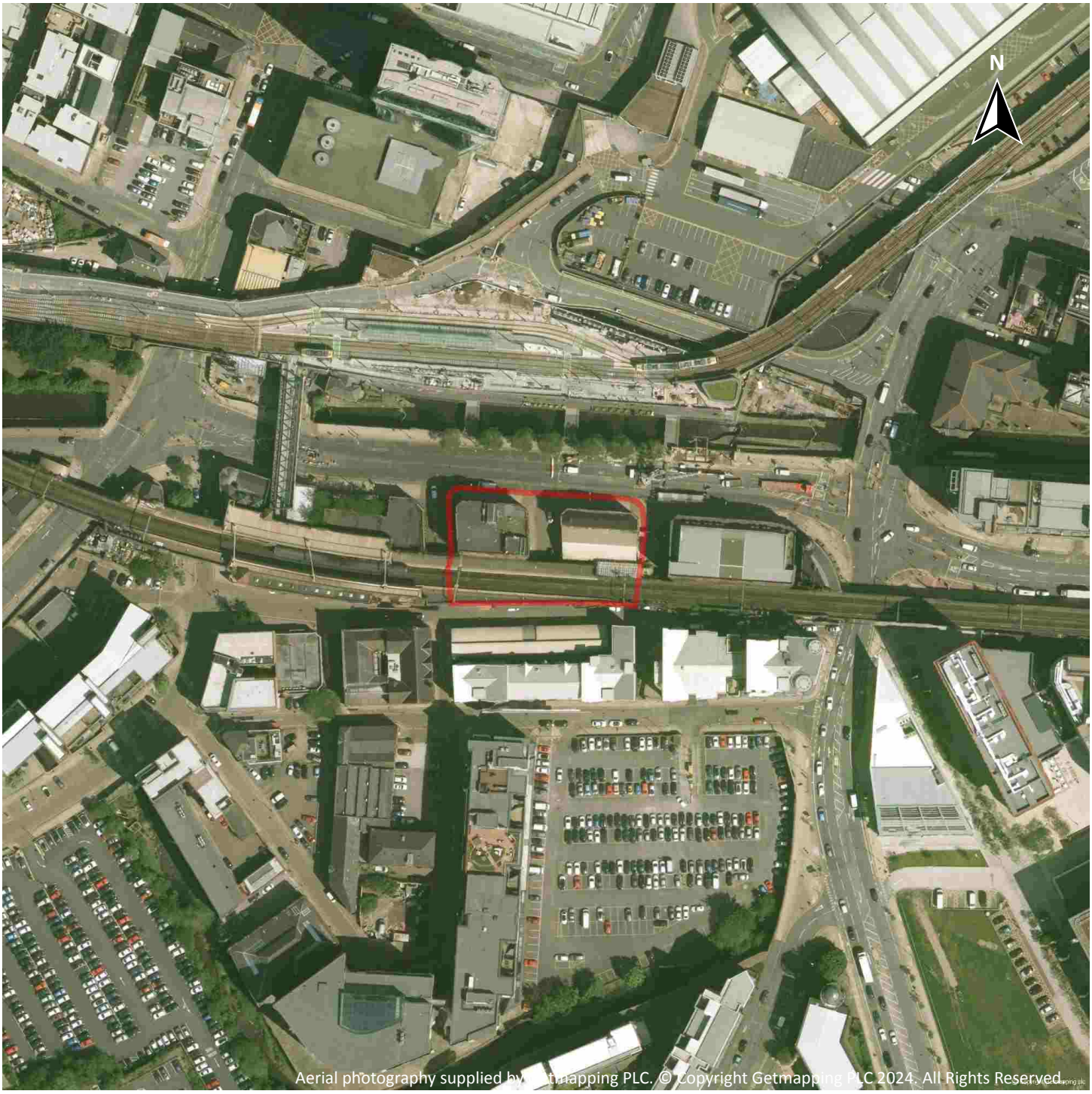


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Capture Date: 22/04/2019

Site Area: 0.24ha

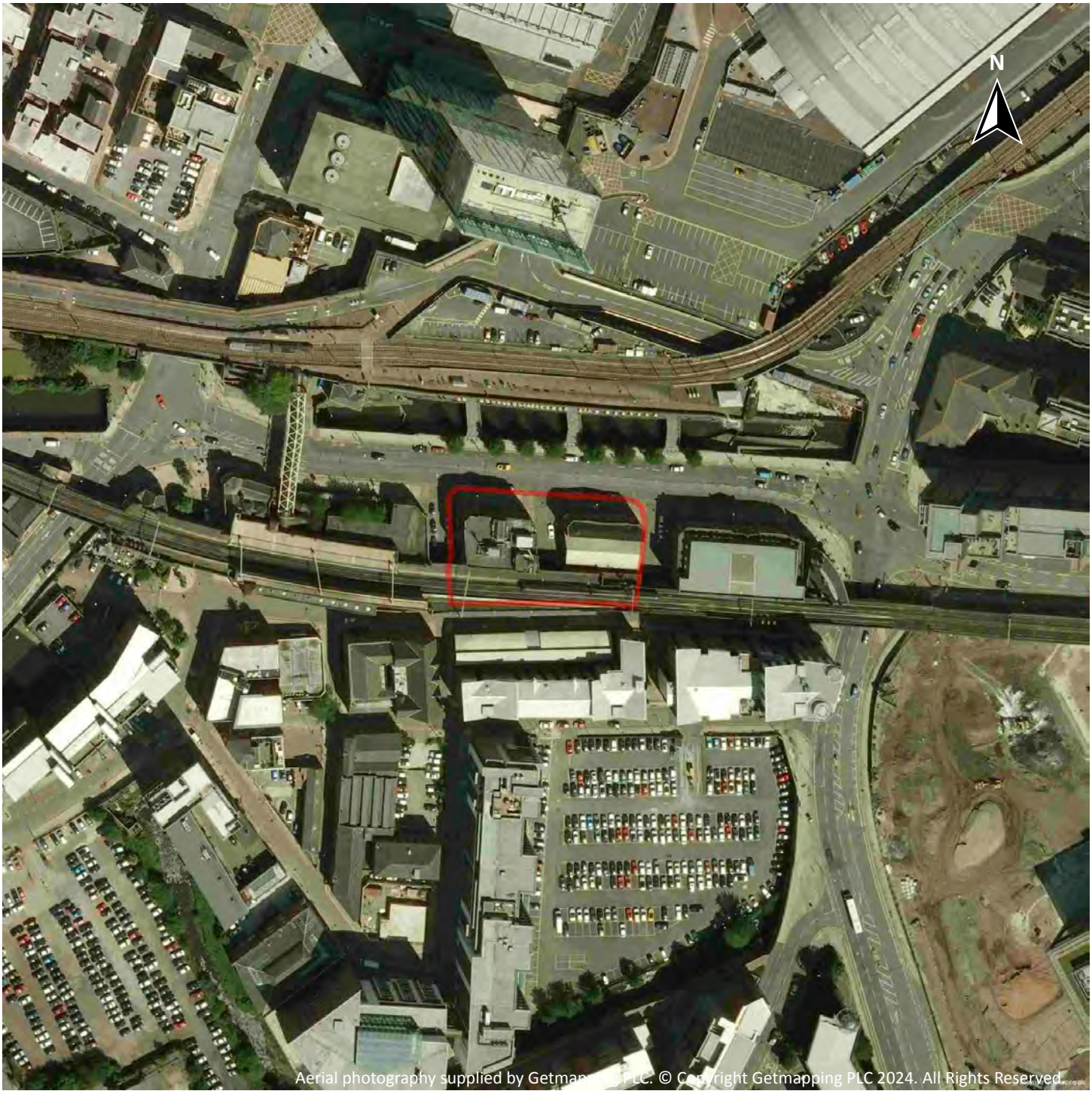
Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 0.24ha

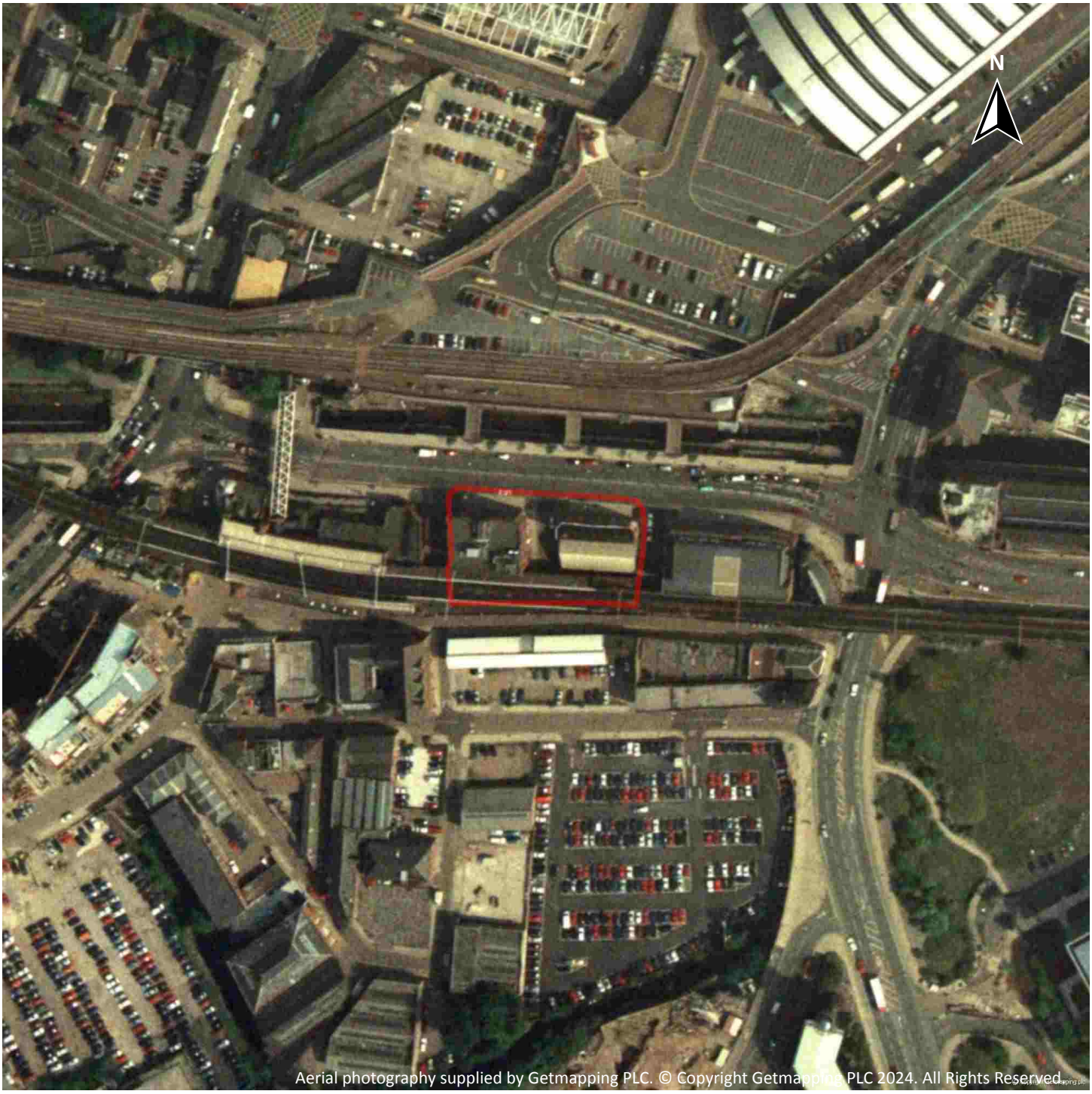
Recent site history - 2009 aerial photograph



Capture Date: 02/06/2009

Site Area: 0.24ha

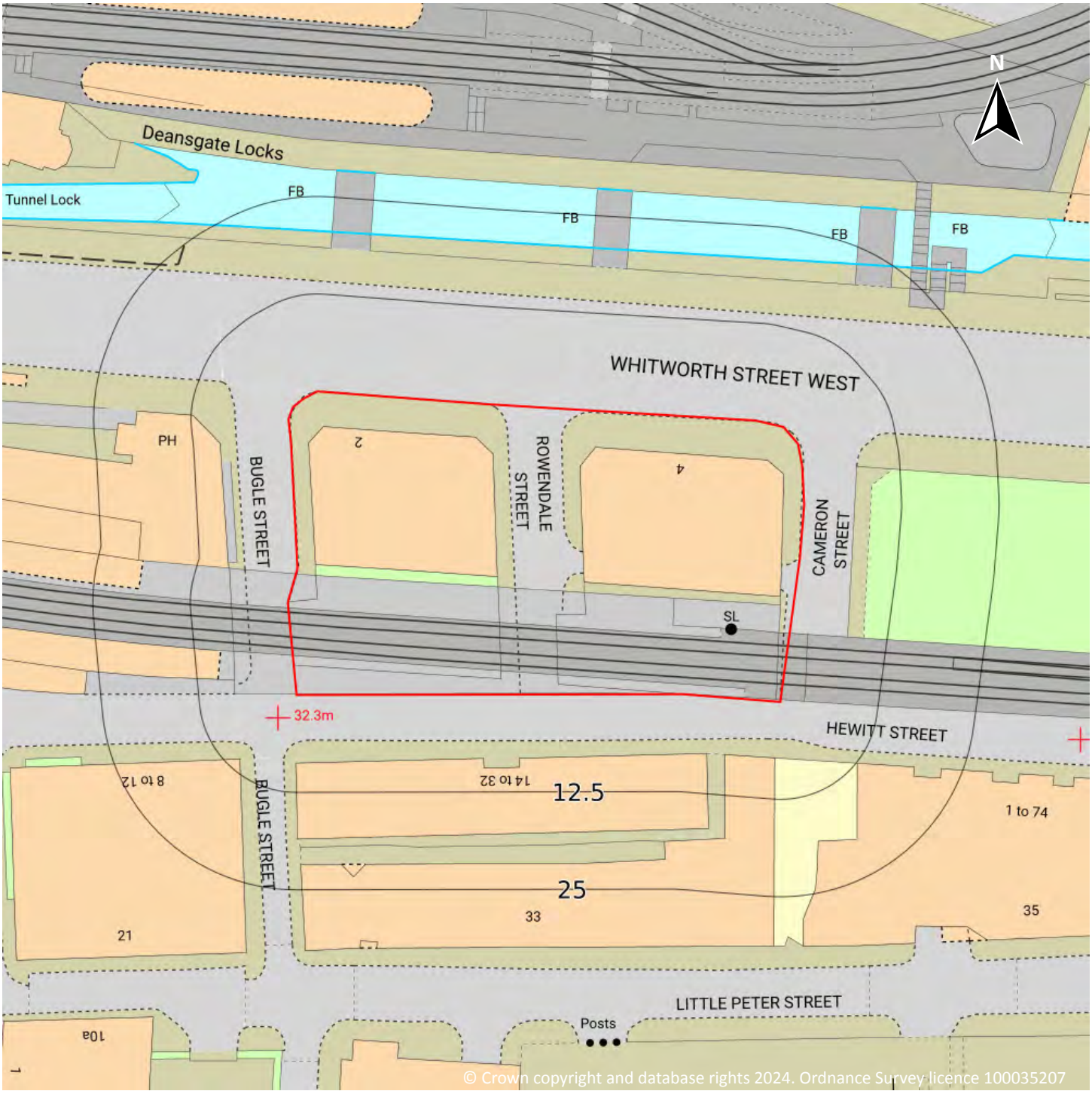
Recent site history - 2000 aerial photograph



Capture Date: 27/06/2000

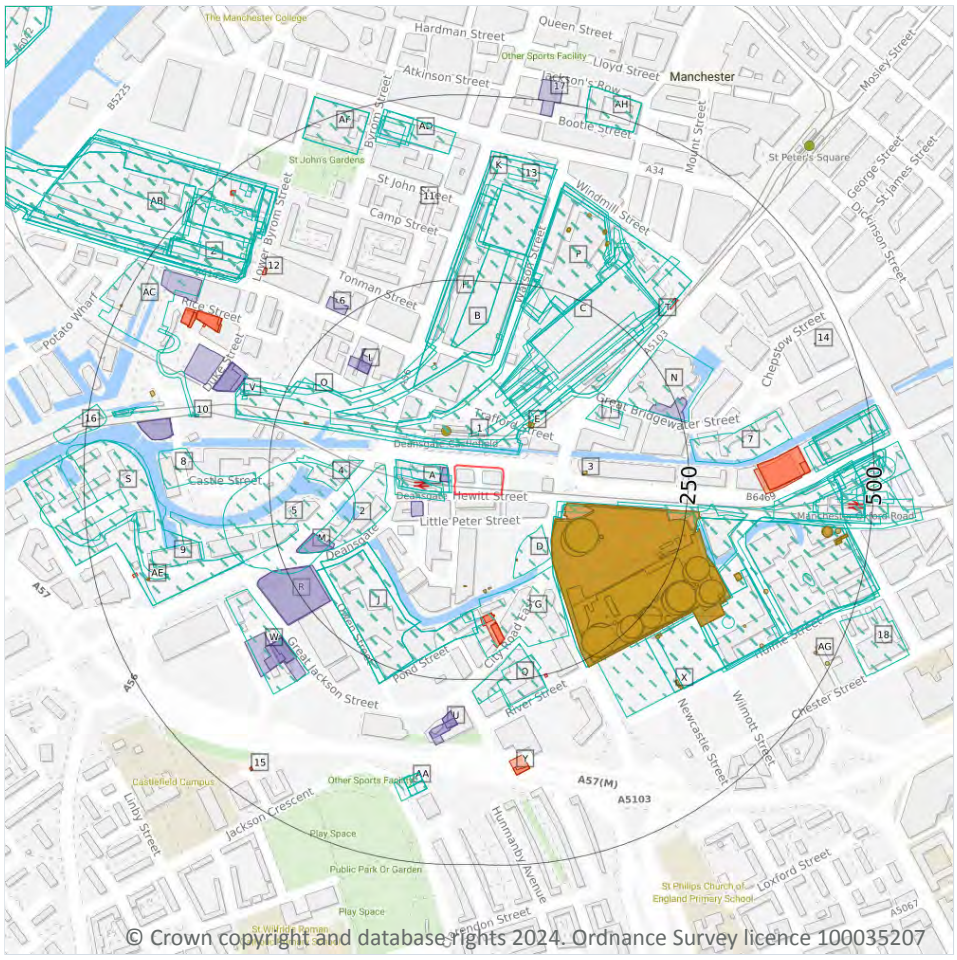
Site Area: 0.24ha

OS MasterMap site plan



Site Area: 0.24ha

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	187

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	4m W	Railway Station	1985 - 1994	880682

ID	Location	Land use	Dates present	Group ID
A	7m W	Railway Station	1978	855265
A	7m W	Railway Station	1956 - 1971	962338
A	15m SW	Railway Station	1905 - 1938	975016
A	18m W	Railway Station	1896	899988
B	20m NE	Railway Sidings	1923	923309
B	25m NE	Railway Sidings	1905 - 1916	871753
B	25m NE	Railway Sidings	1932 - 1938	982150
B	29m NE	Railway Sidings	1956	917334
C	35m NW	Railway Sidings	1896	975593
1	40m N	Railway Building	1905 - 1938	978111
C	43m N	Disused Station	1978	925495
D	66m SE	Cotton Mill	1851	797881
C	70m NE	Railway Station	1905 - 1938	896284
C	72m NE	Railway Station	1956	888631
F	76m E	Unspecified Commercial/Industrial	1851 - 1896	849974
C	76m NE	Railway Station	1896	915817
F	77m SE	Unspecified Commercial/Industrial	1932 - 1938	872530
F	77m SE	Gas Works	1905 - 1923	927583
F	81m E	Unspecified Commercial/Industrial	1956	976686
F	84m E	Unspecified Works	1971	976313
2	89m W	Unspecified Commercial/Industrial	1851	796718
D	97m SE	Unspecified Tank	1956	940796
D	98m SE	Gasometer	1905 - 1923	885805
D	98m SE	Unspecified Tank	1932 - 1938	946195
D	100m SE	Unspecified Tank	1896	890603
D	104m SE	Unspecified Tank	1971	856760
D	104m SE	Unspecified Tank	1978 - 1985	858491
G	118m SE	Brewery	1851	822706

ID	Location	Land use	Dates present	Group ID
H	120m NW	Railway Sidings	1971	946450
H	120m NW	Railway Sidings	1985	958621
H	120m NW	Railway Sidings	1978	989903
4	123m W	Unspecified Commercial/Industrial	1851	796720
I	132m NE	Bus Station	1978	842916
B	132m N	Railway Building	1923	820272
D	134m SE	Railway Sidings	1896	794671
J	135m SW	Automobile Works	1956	813191
J	135m SW	Unspecified Works	1978	940175
J	135m SW	Unspecified Works	1971	948531
5	135m W	Quay	1905 - 1938	872988
J	146m SW	Unspecified Commercial/Industrial	1923	846058
J	146m SW	Unspecified Mill	1932 - 1938	877197
J	146m SW	Unspecified Commercial/Industrial	1905	896875
J	146m SW	Unspecified Mill	1916	904261
C	150m NE	Disused Station	1985	891253
F	160m SE	Unspecified Works	1978	921026
K	163m N	Railway Buildings	1923	833657
B	173m N	Railway Building	1923	820271
I	175m NE	Railway Building	1905 - 1938	985774
N	181m NE	Cotton Mills	1851	811452
O	181m NW	Railway Buildings	1905 - 1938	962263
F	188m SE	Gas Works	1985	894760
F	188m SE	Gas Works	1978	953907
P	202m N	Goods Station	1923	943574
Q	202m S	Unspecified Works	1971	830421
P	205m N	Goods Station	1932 - 1938	883356
P	205m N	Goods Station	1905 - 1916	938206

ID	Location	Land use	Dates present	Group ID
F	208m SE	Unspecified Tank	1851	825228
F	214m SE	Unspecified Tanks	1956	927953
F	214m SE	Gasometer	1978	910445
F	214m SE	Unspecified Tank	1971	973500
P	217m N	Goods Station	1956	923306
S	217m W	Quay	1851	846276
F	219m SE	Unspecified Tank	1932 - 1938	939747
F	219m SE	Gasometer	1905 - 1923	964160
F	219m SE	Unspecified Tanks	1896	952761
Q	220m S	Glass Works	1851	797987
F	233m E	Unspecified Tank	1851	825227
F	235m SE	Gasometer	1905 - 1923	967050
F	235m SE	Unspecified Tank	1932 - 1938	989404
F	244m SE	Unspecified Tank	1932 - 1938	864386
F	244m SE	Gasometer	1905 - 1923	911162
F	254m SE	Gasometer	1905 - 1923	856404
F	254m SE	Unspecified Tank	1932 - 1938	943763
7	255m E	Corporation Yard	1905 - 1938	920120
F	257m SE	Unspecified Tanks	1956	991069
F	257m SE	Rubber Works	1956	849382
F	257m SE	Gasometer	1978	909770
F	257m SE	Gasometer	1985	937412
F	257m SE	Unspecified Tank	1971	953873
F	263m E	Rubber Works	1923 - 1938	926915
F	263m E	Unspecified Commercial/Industrial	1905	944072
F	265m E	Railway Sidings	1905 - 1938	864885
F	265m SE	Unspecified Tank	1932 - 1938	893786
F	265m SE	Gasometer	1905 - 1923	961140

ID	Location	Land use	Dates present	Group ID
8	268m W	Slate Wharf	1851	837258
F	268m E	Rubber Works	1916	915281
T	282m NE	Railway Building	1932 - 1938	946173
K	282m N	Goods Station	1905 - 1938	846931
F	284m SE	Unspecified Works	1978	865006
F	284m SE	Unspecified Works	1985 - 1994	927569
K	290m N	Disused Goods Station	1978	814351
K	290m N	Goods Station	1956	945355
K	290m N	Goods Station	1971	945855
F	294m SE	Gasometer	1905 - 1923	889070
F	294m SE	Unspecified Tank	1932 - 1938	961454
V	295m W	Railway Building	1916	972538
V	295m W	Railway Building	1923	820260
S	299m W	Unspecified Depot	1978	853404
S	299m W	Unspecified Depot	1985 - 1994	921090
V	300m W	Railway Building	1932 - 1938	982027
F	301m SE	Unspecified Tank	1851	987864
W	302m SW	Unspecified Depot	1971	818414
F	325m E	Unspecified Commercial/Industrial	1896	857423
F	334m E	Unspecified Works	1985 - 1994	862878
F	334m E	Unspecified Works	1978	976366
F	343m SE	Unspecified Tank	1851	825246
9	348m W	Warehouse	1851	837278
F	352m E	Railway Sidings	1896	989778
10	352m W	Railway Building	1905 - 1923	846298
V	357m W	Unspecified Ground Workings	1851	800610
F	367m E	Railway Sidings	1985 - 1994	928139
AA	379m S	Police Station	1971	857014

ID	Location	Land use	Dates present	Group ID
AA	379m S	Police Station	1985	942388
AA	379m S	Police Station	1978	959949
AB	382m NW	Railway Sidings	1916 - 1938	893253
AB	382m NW	Railway Sidings	1894	920471
AB	384m NW	Railway Sidings	1923	921834
AA	385m S	Fire Station	1938	891974
13	386m N	Railway Buildings	1923	833653
Z	387m NW	Railway Building	1978	848652
Z	387m NW	Railway Building	1971	911620
Z	387m NW	Railway Building	1985	938373
Z	387m NW	Railway Sidings	1956	951082
AB	387m NW	Goods Depot	1978	893922
AB	387m NW	Goods Depot	1971	912312
AB	387m NW	Railway Sidings	1956	956450
Z	387m NW	Goods Sheds	1905 - 1938	958104
AB	387m NW	Railway Sidings	1932	936526
AB	387m NW	Railway Sidings	1905	984895
Z	388m NW	Railway Buildings	1896	833656
AB	388m NW	Railway Sidings	1896	979167
AA	389m S	Fire Station	1978	845320
AA	389m S	Fire Station	1985	871241
AA	389m S	Fire Station	1971	964050
AB	391m NW	Railway Sidings	1988 - 1994	962023
S	403m W	Unspecified Ground Workings	1851	800608
F	403m E	Railway Station	1905 - 1938	962635
Z	406m NW	Goods Station	1956	821661
V	407m W	Railway Buildings	1905	833631
S	407m W	Unspecified Warehouses	1971	812727

ID	Location	Land use	Dates present	Group ID
F	407m E	Hospital	1923	848326
Z	407m NW	Goods Sheds	1905 - 1938	880509
Z	409m NW	Railway Building	1978	907268
Z	409m NW	Railway Building	1985	923295
Z	409m NW	Railway Building	1971	983624
F	414m E	Hospital	1932 - 1938	949847
AC	415m NW	Unspecified Depot	1985 - 1988	896077
F	419m E	Railway Station	1896	887032
F	420m E	Coal Wharf	1851	794097
F	420m E	Railway Station	1956	923967
F	420m E	Hospital	1956 - 1971	915521
F	420m E	Hospital	1978	957282
AD	420m N	Hospital	1978	946410
AD	420m N	Hospital	1956 - 1971	988332
F	422m E	Unspecified Tanks	1851	815405
F	423m E	Hospital	1916	938342
V	436m W	Railway Building	1916 - 1923	906988
AD	436m N	Hospital	1916	943105
F	436m E	Gas Works	1851	802208
AD	437m N	Hospital	1923	963711
F	438m E	Unspecified Tank	1896	825247
AD	439m N	Hospital	1932 - 1938	946842
S	440m W	Warehouse	1851	837277
AF	441m N	Unspecified Works	1932 - 1938	898924
AF	441m N	Unspecified Commercial/Industrial	1905	935109
AF	441m N	Unspecified Commercial/Industrial	1923	991353
F	446m E	Railway Station	1988 - 1994	912150
V	446m W	Railway Building	1932 - 1938	878526

ID	Location	Land use	Dates present	Group ID
AB	446m NW	Unspecified Commercial/Industrial	1851	796722
F	447m E	Railway Station	1971	960776
F	447m E	Railway Station	1985	962611
F	447m E	Railway Station	1978	981767
AD	449m N	Hospital	1985 - 1988	928879
F	450m E	Railway Building	1956	820261
Z	457m NW	Railway Buildings	1932 - 1938	921932
AB	458m NW	Railway Sidings	1851	921813
Z	461m NW	Railway Building	1905 - 1923	869326
16	474m W	Timber Wharf	1851	811392
F	475m E	Tanks	1851	832185
AB	479m NW	Railway Sidings	1971	888837
AB	479m NW	Railway Sidings	1985	891167
AB	479m NW	Railway Sidings	1978	944715
AH	482m N	Police Station	1978	880849
AH	482m N	Police Station	1956 - 1971	884199
AH	482m N	Police Station	1985 - 1994	940998
18	488m E	Unspecified Mills	1916 - 1923	874195

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**113**

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
E	68m NE	Tanks	1948	141151
E	68m NE	Tanks	1948 - 1979	130142
F	80m SE	Gas Works	1893 - 1908	148771
F	80m SE	Gas Works	1891	138194
F	82m SE	Gas Works	1922	148353
D	89m SE	Unspecified Tank	1891	115954
D	97m SE	Gasometer	1908 - 1922	137166
D	97m SE	Unspecified Tank	1932	149223
D	98m SE	Unspecified Tank	1953 - 1969	138911
D	98m SE	Unspecified Tank	1948 - 1979	134540
D	100m SE	Unspecified Tank	1980 - 1985	129756
3	106m E	Tanks	1891	106783
G	124m S	Unspecified Tank	1891	115779
G	125m S	Tanks	1948	106777
G	129m S	Tanks	1948	107130
B	139m N	Unspecified Tank	1979	134110
B	139m N	Unspecified Tank	1979	148049
D	144m SE	Unspecified Tank	1908 - 1932	134188
D	144m SE	Unspecified Tank	1953 - 1985	135604
D	144m SE	Unspecified Tank	1979	126042
F	155m SE	Gas Works	1948	138071
I	167m NE	Unspecified Tank	1891	115955
F	178m SE	Unspecified Tank	1969	140316
F	186m SE	Disused Gas Holder Station	1985	108346
F	186m SE	Gas Holder Station	1980	144973
F	197m SE	Tanks	1893	133419
F	198m SE	Tanks	1891	127920
O	206m W	Unspecified Tank	1932	115649

ID	Location	Land use	Dates present	Group ID
F	215m SE	Gasometer	1948	135027
F	215m SE	Unspecified Tank	1963 - 1979	141523
F	216m SE	Gasometer	1893 - 1969	129302
F	216m SE	Unspecified Tank	1953	145833
F	216m SE	Tanks	1932	107129
F	216m SE	Gasometers	1908 - 1922	124662
F	216m SE	Unspecified Tank	1948 - 1979	129606
F	219m SE	Unspecified Tank	1891	115953
F	225m E	Tanks	1953 - 1969	129358
F	225m E	Tanks	1948 - 1979	124597
F	229m SE	Unspecified Tank	1953 - 1979	137402
F	229m SE	Unspecified Tank	1979	115952
F	229m SE	Tanks	1948	147005
F	235m SE	Gasometer	1893 - 1948	135717
F	235m SE	Unspecified Tank	1963 - 1979	128106
F	235m SE	Unspecified Tank	1953	136419
F	242m E	Tanks	1979	106781
F	244m SE	Unspecified Tank	1893	147070
F	244m SE	Unspecified Tank	1953 - 1979	147656
F	247m SE	Gasometer	1893	138389
F	247m SE	Gasometer	1891	126443
F	251m SE	Unspecified Tank	1891 - 1893	143653
F	252m SE	Unspecified Tank	1953 - 1985	140482
F	253m E	Unspecified Tank	1948 - 1979	131914
F	256m SE	Gasometer	1893 - 1969	136753
F	257m SE	Gasometer	1891	124584
F	258m SE	Unspecified Tank	1963 - 1979	138510
F	258m SE	Gasometer	1948	142120

ID	Location	Land use	Dates present	Group ID
F	258m SE	Unspecified Tank	1953	134836
F	260m SE	Gas Holder	1980 - 1985	125516
F	263m E	Unspecified Tank	1891	115951
F	265m E	Unspecified Tank	1891	133313
F	265m SE	Gasometer	1891 - 1893	128004
F	267m E	Gasometer	1948	135973
F	267m E	Unspecified Tank	1963 - 1979	148209
F	267m E	Unspecified Tank	1953	127502
F	276m SE	Unspecified Tank	1893	125584
F	277m SE	Gasometer	1891	108523
F	282m SE	Unspecified Tank	1948 - 1990	148192
F	283m SE	Unspecified Tank	1998	124573
F	286m SE	Unspecified Tank	1893	123594
F	289m SE	Gasometer	1969	108524
F	289m SE	Unspecified Tank	1953 - 1985	147415
F	293m SE	Gasometer	1891 - 1893	138622
F	296m SE	Unspecified Tank	1963 - 1979	129031
F	296m SE	Gasometer	1948	144835
F	297m SE	Unspecified Tank	1953	128601
F	322m SE	Unspecified Tank	1987 - 1990	144099
F	327m SE	Unspecified Tank	1891 - 1893	137941
P	331m N	Unspecified Tank	1986 - 1999	144065
P	332m NE	Unspecified Tank	1986	147812
F	332m E	Unspecified Tank	1969 - 1998	138462
P	333m N	Unspecified Tank	1988	124833
F	333m E	Unspecified Tank	1980 - 1990	133041
P	334m NE	Unspecified Tank	1988 - 1999	136452
X	344m SE	Unspecified Tank	1948 - 1979	133333

ID	Location	Land use	Dates present	Group ID
P	345m NE	Unspecified Tank	1986 - 1999	148721
P	347m NE	Unspecified Tank	1988	133750
X	353m SE	Unspecified Tank	1980 - 1985	135450
11	358m N	Unspecified Tank	1891	115646
P	360m NE	Unspecified Tank	1988 - 1999	137115
F	372m SE	Unspecified Tank	1908	115778
F	378m E	Unspecified Tank	1893 - 1922	122317
F	404m SE	Unspecified Tank	1893 - 1922	143428
V	416m W	Unspecified Tank	1922	115648
AE	428m W	Unspecified Tank	1980	132153
AE	428m W	Unspecified Tank	1980	143849
AE	429m W	Unspecified Tank	1963	141829
AE	429m W	Unspecified Tank	1960	123914
AE	429m W	Unspecified Tank	1969	143958
F	435m E	Unspecified Tank	1893	115950
F	437m E	Gasometer	1891 - 1908	131372
F	453m E	Tanks	1953	106778
14	454m E	Unspecified Tank	1891	115956
F	454m E	Unspecified Tank	1922	115957
F	456m E	Unspecified Tank	1948 - 1953	145471
F	457m E	Tanks	1950	106780
F	457m E	Unspecified Tank	1955	135178
F	457m E	Unspecified Tank	1948 - 1953	135406
F	457m E	Unspecified Tank	1955	123253
F	462m E	Unspecified Tank	1948 - 1953	141893
F	463m E	Unspecified Tank	1955	135180
AG	472m SE	Unspecified Tank	1922	115781
AG	493m SE	Unspecified Tank	1948 - 1985	122344

ID	Location	Land use	Dates present	Group ID
AC	499m NW	Unspecified Tank	1963	133635

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**50**

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
F	80m SE	Gas Works	1893 - 1908	79545
F	80m SE	Gas Works	1891	72601
F	82m SE	Gas Works	1922	81689
D	97m SE	Gasometer	1908 - 1922	65948
F	155m SE	Gas Works	1948	66529
G	160m S	Electricity Substation	1998	73868
G	160m S	Electricity Transformers	1969 - 1985	83603
G	172m S	Electricity Substation	1948 - 1979	78830
G	174m S	Electricity Substation	1969 - 1990	82938
F	186m SE	Disused Gas Holder Station	1985	59539
F	186m SE	Gas Holder Station	1980	77508
F	215m SE	Gasometer	1948	69283
F	216m SE	Gasometer	1893 - 1969	65691
F	216m SE	Gasometers	1908 - 1922	65853
F	235m SE	Gasometer	1893 - 1948	65525
F	247m SE	Gasometer	1893	75823
F	247m SE	Gasometer	1891	71699

ID	Location	Land use	Dates present	Group ID
Q	249m S	Electricity Substation	1998	62183
F	256m SE	Gasometer	1893 - 1969	68062
F	257m SE	Gasometer	1891	67026
F	258m SE	Gasometer	1948	71445
F	259m SE	Electricity Substation	1998	62182
F	260m SE	Gas Holder	1980 - 1985	70318
F	265m SE	Gasometer	1891 - 1893	80269
F	267m E	Gasometer	1948	78274
F	277m SE	Gasometer	1891	59716
F	289m SE	Gasometer	1969	59717
F	293m SE	Gasometer	1891 - 1893	71826
F	296m SE	Gasometer	1948	64845
T	313m NE	Electricity Substation	1948 - 1985	80627
F	338m E	Hydraulic Power Station	1932	78003
F	343m E	Hydraulic Power Station	1948 - 1973	64396
F	343m E	Hydraulic Power Station	1948 - 1979	64692
Y	352m S	Electricity Substation	1948 - 1979	83591
12	364m NW	Electricity Substation	1948 - 1995	75611
Z	366m NW	Electricity Substation	1979	77417
Y	367m S	Electricity Substation	1953	65840
Z	368m NW	Electricity Substation	1995	82695
Z	368m NW	Electricity Substation	1948 - 1979	80738
Z	387m NW	Electricity Substation	1948	82720
F	400m E	Electricity Substation	1948 - 1999	65682
Z	403m NW	Electricity Substation	1986	67819
Z	403m NW	Electricity Substation	1990	69796
Z	407m NW	Electricity Substation	1994 - 1995	83961
Z	407m NW	Electricity Substation	1981	80246

ID	Location	Land use	Dates present	Group ID
F	437m E	Gasometer	1891 - 1908	84082
AE	442m W	Electricity Substation	1995 - 1997	72564
15	460m SW	Electricity Substation	1997	65434
Z	472m NW	Electricity Substation	1986 - 1995	67220
Z	473m NW	Electricity Substation	1994 - 1995	65816

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	31

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
A	8m W	Garage	1963 - 1981	26858
A	9m W	Garage	1986 - 1990	26912
A	45m W	Garage	1960 - 1969	25290
D	97m SE	Garage	1953 - 1979	24802
L	172m NW	Garage	1994 - 1995	24725
L	172m NW	Garage	1995	20992

ID	Location	Land use	Dates present	Group ID
L	172m NW	Garage	1981 - 1990	24287
M	177m SW	Garage	1980	25490
M	180m SW	Garage	1969	22918
N	213m E	Garage	1973	20296
R	215m SW	Garage	1980 - 1990	25615
R	219m SW	Garage	1995 - 1997	27082
6	253m NW	Garage	1981	20294
U	292m S	Garage	1960 - 1963	24336
U	293m S	Garage	1979	22408
U	302m S	Garage	1959	21005
W	303m SW	Garage	1980	21660
W	304m SW	Garage	1980 - 1990	24581
W	304m SW	Garage	1979	23209
W	304m SW	Garage	1963	21028
W	304m SW	Garage	1995 - 1997	24964
W	305m SW	Garage	1960 - 1969	25973
V	306m NW	Garage	1981 - 1986	26958
V	307m NW	Garage	1963	21869
V	314m NW	Garage	1963	21949
W	318m SW	Garage	1959	23792
V	344m NW	Garage	1981	20293
V	382m W	Garage	1963 - 1981	25923
V	384m W	Garage	1986	21682
Z	414m NW	Garage	1981 - 1990	24611
17	479m N	Garage	1948	20292

This data is sourced from Ordnance Survey / Groundsure.

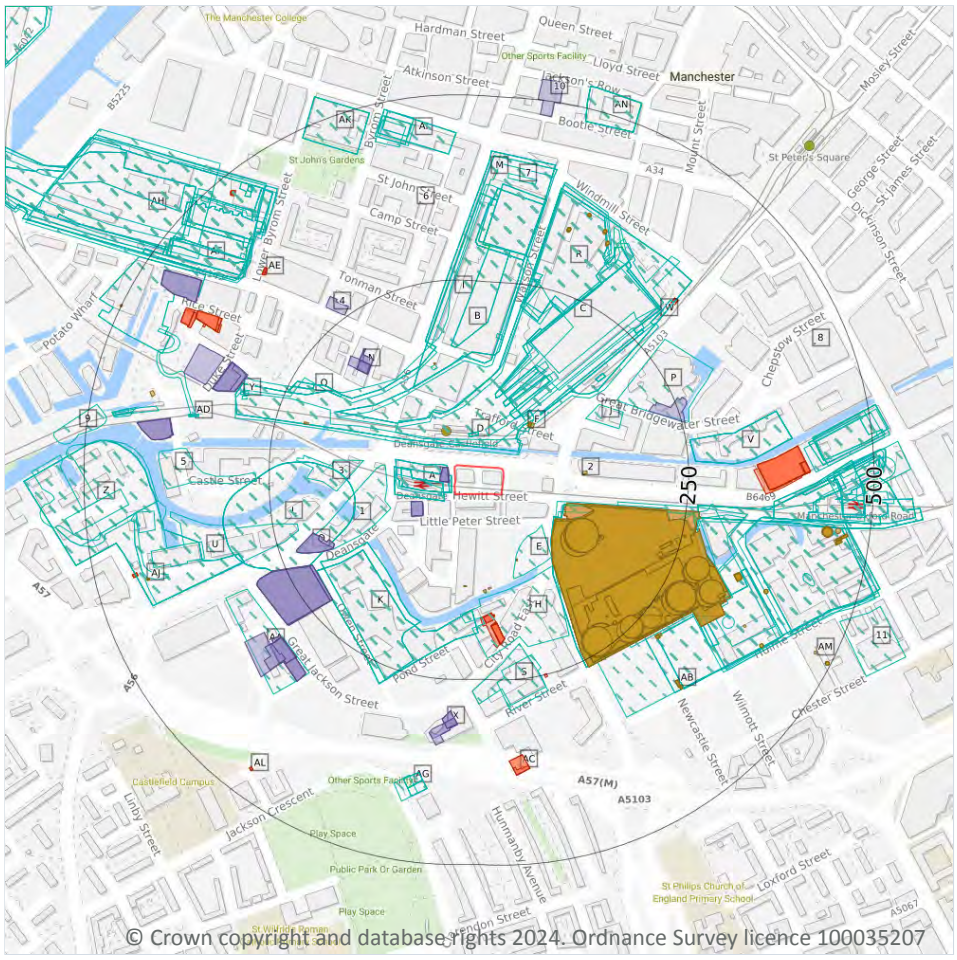
1.6 Historical military land

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	301

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 32 >**

ID	Location	Land Use	Date	Group ID
A	4m W	Railway Station	1988	880682
A	4m W	Railway Station	1985	880682
A	4m W	Railway Station	1994	880682

ID	Location	Land Use	Date	Group ID
A	7m W	Railway Station	1971	962338
A	7m W	Railway Station	1956	962338
A	7m W	Railway Station	1978	855265
A	15m SW	Railway Station	1938	975016
A	15m SW	Railway Station	1932	975016
A	15m SW	Railway Station	1916	975016
A	15m SW	Railway Station	1905	975016
A	15m SW	Railway Station	1923	975016
A	18m W	Railway Station	1896	899988
B	20m NE	Railway Sidings	1923	923309
B	25m NE	Railway Sidings	1938	982150
B	25m NE	Railway Sidings	1932	982150
B	25m NE	Railway Sidings	1916	871753
B	25m NE	Railway Sidings	1905	871753
B	29m NE	Railway Sidings	1956	917334
C	35m NW	Railway Sidings	1896	975593
D	40m N	Railway Building	1938	978111
D	40m N	Railway Building	1932	978111
D	40m N	Railway Building	1916	978111
D	40m N	Railway Building	1905	978111
D	40m N	Railway Building	1923	978111
C	43m N	Disused Station	1978	925495
E	66m SE	Cotton Mill	1851	797881
C	70m NE	Railway Station	1938	896284
C	70m NE	Railway Station	1932	896284
C	70m NE	Railway Station	1916	896284
C	70m NE	Railway Station	1905	896284
C	70m NE	Railway Station	1923	896284

ID	Location	Land Use	Date	Group ID
C	72m NE	Railway Station	1956	888631
G	76m E	Unspecified Commercial/Industrial	1896	849974
C	76m NE	Railway Station	1896	915817
G	77m SE	Unspecified Commercial/Industrial	1938	872530
G	77m SE	Unspecified Commercial/Industrial	1932	872530
G	77m SE	Gas Works	1916	927583
G	77m SE	Gas Works	1905	927583
G	77m SE	Gas Works	1923	927583
G	81m E	Unspecified Commercial/Industrial	1956	976686
G	84m E	Unspecified Works	1971	976313
1	89m W	Unspecified Commercial/Industrial	1851	796718
E	97m SE	Unspecified Tank	1956	940796
E	98m SE	Gasometer	1916	885805
E	98m SE	Gasometer	1905	885805
E	98m SE	Unspecified Tank	1938	946195
E	98m SE	Unspecified Tank	1932	946195
E	98m SE	Gasometer	1923	885805
E	100m SE	Unspecified Tank	1896	890603
E	104m SE	Unspecified Tank	1971	856760
E	104m SE	Unspecified Tank	1978	858491
E	104m SE	Unspecified Tank	1985	858491
H	118m SE	Brewery	1851	822706
I	120m NW	Railway Sidings	1971	946450
I	120m NW	Railway Sidings	1978	989903
I	120m NW	Railway Sidings	1985	958621
3	123m W	Unspecified Commercial/Industrial	1851	796720
J	132m NE	Bus Station	1978	842916
B	132m N	Railway Building	1923	820272

ID	Location	Land Use	Date	Group ID
E	134m SE	Railway Sidings	1896	794671
K	135m SW	Unspecified Works	1971	948531
K	135m SW	Automobile Works	1956	813191
K	135m SW	Unspecified Works	1978	940175
L	135m W	Quay	1938	872988
L	135m W	Quay	1932	872988
L	135m W	Quay	1916	872988
L	135m W	Quay	1905	872988
L	135m W	Quay	1923	872988
K	146m SW	Unspecified Mill	1938	877197
K	146m SW	Unspecified Mill	1932	877197
K	146m SW	Unspecified Mill	1916	904261
K	146m SW	Unspecified Commercial/Industrial	1905	896875
K	146m SW	Unspecified Commercial/Industrial	1923	846058
C	150m NE	Disused Station	1985	891253
G	160m SE	Unspecified Works	1978	921026
M	163m N	Railway Buildings	1923	833657
B	173m N	Railway Building	1923	820271
J	175m NE	Railway Building	1938	985774
J	175m NE	Railway Building	1932	985774
J	175m NE	Railway Building	1916	985774
J	175m NE	Railway Building	1905	985774
J	175m NE	Railway Building	1923	985774
P	181m NE	Cotton Mills	1851	811452
Q	181m NW	Railway Buildings	1938	962263
Q	181m NW	Railway Buildings	1932	962263
Q	181m NW	Railway Buildings	1916	962263
Q	181m NW	Railway Buildings	1905	962263

ID	Location	Land Use	Date	Group ID
Q	181m NW	Railway Buildings	1923	962263
G	188m SE	Gas Works	1978	953907
G	188m SE	Gas Works	1985	894760
G	196m SE	Unspecified Commercial/Industrial	1851	849974
R	202m N	Goods Station	1923	943574
S	202m S	Unspecified Works	1971	830421
R	205m N	Goods Station	1938	883356
R	205m N	Goods Station	1932	883356
R	205m N	Goods Station	1916	938206
R	205m N	Goods Station	1905	938206
G	208m SE	Unspecified Tank	1851	825228
G	214m SE	Unspecified Tanks	1956	927953
G	214m SE	Unspecified Tank	1971	973500
G	214m SE	Gasometer	1978	910445
R	217m N	Goods Station	1956	923306
U	217m W	Quay	1851	846276
G	219m SE	Gasometer	1916	964160
G	219m SE	Gasometer	1905	964160
G	219m SE	Unspecified Tank	1938	939747
G	219m SE	Unspecified Tank	1932	939747
G	219m SE	Gasometer	1923	964160
G	219m SE	Unspecified Tanks	1896	952761
S	220m S	Glass Works	1851	797987
G	233m E	Unspecified Tank	1851	825227
G	235m SE	Gasometer	1916	967050
G	235m SE	Gasometer	1905	967050
G	235m SE	Unspecified Tank	1938	989404
G	235m SE	Unspecified Tank	1932	989404

ID	Location	Land Use	Date	Group ID
G	235m SE	Gasometer	1923	967050
G	244m SE	Gasometer	1916	911162
G	244m SE	Gasometer	1905	911162
G	244m SE	Unspecified Tank	1938	864386
G	244m SE	Unspecified Tank	1932	864386
G	244m SE	Gasometer	1923	911162
G	254m SE	Gasometer	1916	856404
G	254m SE	Gasometer	1905	856404
G	254m SE	Unspecified Tank	1938	943763
G	254m SE	Unspecified Tank	1932	943763
G	254m SE	Gasometer	1923	856404
V	255m E	Corporation Yard	1938	920120
V	255m E	Corporation Yard	1932	920120
V	255m E	Corporation Yard	1916	920120
V	255m E	Corporation Yard	1905	920120
V	255m E	Corporation Yard	1923	920120
G	257m SE	Unspecified Tanks	1956	991069
G	257m SE	Rubber Works	1956	849382
G	257m SE	Unspecified Tank	1971	953873
G	257m SE	Gasometer	1978	909770
G	257m SE	Gasometer	1985	937412
G	263m E	Rubber Works	1938	926915
G	263m E	Rubber Works	1932	926915
G	263m E	Unspecified Commercial/Industrial	1905	944072
G	263m E	Rubber Works	1923	926915
G	265m E	Railway Sidings	1938	864885
G	265m E	Railway Sidings	1932	864885
G	265m E	Railway Sidings	1916	864885

ID	Location	Land Use	Date	Group ID
G	265m E	Railway Sidings	1905	864885
G	265m E	Railway Sidings	1923	864885
G	265m SE	Gasometer	1916	961140
G	265m SE	Gasometer	1905	961140
G	265m SE	Unspecified Tank	1938	893786
G	265m SE	Unspecified Tank	1932	893786
G	265m SE	Gasometer	1923	961140
5	268m W	Slate Wharf	1851	837258
G	268m E	Rubber Works	1916	915281
W	282m NE	Railway Building	1938	946173
W	282m NE	Railway Building	1932	946173
M	282m N	Goods Station	1938	846931
M	282m N	Goods Station	1932	846931
M	282m N	Goods Station	1916	846931
M	282m N	Goods Station	1905	846931
M	282m N	Goods Station	1923	846931
G	284m SE	Unspecified Works	1988	927569
G	284m SE	Unspecified Works	1978	865006
G	284m SE	Unspecified Works	1985	927569
G	284m SE	Unspecified Works	1994	927569
M	290m N	Goods Station	1971	945855
M	290m N	Goods Station	1956	945355
M	290m N	Disused Goods Station	1978	814351
G	294m SE	Gasometer	1916	889070
G	294m SE	Gasometer	1905	889070
G	294m SE	Unspecified Tank	1938	961454
G	294m SE	Unspecified Tank	1932	961454
G	294m SE	Gasometer	1923	889070

ID	Location	Land Use	Date	Group ID
Y	295m W	Railway Building	1916	972538
Y	295m W	Railway Building	1923	820260
Z	299m W	Unspecified Depot	1988	921090
Z	299m W	Unspecified Depot	1978	853404
Z	299m W	Unspecified Depot	1985	921090
Z	299m W	Unspecified Depot	1994	921090
Y	300m W	Railway Building	1938	982027
Y	300m W	Railway Building	1932	982027
G	301m SE	Unspecified Tank	1851	987864
AA	302m SW	Unspecified Depot	1971	818414
G	325m E	Unspecified Commercial/Industrial	1896	857423
G	334m E	Unspecified Works	1988	862878
G	334m E	Unspecified Works	1978	976366
G	334m E	Unspecified Works	1985	862878
G	334m E	Unspecified Works	1994	862878
G	343m SE	Unspecified Tank	1851	825246
U	348m W	Warehouse	1851	837278
G	352m E	Railway Sidings	1896	989778
AD	352m W	Railway Building	1916	846298
AD	352m W	Railway Building	1905	846298
AD	352m W	Railway Building	1923	846298
Y	357m W	Unspecified Ground Workings	1851	800610
G	367m E	Railway Sidings	1988	928139
G	367m E	Railway Sidings	1985	928139
G	367m E	Railway Sidings	1994	928139
AG	379m S	Police Station	1971	857014
AG	379m S	Police Station	1978	959949
AG	379m S	Police Station	1985	942388

ID	Location	Land Use	Date	Group ID
AH	382m NW	Railway Sidings	1916	893253
AH	384m NW	Railway Sidings	1923	921834
AG	385m S	Fire Station	1938	891974
7	386m N	Railway Buildings	1923	833653
AF	387m NW	Railway Building	1971	911620
AF	387m NW	Railway Sidings	1956	951082
AF	387m NW	Railway Building	1978	848652
AF	387m NW	Railway Building	1985	938373
AH	387m NW	Goods Depot	1971	912312
AH	387m NW	Railway Sidings	1956	956450
AH	387m NW	Goods Depot	1978	893922
AF	387m NW	Goods Sheds	1938	958104
AF	387m NW	Goods Sheds	1932	958104
AF	387m NW	Goods Sheds	1916	958104
AF	387m NW	Goods Sheds	1905	958104
AF	387m NW	Goods Sheds	1923	958104
AH	387m NW	Railway Sidings	1938	893253
AH	387m NW	Railway Sidings	1932	936526
AH	387m NW	Railway Sidings	1905	984895
AF	388m NW	Railway Buildings	1896	833656
AH	388m NW	Railway Sidings	1896	979167
AG	389m S	Fire Station	1971	964050
AG	389m S	Fire Station	1978	845320
AG	389m S	Fire Station	1985	871241
AH	391m NW	Railway Sidings	1988	962023
AH	391m NW	Railway Sidings	1994	962023
Z	400m W	Quay	1851	846276
Z	403m W	Unspecified Ground Workings	1851	800608

ID	Location	Land Use	Date	Group ID
G	403m E	Railway Station	1938	962635
G	403m E	Railway Station	1932	962635
G	403m E	Railway Station	1916	962635
G	403m E	Railway Station	1905	962635
G	403m E	Railway Station	1923	962635
AF	406m NW	Goods Station	1956	821661
Y	407m W	Railway Buildings	1905	833631
Z	407m W	Unspecified Warehouses	1971	812727
G	407m E	Hospital	1923	848326
AF	407m NW	Goods Sheds	1938	880509
AF	407m NW	Goods Sheds	1932	880509
AF	407m NW	Goods Sheds	1916	880509
AF	407m NW	Goods Sheds	1905	880509
AF	407m NW	Goods Sheds	1923	880509
AF	409m NW	Railway Building	1971	983624
AF	409m NW	Railway Building	1978	907268
AF	409m NW	Railway Building	1985	923295
G	414m E	Hospital	1938	949847
G	414m E	Hospital	1932	949847
AF	415m NW	Unspecified Depot	1988	896077
AF	415m NW	Unspecified Depot	1985	896077
G	419m E	Railway Station	1896	887032
G	420m E	Coal Wharf	1851	794097
G	420m E	Railway Station	1956	923967
G	420m E	Hospital	1971	915521
G	420m E	Hospital	1956	915521
G	420m E	Hospital	1978	957282
AI	420m N	Hospital	1971	988332

ID	Location	Land Use	Date	Group ID
AI	420m N	Hospital	1956	988332
AI	420m N	Hospital	1978	946410
G	422m E	Unspecified Tanks	1851	815405
G	423m E	Hospital	1916	938342
Y	436m W	Railway Building	1916	906988
AI	436m N	Hospital	1916	943105
G	436m E	Gas Works	1851	802208
AI	437m N	Hospital	1923	963711
G	438m E	Unspecified Tank	1896	825247
AI	439m N	Hospital	1938	946842
AI	439m N	Hospital	1932	946842
Y	440m W	Railway Building	1923	906988
Z	440m W	Warehouse	1851	837277
AK	441m N	Unspecified Works	1938	898924
AK	441m N	Unspecified Works	1932	898924
AK	441m N	Unspecified Commercial/Industrial	1905	935109
AK	441m N	Unspecified Commercial/Industrial	1923	991353
G	446m E	Railway Station	1988	912150
G	446m E	Railway Station	1994	912150
Y	446m W	Railway Building	1938	878526
Y	446m W	Railway Building	1932	878526
AH	446m NW	Unspecified Commercial/Industrial	1851	796722
G	447m E	Railway Station	1971	960776
G	447m E	Railway Station	1978	981767
G	447m E	Railway Station	1985	962611
AI	449m N	Hospital	1988	928879
AI	449m N	Hospital	1985	928879
G	450m E	Railway Building	1956	820261

ID	Location	Land Use	Date	Group ID
AF	457m NW	Railway Buildings	1938	921932
AF	457m NW	Railway Buildings	1932	921932
AH	458m NW	Railway Sidings	1851	921813
AF	461m NW	Railway Building	1916	869326
AF	461m NW	Railway Building	1905	869326
AF	461m NW	Railway Building	1923	869326
9	474m W	Timber Wharf	1851	811392
G	475m E	Tanks	1851	832185
AH	479m NW	Railway Sidings	1971	888837
AH	479m NW	Railway Sidings	1978	944715
AH	479m NW	Railway Sidings	1985	891167
AN	482m N	Police Station	1971	884199
AN	482m N	Police Station	1956	884199
AN	482m N	Police Station	1988	940998
AN	482m N	Police Station	1978	880849
AN	482m N	Police Station	1985	940998
AN	482m N	Police Station	1994	940998
11	488m E	Unspecified Mills	1923	874195

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 32 >**

ID	Location	Land Use	Date	Group ID
F	68m NE	Tanks	1948	141151
F	68m NE	Tanks	1951	130142

ID	Location	Land Use	Date	Group ID
F	68m NE	Tanks	1948	130142
F	68m NE	Tanks	1979	130142
F	68m NE	Tanks	1963	130142
G	80m SE	Gas Works	1893	148771
G	80m SE	Gas Works	1908	148771
G	80m SE	Gas Works	1891	138194
G	82m SE	Gas Works	1922	148353
E	89m SE	Unspecified Tank	1891	115954
E	97m SE	Gasometer	1908	137166
E	97m SE	Gasometer	1922	137166
E	97m SE	Unspecified Tank	1932	149223
E	98m SE	Unspecified Tank	1969	138911
E	98m SE	Unspecified Tank	1953	138911
E	98m SE	Unspecified Tank	1979	134540
E	98m SE	Unspecified Tank	1963	134540
E	98m SE	Unspecified Tank	1948	134540
E	100m SE	Unspecified Tank	1980	129756
E	100m SE	Unspecified Tank	1980	129756
E	100m SE	Unspecified Tank	1985	129756
2	106m E	Tanks	1891	106783
H	124m S	Unspecified Tank	1891	115779
H	125m S	Tanks	1948	106777
H	129m S	Tanks	1948	107130
B	139m N	Unspecified Tank	1979	134110
B	139m N	Unspecified Tank	1979	148049
E	144m SE	Unspecified Tank	1908	134188
E	144m SE	Unspecified Tank	1922	134188
E	144m SE	Unspecified Tank	1932	134188

ID	Location	Land Use	Date	Group ID
E	144m SE	Unspecified Tank	1969	135604
E	144m SE	Unspecified Tank	1953	135604
E	144m SE	Unspecified Tank	1979	126042
E	146m SE	Unspecified Tank	1980	135604
E	146m SE	Unspecified Tank	1980	135604
E	146m SE	Unspecified Tank	1985	135604
G	155m SE	Gas Works	1948	138071
J	167m NE	Unspecified Tank	1891	115955
G	178m SE	Unspecified Tank	1969	140316
G	186m SE	Gas Holder Station	1980	144973
G	186m SE	Gas Holder Station	1980	144973
G	186m SE	Disused Gas Holder Station	1985	108346
G	197m SE	Tanks	1893	133419
G	198m SE	Tanks	1891	127920
Q	206m W	Unspecified Tank	1932	115649
G	215m SE	Unspecified Tank	1979	141523
G	215m SE	Unspecified Tank	1963	141523
G	215m SE	Gasometer	1948	135027
G	216m SE	Gasometer	1969	129302
G	216m SE	Unspecified Tank	1953	145833
G	216m SE	Gasometers	1908	124662
G	216m SE	Gasometers	1922	124662
G	216m SE	Tanks	1932	107129
G	216m SE	Unspecified Tank	1979	129606
G	216m SE	Unspecified Tank	1948	129606
G	217m SE	Gasometer	1893	129302
G	219m SE	Unspecified Tank	1891	115953
G	225m E	Tanks	1969	129358

ID	Location	Land Use	Date	Group ID
G	225m E	Tanks	1953	129358
G	225m E	Tanks	1969	124597
G	225m E	Tanks	1953	124597
G	226m E	Tanks	1979	124597
G	226m E	Tanks	1948	124597
G	229m SE	Unspecified Tank	1979	137402
G	229m SE	Unspecified Tank	1963	137402
G	229m SE	Unspecified Tank	1969	137402
G	229m SE	Unspecified Tank	1953	137402
G	229m SE	Unspecified Tank	1979	115952
G	229m SE	Tanks	1948	147005
G	235m SE	Gasometer	1893	135717
G	235m SE	Unspecified Tank	1979	128106
G	235m SE	Unspecified Tank	1963	128106
G	235m SE	Gasometer	1948	135717
G	235m SE	Unspecified Tank	1953	136419
G	242m E	Tanks	1979	106781
G	244m SE	Unspecified Tank	1893	147070
G	244m SE	Unspecified Tank	1979	147656
G	244m SE	Unspecified Tank	1963	147656
G	245m SE	Unspecified Tank	1953	147656
G	247m SE	Gasometer	1893	138389
G	247m SE	Gasometer	1891	126443
G	251m SE	Unspecified Tank	1893	143653
G	251m SE	Unspecified Tank	1891	143653
G	252m SE	Unspecified Tank	1969	140482
G	252m SE	Unspecified Tank	1953	140482
G	252m SE	Unspecified Tank	1979	140482

ID	Location	Land Use	Date	Group ID
G	252m SE	Unspecified Tank	1963	140482
G	253m E	Unspecified Tank	1969	131914
G	253m E	Unspecified Tank	1953	131914
G	253m E	Unspecified Tank	1979	131914
G	253m E	Unspecified Tank	1963	131914
G	253m E	Unspecified Tank	1948	131914
G	254m SE	Unspecified Tank	1980	140482
G	254m SE	Unspecified Tank	1980	140482
G	254m SE	Unspecified Tank	1985	140482
G	256m SE	Gasometer	1893	136753
G	257m SE	Gasometer	1891	124584
G	258m SE	Unspecified Tank	1979	138510
G	258m SE	Unspecified Tank	1963	138510
G	258m SE	Gasometer	1948	142120
G	258m SE	Gasometer	1969	136753
G	258m SE	Unspecified Tank	1953	134836
G	260m SE	Gas Holder	1980	125516
G	260m SE	Gas Holder	1980	125516
G	260m SE	Gas Holder	1985	125516
G	263m E	Unspecified Tank	1891	115951
G	265m E	Unspecified Tank	1891	133313
G	265m SE	Gasometer	1893	128004
G	266m SE	Gasometer	1891	128004
G	267m E	Unspecified Tank	1979	148209
G	267m E	Unspecified Tank	1963	148209
G	267m E	Gasometer	1948	135973
G	267m E	Unspecified Tank	1953	127502
G	276m SE	Unspecified Tank	1893	125584

ID	Location	Land Use	Date	Group ID
G	277m SE	Gasometer	1891	108523
G	282m SE	Unspecified Tank	1969	148192
G	282m SE	Unspecified Tank	1953	148192
G	282m SE	Unspecified Tank	1979	148192
G	282m SE	Unspecified Tank	1948	148192
G	283m SE	Unspecified Tank	1980	148192
G	283m SE	Unspecified Tank	1985	148192
G	283m SE	Unspecified Tank	1987	148192
G	283m SE	Unspecified Tank	1987	148192
G	283m SE	Unspecified Tank	1990	148192
G	283m SE	Unspecified Tank	1998	124573
G	286m SE	Unspecified Tank	1893	123594
G	289m SE	Gasometer	1969	108524
G	289m SE	Unspecified Tank	1953	147415
G	289m SE	Unspecified Tank	1979	147415
G	289m SE	Unspecified Tank	1963	147415
G	290m SE	Unspecified Tank	1980	147415
G	290m SE	Unspecified Tank	1985	147415
G	293m SE	Gasometer	1893	138622
G	295m SE	Gasometer	1891	138622
G	296m SE	Unspecified Tank	1979	129031
G	296m SE	Unspecified Tank	1963	129031
G	296m SE	Gasometer	1948	144835
G	297m SE	Unspecified Tank	1953	128601
G	322m SE	Unspecified Tank	1987	144099
G	322m SE	Unspecified Tank	1987	144099
G	322m SE	Unspecified Tank	1990	144099
G	327m SE	Unspecified Tank	1893	137941

ID	Location	Land Use	Date	Group ID
G	328m SE	Unspecified Tank	1891	137941
R	331m N	Unspecified Tank	1986	144065
R	332m NE	Unspecified Tank	1986	147812
G	332m E	Unspecified Tank	1998	138462
G	332m E	Unspecified Tank	1969	138462
R	333m N	Unspecified Tank	1988	124833
G	333m E	Unspecified Tank	1980	133041
G	333m E	Unspecified Tank	1980	133041
G	333m E	Unspecified Tank	1985	133041
G	333m E	Unspecified Tank	1987	133041
G	333m E	Unspecified Tank	1987	133041
G	333m E	Unspecified Tank	1990	133041
R	334m NE	Unspecified Tank	1988	136452
R	334m N	Unspecified Tank	1996	144065
R	334m N	Unspecified Tank	1995	144065
R	334m N	Unspecified Tank	1994	144065
R	334m N	Unspecified Tank	1999	144065
R	334m NE	Unspecified Tank	1996	136452
R	334m NE	Unspecified Tank	1995	136452
R	334m NE	Unspecified Tank	1994	136452
R	334m NE	Unspecified Tank	1999	136452
AB	344m SE	Unspecified Tank	1969	133333
AB	344m SE	Unspecified Tank	1953	133333
AB	344m SE	Unspecified Tank	1979	133333
AB	344m SE	Unspecified Tank	1948	133333
R	345m NE	Unspecified Tank	1986	148721
R	347m NE	Unspecified Tank	1988	133750
R	347m NE	Unspecified Tank	1996	148721

ID	Location	Land Use	Date	Group ID
R	347m NE	Unspecified Tank	1995	148721
R	347m NE	Unspecified Tank	1994	148721
R	347m NE	Unspecified Tank	1999	148721
AB	353m SE	Unspecified Tank	1980	135450
AB	353m SE	Unspecified Tank	1980	135450
AB	353m SE	Unspecified Tank	1985	135450
6	358m N	Unspecified Tank	1891	115646
R	360m NE	Unspecified Tank	1988	137115
R	360m NE	Unspecified Tank	1996	137115
R	360m NE	Unspecified Tank	1995	137115
R	360m NE	Unspecified Tank	1994	137115
R	360m NE	Unspecified Tank	1999	137115
G	372m SE	Unspecified Tank	1908	115778
G	378m E	Unspecified Tank	1893	122317
G	378m E	Unspecified Tank	1922	122317
G	404m SE	Unspecified Tank	1893	143428
G	404m SE	Unspecified Tank	1922	143428
Y	416m W	Unspecified Tank	1922	115648
AJ	428m W	Unspecified Tank	1980	132153
AJ	428m W	Unspecified Tank	1980	143849
AJ	429m W	Unspecified Tank	1963	141829
AJ	429m W	Unspecified Tank	1960	123914
AJ	429m W	Unspecified Tank	1969	143958
G	435m E	Unspecified Tank	1893	115950
G	437m E	Gasometer	1891	131372
G	437m E	Gasometer	1908	131372
G	453m E	Tanks	1953	106778
8	454m E	Unspecified Tank	1891	115956

ID	Location	Land Use	Date	Group ID
G	454m E	Unspecified Tank	1922	115957
G	456m E	Unspecified Tank	1953	145471
G	456m E	Unspecified Tank	1948	145471
G	457m E	Tanks	1950	106780
G	457m E	Unspecified Tank	1955	135178
G	457m E	Unspecified Tank	1955	135178
G	457m E	Unspecified Tank	1948	135406
G	457m E	Unspecified Tank	1953	135406
G	457m E	Unspecified Tank	1955	123253
G	462m E	Unspecified Tank	1948	141893
G	462m E	Unspecified Tank	1953	141893
G	463m E	Unspecified Tank	1955	135180
AM	472m SE	Unspecified Tank	1922	115781
AM	493m SE	Unspecified Tank	1980	122344
AM	493m SE	Unspecified Tank	1980	122344
AM	493m SE	Unspecified Tank	1985	122344
AM	493m SE	Unspecified Tank	1969	122344
AM	493m SE	Unspecified Tank	1953	122344
AM	493m SE	Unspecified Tank	1979	122344
AM	493m SE	Unspecified Tank	1963	122344
AM	493m SE	Unspecified Tank	1948	122344
AF	499m NW	Unspecified Tank	1963	133635
AF	499m NW	Unspecified Tank	1963	133635

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**110**

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 32 >**

ID	Location	Land Use	Date	Group ID
G	80m SE	Gas Works	1893	79545
G	80m SE	Gas Works	1908	79545
G	80m SE	Gas Works	1891	72601
G	82m SE	Gas Works	1922	81689
E	97m SE	Gasometer	1908	65948
E	97m SE	Gasometer	1922	65948
G	155m SE	Gas Works	1948	66529
H	160m S	Electricity Substation	1998	73868
H	160m S	Electricity Transformers	1969	83603
H	161m S	Electricity Transformers	1980	83603
H	161m S	Electricity Transformers	1980	83603
H	161m S	Electricity Transformers	1985	83603
H	172m S	Electricity Substation	1953	78830
H	172m S	Electricity Substation	1979	78830
H	172m S	Electricity Substation	1948	78830
H	174m S	Electricity Substation	1969	82938
H	174m S	Electricity Substation	1980	82938
H	174m S	Electricity Substation	1980	82938
H	174m S	Electricity Substation	1985	82938
H	174m S	Electricity Substation	1987	82938
H	174m S	Electricity Substation	1987	82938
H	174m S	Electricity Substation	1990	82938
G	186m SE	Gas Holder Station	1980	77508

ID	Location	Land Use	Date	Group ID
G	186m SE	Gas Holder Station	1980	77508
G	186m SE	Disused Gas Holder Station	1985	59539
G	215m SE	Gasometer	1948	69283
G	216m SE	Gasometer	1969	65691
G	216m SE	Gasometers	1908	65853
G	216m SE	Gasometers	1922	65853
G	217m SE	Gasometer	1893	65691
G	235m SE	Gasometer	1893	65525
G	235m SE	Gasometer	1948	65525
G	247m SE	Gasometer	1893	75823
G	247m SE	Gasometer	1891	71699
S	249m S	Electricity Substation	1998	62183
G	256m SE	Gasometer	1893	68062
G	257m SE	Gasometer	1891	67026
G	258m SE	Gasometer	1948	71445
G	258m SE	Gasometer	1969	68062
G	259m SE	Electricity Substation	1998	62182
G	260m SE	Gas Holder	1980	70318
G	260m SE	Gas Holder	1980	70318
G	260m SE	Gas Holder	1985	70318
G	265m SE	Gasometer	1893	80269
G	266m SE	Gasometer	1891	80269
G	267m E	Gasometer	1948	78274
G	277m SE	Gasometer	1891	59716
G	289m SE	Gasometer	1969	59717
G	293m SE	Gasometer	1893	71826
G	295m SE	Gasometer	1891	71826
G	296m SE	Gasometer	1948	64845

ID	Location	Land Use	Date	Group ID
W	313m NE	Electricity Substation	1979	80627
W	313m NE	Electricity Substation	1963	80627
W	313m NE	Electricity Substation	1948	80627
W	313m NE	Electricity Substation	1951	80627
W	313m NE	Electricity Substation	1973	80627
W	313m NE	Electricity Substation	1948	80627
W	314m NE	Electricity Substation	1985	80627
G	338m E	Hydraulic Power Station	1932	78003
G	343m E	Hydraulic Power Station	1951	64396
G	343m E	Hydraulic Power Station	1973	64396
G	343m E	Hydraulic Power Station	1948	64396
G	343m E	Hydraulic Power Station	1979	64692
G	343m E	Hydraulic Power Station	1948	64692
AC	352m S	Electricity Substation	1979	83591
AC	352m S	Electricity Substation	1948	83591
AE	364m NW	Electricity Substation	1979	75611
AE	364m NW	Electricity Substation	1948	75611
AE	364m NW	Electricity Substation	1995	75611
AE	364m NW	Electricity Substation	1994	75611
AE	364m NW	Electricity Substation	1995	75611
AE	364m NW	Electricity Substation	1948	75611
AE	364m NW	Electricity Substation	1981	75611
AE	364m NW	Electricity Substation	1979	75611
AE	365m NW	Electricity Substation	1986	75611
AE	365m NW	Electricity Substation	1990	75611
AF	366m NW	Electricity Substation	1979	77417
AC	367m S	Electricity Substation	1953	65840
AF	368m NW	Electricity Substation	1995	82695

ID	Location	Land Use	Date	Group ID
AF	368m NW	Electricity Substation	1979	80738
AF	372m NW	Electricity Substation	1948	80738
AF	387m NW	Electricity Substation	1948	82720
G	400m E	Electricity Substation	1985	65682
G	401m E	Electricity Substation	1996	65682
G	401m E	Electricity Substation	1995	65682
G	401m E	Electricity Substation	1994	65682
G	401m E	Electricity Substation	1999	65682
G	401m E	Electricity Substation	1951	65682
G	401m E	Electricity Substation	1988	65682
G	401m E	Electricity Substation	1973	65682
G	401m E	Electricity Substation	1948	65682
G	402m E	Electricity Substation	1979	65682
AF	403m NW	Electricity Substation	1986	67819
AF	403m NW	Electricity Substation	1990	69796
AF	407m NW	Electricity Substation	1995	83961
AF	407m NW	Electricity Substation	1994	83961
AF	407m NW	Electricity Substation	1981	80246
G	437m E	Gasometer	1891	84082
G	437m E	Gasometer	1908	84082
AJ	442m W	Electricity Substation	1995	72564
AJ	442m W	Electricity Substation	1997	72564
AJ	442m W	Electricity Substation	1995	72564
AJ	442m W	Electricity Substation	1997	72564
AL	460m SW	Electricity Substation	1997	65434
AL	460m SW	Electricity Substation	1997	65434
AF	472m NW	Electricity Substation	1995	67220
AF	472m NW	Electricity Substation	1986	67220

ID	Location	Land Use	Date	Group ID
AF	472m NW	Electricity Substation	1990	67220
AF	473m NW	Electricity Substation	1995	65816
AF	473m NW	Electricity Substation	1994	65816

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	**60**

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 32 >**

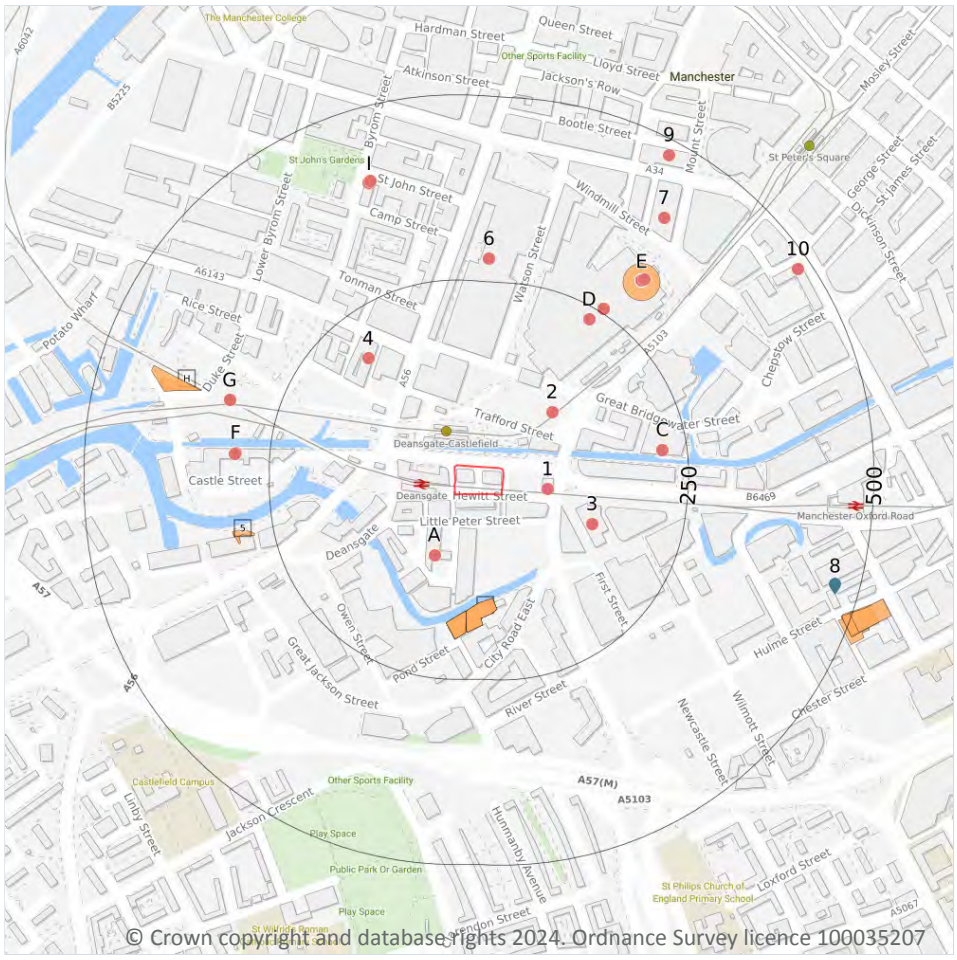
ID	Location	Land Use	Date	Group ID
A	8m W	Garage	1963	26858
A	8m W	Garage	1979	26858
A	8m W	Garage	1963	26858
A	8m W	Garage	1981	26858
A	8m W	Garage	1979	26858
A	9m W	Garage	1986	26912
A	9m W	Garage	1990	26912
A	45m W	Garage	1963	25290
A	46m W	Garage	1960	25290
A	46m W	Garage	1969	25290

ID	Location	Land Use	Date	Group ID
E	97m SE	Garage	1979	24802
E	97m SE	Garage	1963	24802
E	97m SE	Garage	1953	24802
N	172m NW	Garage	1995	24725
N	172m NW	Garage	1994	24725
N	172m NW	Garage	1995	20992
N	172m NW	Garage	1981	24287
N	173m NW	Garage	1986	24287
N	173m NW	Garage	1990	24287
O	177m SW	Garage	1980	25490
O	177m SW	Garage	1980	25490
O	180m SW	Garage	1969	22918
P	213m E	Garage	1973	20296
T	215m SW	Garage	1980	25615
T	215m SW	Garage	1980	25615
T	215m SW	Garage	1990	25615
T	219m SW	Garage	1995	27082
T	219m SW	Garage	1997	27082
T	219m SW	Garage	1995	27082
T	219m SW	Garage	1997	27082
4	253m NW	Garage	1981	20294
X	292m S	Garage	1963	24336
X	293m S	Garage	1979	22408
X	302m S	Garage	1960	24336
X	302m S	Garage	1959	21005
AA	303m SW	Garage	1980	21660
AA	304m SW	Garage	1980	24581
AA	304m SW	Garage	1990	24581

ID	Location	Land Use	Date	Group ID
AA	304m SW	Garage	1979	23209
AA	304m SW	Garage	1963	21028
AA	304m SW	Garage	1995	24964
AA	304m SW	Garage	1997	24964
AA	304m SW	Garage	1995	24964
AA	304m SW	Garage	1997	24964
AA	305m SW	Garage	1960	25973
AA	305m SW	Garage	1969	25973
Y	306m NW	Garage	1981	26958
Y	306m NW	Garage	1986	26958
Y	307m NW	Garage	1963	21869
Y	314m NW	Garage	1963	21949
AA	318m SW	Garage	1959	23792
Y	344m NW	Garage	1981	20293
Y	382m W	Garage	1963	25923
Y	383m W	Garage	1963	25923
Y	383m W	Garage	1981	25923
Y	384m W	Garage	1986	21682
AF	414m NW	Garage	1981	24611
AF	414m NW	Garage	1986	24611
AF	414m NW	Garage	1990	24611
10	479m N	Garage	1948	20292

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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 59 >**

ID	Location	Address	Further Details	Date
B	140m 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	140m 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	140m 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	157m 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	1968
B	157m 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	1997
B	157m 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	1995
B	157m 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	1995
5	276m 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
E	289m 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
H	357m 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	1979
H	357m 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	485m 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	1932
J	487m 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	1953
J	488m 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	1932
J	488m 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	1953
J	496m 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 59 >**

ID	Location	Details		
8	467m 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 59 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	61m E	Axis Tower, Albion Street, Manchester, M1 5nz	WEX074989	Using waste exemption	Not on a farm	Use of waste in construction
A	88m SW	1, Alpha Place, Manchester, M15 4pp	WEX017965	Storing waste exemption	Not on a farm	Storage of waste in secure containers
A	88m SW	1, Alpha Place, Manchester, M15 4pp	WEX017965	Storing waste exemption	Not on a farm	Storage of waste in a secure place
2	102m NE	Axis Tower, Albion Street, Manchester, M1 5nz	WEX220537	Using waste exemption	Not on a farm	Use of waste in construction
3	129m E	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
4	187m NW	6, Southern Street, Manchester, M3 4nj	WEX384675	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	217m 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

ID	Location	Site	Reference	Category	Sub-Category	Description
C	217m 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
C	217m E	Eversheds House 70 Great Bridgewater Street Manchester M1 5es	EPR/QE5657AK/A001	Using waste exemption	Non-agricultural waste only	Use of mulch
D	233m NE	-	WEX346897	Treating waste exemption	Not on a farm	Screening and blending of waste
D	233m NE	-	WEX346897	Treating waste exemption	Not on a farm	Recovery of scrap metal
D	233m NE	-	WEX346897	Treating waste exemption	Not on a farm	Sorting mixed waste
D	233m NE	-	WEX346897	Treating waste exemption	Not on a farm	Treatment of waste food
D	233m NE	-	WEX346897	Treating waste exemption	Not on a farm	Treatment of kitchen waste in a wormery
D	233m NE	-	WEX346897	Using waste exemption	Not on a farm	Use of waste in construction
D	233m NE	-	WEX346897	Using waste exemption	Not on a farm	Use of waste in the construction of entertainment or educational installations etc
D	233m NE	-	WEX346897	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
D	233m NE	-	WEX346897	Storing waste exemption	Not on a farm	Storage of waste in secure containers
D	233m NE	-	WEX346897	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX217816	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX063339	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Using waste exemption	Not on a farm	Use of waste in construction
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Storing waste exemption	Not on a farm	Storage of waste in a secure place

ID	Location	Site	Reference	Category	Sub-Category	Description
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Storing waste exemption	Not on a farm	Storage of waste in secure containers
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
D	255m 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	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Sorting mixed waste
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Manual treatment of waste
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Treatment of waste food
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Treatment of kitchen waste in a wormery
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Screening and blending of waste
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Recovery of scrap metal
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Storing waste exemption	Not on a farm	Storage of waste in secure containers
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX075609	Using waste exemption	Not on a farm	Use of waste in construction
D	255m 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	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Treatment of kitchen waste in a wormery
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Treatment of waste food
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Manual treatment of waste

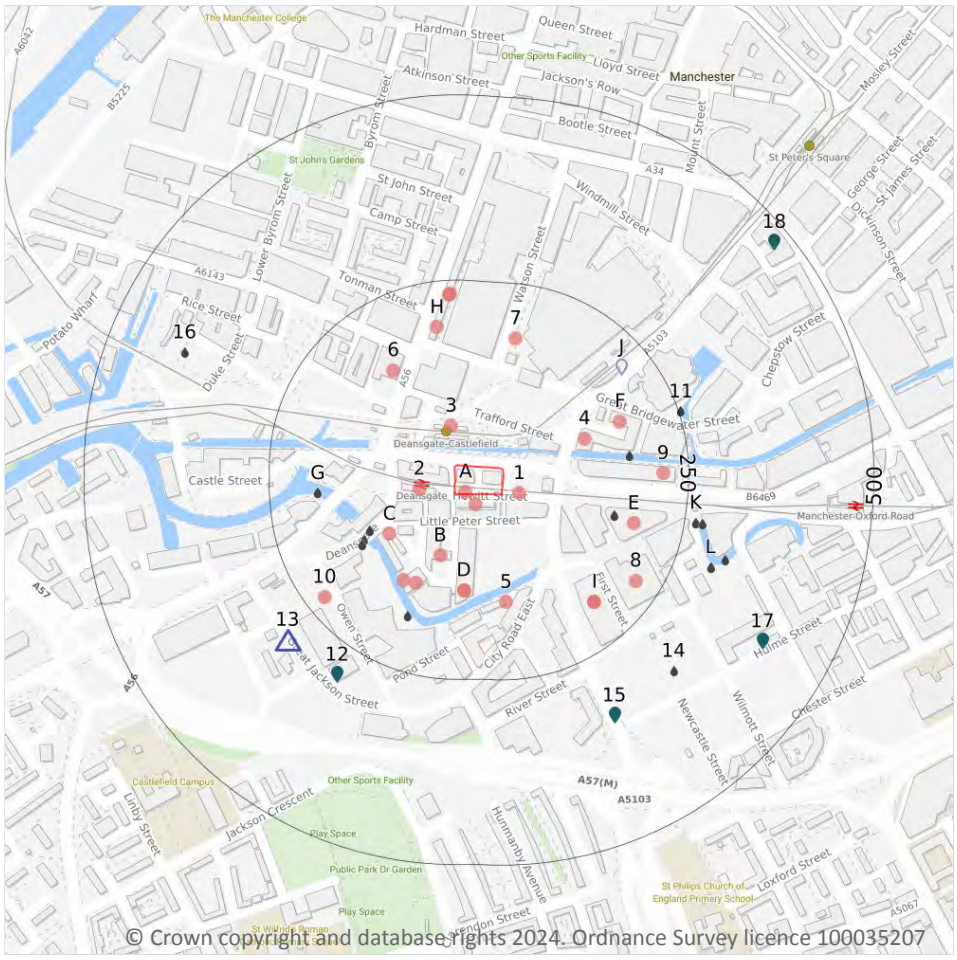
ID	Location	Site	Reference	Category	Sub-Category	Description
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Sorting mixed waste
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Recovery of scrap metal
D	255m NE	Windmill Street, Manchester, M2 3gx	WEX220776	Treating waste exemption	Not on a farm	Screening and blending of waste
6	281m 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
F	296m 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	297m 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	297m 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
E	316m NE	-	WEX210229	Storing waste exemption	Not on a farm	Storage of waste in a secure place
E	316m 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	316m 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	316m 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)

ID	Location	Site	Reference	Category	Sub-Category	Description
E	316m 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	316m 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	316m 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	316m 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
E	316m 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	316m 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	316m 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	316m 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
G	317m W	-	WEX347217	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
G	317m W	-	WEX347217	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment
E	319m 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

ID	Location	Site	Reference	Category	Sub-Category	Description
I	398m N	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	399m N	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	399m N	98, Harley Street, London, W1g 7hz	WEX099367	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
I	401m N	25 St John Street M34dt	EPR/FE5081QV/A001	Treating waste exemption	Non-agricultural waste only	Sorting and de-naturing of controlled drugs for disposal
7	403m NE	Windmill Green, 24 Mount Street, Manchester, M2 3nn	WEX105155	Using waste exemption	Not on a farm	Use of waste in construction
9	479m NE	Brazennose House M2 5pb	EPR/ZE5544KA/A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in a secure place
10	482m 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

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

4.1 Recent industrial land uses

Records within 250m	25

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on page 69 >

ID	Location	Company	Address	Activity	Category
A	**On site**	**G T Autos**	**Arch 88, Hewitt Street, Manchester, Greater Manchester, M15 4GB**	**Vehicle Repair, Testing and Servicing**	**Repair and Servicing**
A	14m S	Integra Consulting	14-32, Hewitt Street, Manchester, Greater Manchester, M15 4GB	Structural Engineers	Engineering Services
1	24m E	Mancoco	84, Hewitt Street, Manchester, Greater Manchester, M15 4GB	Food and Beverage Industry Machinery	Industrial Products

ID	Location	Company	Address	Activity	Category
2	48m W	Deansgate Rail Station	Greater Manchester, M15	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
3	54m NW	Deansgate-Castlefield (Mancheste r Metrolink)	Greater Manchester, M1	Tram, Metro and Light Railway Stations and Stops	Public Transport, Stations and Infrastructure
B	85m SW	Zerum	4, Jordan Street, Manchester, Greater Manchester, M15 4PY	Civil Engineers	Engineering Services
C	104m SW	Hulley & Kirkwood	2, Commercial Street, Manchester, Greater Manchester, M15 4RQ	Civil Engineers	Engineering Services
4	118m E	My P C Fix	Albion Wharf 19, Albion Street, Manchester, Greater Manchester, M1 5LN	Electrical Equipment Repair and Servicing	Repair and Servicing
D	130m S	Pest Control Manchester	14, Commercial Street, Manchester, Greater Manchester, M15 4PZ	Pest and Vermin Control	Contract Services
D	130m S	Adeptus Consulting	14, Commercial Street, Manchester, Greater Manchester, M15 4PZ	Car Ports and Steel Buildings	Industrial Products
B	131m SW	R O C Consulting	Commercial Wharf, 6, Commercial Street, Manchester, Greater Manchester, M15 4PZ	Industrial Engineers	Engineering Services
B	136m SW	Commercial Wharf	Greater Manchester, M15	Moorings and Unloading Facilities	Water
5	145m S	Electricity Sub Station	Greater Manchester, M15	Electrical Features	Infrastructure and Facilities
6	154m NW	Handpicked Accountants	340, Deansgate, Manchester, Greater Manchester, M3 4LY	Published Goods	Industrial Products
F	171m NE	Electricity Sub Station	Greater Manchester, M1	Electrical Features	Infrastructure and Facilities
7	176m N	Duffy Motors Manchester Ltd	Arch 16-17, Watson Street, Manchester, Greater Manchester, M3 4LP	Vehicle Repair, Testing and Servicing	Repair and Servicing
E	183m E	Corner House Publications	2, Tony Wilson Place, Manchester, Greater Manchester, M15 4FN	Distribution and Haulage	Transport, Storage and Delivery
H	188m N	Feather & Black Ltd	289-291, Deansgate, Manchester, Greater Manchester, M3 4EW	Beds and Bedding	Consumer Products
I	192m SE	W S P	8, First Street, Manchester, Greater Manchester, M15 4RP	Civil Engineers	Engineering Services

ID	Location	Company	Address	Activity	Category
I	192m SE	Gazprom Marketing & Energy	8, First Street, Manchester, Greater Manchester, M15 4RP	Fuel Distributors and Suppliers	Household, Office, Leisure and Garden
8	215m SE	Autotrader	Fourth Floor 1, Tony Wilson Place, Manchester, Greater Manchester, M15 4FN	Secondhand Vehicles	Motoring
9	215m E	Curtins	17-19, Whitworth Street West, Manchester, Greater Manchester, M1 5WG	Structural Engineers	Engineering Services
10	225m SW	Electricity Sub Station	Greater Manchester, M15	Electrical Features	Infrastructure and Facilities
H	231m N	Isovitality Nutriceuticals Ltd	275, Deansgate, Manchester, Greater Manchester, M3 4EL	Catering and Non Specific Food Products	Foodstuffs
H	231m N	Natural Flooring Solutions	275, Deansgate, Manchester, Greater Manchester, M3 4EL	Construction Completion Services	Construction Services

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 69 >**

ID	Location	Company	Address	LPG	Status
13	300m 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 69 >**

ID	Location	Details	
J	212m 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: 23/11/2023 Status: Effective
J	212m 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: 23/11/2023 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 69 >**

ID	Location	Address	Details	
12	291m 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
15	334m SE	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
17	404m 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	478m 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	**24**

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 69 >**

ID	Location	Address	Details	
C	125m SW	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

ID	Location	Address	Details	
C	125m SW	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
C	138m SW	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: -
C	143m SW	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
C	143m SW	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
E	154m 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
E	154m 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
F	170m 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

ID	Location	Address	Details	
B	177m 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
G	184m 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
G	184m 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
G	184m 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
G	184m 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
G	184m 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

ID	Location	Address	Details	
11	252m E	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
K	265m 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
K	265m 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
K	274m 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: -
L	298m E	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
L	298m E	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
L	298m 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: 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	
L	314m 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
14	332m 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: -
16	396m NW	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

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	0

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

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.

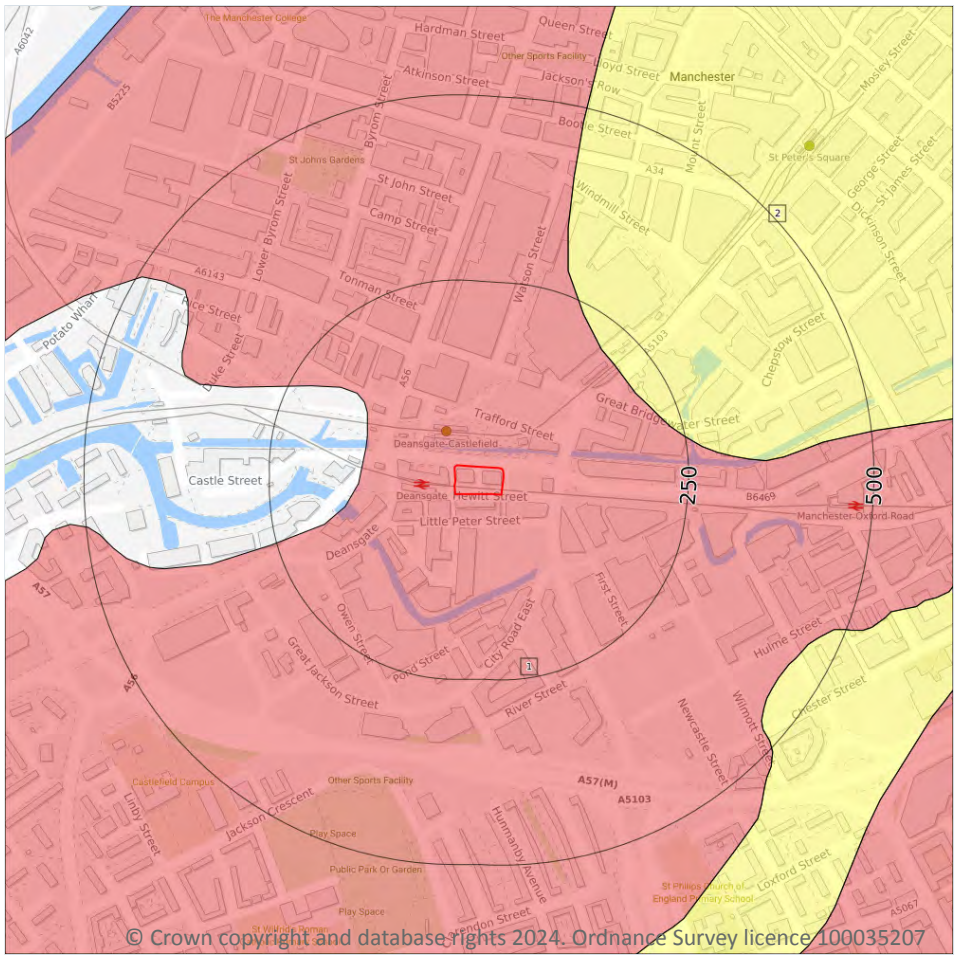
4.21 Pollution inventory radioactive waste

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



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5.1 Superficial aquifer

Records within 500m	2

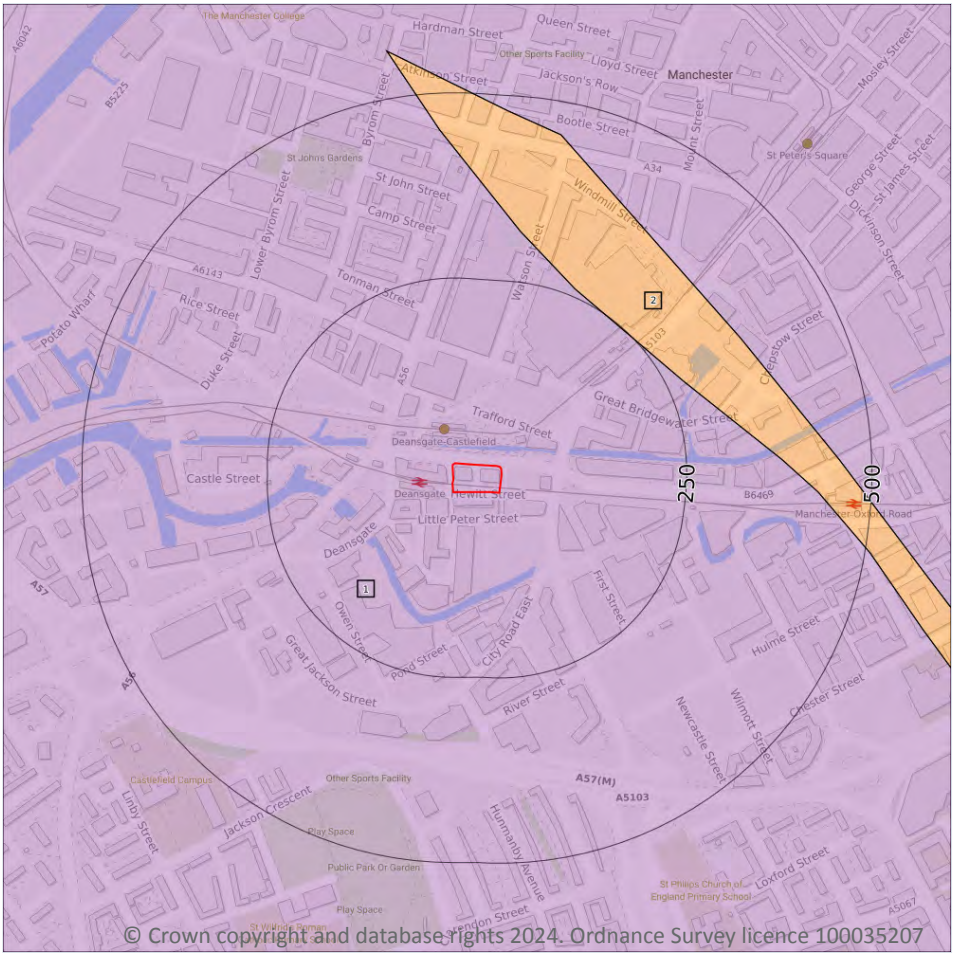
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 80 >**

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	206m 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

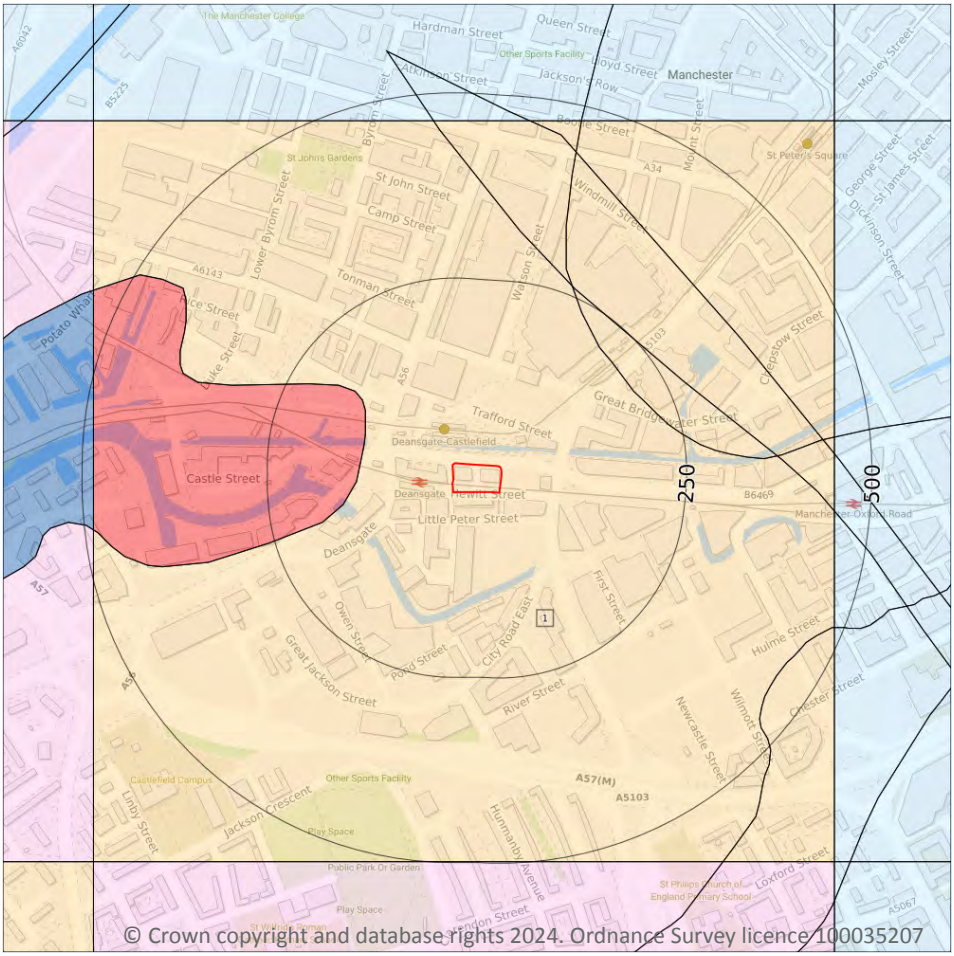
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 82 >**

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	249m 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



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

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 84 >**

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.

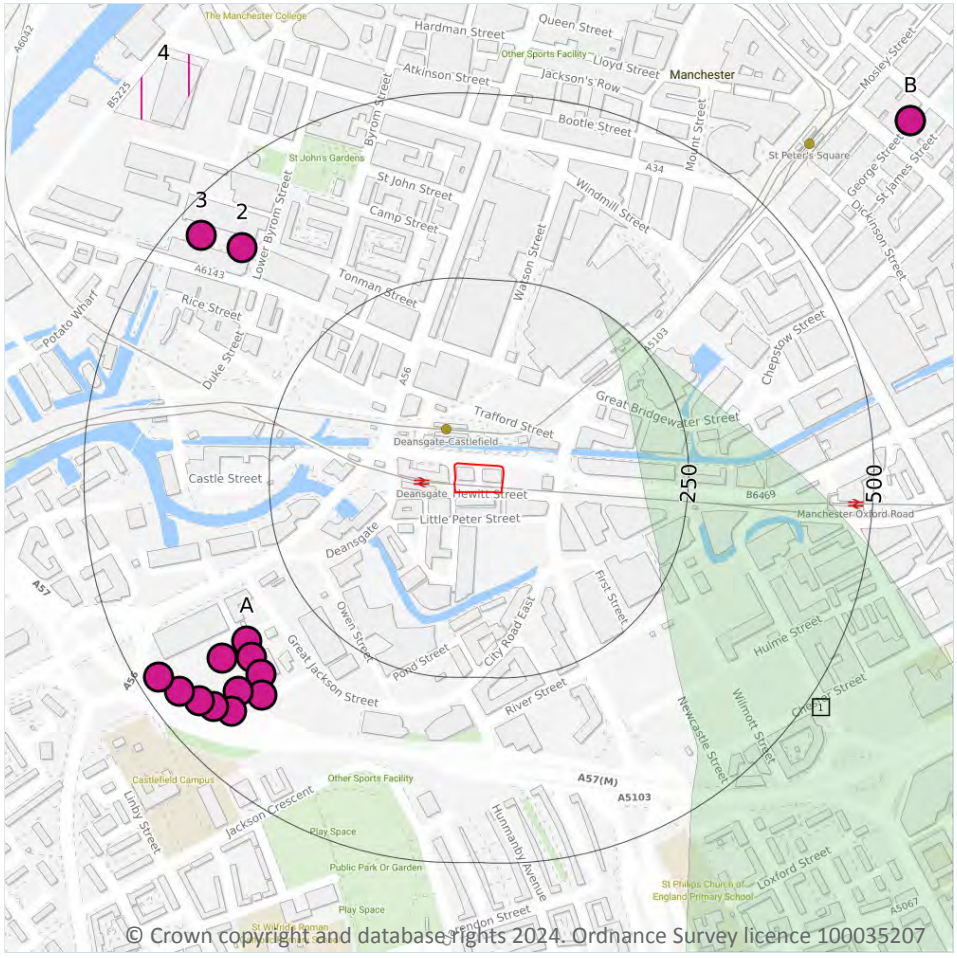
5.5 Groundwater vulnerability- local information

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



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	61

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 86 >**

ID	Location	Details	
A	345m 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: -
A	353m 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: -
A	359m 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: -
A	378m 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	
A	386m 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: -
A	397m 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: -
2	410m 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: -
A	422m 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	436m 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: -
A	445m 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: -
A	459m 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: -
3	461m 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	
A	472m 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: -
4	594m 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: -
-	662m N	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: -
B	722m 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: -

ID	Location	Details	
B	722m 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: -
-	752m 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: -
-	752m 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: -
-	767m 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: -

ID	Location	Details	
-	770m 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: -
-	770m 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: -
-	852m 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: -
-	852m 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: -

ID	Location	Details	
-	1176m 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: -
-	1176m 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: -
-	1176m 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: -
-	1519m 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: -

ID	Location	Details	
-	1519m 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: -
-	1620m 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: -
-	1620m 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: -
-	1636m 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: -

ID	Location	Details	
-	1636m 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: -
-	1636m 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: -
-	1636m 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: -
-	1636m 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: -

ID	Location	Details	
-	1636m 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: -
-	1670m 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: -
-	1670m 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: -
-	1670m 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: -

ID	Location	Details	
-	1670m 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: -
-	1678m 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: -
-	1678m 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: -
-	1678m 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	
-	1678m 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: -
-	1678m 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: -
-	1678m 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: -
-	1689m 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	
-	1689m 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: -
-	1710m 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: -
-	1710m 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: -
-	1710m 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	
-	1710m 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: -
-	1710m 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: -
-	1710m 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: -
-	1743m 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: -

ID	Location	Details	
-	1743m 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: -
-	1743m 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: -
-	1743m 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: -
-	1743m 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: -

ID	Location	Details	
-	1743m 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 86 >**

ID	Location	Details	
-	990m 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: -
-	990m 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 86 >**

ID	Location	Details	
-	1678m 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: -
-	1678m 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: -
-	1678m 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: -

ID	Location	Details	
-	1710m 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: -
-	1710m 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: -
-	1710m 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: -
-	1743m 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: -

ID	Location	Details	
-	1743m 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: -
-	1743m 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 86 >**

ID	Location	Type	Description
1	182m E	3	Total catchment

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

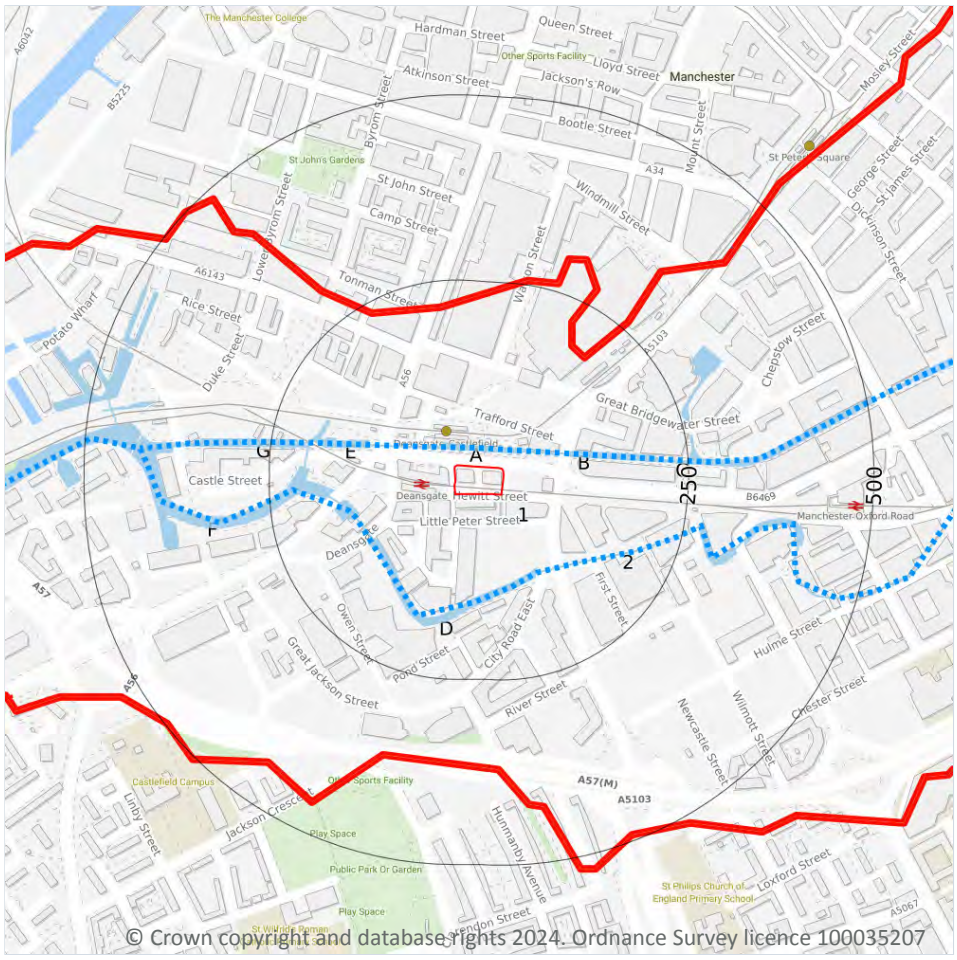
5.10 Source Protection Zones (confined aquifer)

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	21

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 106 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	24m NW	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
B	24m NE	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
A	25m N	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
A	26m NW	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
A	26m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	52m NW	Canal. A manmade watercourse for inland navigation.	Underground	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
D	114m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
2	115m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
E	119m W	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
E	126m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
E	137m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
E	155m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	River Medlock
E	170m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock
E	181m W	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	189m W	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
E	199m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Bridgewater Canal
G	199m W	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
E	203m W	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Bridgewater Canal
F	208m W	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Bridgewater Canal
C	217m 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	242m E	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	7

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 106 >**

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 106 >**

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 106 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
B	24m NW	Canal	Rochdale Canal, western section	GB71210517 ↗	Moderate	Fail	Moderate	2019
3	116m SE	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**

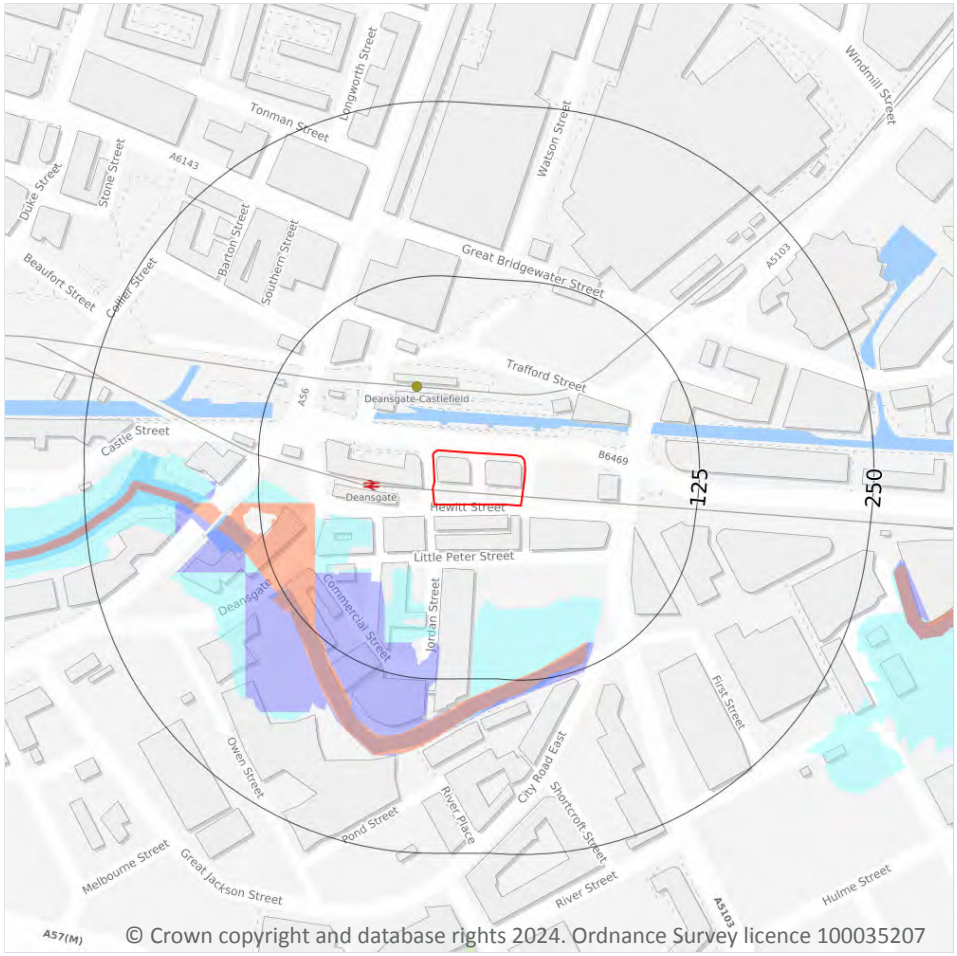
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 106 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**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



Site Outline

Search buffers in metres (m)

River and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

7.1 Risk of flooding from rivers and the sea

Records within 50m	2

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).

Features are displayed on the River and coastal flooding map on **page 111 >**

Distance	Flood risk category
On site	**N/A**
0 - 50m	Low

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.

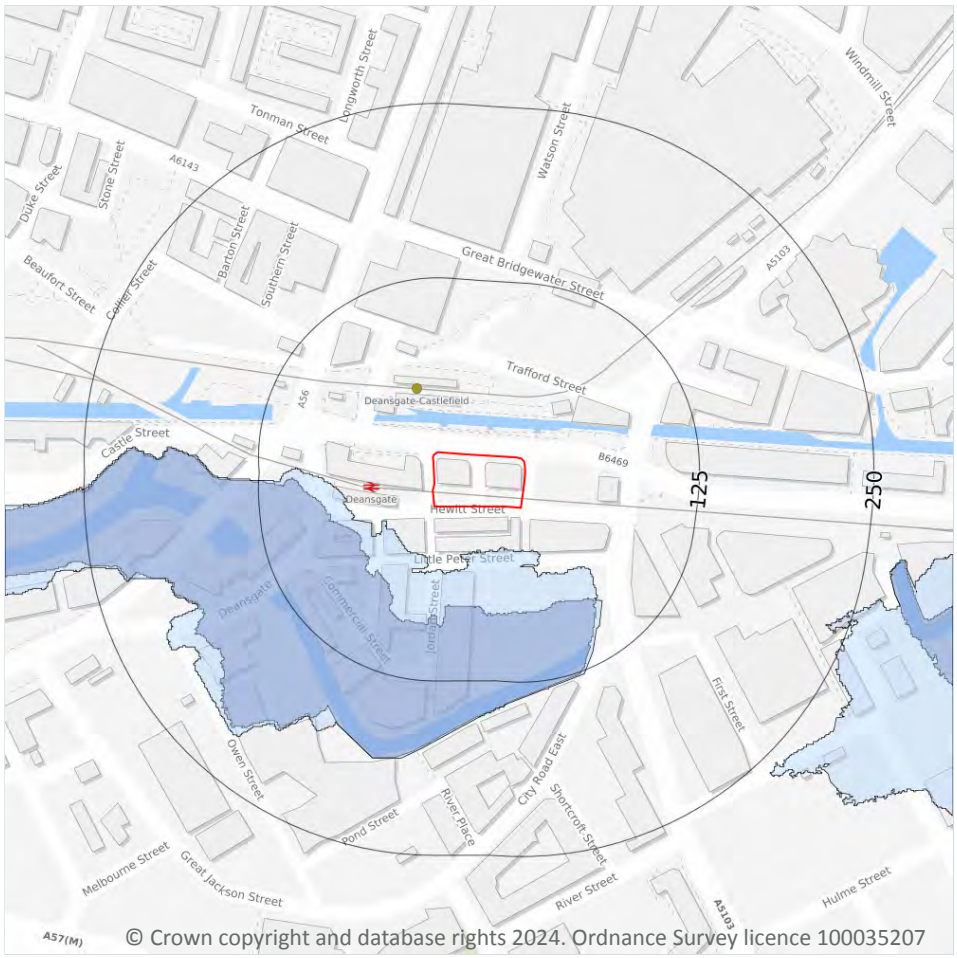
7.5 Flood Storage Areas

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



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

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 111 >**

Location	Type
29m S	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 1000 year, Greater than 1.0m**

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 115 >**

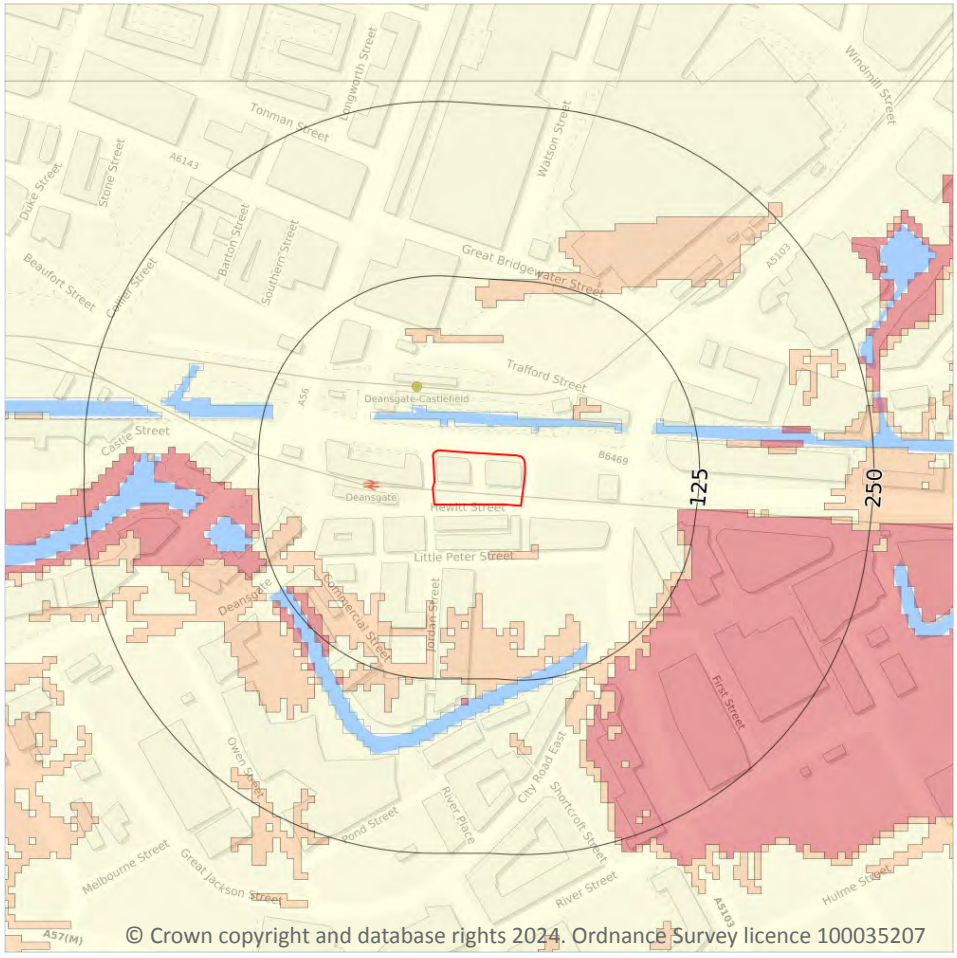
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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 117 >**

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
1148m NE	River Irk (Moston Brook to River Irwell) NVZ	Surface Water	638	Existing
1166m NW	Irwell / Man. Ship Canal (Kearsley to Irlam Locks) NVZ	Surface Water	643	Existing
1179m NE	River Irk (Moston Brook to River Irwell) NVZ	Surface Water	638	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 122 >**

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.

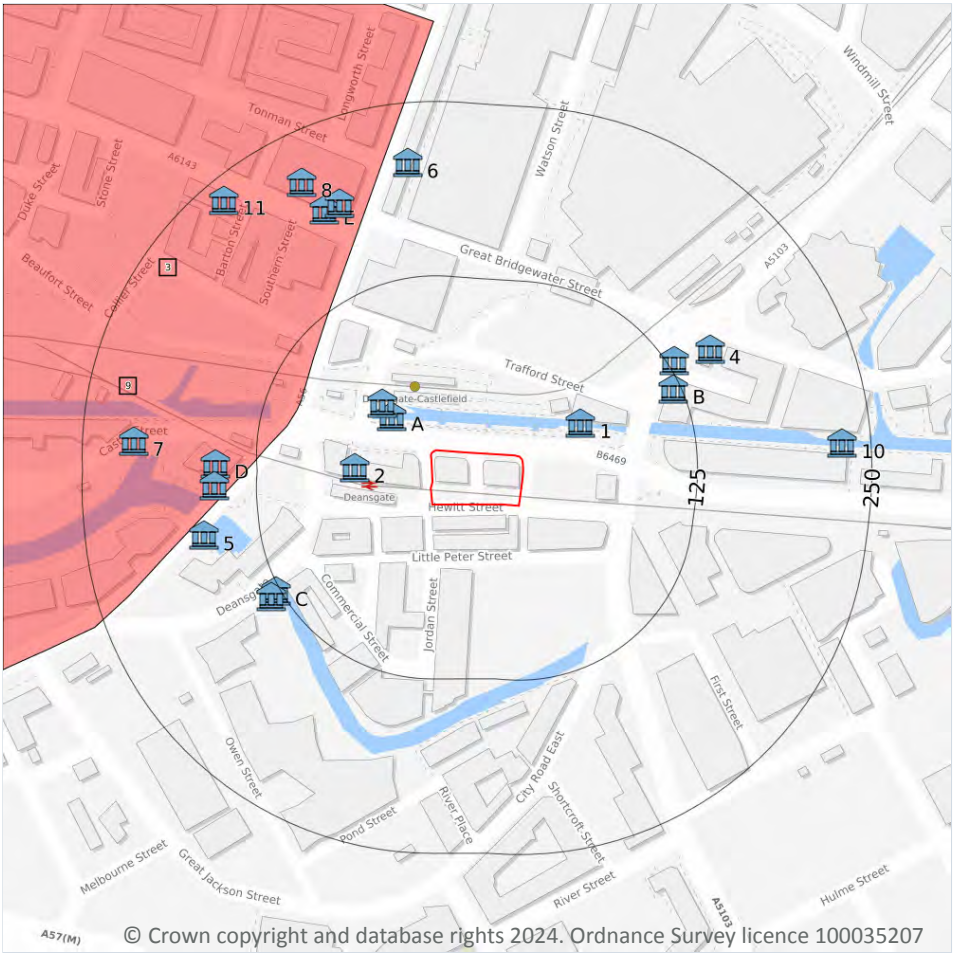
10.18 SSSI Units

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	19

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 124 >**

ID	Location	Name	Grade	Reference Number	Listed date
A	39m NW	Rochdale Canal Lock Number 91 At East End Of Gaythorn Tunnel	II	1247483	29/01/1986
1	49m NE	Rochdale Canal Lock Number 90, Approximately 30 Metres West Of Albion Bridge	II	1247482	06/06/1994
A	50m NW	Rochdale Canal Lock Keepers Cottage At Lock Number 91, Next To Gaythorn Tunnel	II	1247597	29/01/1986
2	55m W	Deansgate Station	II	1376146	20/08/1998

ID	Location	Name	Grade	Reference Number	Listed date
B	120m NE	13-17, Albion Street	II	1279694	03/10/1974
C	128m SW	Boundary Stone On Knott Mill Bridge	II	1282975	06/06/1994
B	130m NE	Manchester South Junction And Altrincham Railway Viaduct	II	1200837	06/06/1994
C	133m SW	Floodgate On East Side Of Knott Mill Bridge	II	1210156	06/06/1994
D	155m W	Former Congregational Chapel	II	1292311	20/06/1988
D	155m W	Electricity Junction Box In Castlefield Canal Basin, Manchester	II	1475255	29/09/2021
4	156m NE	The Britons Protection Ph The Britons Protection Public House	II	1292050	16/03/1990
5	165m W	Electricity Junction Box In Castlefield Canal Basin, Manchester	II	1475459	29/09/2021
E	190m NW	K6 Telephone Kiosk Beside South West Corner Of Number 330 Deansgate	II	1219441	29/10/1987
E	190m NW	Castlefield Information Centre	II	1200853	17/05/1974
6	207m N	235-291, Deansgate	II	1210103	28/02/1989
7	213m W	Electricity Junction Box On Castle Street, Manchester	II	1475254	29/09/2021
8	215m NW	Former Market Hall	II	1197915	17/05/1974
10	230m E	Rochdale Canal Lock Number 89 (Tib Lock), On South Side Of Havelock Mills	II	1247596	06/06/1994
11	235m NW	29-41, Liverpool Road	II	1219402	06/06/1994

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 124 >**

ID	Location	Name	District	Date of designation
3	101m NW	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	1

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.

Features are displayed on the Visual and cultural designations map on **page 124 >**

ID	Location	Ancient monument name	Reference number
9	220m W	Remains of eastern wall of the Roman fort	1001953

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



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 128 >**

ID	Location	Classification	Description
1	**On site**	**Urban**	-

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



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Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	1

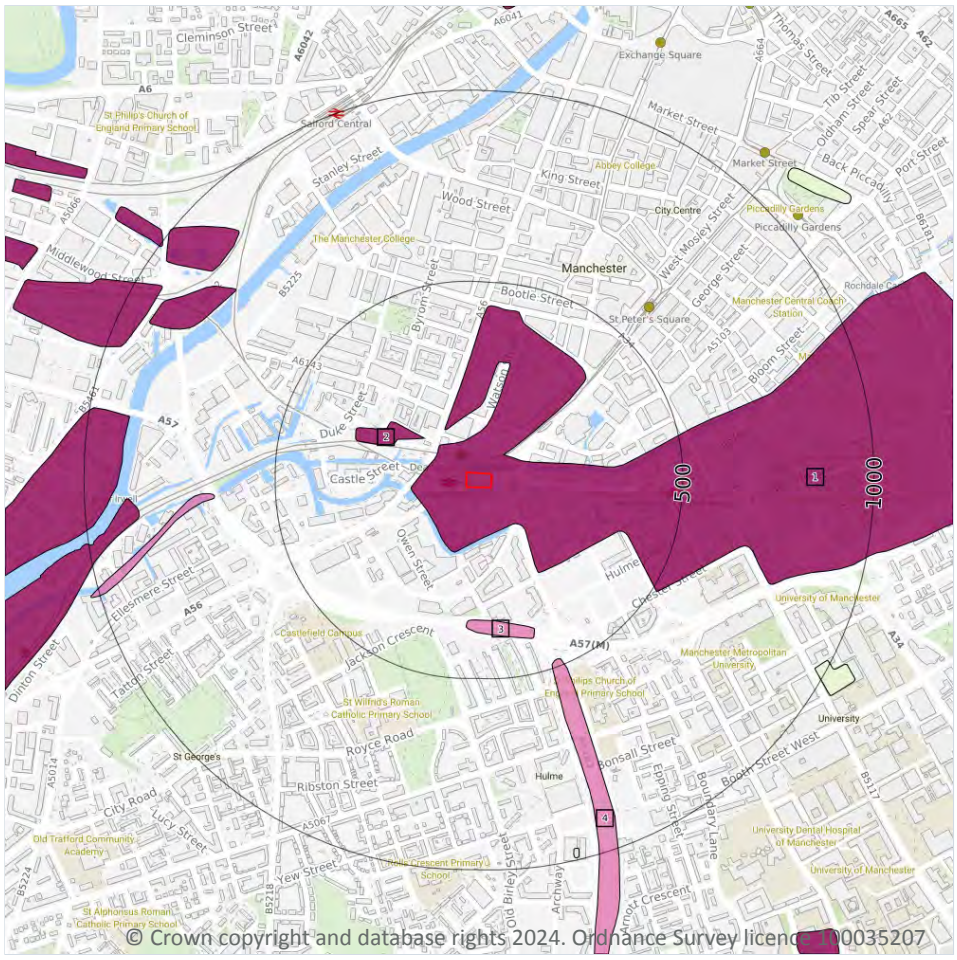
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 131 >**

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



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14.2 Artificial and made ground (10k)

Records within 500m	4

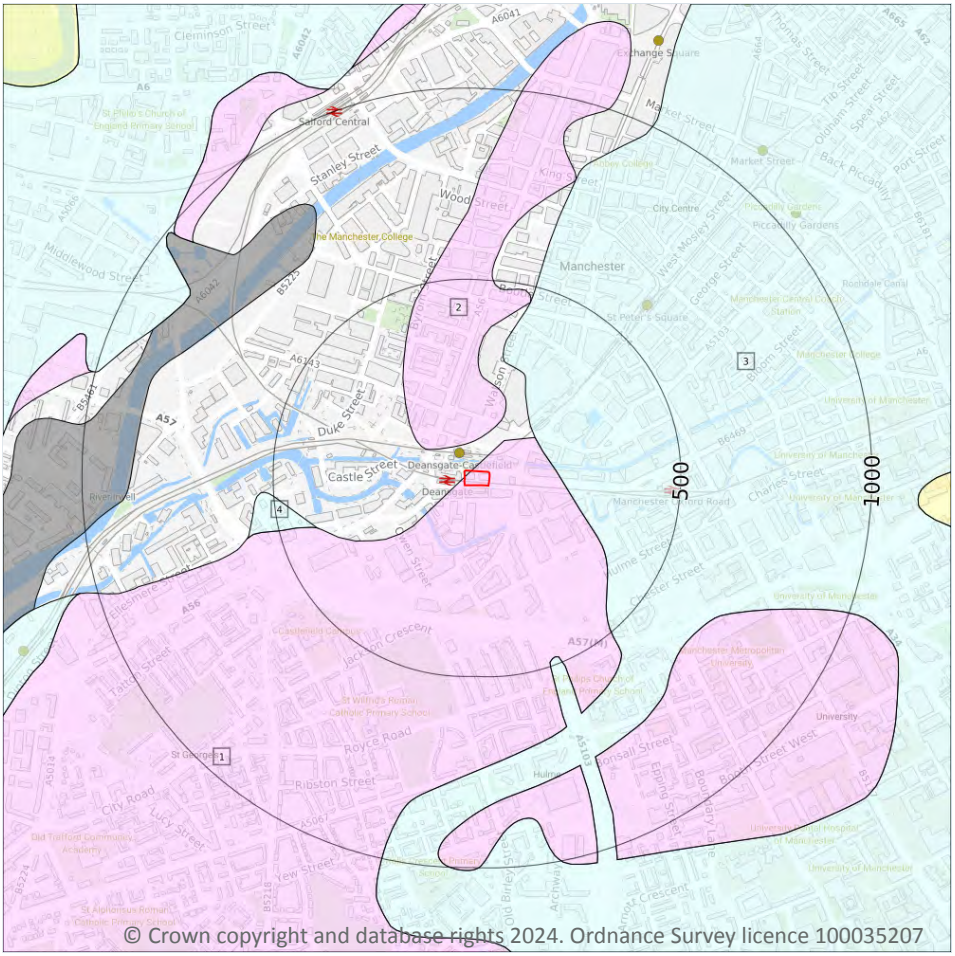
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 132 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**
2	143m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	347m S	WGR-VOID	Worked Ground (Undivided)	Void
4	481m SE	WGR-VOID	Worked Ground (Undivided)	Void

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



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 134 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFSDD-XSV**	**Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel**	**Sand And Gravel**
2	67m NW	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
3	150m NE	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
4	402m W	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton

This data is sourced from the British Geological Survey.

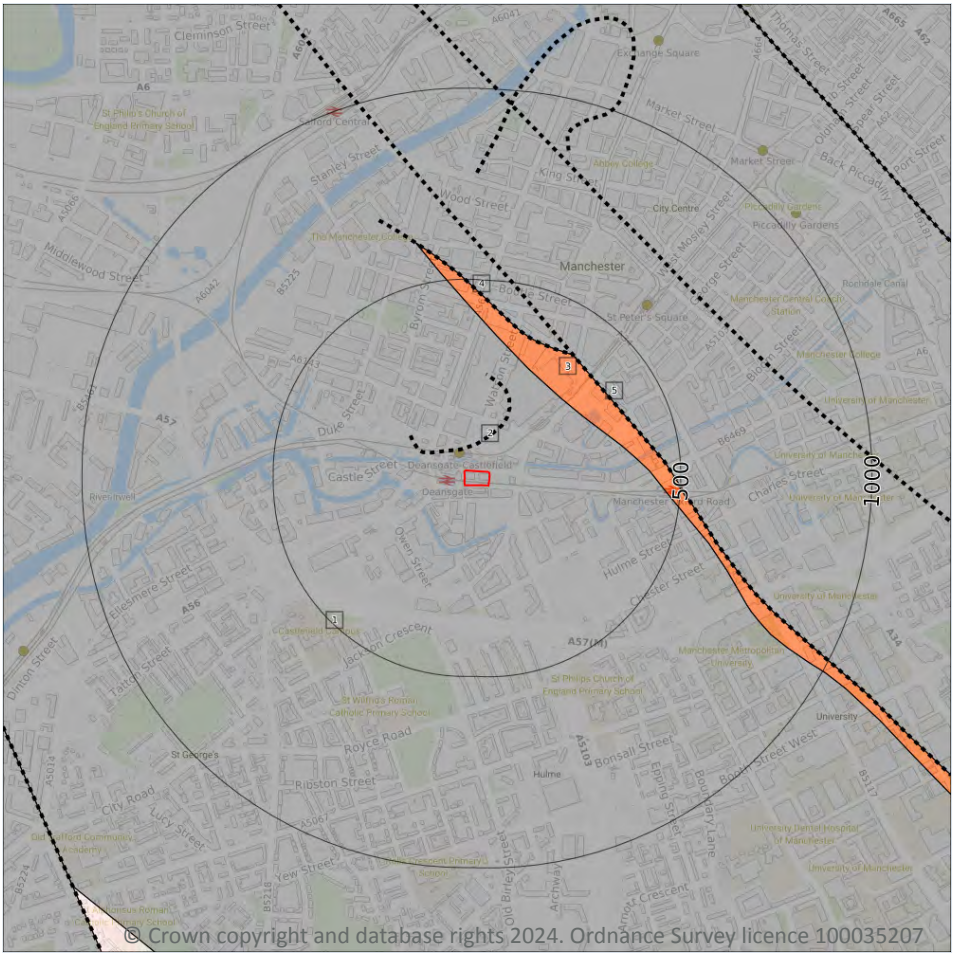
14.4 Landslip (10k)

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



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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 136 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CPB-SDST**	**Chester Pebble Beds Formation - Sandstone**	**Early Triassic Epoch**
3	270m 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 136 >**

ID	Location	Category	Description
2	56m NW	LANDFORM	Buried channel or valley margin
4	364m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
5	367m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



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Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

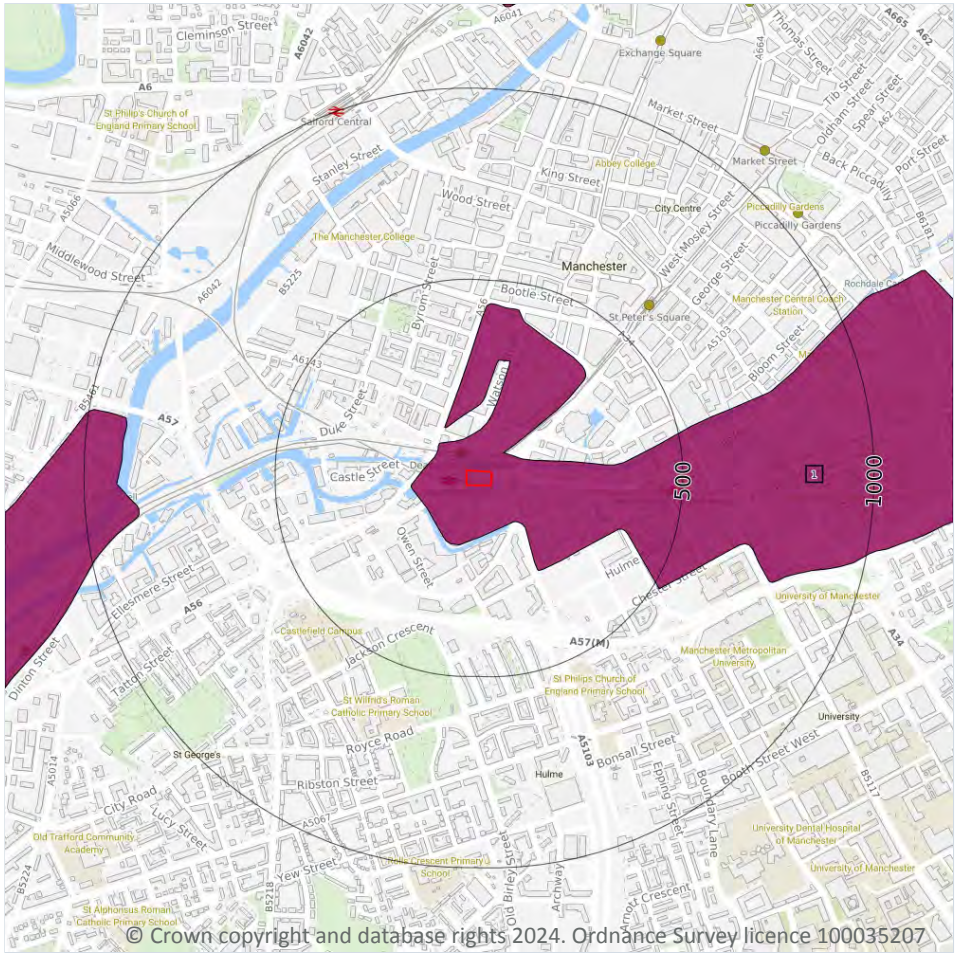
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 138 >**

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 139 >**

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)

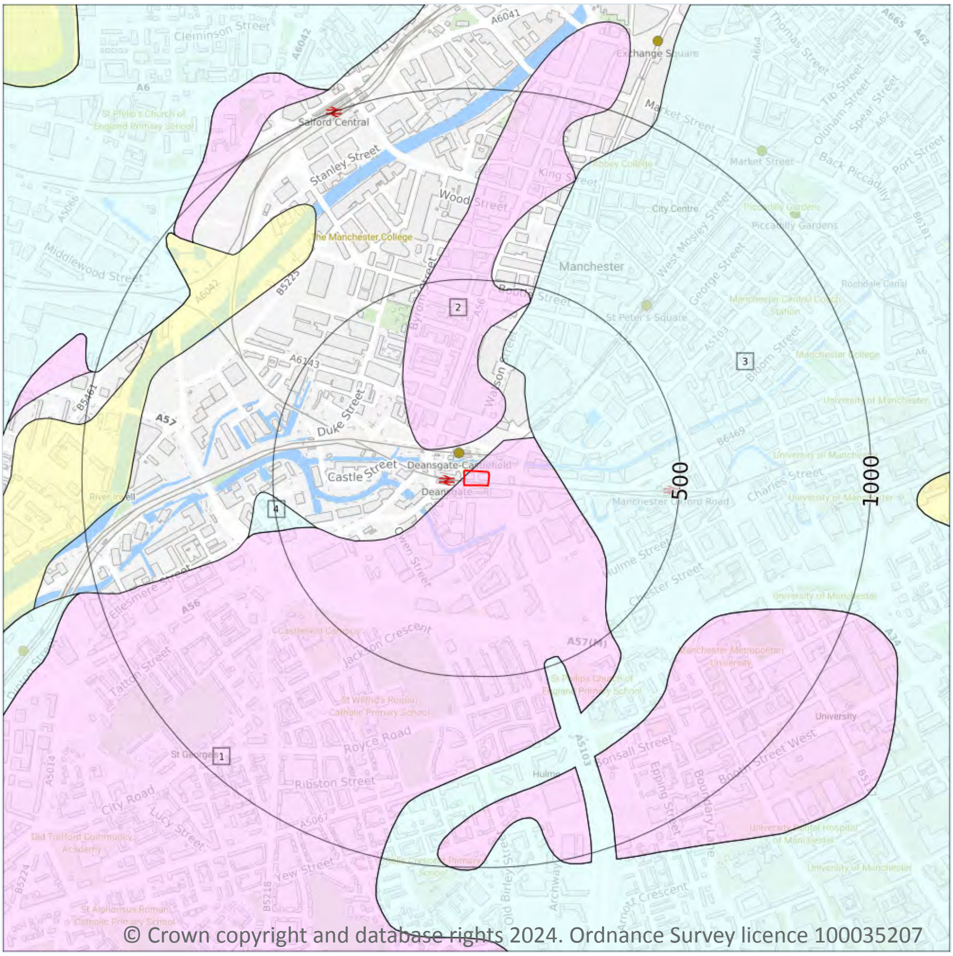
Records within 50m	1

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 141 >

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFSDD-XSV**	**GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN**	**SAND AND GRAVEL**
2	67m NW	GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN	SAND AND GRAVEL
3	149m NE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
4	402m 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.

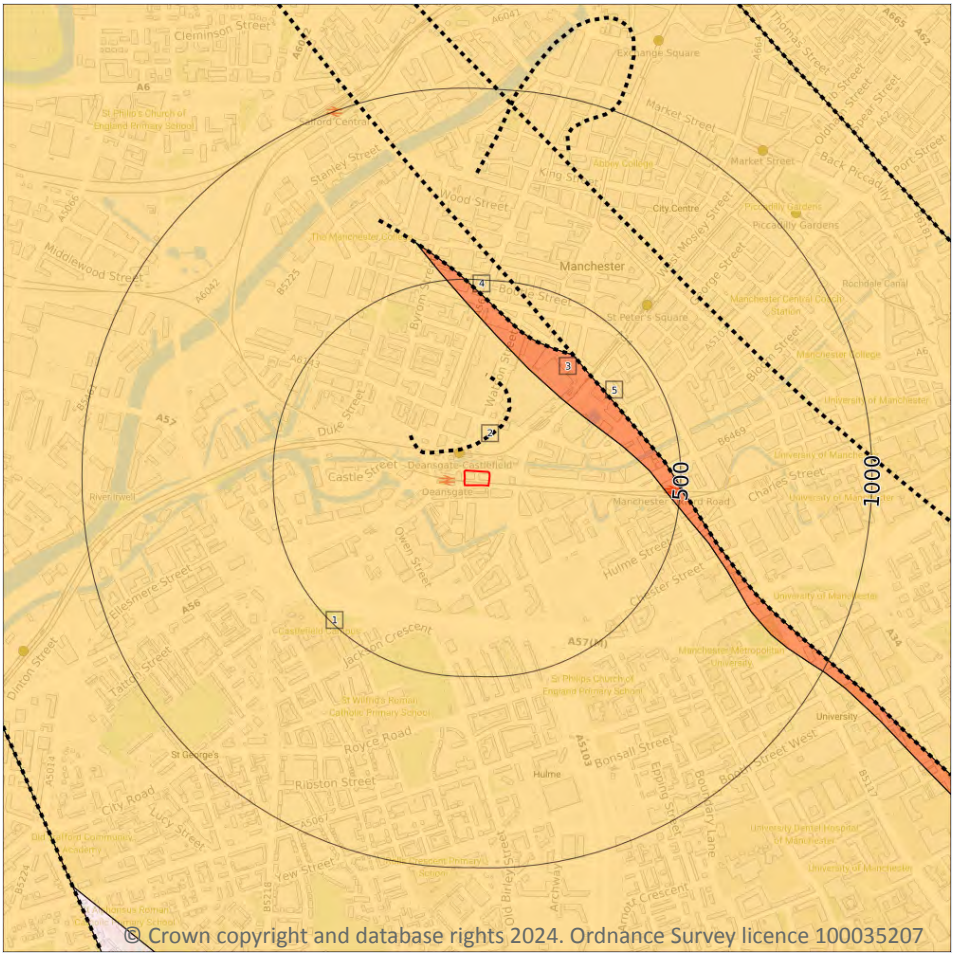
15.7 Landslip permeability (50k)

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



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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 143 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CHES-SDST**	**CHESTER FORMATION - SANDSTONE**	**OLENEKIAN**
3	270m 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**

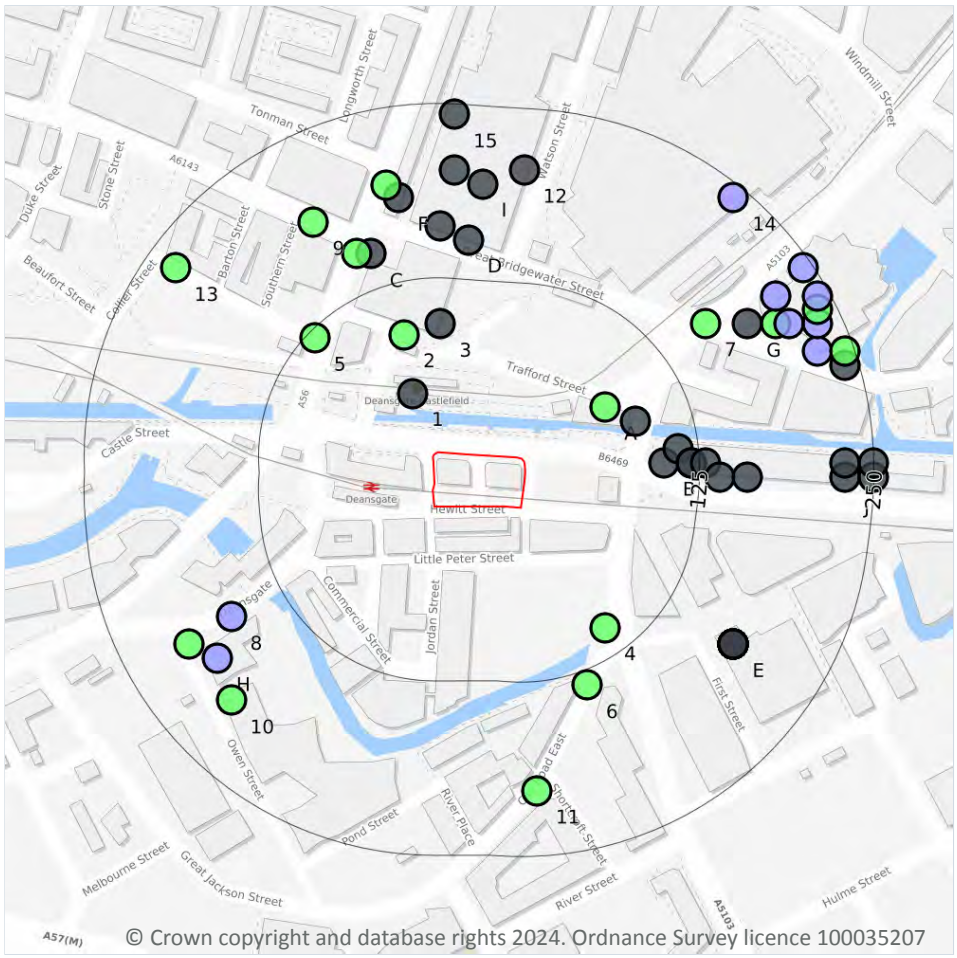
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

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

ID	Location	Category	Description
2	56m NW	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley
4	363m NE	FAULT	Fault, inferred
5	367m NE	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



16.1 BGS Boreholes

Records within 250m	73

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 145 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	46m NW	383470 397580	FESTIVAL MARKETPLACE 3/1	-	Y	N/A
A	70m NE	383608 397570	MANCHESTER CORP. B.SEWER	14.02	N	1042261 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	85m E	383630 397560	GREAT BRIDGEWATER STREET 1	-	Y	N/A
2	88m NW	383464 397622	MANCHESTER CORP. B.SEWER	12.5	N	1042262 ↗
3	92m N	383490 397630	FESTIVAL MARKETPLACE 3/2	-	Y	N/A
B	100m E	383650 397530	HACIENDA SITE WHITWORTH STREET MANCHESTER WS01	-	Y	N/A
4	105m SE	383608 397412	MANCHESTER CORP. B.SEWER	11.28	N	1042260 ↗
B	110m E	383660 397540	HACIENDA SITE WHITWORTH STREET MANCHESTER WS02	-	Y	N/A
B	120m E	383670 397530	HACIENDA SITE WHITWORTH STREET MANCHESTER WS03	-	Y	N/A
B	120m E	383670 397530	HACIENDA SITE WHITWORTH STREET MANCHESTER WS04	-	Y	N/A
5	120m NW	383400 397620	BRIDGEWATER STREET / RICE STREET MAIN DRAINAGE 1	12.0	N	1045617 ↗
B	130m E	383680 397530	HACIENDA SITE WHITWORTH STREET MANCHESTER WS05	-	Y	N/A
6	136m SE	383595 397371	MANCHESTER CORP. B.SEWER	11.28	N	1042259 ↗
B	139m E	383690 397520	HACIENDA SITE WHITWORTH STREET MANCHESTER WS06	-	Y	N/A
C	150m NW	383440 397680	FESTIVAL MARKETPLACE TP 3/1	-	Y	N/A
D	153m N	383510 397690	FESTIVAL MARKETPLACE 1/8	-	Y	N/A
C	154m NW	383430 397680	CITY CENTRE - PHASE 2 29	12.5	N	1043527 ↗
B	159m E	383710 397520	HACIENDA SITE WHITWORTH STREET MANCHESTER WS07	-	Y	N/A
D	162m N	383490 397700	FESTIVAL MARKETPLACE TP 1/8	-	Y	N/A
7	163m NE	383680 397630	LOWER MOSLEY STREET PHASE 2 A	14.5	N	13469181 ↗
8	166m SW	383340 397420	LOWER MEDLOCK UCSO'S CONTRACT 1 MAN 0276 304	9.1	N	1043415 ↗
E	181m SE	383700 397400	GAYTHORN GASWORKS M16	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M18	-	Y	N/A

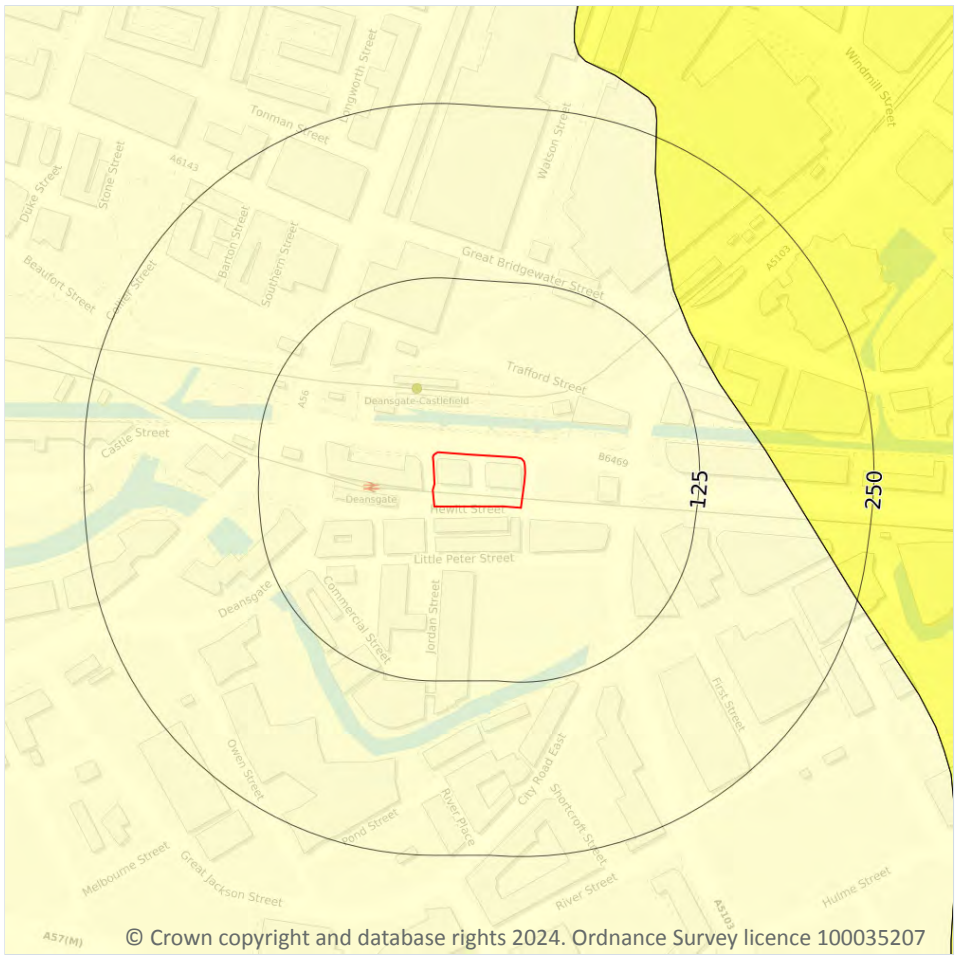
ID	Location	Grid reference	Name	Length	Confidential	Web link
E	181m SE	383700 397400	GAYTHORN GASWORKS M2	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M5	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS R2	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS R2	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M15	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M1	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M7	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M6	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M11	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M12A	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M13	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M14	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M3	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M7A	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M8	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M9	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M17	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS R1	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M4	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M10	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS R1	-	Y	N/A
E	181m SE	383700 397400	GAYTHORN GASWORKS M12	-	Y	N/A
F	184m N	383460 397720	FESTIVAL MARKETPLACE 1/7	-	Y	N/A
9	188m NW	383399 397703	MANCHESTER CORP. E.SEWER	12.5	N	1042233 ↗
G	188m NE	383710 397630	GREAT BRIDGEWATER STREET 2	-	Y	N/A
H	190m SW	383330 397390	LOWER MEDLOCK UCSO'S CONTRACT 1 MAN 0276 305	9.3	N	1043416 ↗
I	194m N	383520 397730	FESTIVAL MARKETPLACE TP 1/6	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
F	195m N	383451 397729	MANCHESTER CORP. DEANSGATE	10.67	N	1042210 ↗
10	201m SW	383340 397360	LOWER MEDLOCK UCSO'S CONTRACT 1 MAN 0276 302	12.11	N	1043413 ↗
H	202m SW	383310 397400	LOWER MEDLOCK UCSO'S CONTRACT 1 MAN 0276 303	10.59	N	1043414 ↗
I	203m N	383500 397740	FESTIVAL MARKETPLACE TP 1/7	-	Y	N/A
11	203m S	383559 397295	MANCHESTER CORP. B.SEWER	11.28	N	1042258 ↗
G	206m NE	383730 397630	GT BRIDGEWATER ST 109	30.0	N	1042749 ↗
12	206m N	383550 397740	FESTIVAL MARKETPLACE 1/6	-	Y	N/A
G	214m NE	383740 397630	GT BRIDGEWATER ST TP 103	2.0	N	1042758 ↗
G	216m NE	383730 397650	GT BRIDGEWATER ST TP 101	2.0	N	1042756 ↗
G	224m E	383760 397610	GT BRIDGEWATER ST TP 106	3.0	N	1042761 ↗
13	229m NW	383300 397670	BRIDGEWATER STREET / RICE STREET MAIN DRAINAGE 2	12.0	N	1045618 ↗
J	229m E	383780 397520	WHITWORTH STREET WEST MANCHESTER 1	-	Y	N/A
J	229m E	383780 397530	WHITWORTH STREET WEST MANCHESTER 2	-	Y	N/A
G	232m NE	383760 397630	GT BRIDGEWATER ST TP 105	3.0	N	1042760 ↗
G	237m NE	383760 397640	GT BRIDGEWATER ST 108	30.0	N	1042748 ↗
G	240m E	383780 397600	GREAT BRIDGEWATER STREET 4/4A	-	Y	N/A
14	241m NE	383700 397720	LOWER MOSLEY STREET PHASE 2 B	5.0	N	13469182 ↗
G	241m NE	383760 397650	GT BRIDGEWATER ST TP 104	3.0	N	1042759 ↗
15	243m N	383500 397780	FESTIVAL MARKETPLACE 1/5	-	Y	N/A
G	243m E	383780 397610	GT BRIDGEWATER ST 111	21.0	N	1042751 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
G	244m NE	383750 397670	GT BRIDGEWATER ST TP 102	2.0	N	1042757 ↗
J	249m E	383800 397520	WHITWORTH STREET WEST MANCHESTER 4	-	Y	N/A
J	249m E	383800 397530	WHITWORTH STREET WEST MANCHESTER 3	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m	1

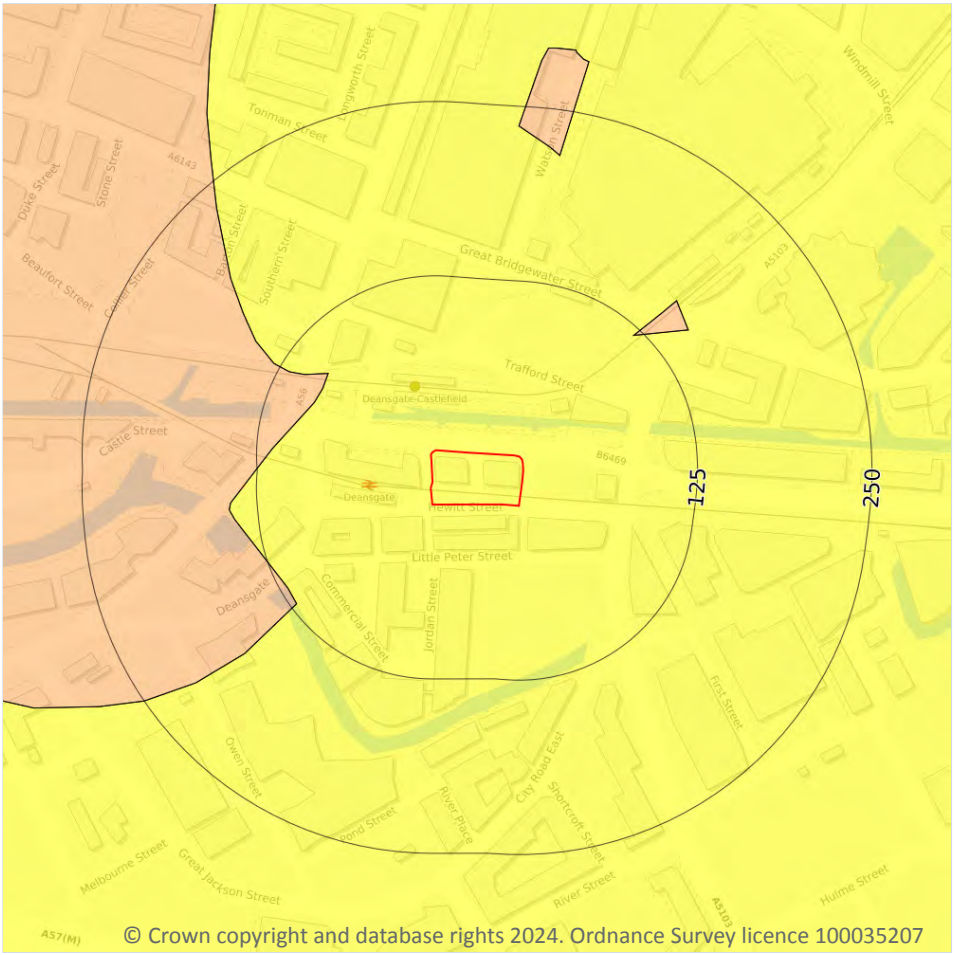
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 150 >**

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



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17.2 Running sands

Records within 50m	1

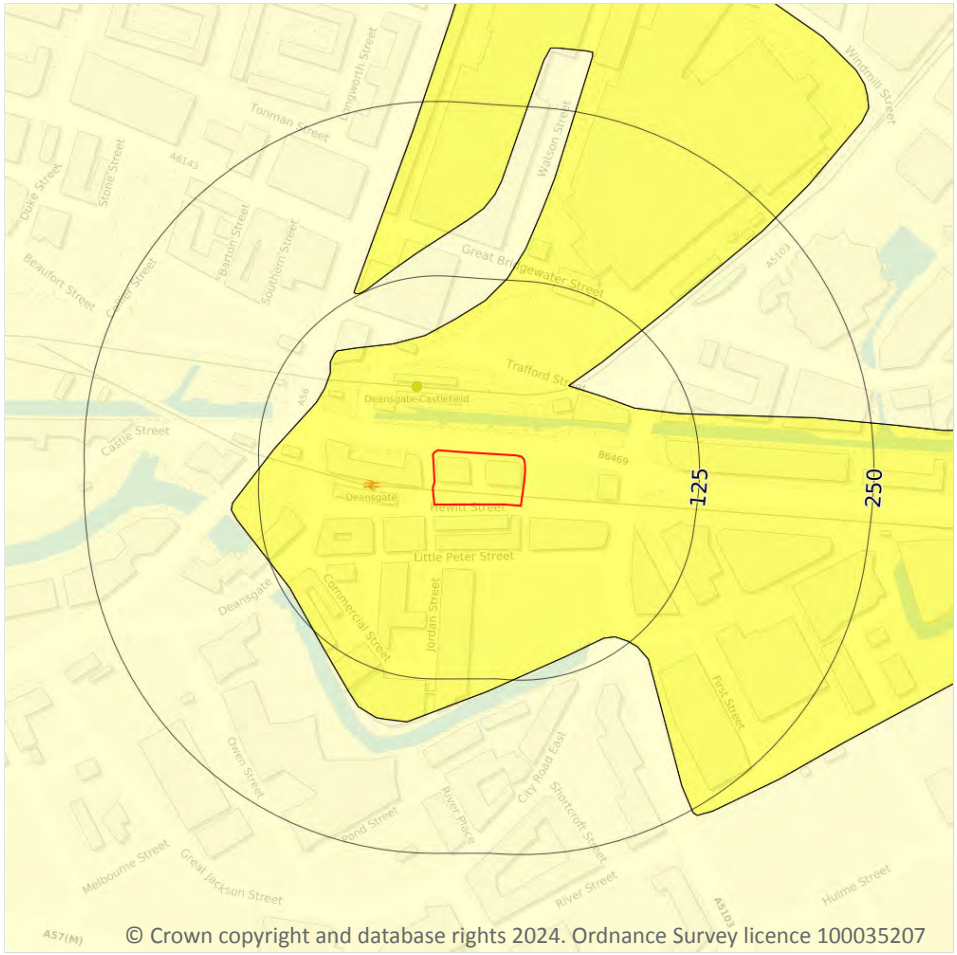
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 151 >**

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



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

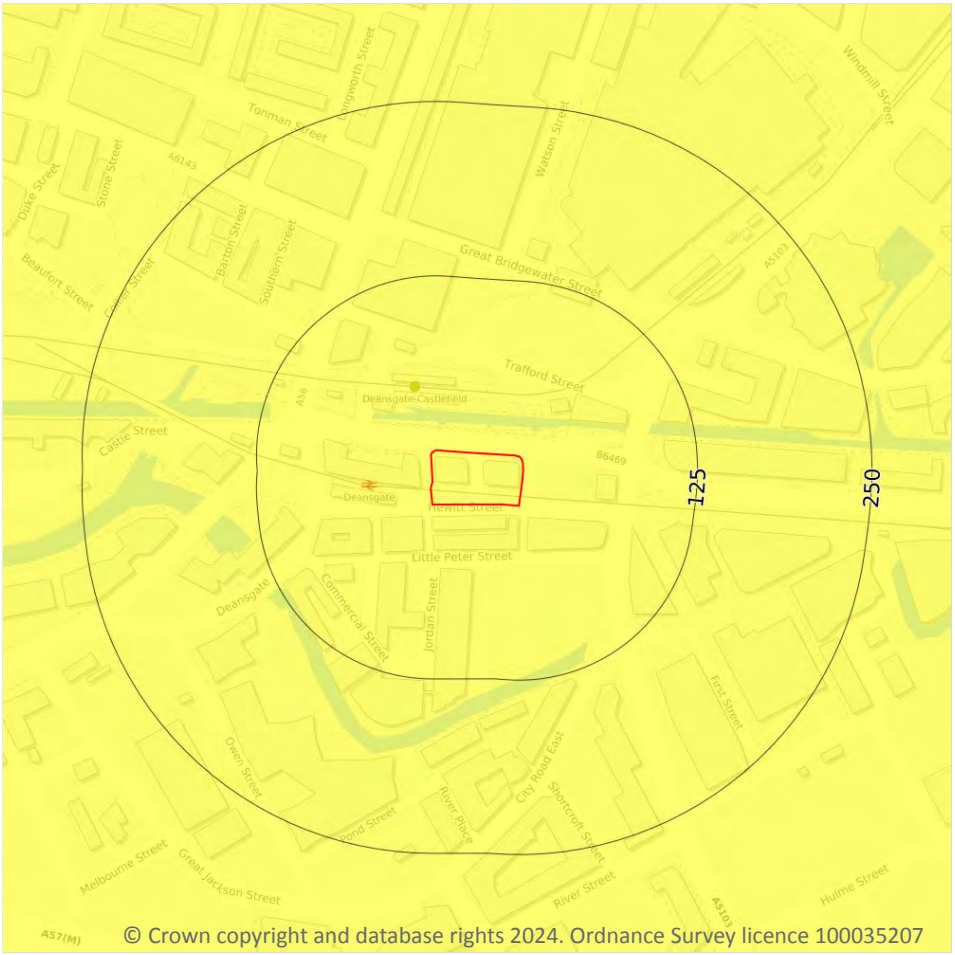
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 152 >**

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.**

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

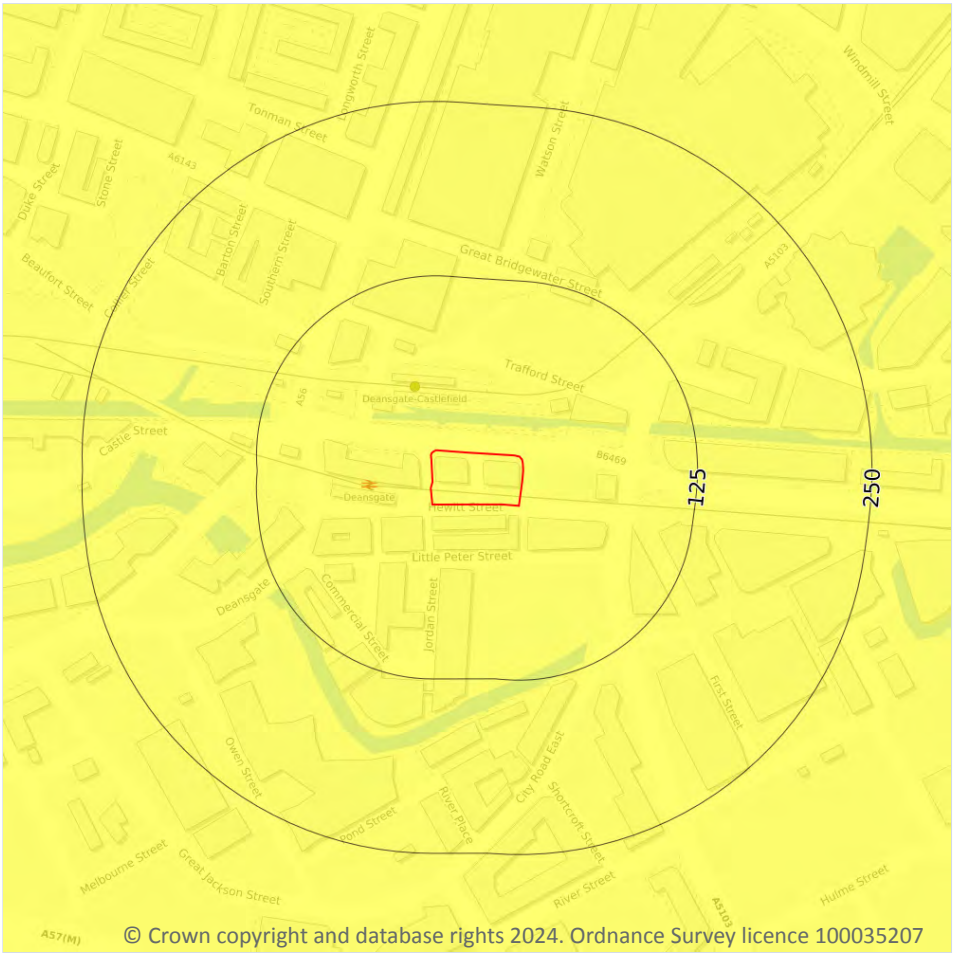
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 153 >**

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



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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 154 >**

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



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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 155 >**

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



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	21

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 157 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	12m NW	Canal	1938	1:10560
A	12m NW	Canal	1932	1:10560
A	12m NW	Canal	1916	1:10560
A	12m NW	Canal	1905	1:10560
A	12m NW	Canal	1923	1:10560
A	16m NE	Canal	1988	1:10000
1	17m NW	Canal	1896	1:10560
2	19m NW	Canal	1956	1:10560
B	108m SE	Canal	1971	1:10000
B	108m SE	Canal	1978	1:10000
B	108m SE	Canal	1985	1:10000
B	108m SE	Canal	1994	1:10000
C	135m W	Quay	1938	1:10560
C	135m W	Quay	1932	1:10560
C	135m W	Quay	1916	1:10560
C	135m W	Quay	1905	1:10560
C	135m W	Quay	1923	1:10560
3	188m S	Pond	1851	1:10560
4	210m E	Pond	1851	1:10560
D	217m W	Quay	1851	1:10560
5	221m SE	Pond	1851	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



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 165 >**

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	4

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**
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**
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**
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**

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	5

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	**17**	**3**	**147**	**101**	**0.4**	**64**	**34**	**24**	**10**

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	**17**	**3**	**270**	**185**	**0.3**	**58**	**35**	**22**	**11**
On site	**18**	**3.2**	**47**	**32**	**0.3**	**70**	**29**	**24**	**6**
49m E	16	2.8	61	42	0.5	66	26	22	5

This data is sourced from the British Geological Survey.

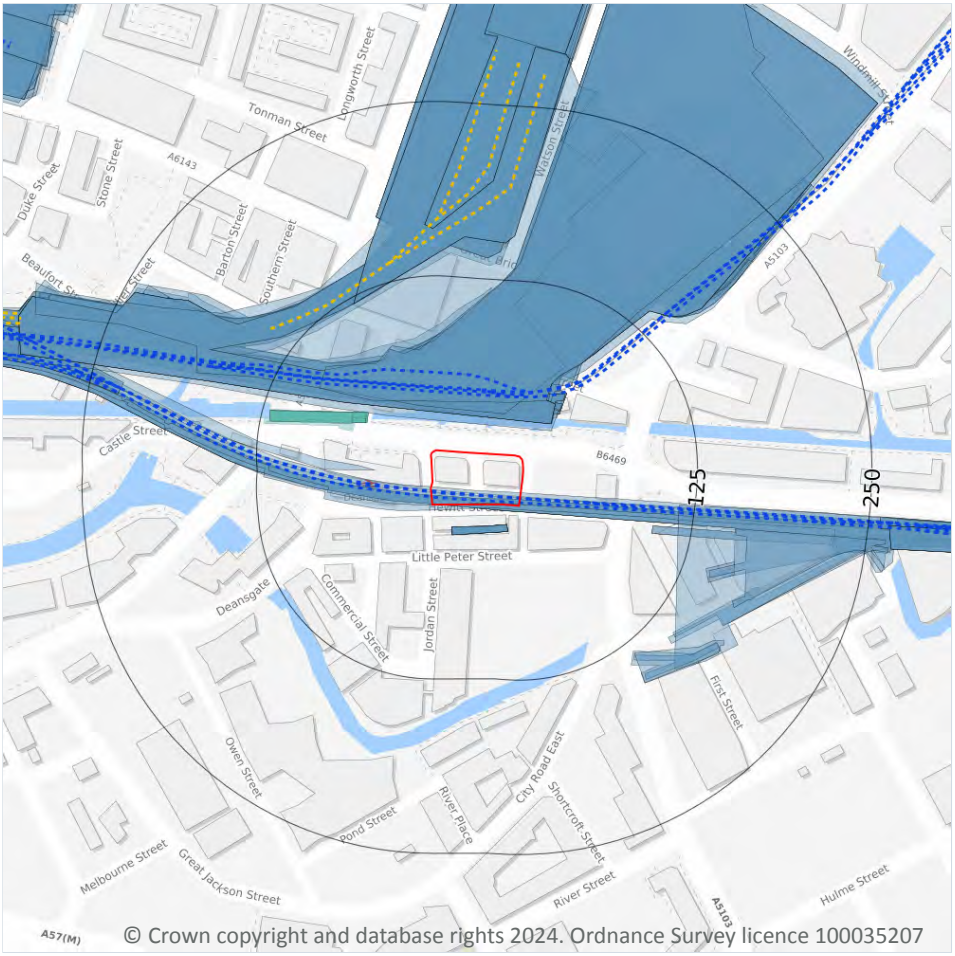
21.3 BGS Measured Urban Soil Chemistry

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	78

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 169 >**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1893**	**2500**
On site	**Railway Sidings**	**1908**	**2500**
On site	**Railway Sidings**	**1922**	**2500**
On site	**Railway Sidings**	**1932**	**2500**
On site	**Railway**	**1922**	**-**
On site	**Railway**	**1932**	**-**
14m SE	Railway Sidings	1980	1250
14m SE	Railway Sidings	1985	1250
14m SE	Railway Sidings	1987	1250
14m SE	Railway Sidings	1990	1250
20m NE	Railway Sidings	1923	10560
25m NE	Railway Sidings	1938	10560
25m NE	Railway Sidings	1932	10560
25m NE	Railway Sidings	1916	10560
25m NE	Railway Sidings	1905	10560
28m NE	Railway Sidings	1891	500
29m NE	Railway Sidings	1956	10560

Location	Land Use	Year of mapping	Mapping scale
31m NE	Railway Sidings	1963	2500
31m NE	Railway Sidings	1948	2500
31m NE	Railway Sidings	1979	2500
32m N	Railway Sidings	1951	1250
32m N	Railway Sidings	1948	1250
33m N	Railway Sidings	1955	-
35m NW	Railway Sidings	1896	10560
39m N	Railways	1893	-
42m N	Railway Sidings	1891	500
51m NW	Tunnel	1948	2500
51m NW	Tunnel	1979	2500
51m NW	Tunnel	1963	2500
51m NW	Tunnel	1995	1250
51m NW	Tunnel	1994	1250
51m NW	Tunnel	1955	-
52m NW	Tunnel	1948	1250
52m NW	Tunnel	1963	1250
52m NW	Tunnel	1979	1250
52m NW	Tunnel	1981	1250
53m NW	Tunnel	1932	-
59m W	Tunnel	1932	2500
61m NW	Tunnel	1986	1250
61m NW	Tunnel	1990	1250
67m N	Railway Sidings	1891	500
70m NW	Railway Sidings	1948	1250
71m NW	Railway Sidings	1979	1250
72m NW	Railway Sidings	1955	-
81m N	Railway Sidings	1891	500

Location	Land Use	Year of mapping	Mapping scale
114m E	Railways	1893	-
120m NW	Railway Sidings	1971	10000
120m NW	Railway Sidings	1978	10000
120m NW	Railway Sidings	1985	10000
122m N	Railway Sidings	1891	500
122m NW	Railway Sidings	1948	1250
123m NW	Railway Sidings	1963	2500
124m N	Railway Sidings	1891	500
124m NW	Railway Sidings	1963	1250
129m NE	Railway Sidings	1891	500
133m SE	Railway Sidings	1893	2500
134m SE	Railway Sidings	1896	10560
135m SE	Railway Sidings	1891	500
138m NE	Railway Sidings	1891	500
141m E	Railway Sidings	1893	2500
144m E	Railway Sidings	1891	500
148m NE	Railway Sidings	1891	500
150m N	Railway Sidings	1979	1250
150m N	Railway Sidings	1955	-
153m N	Railway Sidings	1951	1250
153m N	Railway Sidings	1948	1250
156m NE	Railway Sidings	1891	500
159m NE	Railway Sidings	1951	1250
159m NE	Railway Sidings	1948	1250
160m NE	Railway Sidings	1963	2500
164m NW	Railway Sidings	1955	-
171m N	Railway	1933	-
181m NW	Railway Sidings	1979	1250

Location	Land Use	Year of mapping	Mapping scale
182m N	Railway Sidings	1973	1250
225m N	Railway Sidings	1973	1250
236m NE	Railway	1893	-
243m N	Railway Sidings	1979	1250
244m N	Railway Sidings	1955	-

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 169 >**

Location	Description
130m NW	Dismantled
138m N	Dismantled
167m N	Dismantled

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	27

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 169 >

Location	Name	Type
On site	**Manchester and Ordsall Lane Junction Branch**	**rail**
On site	**Manchester and Ordsall Lane Junction Branch**	**rail**
On site	**Not given**	**Multi Track**
5m E	Not given	Multi Track
42m NE		light_rail
42m NE		light_rail
44m NE	Not given	Multi Track
45m E		rail
46m N		light_rail
46m N		light_rail
46m NW		light_rail
46m NE		light_rail
46m NE		light_rail
68m NE	Not given	Multi Track
98m NW	Not given	Multi Track
119m W	Not given	Multi Track
137m NW	Metrolink	light_rail
137m NW	Metrolink	light_rail
170m NW		light_rail
171m NW		light_rail
202m E		rail
228m W	Manchester and Ordsall Lane Junction Branch	rail
228m W	Manchester and Allerton Junction Line	rail
230m W	Manchester and Allerton Junction Line	rail

Location	Name	Type
230m W	Manchester and Ordsall Lane Junction Branch	rail
234m W	Not given	Multi Track
234m W	Not given	Multi Track

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 6

BGS BOREHOLE LOGS, BGS MINERAL RESOURCES MAP FOR GREATER MANCHESTER AND GREATER MANCHESTER MINERAL SAFEGUARDING MAPS

British Geological Survey

BGS ID: 1042261 : BGS Reference: SJ89NW119
British National Grid (27700) : 383608,397570

62

G.S.M. Nos. 122-126

SJ89NW 21·125

(B11867) Wt. 17852—2164—5,000 12/35 Gp. 189. O.A.

SECTION OF Bores & Shafts at Irwell Storm Relief Overflow Sewer, Cornbrook, Manchester.

Maps: One-inch 82. Six-inch 104 S.W.E. County Lancs.

Height above O.D. Latitude Longitude

SJ89NW 116·120

) Wt. 5991—S.33 2000 6/22 Gp. 147

SECTION OF Manholes in B. Sewer at Manchester cont.

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. M	Thickness. ft		Depth from Surface. M	Depth from Surface. ft	
No. 110						
No. 1 Junction of City Road & Slot 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. 117						
No. 4. 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. 118						
No. 4 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. 119						
No. 7 Traff. St., 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. 120						
No. 19 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

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Office of the Deputy Prime Minister
Creating sustainable communities

GREATER MANCHESTER

(comprising the Cities of Manchester and Salford and the Metropolitan Boroughs of Bolton, Bury, Oldham, Rochdale, Stockport, Tameside, Trafford and Wigan)

Mineral Resource Information in Support of National, Regional and Local Planning

Mineral Resources

Scale 1:100 000

Compiled by D.J. Minchin, D.G. Cameron, D.J. Evans, G.K. Lott, S.F. Hobbs and D.E. Highley.
Project Leader: D.E. Highley.
Digital cartography by N.A. Spencer, British Geological Survey.

Published 2006.

This map comprises part of a summary of the 'Mineral Resources of the North-West England Region'.
For more information see www.mineralsUK.com

BIBLIOGRAPHIC REFERENCE

Minchin D .J. and 5 others. 2006. Mineral Resource Information for National, Regional and Local Planning: Greater Manchester (comprising the Cities of Manchester and Salford and Metropolitan Boroughs of Bolton, Bury, Oldham, Rochdale, Stockport, Tameside, Trafford and Wigan). *British Geological Survey Commissioned Report CR/05/182N*

Production of this map was commissioned and funded by the Office of the Deputy Prime Minister (Contract MP0677).

SAND & GRAVEL

Superficial deposits

- Sub-alluvial: Inferred resources
- River Terrace deposits
- Glaciofluvial deposits

PEAT

SANDSTONE

- Carboniferous: Millstone Grit and Pennine Coal Measures

BRICK CLAY

- Brick clay and Fireclay coincident with coal bearing strata - Shallow Coal/ Unproductive Coal Measures

COAL

- Carboniferous: Pennine Coal Measures
- Area of shallow coal
- Opencast coal: worked area

MINERAL PLANNING PERMISSION (as at 01.01.06)

Source: Mineral Planning Authorities

- Surface planning permission (valid and expired)
- Underground planning permission other than coal (valid and expired)

MINERAL WORKINGS

- Harwood — Active site
- *Cowbury Dale* — Inactive (including yet to be worked), worked-out and/or restored site

Mineral commodity

Cl	Clay & Shale	San	Sand
Co	Coal	Sec	Secondary aggregate
CR	Crushed Rock	SiS	Silica Sand
Fr	Fireclay	Sst	Sandstone
Gas	Natural Gas	Sg	Sand and Gravel
Min	Mineral, unspecified		

- Active rail aggregate depot

ENVIRONMENTAL DESIGNATIONS (as at 06/07/05)

- National nature conservation designations (SSSIs and NNRs)
- International nature conservation designations (SACs, SPAs and Ramsar sites)
- National Park: Peak District (part)
- \+ Scheduled Monument

ADMINISTRATIVE AREAS

- Mineral Planning Authority (National Parks are also MPAs)

Aims and Limitations

The purpose of the maps in this series is to show the broad distribution of those mineral resources which may be of current or potential economic interest and to relate these to selected nationally-recognised planning designations. The maps are intended to assist in the consideration and preparation of development plans and proposals in respect of mineral extraction and the protection of important mineral resources against sterilisation. They bring together a wide range of information, much of which is scattered and not always available in a convenient form.

The maps have been produced by the collation and interpretation of mineral resource data principally held by the British Geological Survey. Information on the extent of mineral planning permissions has been obtained from the relevant Mineral Planning Authority (MPA). Some of these permissions may have lapsed or expired. The status of individual areas can be ascertained from the appropriate MPA. Location information on national planning designations has been obtained from the appropriate statutory body (Countryside Agency, English Nature and English Heritage). For further information the relevant body should be contacted.

The mineral resource data presented are based on the best available information, but are not comprehensive and their quality is variable. The inferred boundaries shown are, therefore, approximate. Mineral resources defined on the map delineate areas within which potentially workable minerals may occur. These areas are not of uniform potential and take no account of planning constraints that may limit their working. The economic potential of specific sites can only be proved by a detailed evaluation programme. Such an investigation is an essential precursor to submitting a planning application for mineral working. Extensive areas are shown as having no mineral resource potential, but some isolated mineral workings may occur in these areas. The presence of these operations generally reflect very local or specific situations.

The maps are intended for general consideration of mineral issues and not as a source of detailed information on specific sites. The maps should not be used to determine individual planning applications or in taking other decisions on the acquisition or use of a particular piece of land, although they may give useful background information which sets a specific proposal within context.

BRICK CLAY (including FIRECLAY)

Brick clay is the term used to describe 'clay and shale' used in the manufacture of structural clay products, such as facing and engineering bricks, pavers, clay tiles and vitrified clay pipes. These clays may also be used in cement manufacture, as a source of constructional fill and for lining and sealing landfill sites. Brick manufacture is the largest tonnage use in England. Clay bricks are versatile construction materials and one of the most visible components of the built environment. They make an important contribution to local architectural styles.

Brick clays are essentially mudstones of different geological ages and compositions. Their mineralogy, chemistry and physical properties are critical to determining their suitability for the manufacture of structural clay products. These properties affect the forming behaviour of the clay (the process of shaping the ware) and also its behaviour during drying and firing. They will also determine the technical properties of the fired product, such as strength, water absorption (porosity) and frost resistance, and thus its durability and performance in service and, importantly, its architectural appearance, such as colour and texture. Most facing bricks, engineering bricks and pavers for clay-based building products are manufactured in large automated factories. These represent a high capital investment and are therefore increasingly dependent on raw material with predictable and consistent firing characteristics in order to achieve high yields at saleable products. Blending different clays to achieve improved durability and to provide a range of fired colours and textures is an increasingly common feature of the brick industry. Continuity of supply of suitable raw materials is of paramount importance.

In Manchester, brick clay has been produced for local consumption from small brick pits for over two hundred years. Historically, a variety of clays were extracted for 'common' brick making, including boulder clay, Triassic Mercia Mudstone and mudstones from the Pennine Lower and Middle Coal Measures. Fireclay, the fine-grained seatearths that commonly underlie coal seams, was mined alongside coal in opencast and deep mines for use in pipe making. With the demise of the 'common' brick and consolidation of the brick industry, most of these clay quarries closed. Today, one active clay quarry remains at Harwood, northeast of Bolton, working the Pennine Lower Coal Measures. This quarry produces high quality brick clay for use in facing, engineering and paving bricks but has no associated brickworks. The clay is delivered to a brickworks at Denton, in Tameside, which has no associated quarry and sources clay from a variety of locations, mainly from a site in Glossop, approximately 13 km away in Derbyshire.

Pennine Coal Measures mudstones, which occur interbedded with siltstone, sandstone, coal seams and seatearths, are the principal brick clay resource in North West England. Resources occur across the north and east of the county but are currently only worked in Bolton. The clay mineralogy of Coal Measures mudstones is dominated by kaolinite and illite which tend to provide optimum firing characteristics. Carbon and sulphur contents are also critical to firing performance. Excessive amounts of either may lead to firing problems and sulphur may also give unacceptable emission levels, although blending of clays may reduce these problems. In general, carbon and sulphur contents should be less than 1.5 per cent and 0.2 per cent respectively. Both fireclays and mudstones occur in association with opencast coal, with which they may be worked. However, this is only rarely the case because of the variable quality of the clay, particularly of the fireclays, and due to operational and planning difficulties. Fireclays have relatively low iron content compared to other brick clays and they are primarily valued for the manufacture of buff-coloured bricks and pavers. There is no current fireclay extraction in the area.

PEAT

Peat is an unconsolidated deposit of compressed plant remains in a water-saturated environment such as a bog or fen. Bogs occur in areas where inputs of water (almost exclusively from precipitation) have a low nutrient content and where the rainfall is sufficient to maintain the ground surface in a waterlogged condition. The vegetation is characterised by acid-tolerant plant communities in which the moss genus Sphagnum is dominant. The two main types of bog are (i) raised bogs, characteristic of flat underlying topography and found on plains and broad valley floors and (ii) blanket bogs, which occur mainly in upland areas where conditions are suitably cool and wet. Many lowland raised bogs have been designated as sites of international and national conservation areas. Peat is dug in England mainly from raised lowland bogs, almost entirely (98 per cent) for horticultural use, either as growing media or as a soil improver. Areas of upland blanket peat are not worked and therefore not shown.

Peat is being extracted from three sites on Chat Moss to the west and north west of Irlam on the Wigan/Salford boundary. The peat deposits cover an area of 2587 ha of raised bogs up to 9 m thick on a flat underlying topography. Planning permission for peat extraction covers 305 ha, both in the Wigan and Salford districts. Smaller lowland peat deposits such as Carrington Moss and Ashton Moss cover approximately two square kilometres each, but are not worked.

Many of the peat deposits have been worked extensively in the past and today a large percentage of these areas have been 'reclaimed' to agricultural land. Due to the unavailability of up to date linework defining the extent of the reclamation, the entire resource as mapped is shown on the face of the map.

COAL

The area lies predominantly within the South Lancashire Coalfield. The coal-bearing strata of the Pennine Lower and Middle Coal Measures (Upper Carboniferous) generally dip to the southwest and west. The South Lancashire Coalfield crops out across an area of approximately 970 km^2, stretching from Rochdale in the east to St Helens in the west. A spur runs southwards from Rochdale to just south of Stockport. In the east and north, older Namurian strata are present at outcrop and to the west and south, Permo-Triassic strata unconformably overlie the Coal Measures. To the south, the coalfield deepens significantly to greater than 3000 m below Ordnance Datum beneath Permo-Triassic strata and passes into the Cheshire Basin. A substantial portion of the coalfield is covered by urban development.

Coal seams are numerous with in excess of 36 named coal seams, which vary laterally in both thickness and composition, chiefly by variation in the number of dirt partings present within the seam. Coals are mainly present within the Pennine Lower and Middle Coal Measures, with a few additional coals in the lower part of the Pennine Upper Coal Measures. The main coal-bearing interval typically varies from about 590 m in the west to 880 m in the east. The lower part of the Pennine Lower Coal Measures, below the Arley seam, typically contains coals that are thin and of variable quality. The rest of the Pennine Lower and Middle Coal Measures form the most important coal-bearing interval, with a number of coals in excess of 2 m in thickness. Coals from the Pennine Upper Coal Measures are generally thin, the exception being the Wortsley Four Foot, which can be up to 1.8 m in thickness. Coal rank ranges from high to medium volatile.

There are no operating deep mines in the area, the last, Parkside, was closed in 1993. Any future commercial interest in coal extraction is likely to be confined to coal that can be recovered by surface mining. Historic opencast mining has occurred in the Wigan Coalfield, which has been mined for seven centuries, and across the north of the area. Opencast mining in the east has been limited by the steeper dip of the strata in this area. Recent, small-scale opencast production has been confined to the Wigan Coalfield, but there has been no production since 2000. Although there is potential for further opencast mining this is reduced by a number of factors. Firstly the basal part of the Pennine Lower Coal Measures does not contain many thick seams. Hence areas on the northern and eastern flank of the coalfield are probably not economically viable. Secondly there are thick drift deposits (up to 50 m in places) across the coalfield and, thirdly, much of the area is sterilised by urban development. Areas of shallow coal resources and former opencast worked areas are shown on the map.

PLANNING PERMISSIONS FOR MINERAL EXTRACTION

The extent of all known extant and former planning permissions for mineral working is shown on the map, irrespective of their current planning or operational status. The polygons were supplied as digital files by the Greater Manchester Geological Unit, and also were digitised by BGS from Plotting Sheets and other documents supplied by Wigan, Rochdale and Bury Metropolitan Councils. In addition, planning permission information was digitally acquired from Ministry of Housing and Local Government maps for the area and incorporated in the data. This data has been checked and amended by the local Authorities shown below. Any queries regarding the sites shown should be directed to these authorities at the addresses shown below. The polygons cover active, former and restored mineral workings and, occasionally, unworked deposits.

Planning Permissions represent areas where a commercial decision to work mineral has been made, a successful application has been dealt with through the provisions of the Town and Country Planning legislation and the permitted reserve will have been depleted to a greater or lesser extent. Current planning status is not qualified on the map but is available in the underlying database.

Contact addresses:

Bolton Metropolitan Borough Council, Development Department, Town Hall, Bolton BL1 1RU. Tel: 01204 522311, Fax: 01204 387153, web address: www.bolton.gov.uk

Bury Metropolitan Borough Council, Development and Environmental Services Department, Craig House, 5 Bank Street, Bury BL9 0DN. Tel: 0161 253 5000, Fax: 0161 253 5290, web address: www.bury.gov.uk

Greater Manchester Geological Unit, University of Manchester, Oxford Road, Manchester M13 9PL. Tel: 0161 275 7150, Fax: 0161 275 7157, web address: www.gmgu.org.uk

Oldham Metropolitan Borough Council, Environmental Services Department, PO Box 30, Civic Centre, West Street, Oldham OL1 1UQ. Tel: 0161 911 3000, Fax: 0161 911 3104, web address: www.oldham.gov.uk

Rochdale Metropolitan Borough Council, Planning Services and Environmental Department, PO Box 32, Telegraph House, Baillie Street, Rochdale OL16 1JH, Tel: 01706 647474, Fax: 01706 864185, web address: www.rochdale.gov.uk

Salford City Council, Development Services Directorate, Planning & Building Control Division, Civic Centre, Chorley Road, Swinton M27 5BW, Tel: 0161 794 4711, Fax: 0161 727 8269, web address: www.salford.gov.uk

Stockport Metropolitan Borough Council, Environment and Economic Development Division, Hygarth House, 103 Wellington Road South, Stockport SK1 3TT, Tel: 0161 480 4949, Fax: 0161 953 0013, web address: www.stockport.gov.uk

Tameside Metropolitan Borough Council, Environmental Services Department, Council Offices, Wellington Road, Ashton under Lyne OL6 6DL, Tel: 0161 342 8355, Fax: 0161 342 3111, web address: www.tameside.gov.uk

Trafford Metropolitan Borough Council, Trafford Town Hall, Talbot Road, Stretford, Manchester M32 0YY, Tel: 0161 912 1212, Fax: 0161 912 4490, web address: www.trafford.gov.uk

Wigan Metropolitan Borough Council, Borough Planning Department, Civic Buildings, New Market Street, Wigan WN1 1RP, Tel: 01942 244991, Fax: 01942 404022, web address: www.wiganmbc.gov.uk

PLANNING PERMISSIONS ON MAP FACE

1 *Gadbury Brickworks (Gadbury Shale Hole) (Cl)*
2 *Gadbury Fold Branch line (Lovers Lane/Leigh Road and Gadbury Fold, Atherton) (Sec)*
3 *Squires Lane Branch line (Howe Bridge, Atherton to Squires Lane, Tyldesley (Sec)*
4 *Boo Hole Sand Pit (Bury New Road) (San)*
5 *Former Broadfield Station (Sec)*

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Positions of Scheduled Monuments at 25th September 2003 as supplied by English Heritage.
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CRUSHED ROCK AGGREGATES

A variety of hard rocks are, when crushed, suitable for use as aggregate. Their technical suitability for different applications depends on their physical characteristics, such as crushing strength and resistance to impact and abrasion. Higher quality aggregates are required for coating with bitumen for road surfacing, or for mixing with cement to produce concrete. For applications such as constructional fill and drainage media, with less demanding specifications, lower quality materials are acceptable.

The crushed rock aggregate resources of Greater Manchester are confined to Carboniferous sandstones, which are relatively extensive but do not provide a source of high quality aggregate.

Sandstone

The Carboniferous sandstones of the Millstone Grit and Pennine Coal Measures of Greater Manchester have traditionally been extensively used as a source of building stone and today both disused and working quarries are a common feature of the landscape.

Carboniferous sandstones consist of sand-sized particles, with minor pebbles, composed dominantly of quartz, but also with some feldspar, which are cemented by silica, to a greater or lesser extent. The sandstones are typically buff-coloured, although locally grey, and vary from fine- to coarse-grained.

Most of the sandstones are too weak and porous to make good quality aggregate for roadstone and concrete, but maybe suitable for fill and for the production of manufactured sand to produce reconstituted stone products.

There are currently 7 working sandstone quarries working Carboniferous sandstones in Greater Manchester. Most quarries produce blockstone or a range of masonry products and some produce crushed aggregate for less demanding specifications.

There are many sandstones of Carboniferous age, However the Haslingden Flags, the Fletcher Bank Grit, Kinderscout Grit (Millstone Grit), Ouse Nest Grit and Old Lawrence Rock (Pennine Lower Coal Measures) are the most extensively worked. Production of sandstone in Greater Manchester was just over 1 million tonnes in 2004. Permitted reserves are of the order of 20 million tonnes.

SAND AND GRAVEL

Sand and gravel are defined on the basis of particle size rather than composition. In current commercial practice, following the introduction of new European standards from 1st January 2004, the term 'gravel' or more correctly coarse aggregate is used for general and concrete applications to define particles between 4 and 80 mm, and the term 'sand' for material that is finer than 4 mm, but coarser than 0.063 mm. For use in asphalt 2 mm is now the break point between coarse and fine aggregate. Most sand and gravel is composed of particles that are rich in silica (quartz, quartzite and flint), but other rock types may occur locally.

The principal uses of sand are as fine aggregate in concrete, mortar and asphalt. The main use of gravel is as coarse aggregate in concrete. Substantial quantities of sand and gravel may also be used for construction fill.

Production of sand and gravel in Greater Manchester is about 0.24 million tonnes in 2004, according to the Annual Minerals Raised Inquiry, Office for National Statistics. No separate figures are available for permitted reserves in Greater Manchester but these are believed to be small. In 2003 total permitted reserves of sand and gravel in Greater Manchester, Merseyside, Halton and Warrington were 6.7 million tonnes. (North West Regional Aggregates Working Party Annual Report, 2003).

Sand and gravel resources occur in a variety of geological environments. In Greater Manchester these resources occur mainly within superficial or 'drift' deposits, subdivided into river sand and gravel and glaciofluvial sand and gravel, the most important are the glaciofluvial deposits.

Superficial Deposits

Glaciofluvial sand and gravel

These are deposits mapped as the products of deposition by glacial melt waters and are nowadays commonly labelled on BGS maps as glaciofluvial deposits, a more accurate description of their origin. The sequence of these deposits is complex with mappable units commonly exhibiting intricate relationships. Bodies of sand and gravel may occur as sheet- or delta-like layers above till deposits or as elongate, irregular lenses within the till sequence. Areas of wholly concealed, and thus unknown, bodies of sand and gravel may occur under spreads of till and other drift deposits.

Glaciofluvial deposits cover large areas of Rochdale, Bury and Trafford but are mainly fine-grained and are largely devoid of gravel. They vary considerably in thickness but may be over 30 m thick where they fill pre-glacial hollows or buried valleys or form moraines. Sands and gravels are derived from the erosion of local bedrock by the action of ice and water and, as such, mudstone and coal fragments can be common and make the working of a deposit difficult. Glaciofluvial sand and gravel are being worked at Pilsworth South pit in Heywood, Bury. Large areas of potential resource have been sterilized by urban development.

Extensive sheets of sand and gravel, averaging 2 m to 3 m thick, were laid down in the valley of the Mersey west of Stockport, the Bollin below Styal, the Micherley Brook, Irwell, Dane and Weaver, all of which drain into the Mersey Estuary. In the lower reaches of all these rivers is the same pattern of a big terrace, in places more than 10 m above present river level, and very wide compared with the later terraces, which form a group including present day alluvium continued to the immediate vicinity of the river. After the formation of the high terrace from a place an event that suddenly lowered the base level to which the rivers were being graded. This happened to all the rivers mentioned above simultaneously, for their high terraces are at grade with one another. This high terrace phenomenon is limited in this area to the Mersey watershed.

The high terraces of the Mersey Basin were most probably formed at the end of the last Ice Age when the mouth of the river was still blocked by ice in the Irish Sea; thus water was ponded up in the lower Mersey valley and escaped over the neck of the Wirral peninsula. The spillway over the Wirral controlled the base level and it is to this that the high terrace is graded to. The sections left in the base level of the rivers took place when the last glacial ice melted and the present Mersey channel became open. The high terrace is currently being worked along with more recent river terraces of the River Goyt in Offerton Quarry near Stockport.

River Sand and Gravel (terrace and sub-alluvial deposits)

Resources occur in both raised river terrace sequences flanking the modern floodplains and in floodplain terrace deposits associated with, and underlying, present day alluvium. This sequence of deposits are best developed along the Rivers Mersey, Irwell, Goat and Roch with a succession of deposits formed representing accumulations of sand and gravel in response to falling sea level in Pleistocene times. Less developed terrace deposits occur along the River Tame, Middle Brook, Hey Brook and Moss Brook. The deposits typically consist of upwardly fining and laterally graded spreads of gravel, sand, silt and clay. Alluvium deposits in the area are usually thin and of little significance when compared to the sands and gravels of the high terrace. The composition of river sand and gravel generally reflects the rocks drained by the river and its tributaries. In this case it is mainly Carboniferous sandstones and mudstone, which are weak and friable and only suitable for low-grade uses such as construction fill.

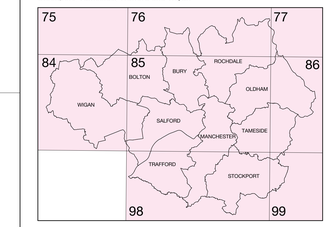
Blown sand

Overlying the glacial till is an irregular, discontinuous layer of wind blown sand referred to as the Shirdley Hill Sand. The sand, which is typically only about 1 to 1.2 m thick, although locally thicker, is younger than the glacial deposits and lies immediately beneath a cover of topsoil. The sand is characteristically uniform in both composition and grain size distribution, reflecting its wind-blown origin. Most of the sand particles fall in the range 0.5 mm to 0.1 mm, which is unsuitable for construction use. The Shirdley Hill Sand was formerly worked in St Helens and Lancashire for glass sand, and particularly for flat glass manufacture. However, these operations ceased in the mid-1970s. A number of spreads of blown sand resembling Shirdley Hill Sand have been noted in the terraces of the Mersey and Bollin but are too thin to be considered economic. Wind-blown sands are generally too fine-grained and uniform size for aggregate use. They are therefore not shown on the map.

Bedrock deposits

Additional resources of sand and gravel may be won from exploiting suitable bedrock deposits. Triassic sandstones of the Sherwood Sandstone Group are being worked at Morleys Hall Quarry, southeast of Leigh, to produce sand for mortar and asphalt. The Sherwood Sandstone has been deeply weathered in places by a tropical climate during pre-glacial times. The upper part of the sandstone, immediately below the drift cover, is sometimes weathered to the extent that the cementing material between the sand grains has disintegrated leaving the original quartz grains in the form of sand that can be worked without substantial crushing. The weathered portions of the Sherwood Sandstone usually do not have an ideal particle size distribution for use in mortar, concrete or asphalt and usually the sand is too fine grained or too weak for use as concrete aggregate. Difficulties in removing overburden in the form of glacial till and extra treatment in crushing, however minor, together with washing and slime removal can often make the resource uneconomic compared to more easily worked glacial sands. The Sherwood Sandstone is, therefore, rarely worked and is not shown on the map.

BGS maps covering Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan



1:63 360 or 1:50 000 map published

Current digital availability of these sheets can be found on the British Geological Survey website: www.bgs.ac.uk

BUILDING STONE

Natural stone is the traditional building material of Britain and the built environment is perhaps the most visible aspect of our cultural heritage. Production and usage of natural stone has declined since the high point of the industry in the late 19th Century, largely because of competition from cheaper alternatives, such as brick and concrete. However, more recently there has been an increased interest in natural stone and the prospects for the industry remain buoyant.

A wide range of rock types is used as building stones. In the area these comprise building sandstones, principally of Carboniferous and Permo-Triassic age. The working of local sandstones for block stone, flagstone and roofing 'slate' was very widespread in the past and almost every Carboniferous sandstone outcrop shows evidence of quarrying. However, currently only four quarries in the area are working Carboniferous sandstone for building stone.

The oldest rocks that were quarried for building stone and flagstone are from the Millstone Grit Group (Carboniferous) which crops out along the northern and eastern margins of the area. The principal sandstone quarries were located around Littleborough (Calderbrook and Long Lees) in the Huddersfield White Rock; at Stalybridge (Buckton Moor) in the Kinderscout Grit; around Horwich (Smithills Moor), Ramsbottom (Quarlton, Crowthorne, Limefield, Baddingstone, Holcombe, Rooley, Ashworth), Milnrow, Gee Cross and Marple Bridge in the Rough Rock.

Quarrying of the Pennine Lower Coal Measures sandstones was extensive e.g. at Whitworth (Middle Hill, Hades Hill and Higher Slack), Burnt House Moor (Pinfold); near Bolton (Dofflocker, Moor Gate, Ridgeway in the Ouzel Nest Grit); and near Stalybridge. The Pennine Middle Coal Measures sandstones were quarried at Oldham Edge, Farnworth and Peel Hall. The small outcrop of Pennine Upper Coal Measures at Collyhurst (Worsley Delf Rock) was also an important source of building stone in the past.

The red Permian and Triassic sandstones at Collyhurst (Aspley Group) and Timperley (Sherwood Sandstone Group) were worked for building stone to a limited extent in the past.

HYDROCARBONS

Conventional Oil and Gas

Greater Manchester is perceived as having poor hydrocarbon prospectivity. Permo-Triassic strata in the south of the area form the Cheshire Basin. This is linked to the offshore East Irish Sea Basin, within which hydrocarbons (mainly gas) have been discovered in a number of fields. Oil has also been produced from the Douglas and Lennox fields. There is also the presence of the small enigmatic Formby Oilfield onshore to the west in Merseyside. The oilfield is thought to owe its existence to the breaching and migration from a deeper (older) Carboniferous trap and is capped by glacial boulder clay.

Carboniferous strata (Namurian mudstones and Westphalian Coal Measures) provide source rock potential both in Greater Manchester area and surrounding districts and the wider area has attracted interest from oil companies. Exploration has been ongoing for many years, with many kilometres of seismic reflection data acquired and hydrocarbon exploration wells drilled. Many of these wells have tested Triassic prospects within the Cheshire Basin, but have proved to be dry. Within the Greater Manchester area, the Fletchertank 1 and Heywood 1 wells (see Table below) tested Carboniferous plays. Both wells were plugged and abandoned as dry, although Heywood had minor hydrocarbon shows.

Perhaps the best prospects, therefore, represent intra-Carboniferous plays with accumulations that have been little disturbed since their formation and charging. The yields from such plays would be small and the current hydrocarbon licence situation reflects the fact that prospectivity in Greater Manchester is not presently perceived as great. Indeed, the four small licence blocks presently operated are from former larger licence block areas and relate not to oil exploration, but to coalbed methane or mine gas (methane) development (see below).

Hydrocarbon exploration wells in Greater Manchester

Exploration Well	Drilling date	Original operator	Current licence area and operator	Status
Fletchertank 1	1958-59	Steel Brothers Company Ltd	Open acreage	Plugged and abandoned, dry
Heywood 1	1984	BP Development Company Ltd	open acreage	Plugged and abandoned, dry, minor hydrocarbon shows

Abandoned Mine Methane (AMM), Coal Mine Methane (CMM) and Coalbed Methane (CBM) potential

During the process of coal formation through the conversion of plant matter into coal, gases are produced which are either adsorbed onto the coal or dispersed into pore spaces around the coal seam. The generic term for this gas is coalbed methane (CBM). The majority of the gas is attached to the coal surface in micropores. However, during mining the coal is destressed or fractured which releases significant quantities of CBM. Further gas is released during the life of the mine and after mining has ceased. This gas is an environmental hazard but it is also a potential source of energy. This potential depends on the gas content, permeability and total thickness of the coal present.

CBM can be exploited in various ways:

- Extraction from operational mines for safety reasons prior to it entering the mine air stream (coal mine methane - CMM),
- Coal extracted from abandoned mines (abandoned mine methane - AMM),
- Extraction from virgin or unmined coal from surface boreholes (virgin coalbed methane - VCBM)

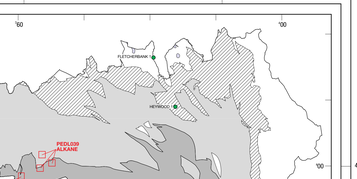
There are no operational coal mines in the area and thus there is no CMM potential.

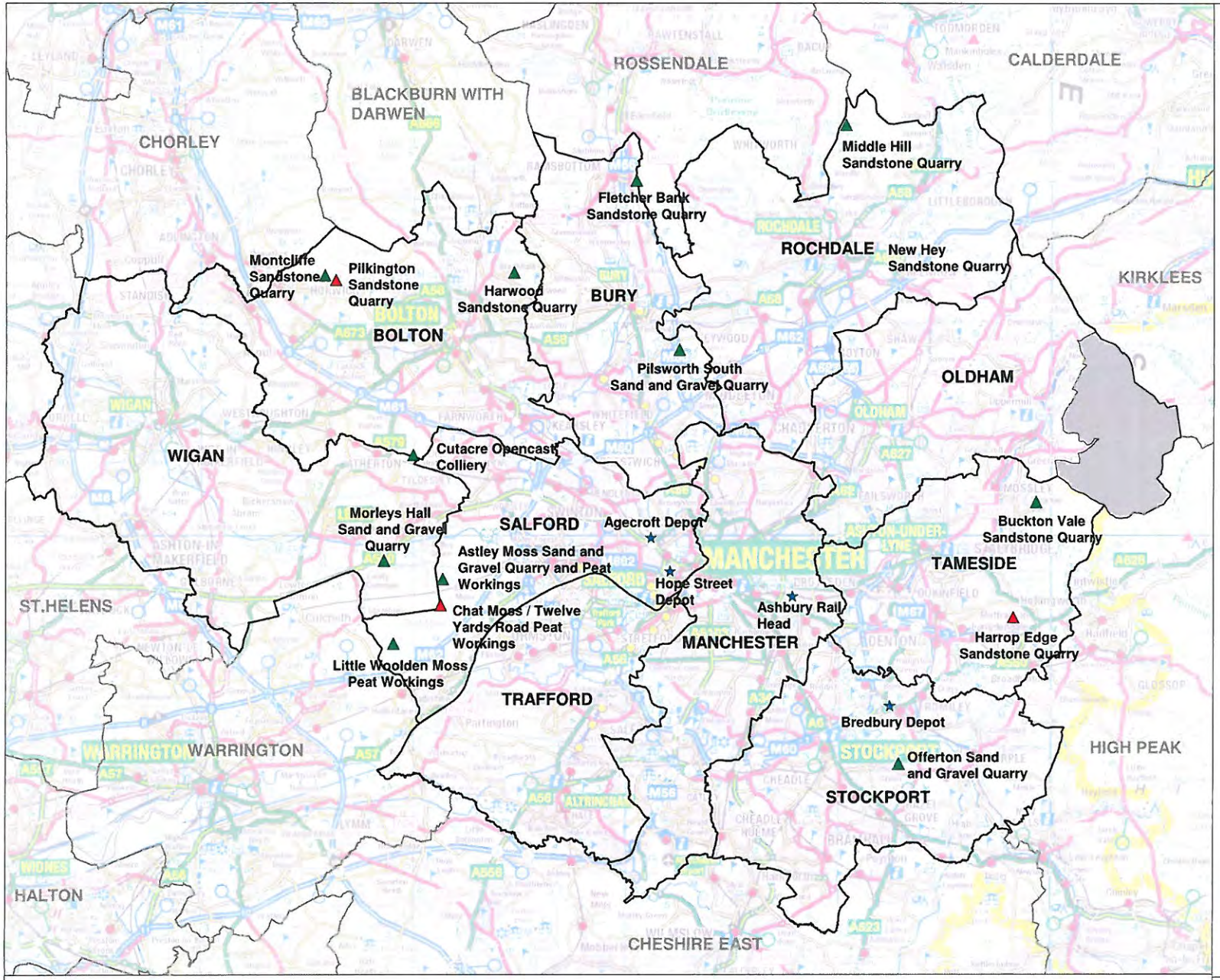
The Pennine Lower and Middle Coal Measures of the South Lancashire coalfield comprise a succession up to 880 m thick, with 36 named coals present, attaining a maximum seam thickness of >3 m and producing 20-25 m total coal thickness. Historically, gas has been encountered in the coalfield, with some seams noted for their 'coal gas' (the fuel gas produced from a high-volatile bituminous coal). The coals are high to medium, volatile bituminous types with methane contents of up to 9.53 m^3 per tonne of coal, and average methane contents of 8.2m^3 per tonne of coal.

The concept of Abandoned Mine Methane capture in the UK goes back to the 1950s when Old Boston Mine in the Lancashire Coalfield was sealed and then tapped to supply gas to the adjacent Wood Colliery. This previously successful scheme has perhaps been influential in the interest generated in Abandoned Mine Methane (AMM), Coal Mine Methane (CMM) and Coalbed Methane (CBM) in the South Lancashire and North Wales coalfield areas over recent years.

Old Boston Mine lies just to the west of the area. Currently, the small licence areas EXL253 (Eastern/Pegasus) and PEDL029 (Alkane Energy) representing AMM and CBM interests in the west of the county, adjacent to the Old Boston Mine area, represent the retained areas of formerly much larger licence block areas. The relinquishment of large areas of these licence blocks perhaps suggests that prospects for AMM (and CBM) in the area are not now perceived as particularly good. This may be because any former mines are long abandoned and thus are likely to be flooded, provide poor yields, or that the financial/taxation scheme is unhelpful at present.

In the USA, coalbed methane is produced from virgin coals containing 7 or more m^3 of methane per tonne of coal. The average gas content of the coals in the South Lancashire Coalfield is 8.2 m^3 of methane per tonne of coal, which is above the economic threshold in America. However, the South Lancashire Coalfield has been heavily worked and CBM development from virgin coal seams may only be a prospect in unmined areas.





Greater Manchester Districts

Neighbouring District Boundaries

Peak District National Park - although located within Oldham it is not part of the Minerals Plan area

Inactive Mineral Extraction Sites

Active Mineral Extraction Sites

Rail Depots

Inactive sites are those which have not been worked at any point within the previous year. In this case January - December 2010.

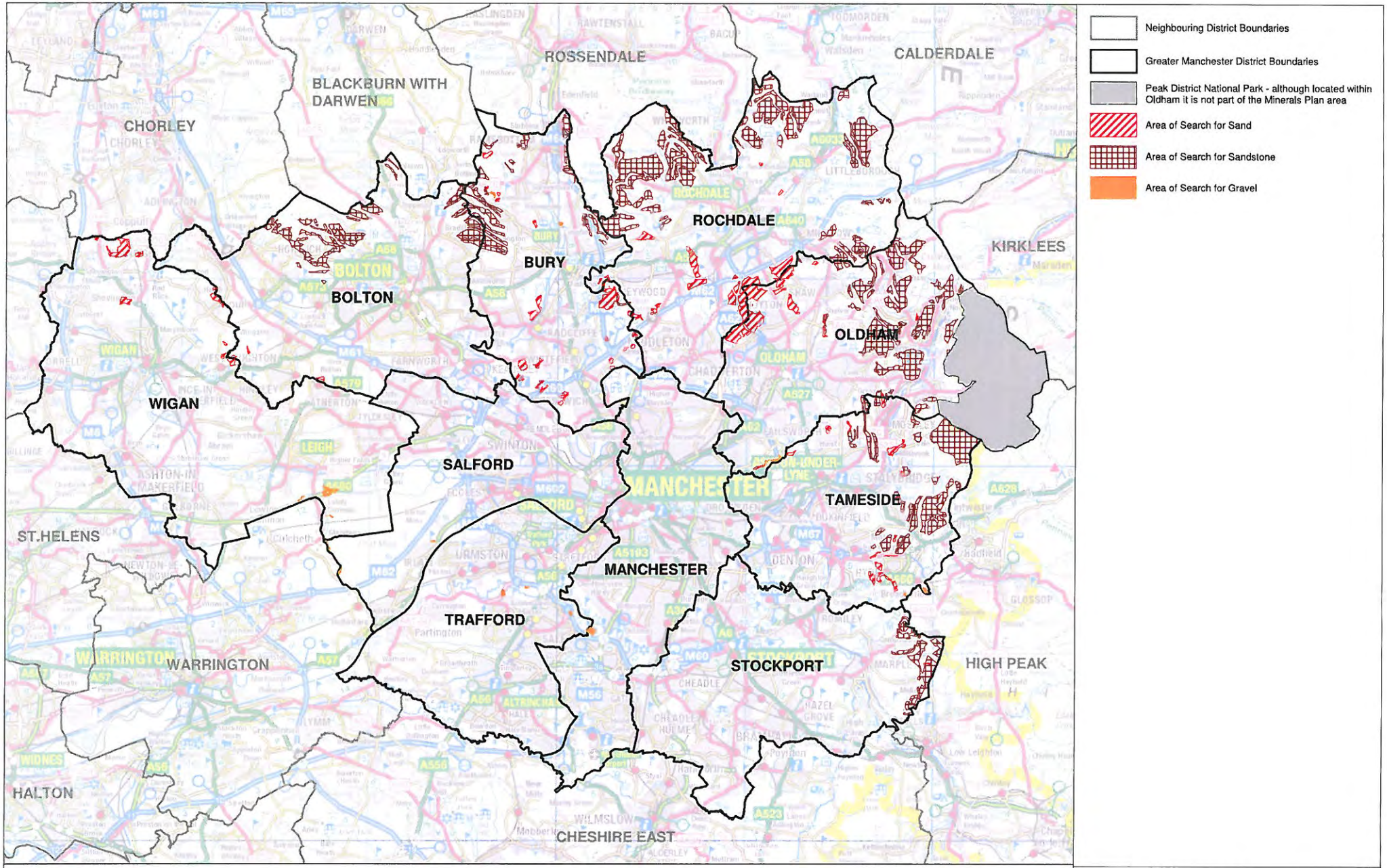
The following quarries have been identified by the English Heritage BGS Strategic Stone Study (SSS) as being important for maintaining and repairing historic buildings:

Buckton Vale
Harwood Quarry
Fletcher Bank Quarry
Middle Hill Quarry
Montcliffe Quarry

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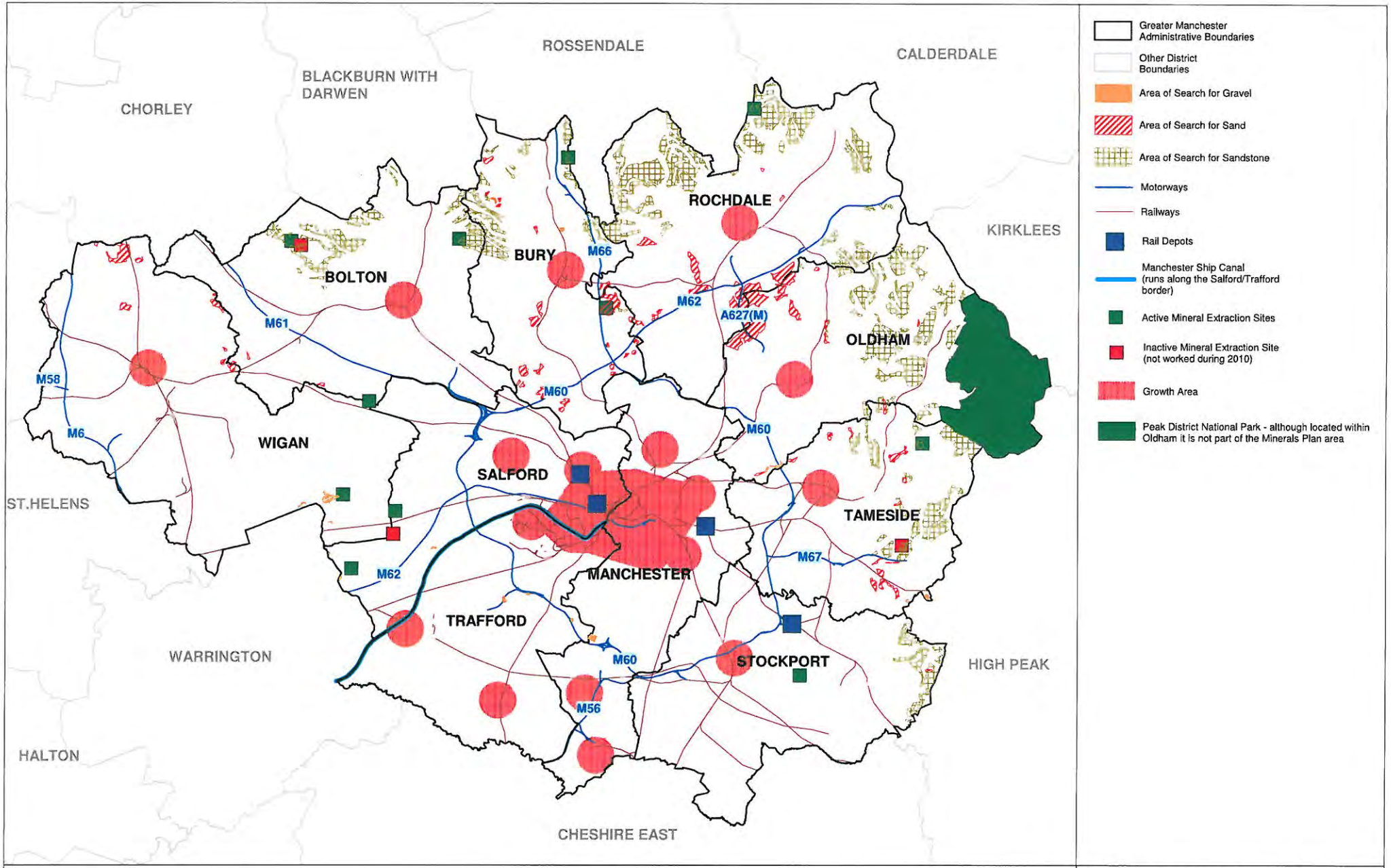
Map 1 - Existing Quarries with planning permission and Rail Depots used for minerals transportation within Greater Manchester



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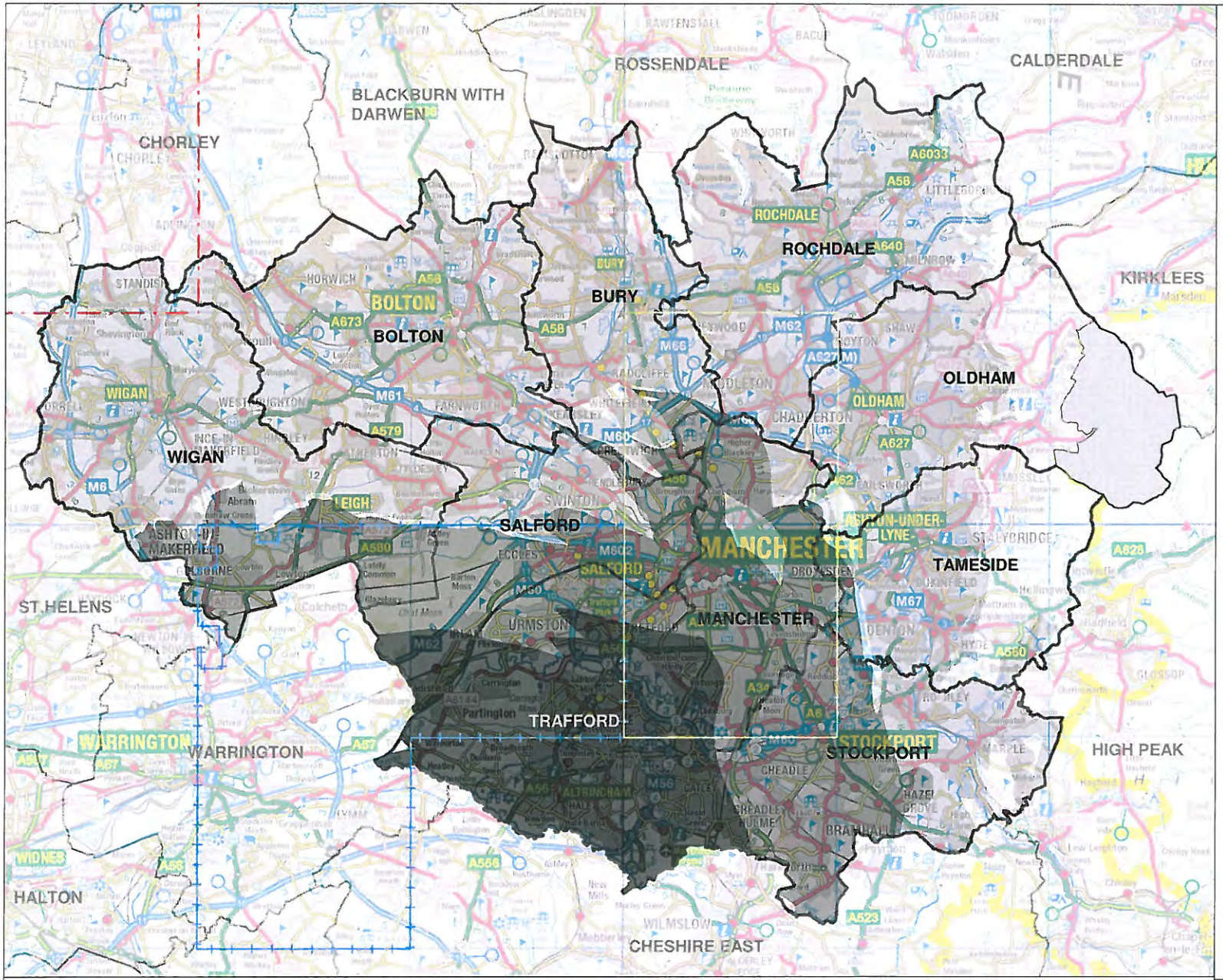
Map 2 - Areas of Search for Minerals in Greater Manchester



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Map 2a - Greater Manchester Spatial Distribution of Mineral Sites and Rail Depots with Key Locational Criteria



Greater Manchester Districts

Neighbouring District Boundaries

PEDL 165

PEDL 166

PEDL 193

Deep Coal Resource (1,200m +) - potential for Coal Bed Methane and other unconventional gas resource

Shallow Coal Resource (50 - 1,200m) - potential for Coal Bed Methane and other unconventional gas resource

Workable Surface Coal Resource

Peak District National Park - although located within Oldham it is not part of the Minerals Plan area

The extent of the coalfield with reserves at depths of 200 - 1,500m have potential for Coal Bed Mathane Extraction

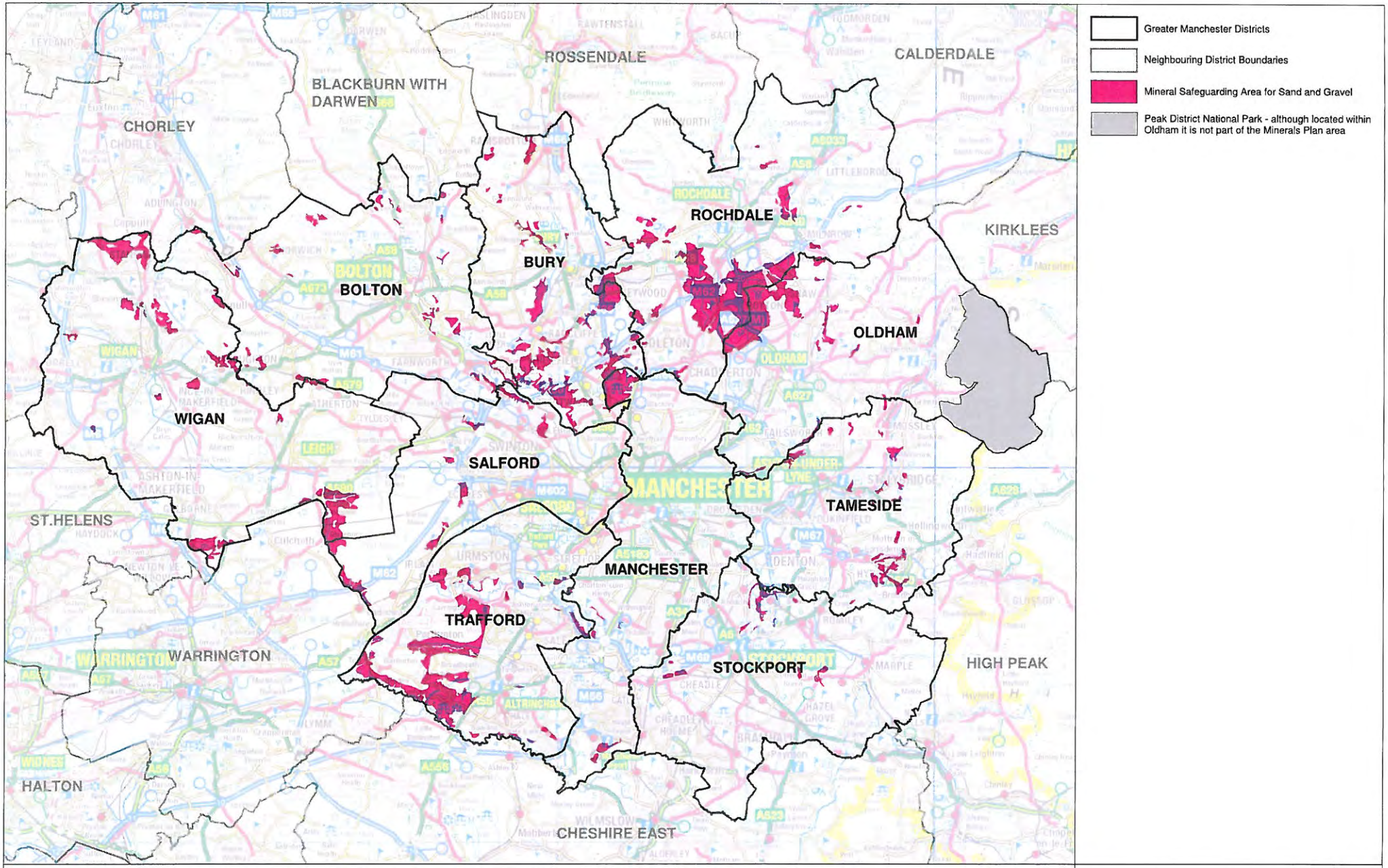
Information on PEDLs was up to date at time of Publication. For up to date PEDL information please refer to the Department of Energy and Climate Change (DECC)

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Map 3 - Coal Resource and Petroleum Exploration Development Licenses (PEDLs) in Greater Manchester

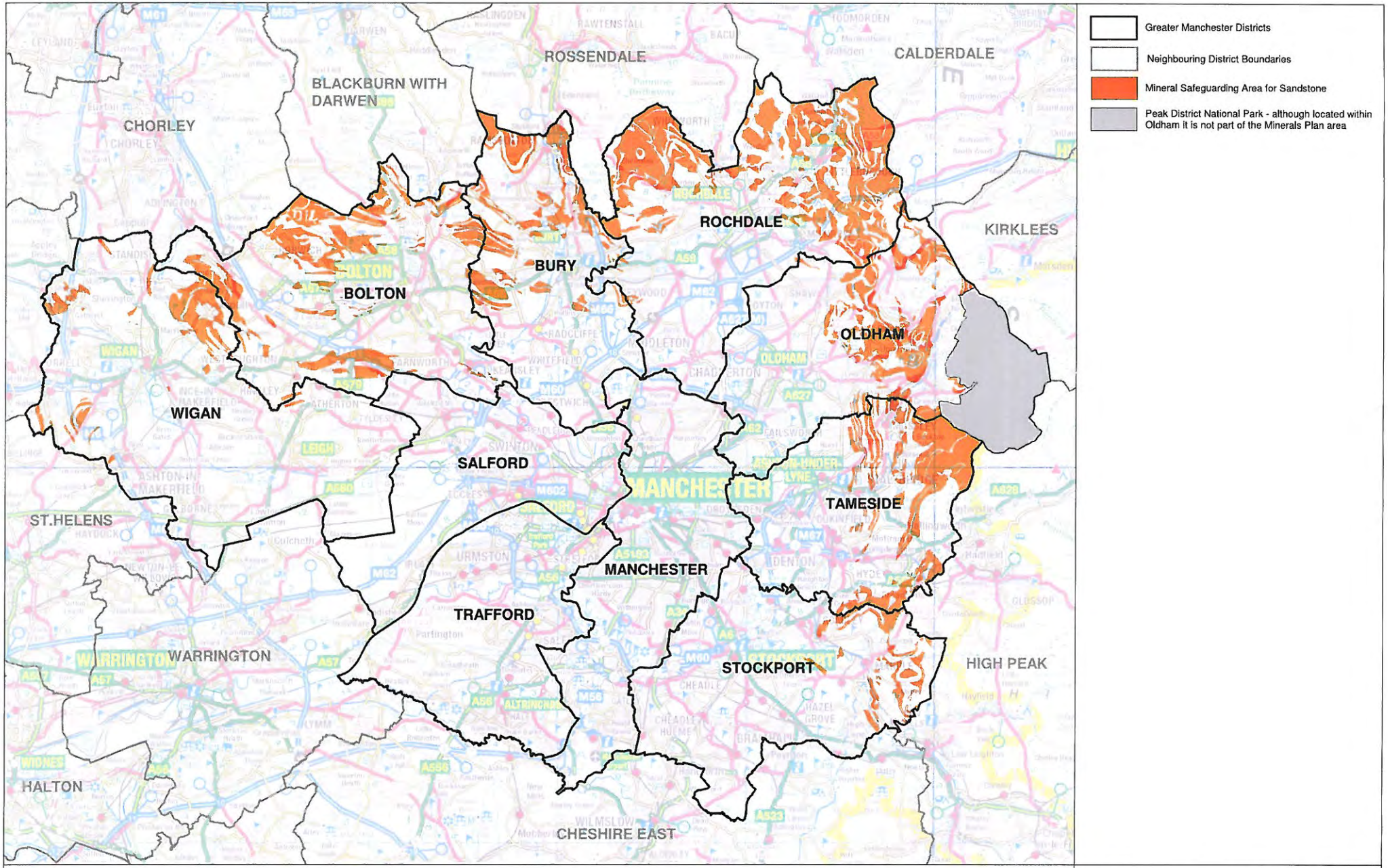


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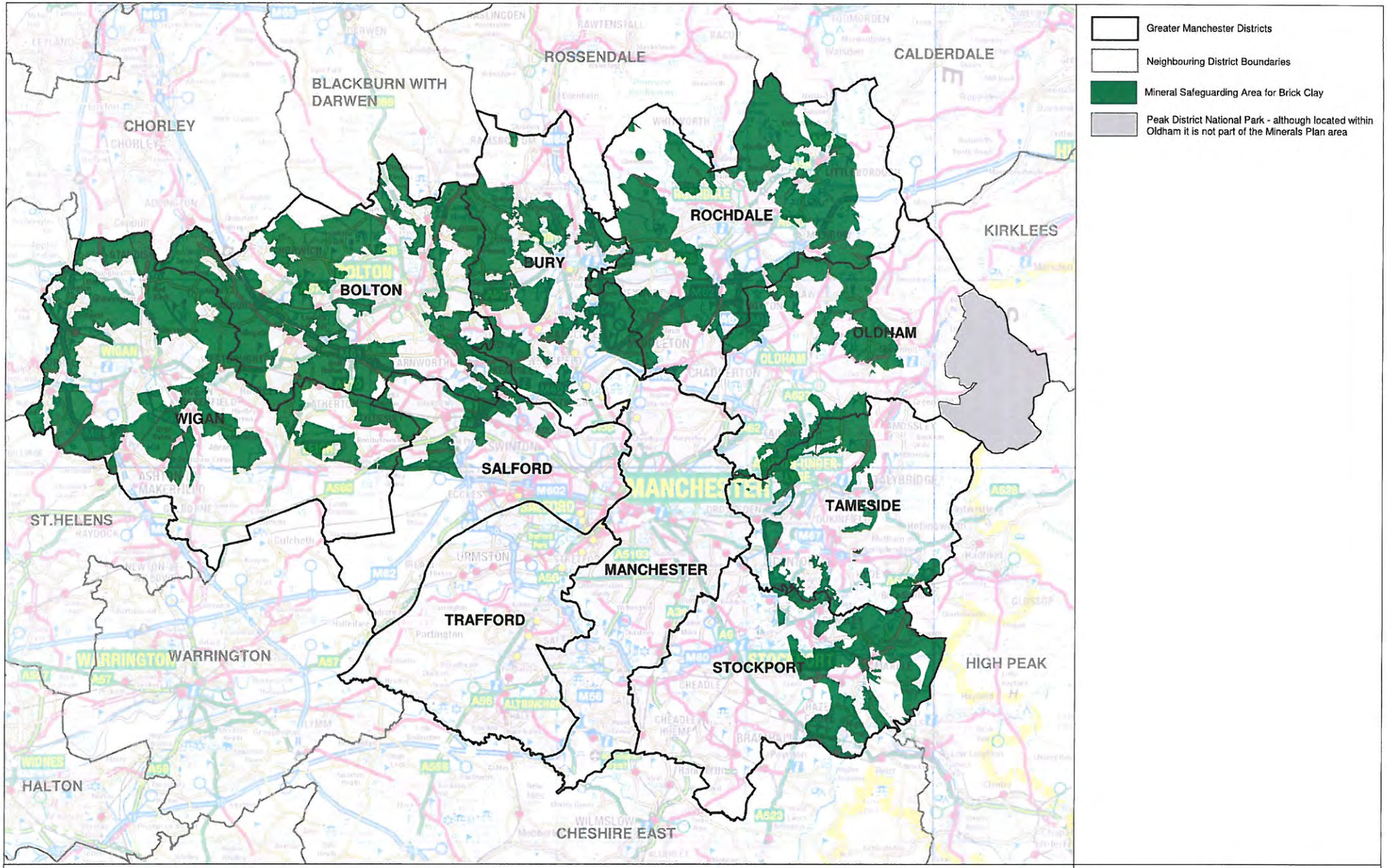
Map 4 - Mineral Safeguarding Area for Glaciofluvial Sand and Gravel



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Map 5 - Mineral Safeguarding Area for Sandstone

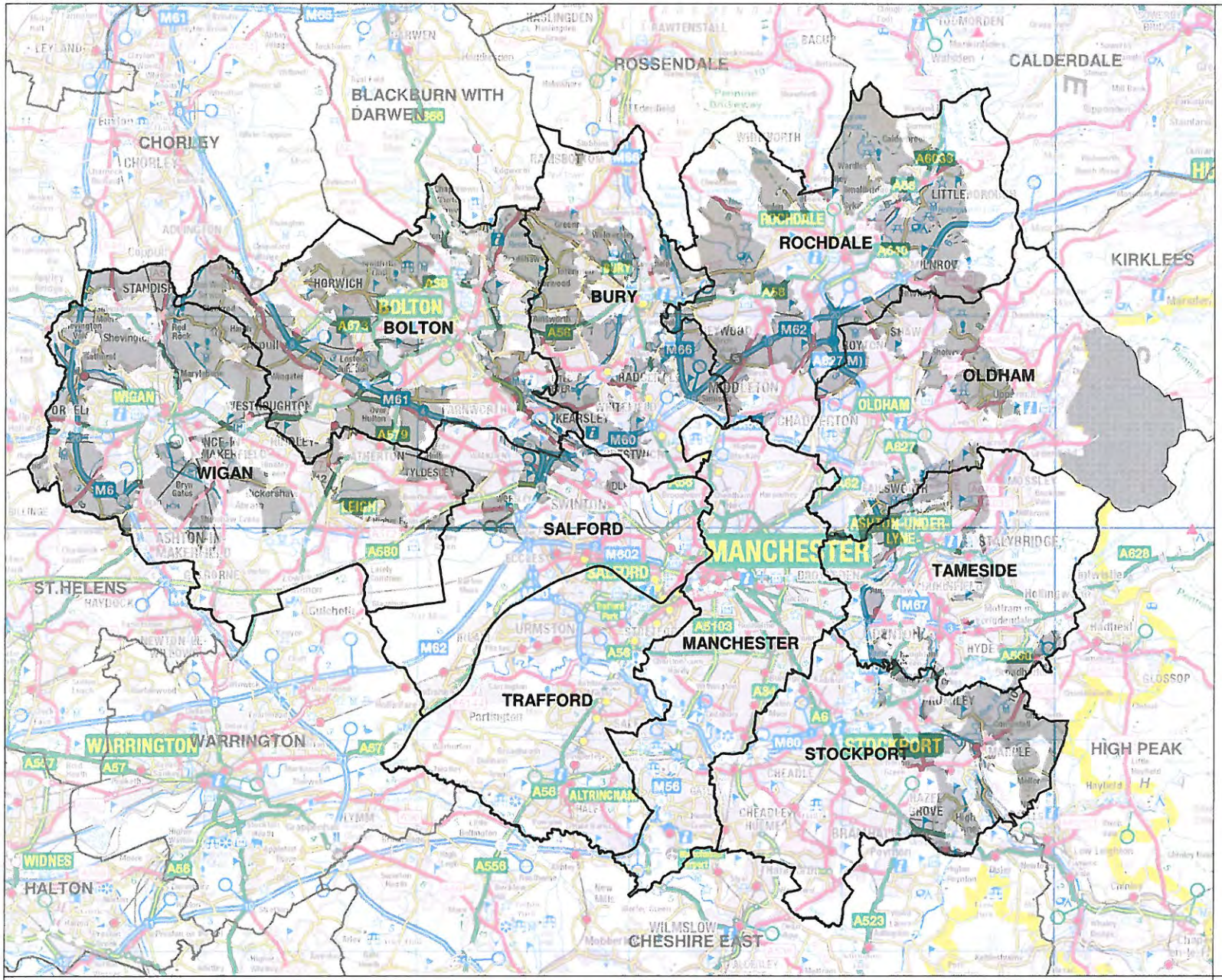


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Map 6 - Mineral Safeguarding Area for Brick Clay



Greater Manchester Districts

Neighbouring District Boundaries

Mineral Safeguarding Area for Coal

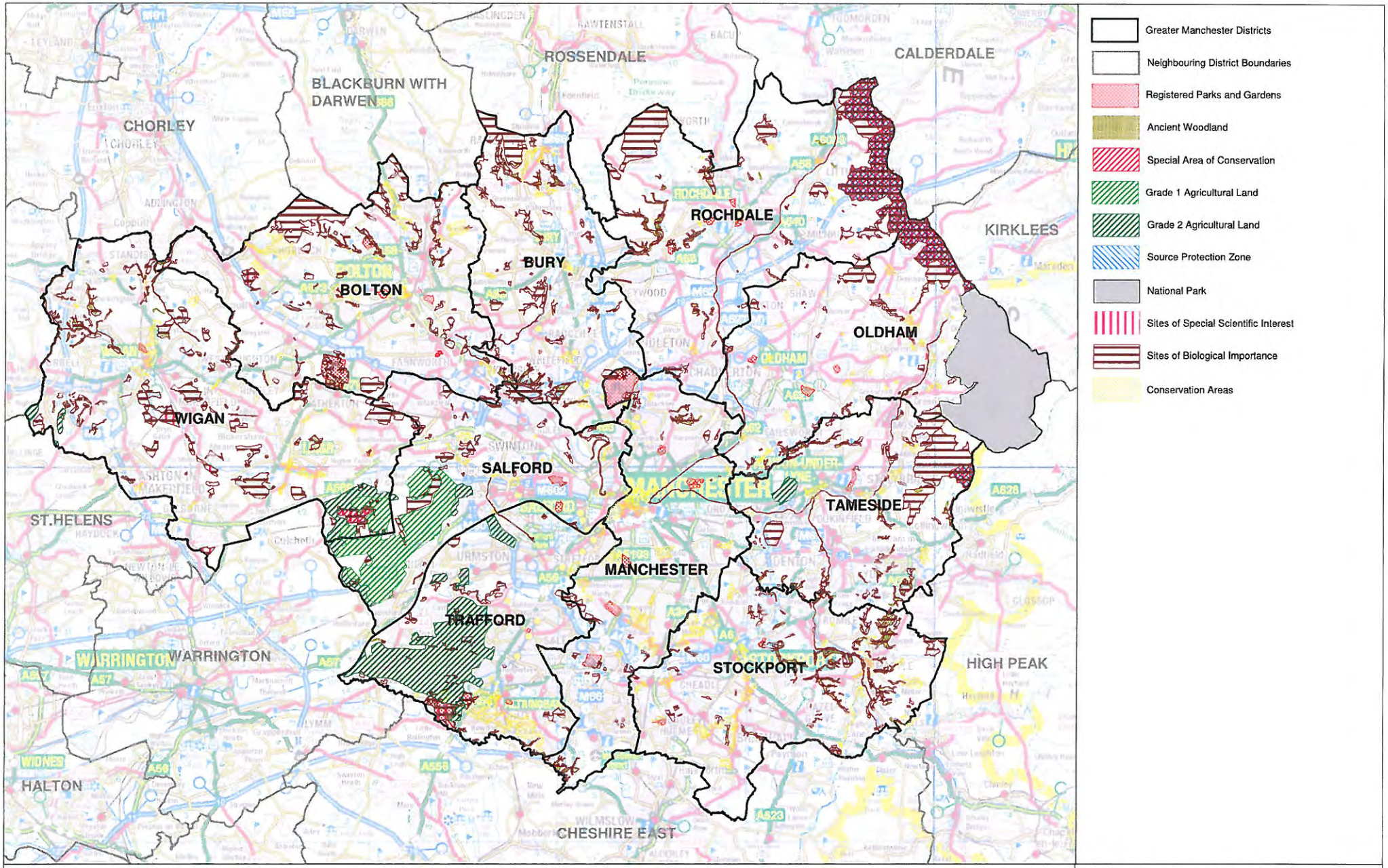
Peak District National Park - although located within Oldham it is not within the Minerals Plan area

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Map 7 - Mineral Safeguarding Area for Coal

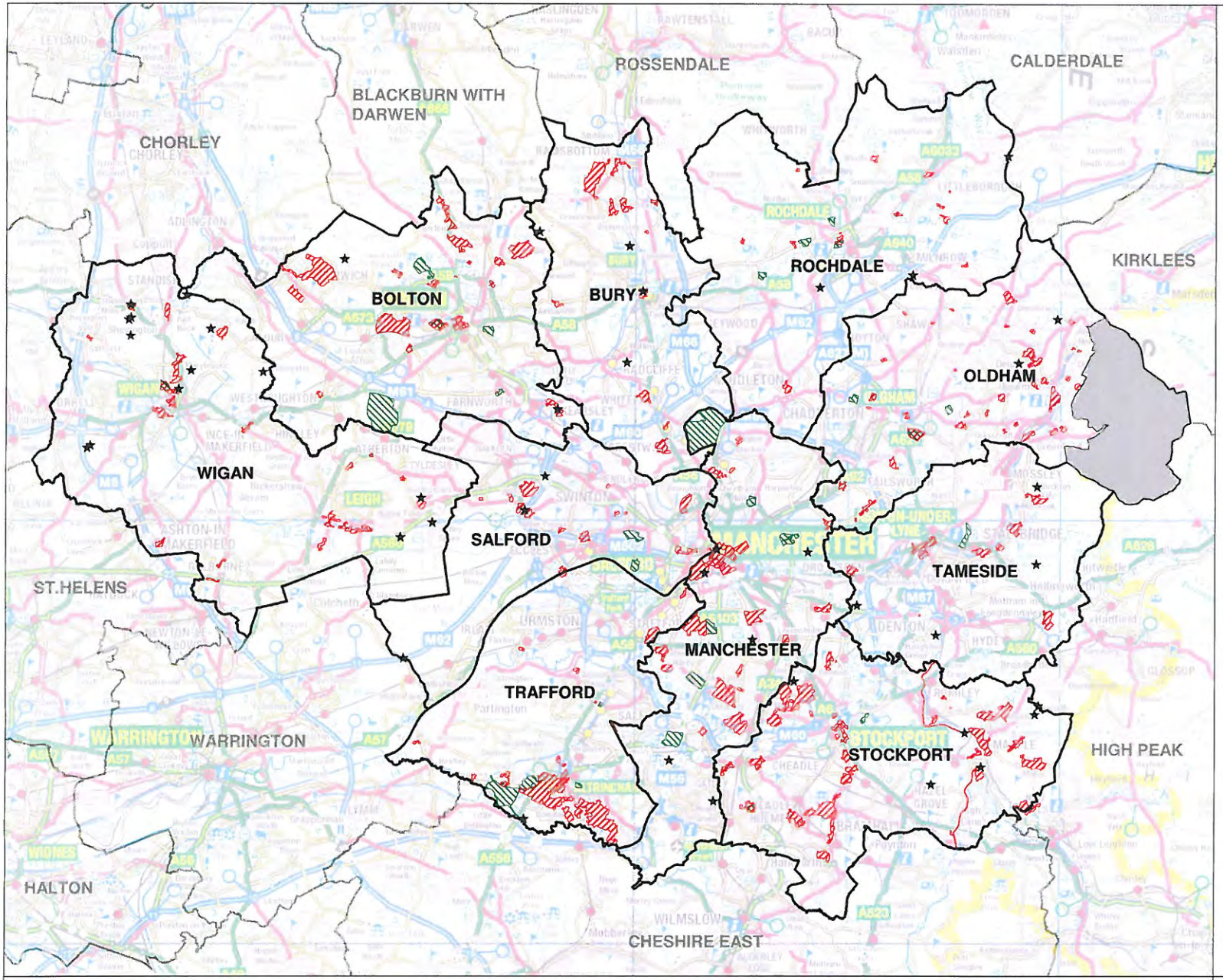


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Map 8 - Environmental Designations within Greater Manchester



Greater Manchester Districts

Neighbouring District Boundaries

Peak District National Park - although located within Oldham it is not included within the Minerals Plan area

Conservation Areas

Scheduled Ancient Monuments

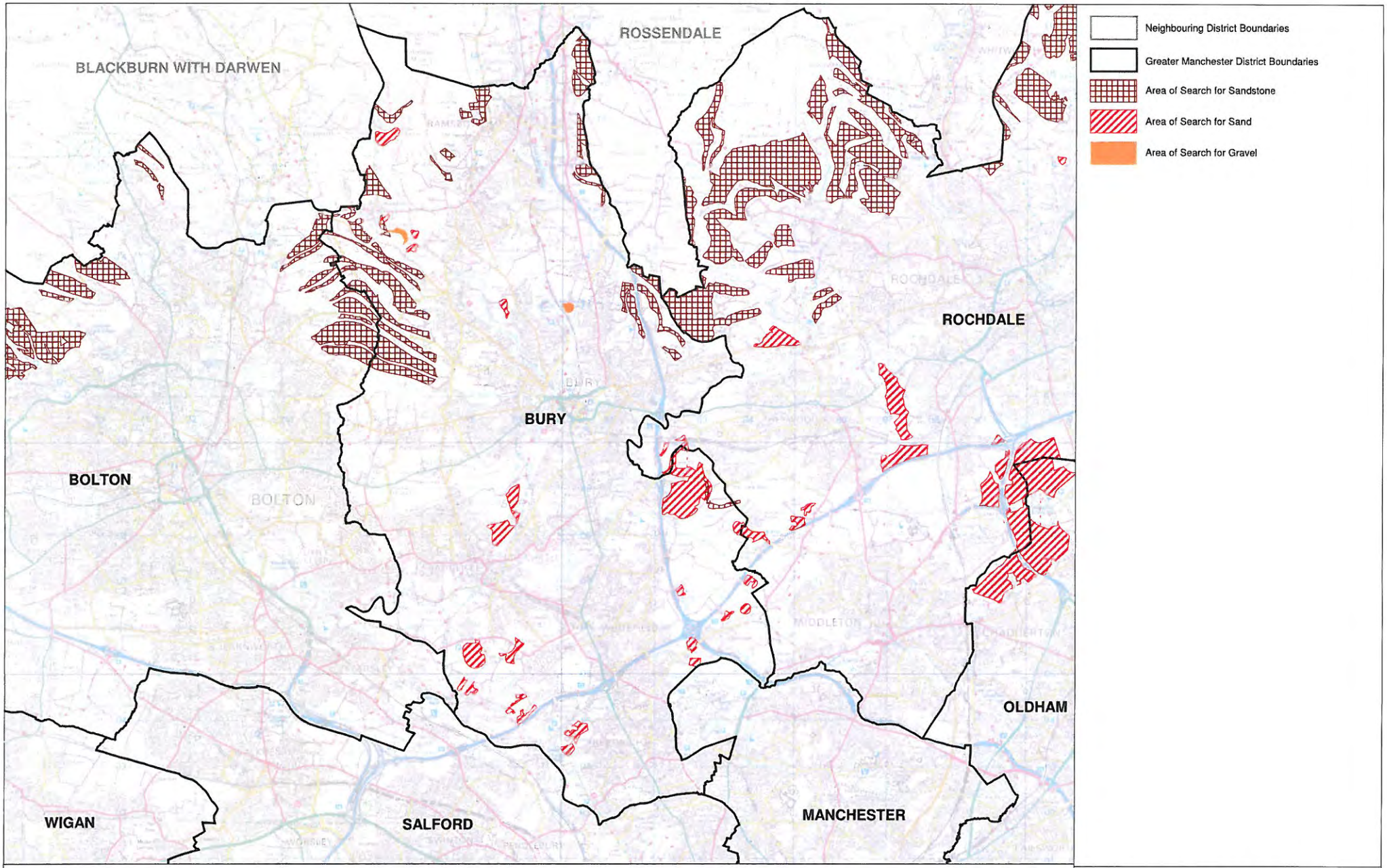
Registered Parks and Gardens

There are numerous Listed Buildings within the Greater Manchester sub-region which would be seen as a constraint to developing land. They have not been included on this map as it would make the map un-readable due to the high quantity of them.

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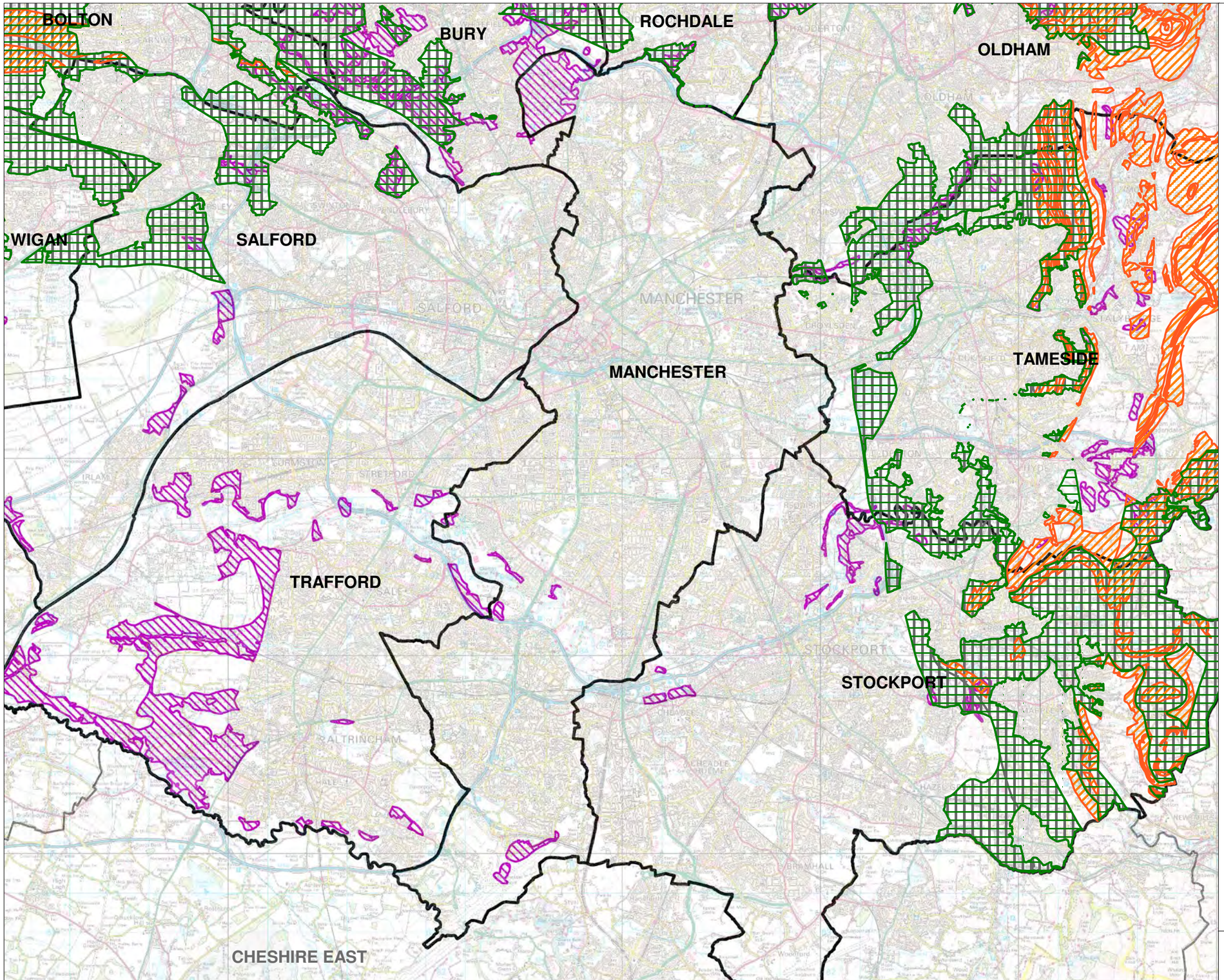
Map 9 - Designated Sites of Historical Importance



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Map 11 Areas of Search for Aggregates in Bury



Greater Manchester Disctricts

Neighbouring District Boundaries

Mineral Safeguarding Area for Coal

Mineral Safeguarding Area for Sand and Gravel

Mineral Safeguarding Area for Brick Clay

Mineral Safeguarding Area for Sandstone

MAP 22 MANCHESTER

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Scale @ A3
1cm = 1km

All Mineral Safeguarding Areas in Manchester

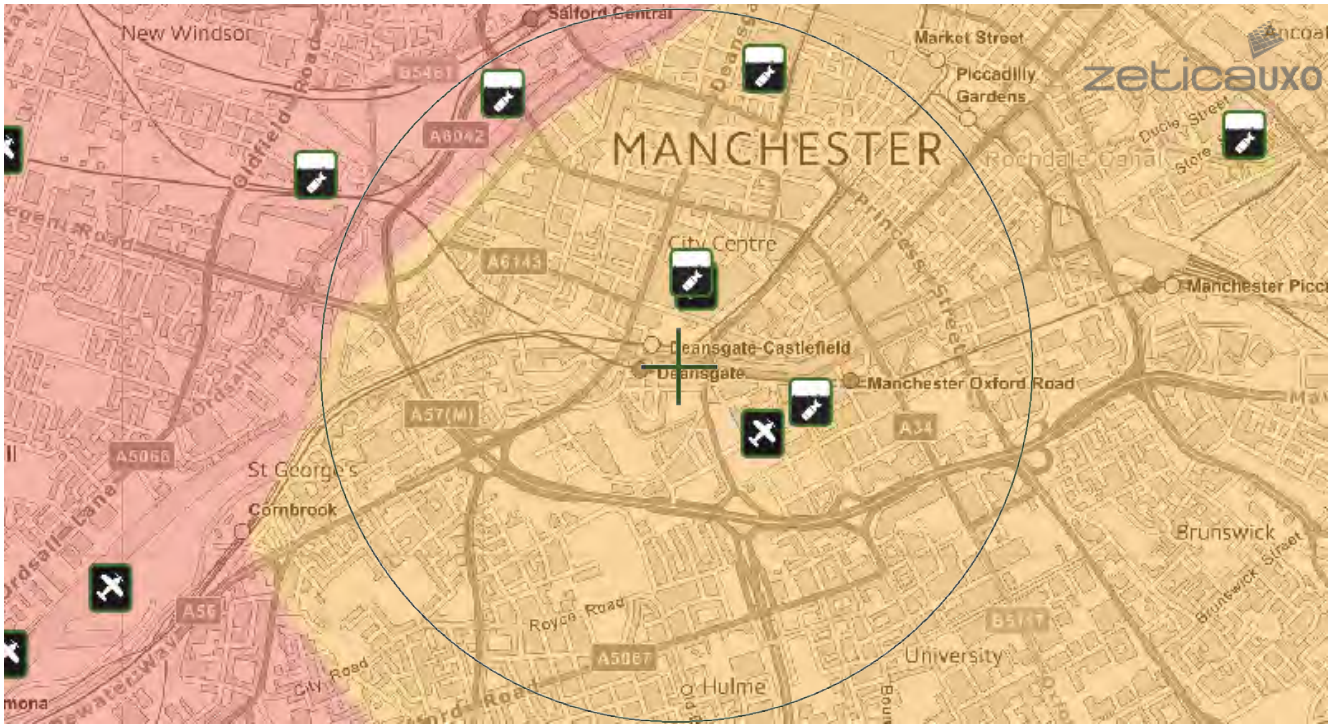
APPENDIX 7

ZETICA UXO RISK MAP AND A PRELIMINARY RISK ASSESSMENT REPORT

UNEXPLODED BOMB RISK MAP

SITE LOCATION

Map Centre: 383511,397530



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.

STAGE 1 PRELIMINARY UXO RISK ASSESSMENT

Report Ref: PRA-24-2493 | **Author:** ER | **Reviewer:** CB

Client: IGE Consulting Ltd.
Project: 2-4 Whitworth Street, Manchester
Date: 25/06/2024

BRIMSTONE
Innovation Centre Medway, Maidstone Road, Chatham, ME5 9FD
020 7117 2492
www.brimstoneuxo.com

INTRODUCTION

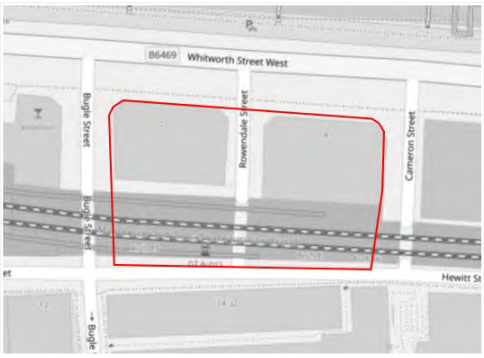
The Stage 1 Preliminary Risk Assessment is an initial screening assessment designed to highlight any sources of unexploded ordnance (UXO) with the potential to contaminate a given site.
The aim of the Stage 1 assessment is to identify or discount the need for further detailed research - a Stage 2 Detailed UXO Risk Assessment.
This desktop assessment has been researched and written by a dedicated Researcher / Risk Assessor and produced in accordance with the CIRIA C681 Guidelines: 'Unexploded Ordnance, a Guide for the Construction Industry' (published in 2009).
In preparation for this assessment, original wartime records, historic OS mapping and the *Brimstone UXO Sources Database* have been reviewed. The latter incorporates multiple datasets plotting the positions of a variety of domestic military sites and confirmed historic German bombing targets.

The Stage 1 Preliminary Risk Assessment considers the following:

1. The Proposed Works
2. Enemy Action During WWI and WWII
3. British / Allied Military Activity
4. Historic Site Occupancy
5. Risk Mitigating Factors

THE SITE

The Site (approximately centred on the National Grid Ref: SJ 83517 97524) is located within the area of Deansgate in Greater Manchester, approximately 20m east of Deansgate railway station.
The Site comprises two multi-storey structures in the northern extent and a raised railway line and hardstanding in the south. Rowendale Street intersects the central extent of the Site, leading to Hewitt Street.
The Site is bound to the north by Whitworth Street West, to the east by Cameron Street, to the south by Hewitt Street, and to the west by Bugle Street.



THE PROPOSED WORKS

SI works will comprise four boreholes to 35m bgl, 12 trial pits and six trenches to unspecified depths, constructed within the paved areas.
Development works will include the demolition of the existing buildings and the construction of a 43-storey building.

ENEMY ACTION DURING WWI AND WWII

Potential Source of UXO	Significant?	Details	
WWI German Bombing	✗	No air raids affected Manchester during WWI.	
WWII German Bombing	✓	British District Bombing Density Statistics	The Site was located within the WWII-era County Borough of Manchester, which sustained 27 bombs / 1,000 acres, a low-to-moderate bombing density.

		Evidence of Bomb Strikes / Damage	A bomb and damage map for Manchester, covering bombing between 1940-1941, records no HE bombs and two incendiary bomb 'showers' within an approximate 300m radius of the Site; the closest IB shower is plotted approximately 130m west of the Site. This source also records multiple areas of damage in the surrounding area of the Site, with the closest recorded to a structure approximately 75m south-west. Note, this source does not provide a comprehensive overview of bombing incidents within Manchester due to its limited date range. Bomb census tracings for Manchester do not record any bomb strikes within the vicinity of the Site. However, it should be noted that these tracings are poorly scaled and do not contain a lot of detail. Subsequently, the precise location of the Site and local bomb strikes could not be confirmed. Blitz Britain by Graham Phythian records an IB on 22nd December 1940 as impacting Whitworth Street; however, the precise location of the damage / area of impact was not recorded although it is not believed to have affected the Site. A comparison of pre- (1938) and post- (1948) WWII OS mapping and consultation of post-WWII (1946) aerial photography does not reveal any immediately obvious evidence of bomb damage, with the structures on Site and in the immediate surrounds remaining externally intact. Repair works appear to have been conducted to railway tracks approximately 65m north-west in the aerial image.
		Local Bombing Decoy Sites	None within a significant distance of the Site. The closest was located approximately 8.5km to the south-east.
		Local German Bombing Targets	Luftwaffe target photography identifies Manchester Central Station, approximately 150m north-east of the Site and a gas works and gas supply instillation approximately 375m south-east, as primary bombing targets.
WWII German Cross Channel Artillery Shelling	×	n/a	

BRITISH / ALLIED MILITARY ACTIVITY		
Potential Source of UXO	**Significant?**	**Details**
WWII Home Guard (HG) Activity	×	Soldiers of the 47th, 49th and 56th Lancashire (Manchester) and the 57th (21 GPO), 58th (22 GPO), and 59th (23 GPO) Lancashire HG Battalions will have been active locally during WWII. However, such troops are unlikely to have utilised the Site due to its developed nature.

Site Requisitioned for Wartime Military Use	×	n/a
Existing or Historic Army or RAF Training Area / Weapons Range	×	n/a
Existing or Historic Military Bases and Other Installations	×	n/a
Existing or Historic Munitions or Explosives Factories	×	n/a
Existing or Historic Military Defensive Fortifications	×	n/a
WWII Light and / or Heavy Anti-Aircraft (LAA and HAA) Fire	×/✓	Numerous (>30) permanent HAA batteries were active within a range of the Site during WWII. Luftwaffe activity in the region was somewhat frequent. Therefore, these guns are likely to have fired a notable amount of ammunition in the vicinity of the Site. Given this, it is possible that an unexploded AA shell struck the Site, although this is considered unlikely due to its largely developed nature during WWII.
Pipe-Mined Locations and Beach Minefields	×	n/a
UXO Finds	×	An incident occurred on 24th October 2018, in which an unexploded tank cartridge was discovered on a building site on New Quay Street, approximately 710m north-west of the Site. The device was later safely removed by an EOD team from the military.[1]
SITE HISTORY		
What was the Site occupancy historically, especially during WWI and WWII?	During WWII, the Site comprised two structures in the northern extent of the Site, potentially warehouses / storage areas. Train tracks encompassed the central extent of the Site and hardstanding in the south.	
RISK MITIGATING FACTORS		
Post-Conflict Ground Works	The Site appears to have retained its pre-war composition and no significant post-conflict ground works are anticipated to have occurred, although potential modernisation / general maintenance, disturbing WWII-era soil to very shallow (<1m bgl) depths may have occurred.	

[1] https://www.independent.co.uk/news/uk/home-news/manchester-city-centre-evacuated-bomb-tank-shell-cartridge-new-quay-street-latest-a8599581.html

Likelihood of UXO Remaining	The risk associated with (any) very shallow buried UXO may have been partially mitigated. However, the risk associated with (any) shallow (1-2m bgl) and deep (>2m bgl) buried UXO almost certainly remains unmitigated.

CONCLUSIONS

German UXO:

- The Site was located within the WWII-era County Borough of Manchester, which sustained 27 bombs / 1,000 acres, a low-to-moderate bombing density. The Site was situated in the vicinity of multiple primary bombing targets; the closest was Manchester Central Station, approximately 150m north-east, and a gas works and gas supply installation, approximately 375m south-east of the Site.
- A bomb plot damage map (1940-1941) does not record any HE bomb strikes within an approximate 300m radius of the Site. The closest incident, an incendiary bomb 'shower', is plotted 130m west of the Site. Multiple areas of damage are also recorded in the surrounding area, with the closest recorded approximately 75m south-west.
- Bomb census tracings for Manchester do not record any bomb strikes in the vicinity of the Site; although, it should be noted that these tracings are poorly scaled and contain limited detail, and therefore the precise location of the Site and local bomb strikes could not be confirmed. Furthermore, a written account refers to an IB 'shower' as impacting Whitworth Street in which the Site is located; however, the precise location of this strike could not be determined.
- Post-WWII aerial photography and a comparison of pre- and post-WWII OS mapping has not displayed any immediately obvious evidence of bomb damage on Site or in the immediate surrounds, with no cratering or structural clearance / damage identifiable. The structures / infrastructure on Site appear to have survived externally intact; indeed, the current footprint of the Site is largely consistent with that present during WWII.
- As a result of the above, wartime ground cover on Site is anticipated to have been conducive to the visual detection of UXBs i.e. undamaged properties. Evidence of bomb damage / UXBs is likely to have been clear and obvious and will likely have been noticed and reported at the time. Furthermore, access levels to the Site are anticipated to have been frequent during WWII given the lack of identifiable damage, as well as the Site's situation in an urbanised areas being bound by further structures / infrastructure and roadways which also display no immediately obvious evidence of significant damage occurring. This further heightens the likelihood of a UXB strike being observed and reported at the time.
- In summary, as no evidence of bombing / damage occurring on Site has been identified, combined with the wartime ground cover being largely conducive to the visual detection of UXBs and access levels anticipated to have been frequent, therefore, the risk of encountering UXBs on Site is not considered to be elevated above the 'background level' for this area of the country.

British / Allied UXO:

- No evidence of significant military activity specifically on Site has been found and none is likely to have occurred.
- Numerous (30>) HAA batteries were active within a range of the Site during WWII. It is possible that an unexploded AA shell struck the Site; however, as above, any incidents would likely have been observed and dealt with at the time of occurrence.

RECOMMENDATIONS

SI Works	A Stage 2 Detailed Risk Assessment is not considered necessary prior to SI works commencing. However, the possibility of UXO remaining on Site cannot be completely ruled out at desktop stage. Therefore, a **UXO Safety Briefing** to all personnel conducting ground works would be considered prudent.
Development Works	

APPENDIX 8

COAL AUTHORITY CONSULTANTS COAL MINING REPORT

The Coal Authority

Consultants

Coal Mining Report

4201 Whitworth Street, Manchester
Greater Manchester

Date of enquiry:	**21 June 2024**
Date enquiry received:	**21 June 2024**
Issue date:	**21 June 2024**
Our reference:	**51003432566001**
Your reference:	**GS-MWY-A3U-VQS-RWE**

Consultants

Coal Mining Report

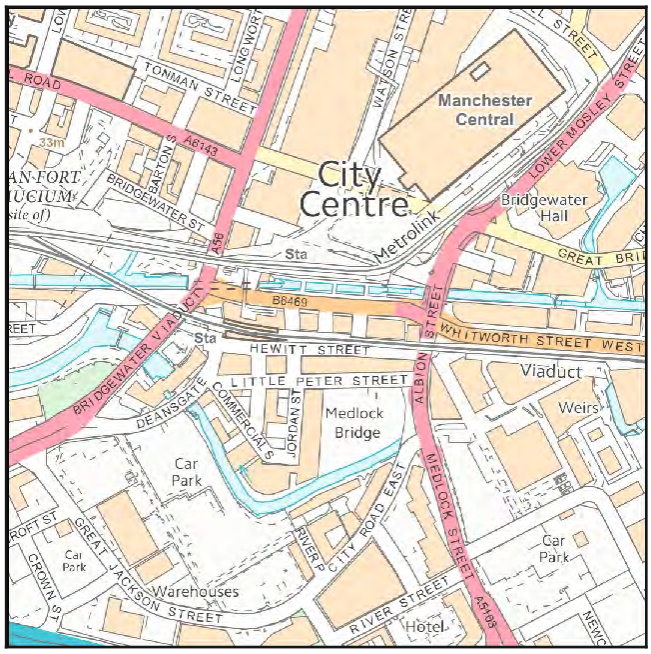
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

4201 Whitworth Street, Manchester
Greater Manchester



Approximate position of property

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How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

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Section 1 – Mining activity and geology

Past underground mining
No past mining recorded.

Probable unrecorded shallow workings
None.

Spine roadways at shallow depth
No spine roadway recorded at shallow depth.

Mine entries
None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers
None available.

Outcrops
No outcrops recorded.

Geological faults, fissures and breaklines
No faults, fissures or breaklines recorded.

Opencast mines
None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips
None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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The Coal Authority

Summary of findings

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The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

APPENDIX 9

BRITAIN FROM ABOVE PHOTOGRAPHS



www.britainfromabove.org.uk/image/EPW062697 © Historic England



www.britainfromabove.org.uk/image/EPW062700 © Historic England



www.britainfromabove.org.uk/image/EPW062708 © Historic England



www.britainfromabove.org.uk/image/EPW062710 © Historic England

APPENDIX 10

KATHRYN SATHER AND ASSOCIATES HISTORICAL RECORDS

Plans 9265
249

I. ANDREW. ESQ
WAREHOUSE, WHITWORTH ST WEST

9265

SCALE: EIGHT FEET TO ONE INCH

H.B. McClelland & G. Ondrew
Architects
2 Victoria St. Manchester

GUAGE OF BRICKWORK: 4 COURSES





Projections not to exceed 12"

Projections not to exceed 12" all downpipes to be to a height of 12'

ROWE STREET

BASEMENT

WHITWORTH STREET WEST

DATUM

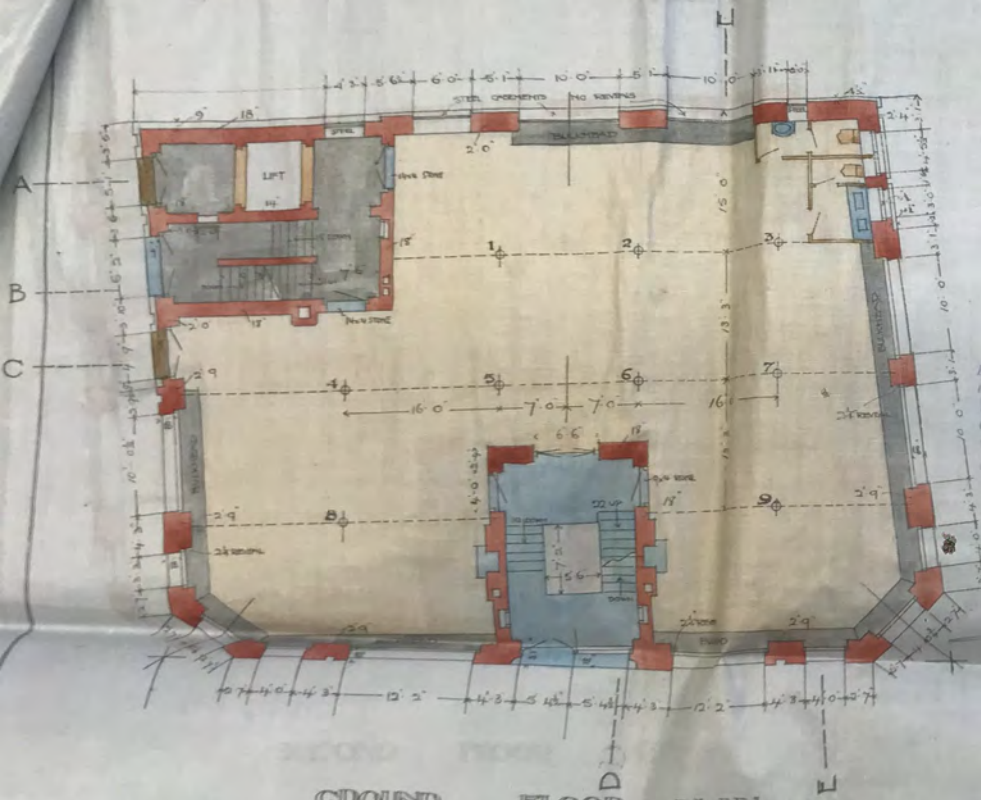
City of Manchester
Approved so far as relates to the Bye-Laws only and without responsibility as to strength or stability of the structure. The building and work must be carried out in every particular in strict accordance with the Bye-Laws in force with respect to New Streets and Buildings, &c. This approval to remain in force only in case the buildings are commenced within two years from this date.
Dated this 25th day of June 19
Chairman
Henry Dixon Assistant

L. ANDREW. ESQ. WAREHOUSE, WHITWORTH ST WEST.

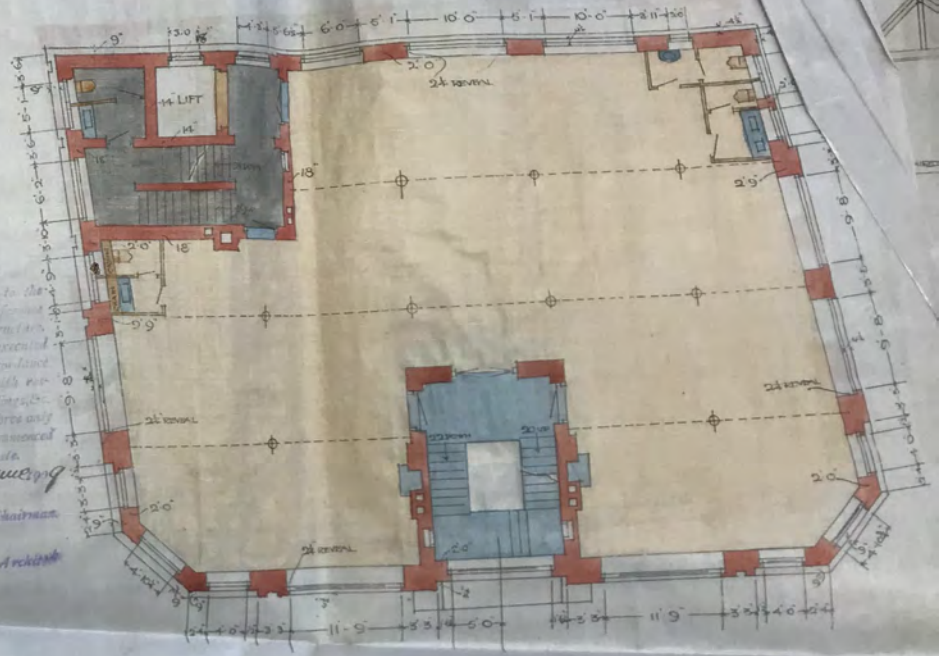
SCALE EIGHT FEET TO ONE INCH.

H.B. Mebbullock & Alf. Andrew
Architects
2 Victoria Street, Manchester

9265



GROUND FLOOR PLAN.



FIRST FLOOR PLAN.

City of Manchester.

Approved so far as relates to the Bye-Laws only and without reference to strength or stability of the structure. The building and work must be executed in every particular in strict accordance with the Bye-Laws in force with respect to New Streets and Buildings. This approval to remain in force only in case the buildings are commenced within two years from this date.

Dated this 23 day of June 1899

Chairman.

Henry Price Architect

Vent pipes to be provided to the W.C's



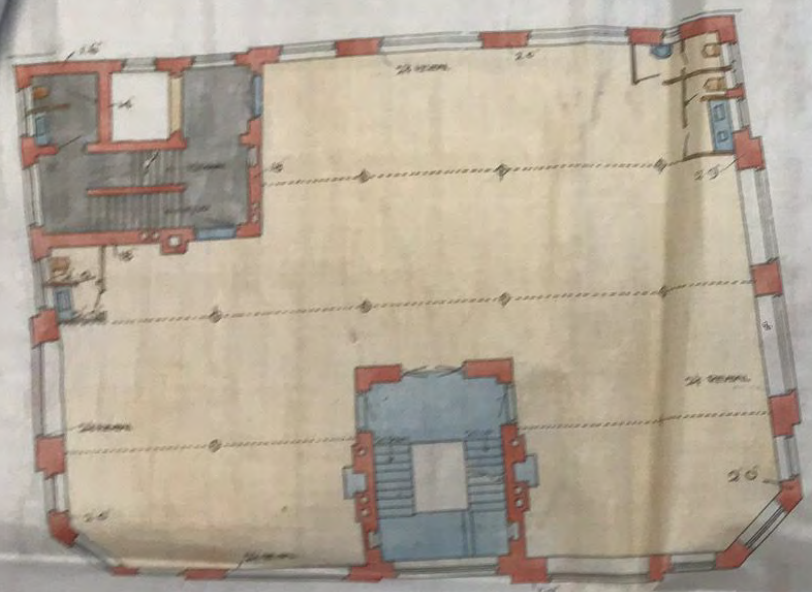
Before the Parish Committee

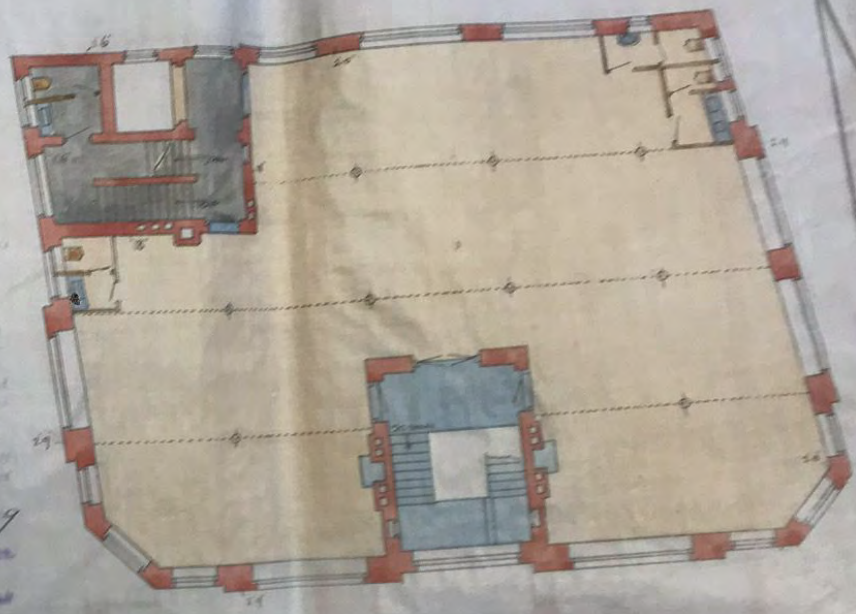
L. ANDREW. ESQ

WAREHOUSE, WHITWORTH ST WEST

SCALE: EIGHT FEET TO ONE INCH

9265





City of Manchester.

SECOND FLOOR PLAN.

THIRD FLOOR PLAN

GOODS LIFT. SECTION A

GOODS STAIR SECTION B.

MAIN STAIR SECTION D

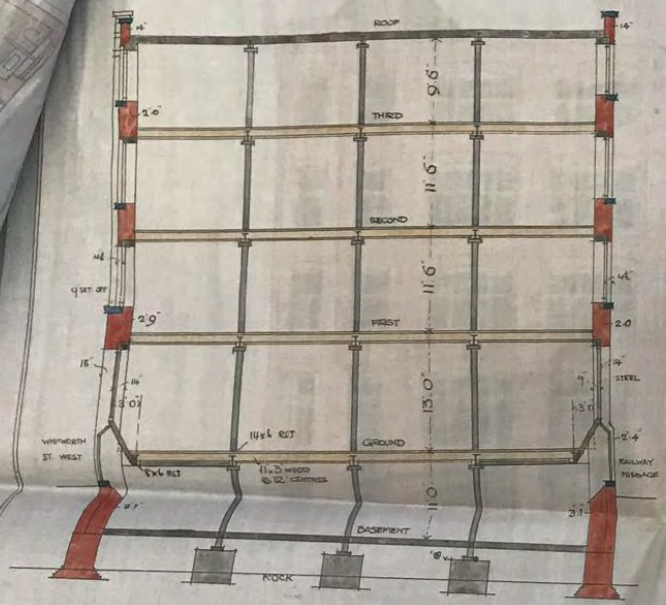
I. ANDREW. ESQ

WAREHOUSE. WHITWORTH ST WEST

SCALE. EIGHT FEET TO ONE INCH.

Sth McClelland & Andrews
Architects
2 Victoria Sts. Manchester.

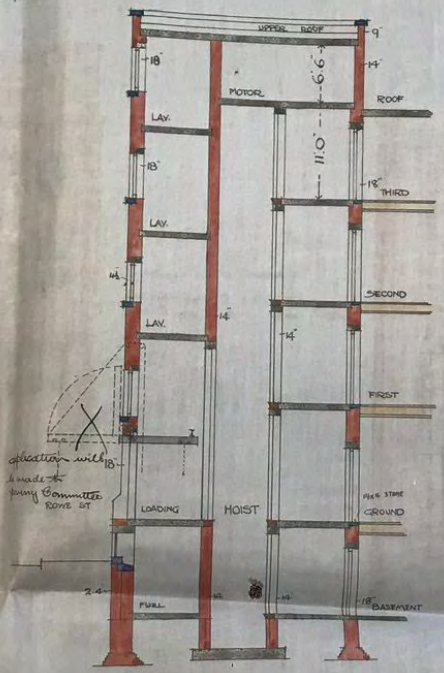
9265



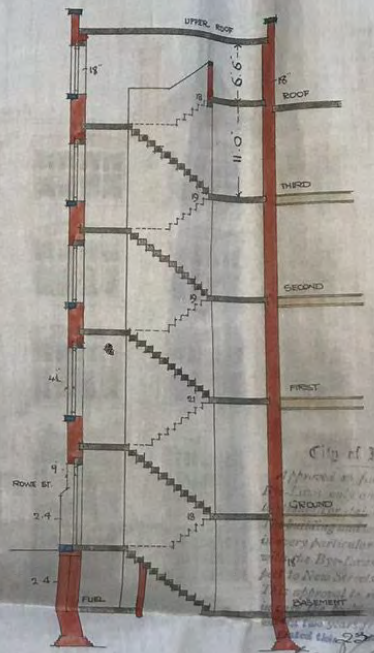
DATUM

WARE ROOM. SECTION E

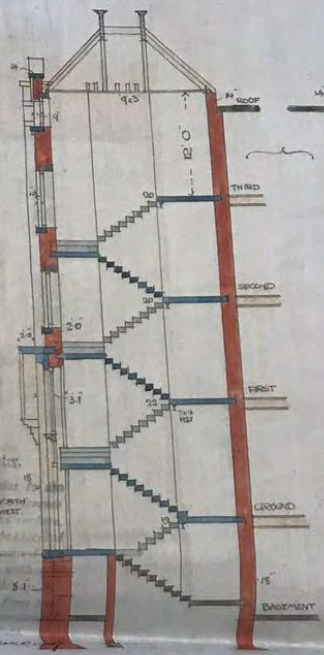
Horizontals & vertical damp course in Pennine Rock or other approved.



GOODS LIFT. SECTION A



GOODS STAIR SECTION B.



MAIN STAIR SECTION D

WARE ROOM

City of Manchester.

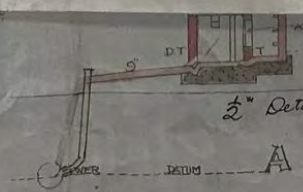
Approved as far as the Line and Level of the Street is concerned

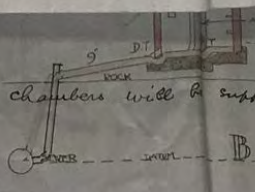
Chairman

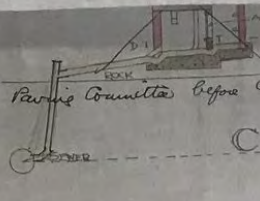
Surveyor to the Committee

5.59

ALL EXTERNAL AND INTERNAL WALLS BUILDED







½" Details of these Chambers will be supplied to the Paving Committee before Construction.

5.22

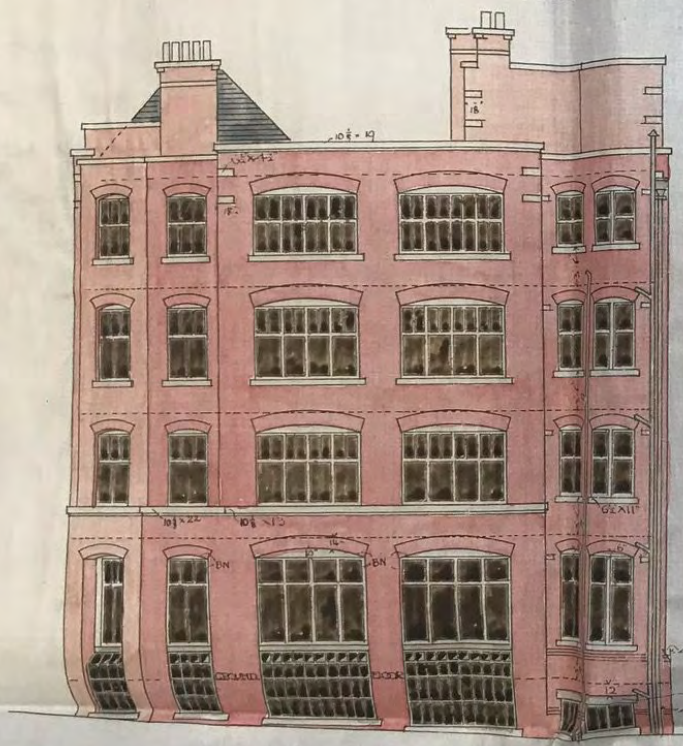
L. ANDREW. ESQ

WAREHOUSE . WHITWORTH ST WEST

9265

SCALE: EIGHT FEET TO ONE INCH

H.B. McBultch & A.G. Andrew
Architects
2 Victoria Street Manchester





Projections not to exceed 12"
all doorsps to be in chases
to a height of 12-0 above footpath.

City of Manchester

Approved so far as relates to the Bye-Laws only and without reference to strength or stability of the structure. The building and work must be executed in every particular in strict accordance with the Bye-Laws in force with respect to New Streets and Buildings, &c. This approval to remain in force only if Buildings are commenced within three years from date.

Dated the 28th day of June 1899

Chairman

City Architect

BASEMENT

BUGLE STREET

DATUM

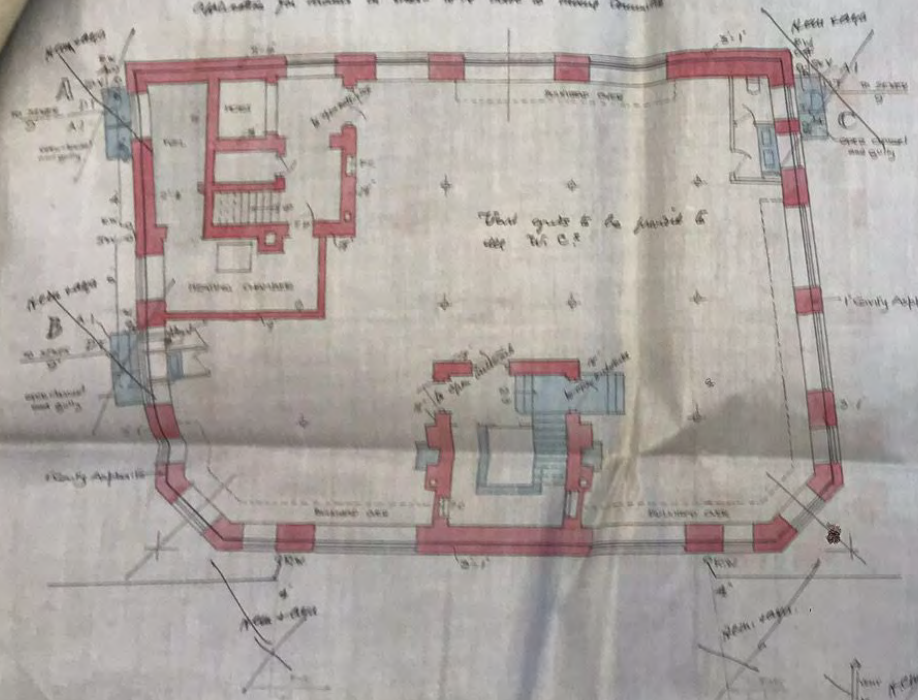
RAILWAY PASSAGE

WAREHOUSE. WHITWORTH STREET WEST. MANCHESTER.

SCALE EIGHT FEET TO AN INCH.

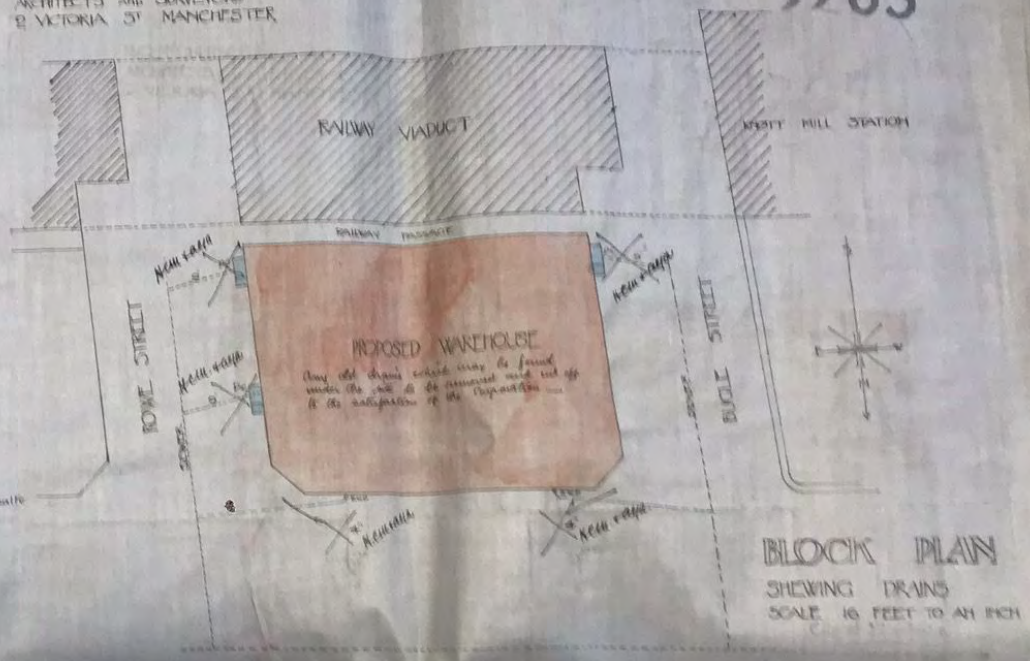
H.C. McCULLOCH and A.G. ANDREW
ARCHITECTS and SURVEYORS
2 VICTORIA ST MANCHESTER

9765



BASEMENT PLAN

ALL INTERNAL AND INTERNAL WORKS ALLOWED



BLOCK PLAN

SHEWING DRAINS
SCALE 16 FEET TO AN INCH



5-24

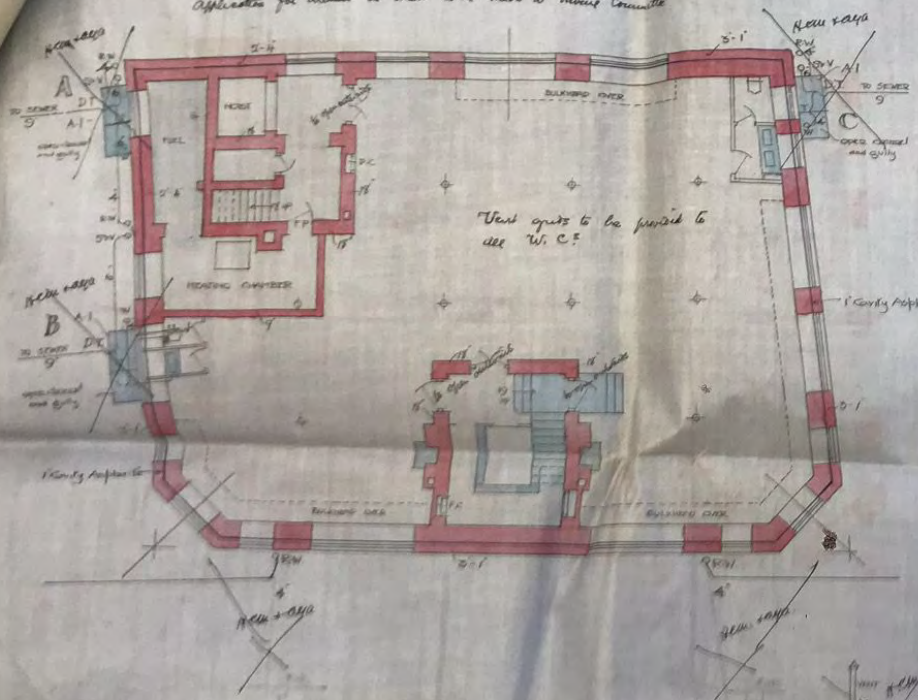
WAREHOUSE. WHITWORTH STREET WEST. MANCHESTER.

SCALE EIGHT FEET TO AN INCH.

H.C. McCULLOCH and A.G. ANDREW
ARCHITECTS and SURVEYORS
2 VICTORIA ST MANCHESTER

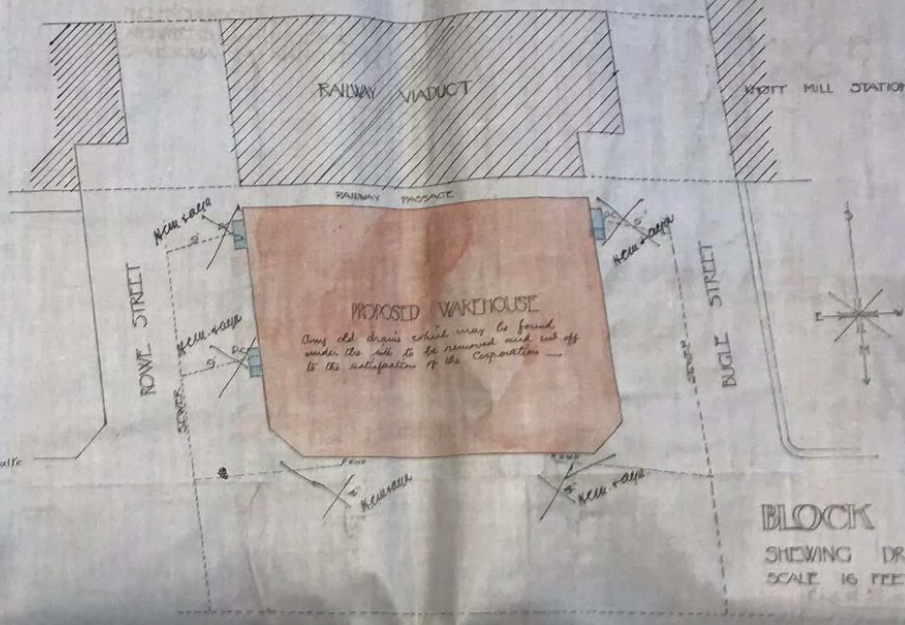
9765

Application for drains in streets to be made to Paving Committee



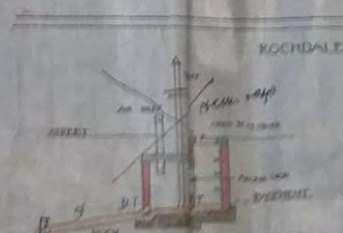
BASEMENT PLAN

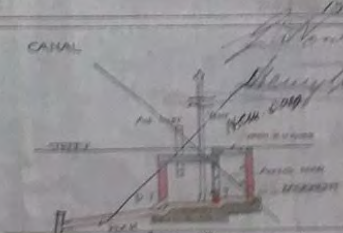
ALL DRAINS AND INTERNAL WORK TO BE



BLOCK PLAN
SHEWING DRAINS
SCALE 16 FEET TO AN INCH





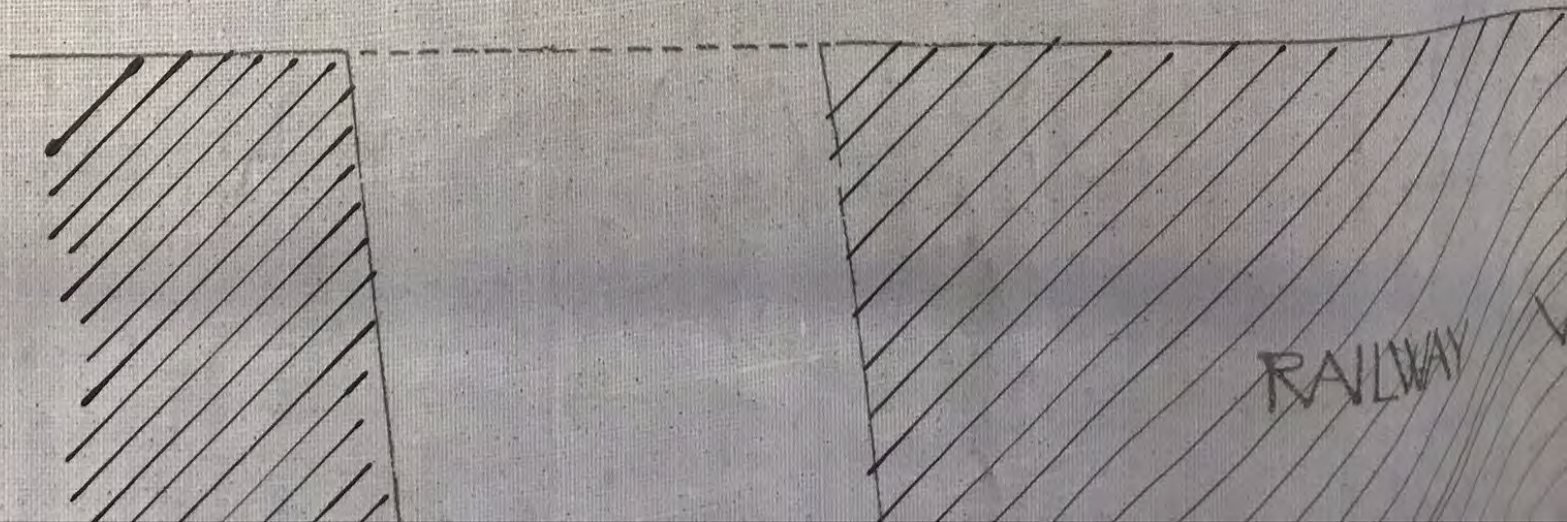


½" Details of these chambers will be supplied to the Paving Committee before Construction

5-22

TH STREET WEST. M

H.C. McCULLOCH AND A.G. ANDREW
ARCHITECTS AND SURVEYORS
2 VICTORIA ST MANCHESTER

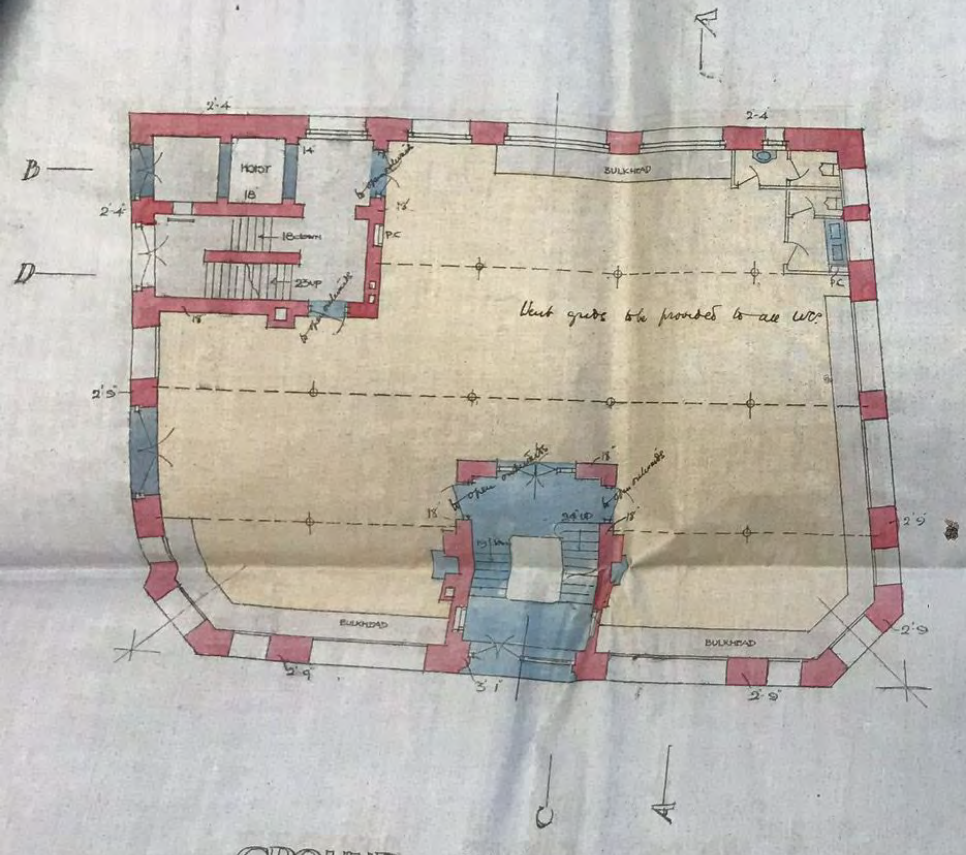


WAREHOUSE. WHITWORTH STREET WEST. MANCHESTER.

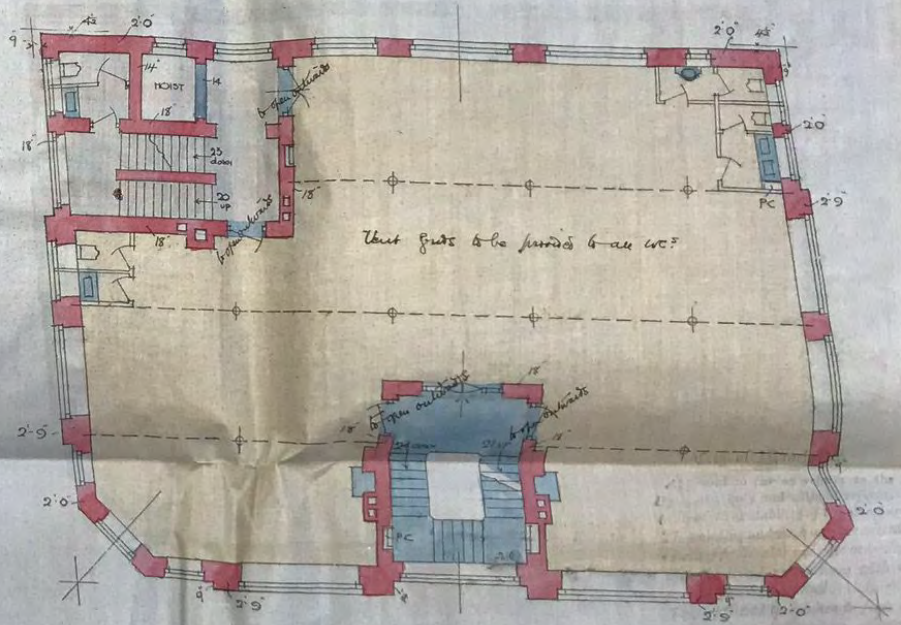
SCALE EIGHT FEET TO AN INCH.

H.C. McCULLOCH AND A.G. ANDREW
ARCHITECTS AND SURVEYORS
2 VICTORIA ST MANCHESTER

9265



GROUND FLOOR PLAN



13 Jan 9
J. Howarth
Henry Lee

FIRST FLOOR PLAN

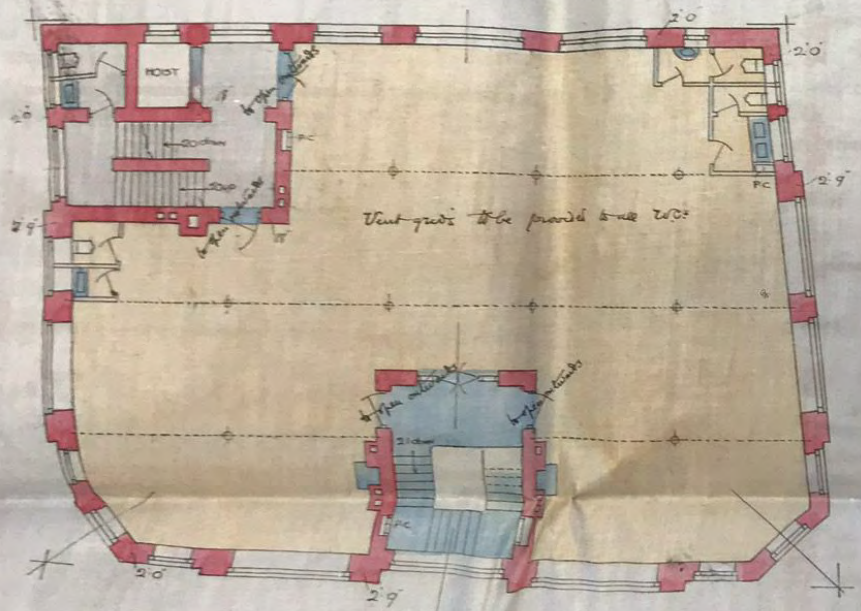
5.23

WAREHOUSE. WHITWORTH STREET WEST. MANCHESTER.

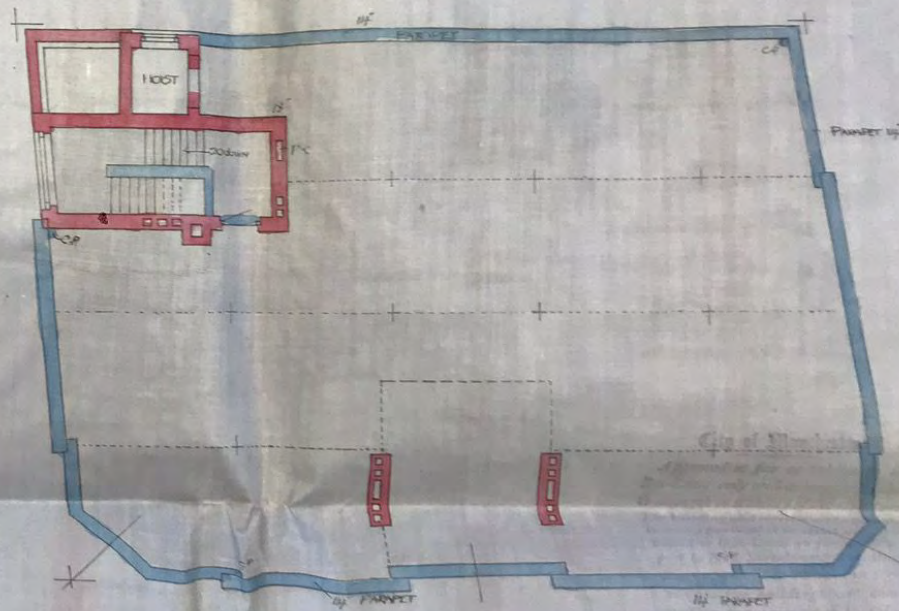
SCALE EIGHT FEET TO AN INCH.

H.C. M'CULLOCH AND A.G. ANDREW
ARCHITECTS AND SURVEYORS
2 VICTORIA ST. MANCHESTER.

9265



SECOND FLOOR PLAN



ROOF PLAN

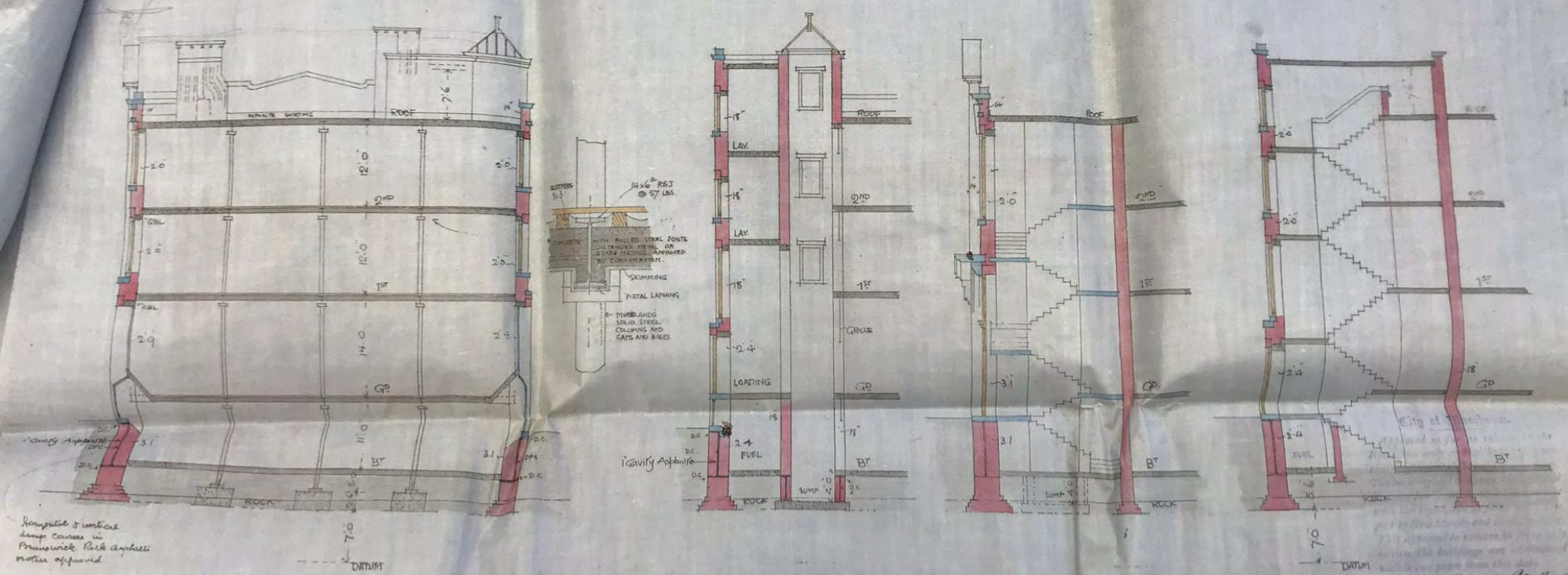
13 June

WAREHOUSE. WHITWORTH STREET WEST. MANCHESTER.

SCALE EIGHT FEET TO AN INCH.

H.C. McCULLOCH and A.G. ANDREW
ARCHITECTS and SURVEYORS
2 VICTORIA ST MANCHESTER

9265



SECTION A·A B· C· D·

13 Jan 49

5·2

WAREHOUSE. WHITWORTH STREET WEST. MANCHESTER.

SCALE EIGHT FEET TO AN INCH.

H.C. McCULLOCH AND A.G. ANDREW
ARCHITECTS AND SURVEYORS
2 VICTORIA ST MANCHESTER

9265





13 Jan 9

J. Howarth

Henry Price City Architect

BUGLE STREET

RAILWAY PASSAGE

5.27

WAREHOUSE. WHITWORTH STREET WEST. MANCHESTER.

SCALE EIGHT FEET TO AN INCH.

H.C. McCULLOCH and A.G. ANDREW
ARCHITECTS AND SURVEYORS
2 VICTORIA ST MANCHESTER

9265





All dampcourses to be not less than 6" & Height of 9" above footpath

ROWE STREET

WHITWORTH STREET WEST

5.26

Survey

Prog. No. 9265

THE CORPORATION OF THE CITY OF MANCHESTER.

I hereby give you Notice that it is my intention to erect certain Buildings in this City, and that the following particulars relate thereto, namely:—

SUBJECT		PARTICULARS
Christian and Surname in *full*, Address, and Occupation of person for whom Buildings to be erected.	1	Llewelyn Andrew, Merchant 2 Carr Street, Blackfriars Street, Manches
Name and Address of Architect.	2	H.G. McCulloch and A.G. Andrew 2 Victoria Street, Manchester
Description of Buildings and of the Materials to be used in construction of same.	3	Brick Stone, Concrete, steel.
Situation of Buildings.	4	Whitworth Street West, Bugle Street and Rowe Street Knott Mill
Level or intended Level of Ground Floor, with reference to surface or Street.	5	Average 3'-0"
Intended use of Buildings.	6	Warehouse
Width of Streets or Open Space opposite Buildings.	7	Whitworth Street West 75'-0" Bugle St 36 Rowe Street 36.0
Size and Description of Drains.	8	9" 6" or 4" glazed socketted earthenwar
Inclination of Drains.	9	1 in 60
Description of Outlet to Drains.	10	Sewers
How supplied with Water.	11	Corporation
Description of Closet Accommodation.	12	Pedestal W.C.
Intended number of persons to be employed in Buildings to be used as Warehouses, &c.	13	25 Males 15 Females

CIV. 10.14

Prog. No. 12[illegible]

CORPORATION OF THE CITY OF MANCHESTER.

I hereby give you Notice that it is my intention to erect certain Buildings in this City, that the following particulars relate thereto, namely :—

No.	SUBJECT	PARTICULARS
1	Christian and Surname in *full*, Address, and Occupation of person for whom Buildings to be erected.	1 Messrs Hallejo Industrial Motors Ltd. Knott Mill. Manchester
2	Name and Address of Architect.	2 Lyrid J. Linden 8, Exchange St. Manchester
3	Description of Buildings and of the Materials to be used in construction of same.	3 Brick, reinforced concrete, steel & usual materials
4	Situation of Buildings.	4 Whitworth Street West Manchester
5	Level or intended Level of Ground Floor, with reference to surface or Street.	5 12" above crown of street
6	Intended use of Buildings.	6 Offices & garage
7	Width of Streets or Open Space opposite Buildings.	7 75'-0"
8	Size and Description of Drains.	8 4" & 6" glazed earthenware socketted pipes
9	Inclination of Drains.	9 1 in 40
10	Description of Outlet to Drains.	10 Existing sewers Rowe & Cheetham St.
11	How supplied with Water.	11 Corporation supply
12	Description of Closet Accommodation.	12 One on G.F. : one M. mezzanine & 2 on 2nd floor
13	Intended number of persons to be employed in Buildings to be used as Warehouses, &c.	13 12 Males ..... Females
14	Intended number of persons to be employed in Factory or Workshop.	14 .....

AND I herewith deliver at the Offices of your Architect complete Plans and Sections, *duly signed*, of every floor of such intended Building, drawn to a scale of not less than one inch to every eight feet, showing the [illegible]

8, EXCHANGE STREET,
MANCHESTER.

June 19th, 1914.

...i,
...provements Committee,
Town Hall,
MANCHESTER.

CITY ARCHITECTS & ARCHITECTS DEPTS.
RECEIVED
19 JUN 1914
...MENT & BUILDINGS BRANCH

Dear Sir,

Re Halley's. Motor Garage .

I herewith forward you Drawings shewing the revised Emergency Staircase, in connection with the first and second floor at the above garage.

I pointed out to your surveyor that the whole building would not be used by more than one dozen people or so, and to build a second stone Staircase for this number greatly cripples the floor space of the Garage where every inch of space is required.

To overcome this difficulty, I have seen the Highways Department and I think they would be willing to allow us to erect an Iron Staircase externally, plans of which I herewith forward for your consideration.

Yours faithfully,

Cyril E. Ainley

CEA/EM

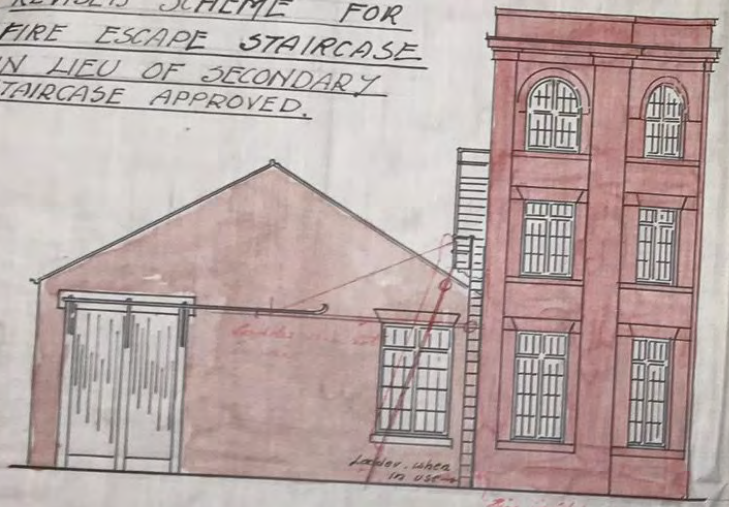
12083
232

HALLEY'S INDUSTRIAL MOTORS LTD

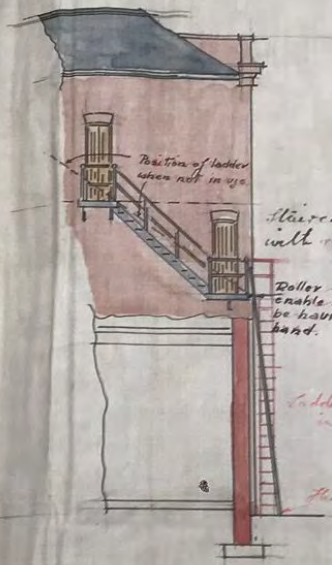
GARAGE IN WHITWORTH ST. WEST. M/C.

12083

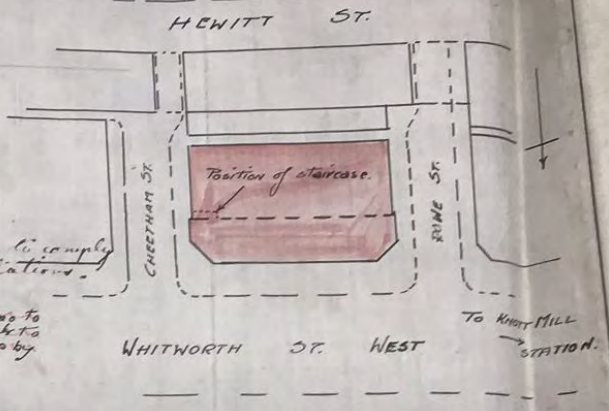
REVISED SCHEME FOR FIRE ESCAPE STAIRCASE IN LIEU OF SECONDARY STAIRCASE APPROVED.



ELEVATION TO CHEETHAM ST.



BACK ELEVATION.



BLOCK PLAN.

Application will be made to Paving Committee for permission to project Ladder over Street.

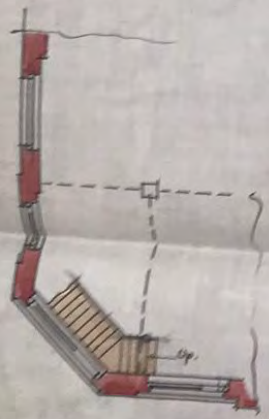
Approved on behalf of the Council of the City of Manchester.

This approval is given so far as relates to the Bye-Laws only and without reference to strength or stability of the structure. The building and work must be executed in every particular in strict accordance with the Bye-Laws in force with respect to New Streets and Buildings, &c. This approval to remain in force only in case the buildings are commenced within two years from this date.

Dated this 22nd day of July 1914.

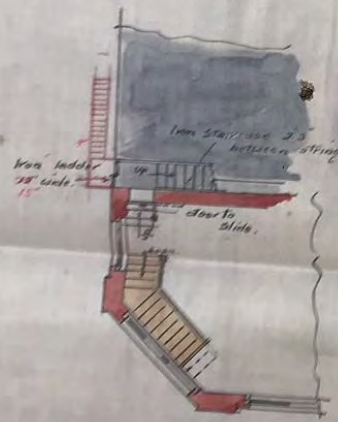
Chairman

Town Clerk

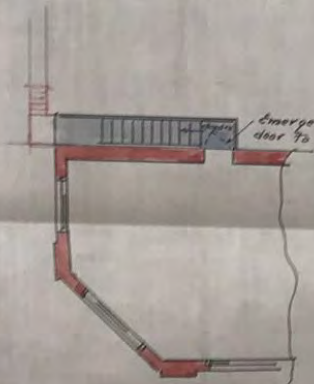


GROUND FLOOR PLAN.

SCALE 1" = 8 FEET TO AN INCH.



1st. FLOOR PLAN.



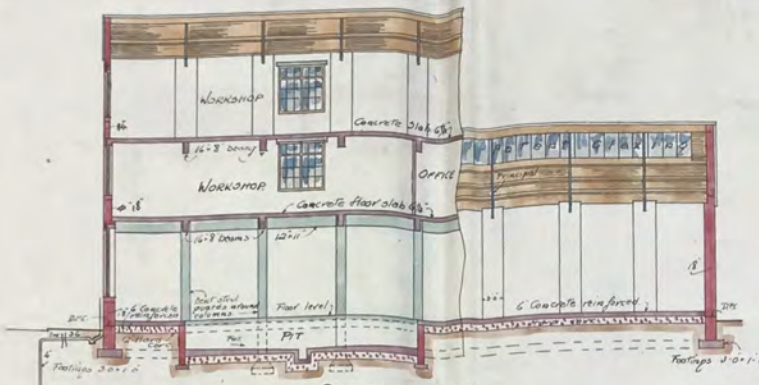
2nd. FLOOR PLAN.

Cyril S. Hurley
Architect
8 Exchange St.
Manchester.
JUNE 18th 14.

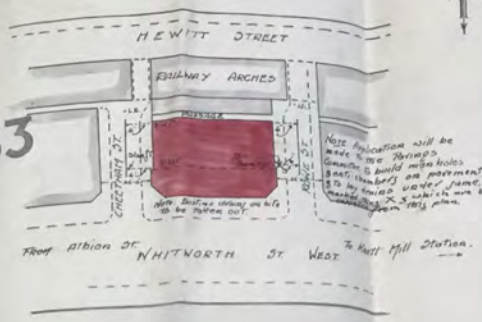
MOTOR GARAGE
WHITWORTH ST. WEST, MANCHESTER. — FOR HALLEY'S INDUSTRIAL MOTORS LTD —.

SCALE = 8 FEET TO AN INCH.

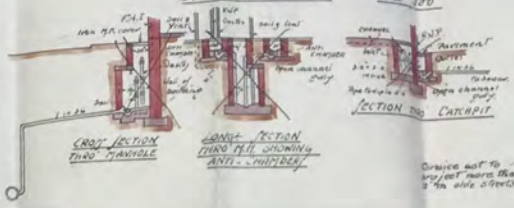
12083



SECTION B.B.



BLOCK PLAN SCALE 1/200



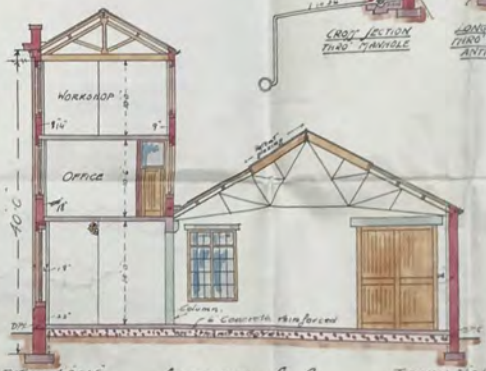


FRONT ELEVATION

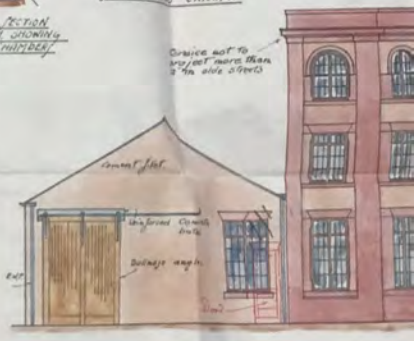


ELEVATION OF ANGLE

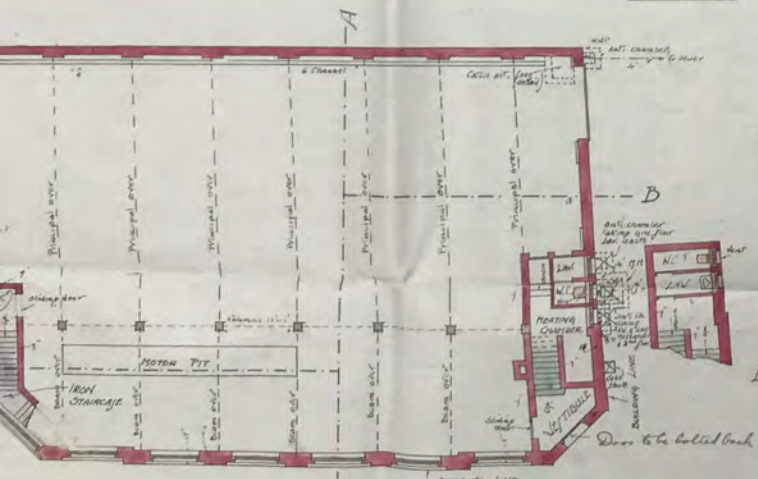
ELEVATION TO ROWE ST.



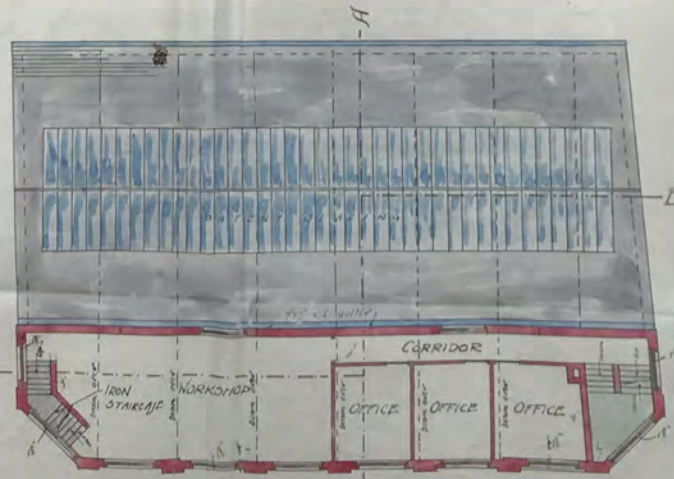
SECTION A.A.



ELEVATION TO CHEETHAM ST.



GROUND FLOOR PLAN



FIRST FLOOR PLAN



SECTION THRO' PIT.



SECOND FLOOR PLAN

City of Manchester.

Approved so far as relates to the Bye-Laws only and without reference to strength or stability of the structure. The building and work must be executed in every particular in strict accordance with the Bye-Laws in force with respect to New Streets and Buildings, &c. This approval to remain in force only in case the buildings are commenced within two years from this date.

Dated this 22nd day of APR 1914

John [illegible] Chairman

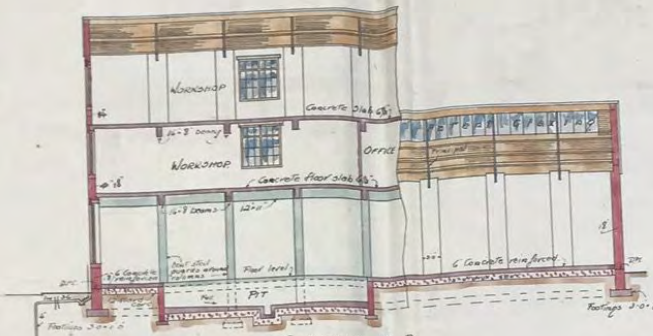
Henry Lee C. City Architect

Cyril C. [illegible] Architect 8 Exchange April 19th. 1914

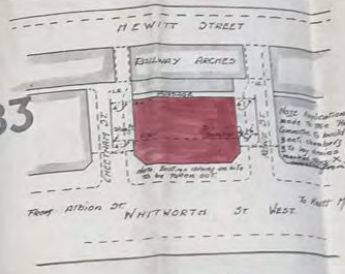
MOTOR GARAGE
WHITWORTH ST. WEST, MANCHESTER. — FOR HALLEY'S INDUSTRIAL MOTORS LTD —.

SCALE = 8 FEET TO AN INCH.

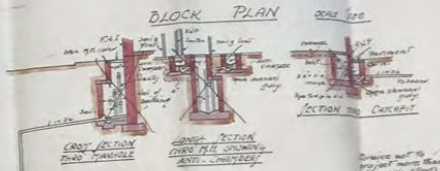
12083



SECTION B.B.



BLOCK PLAN SCALE 1/200


CROSS SECTION THRO' TURNTABLE

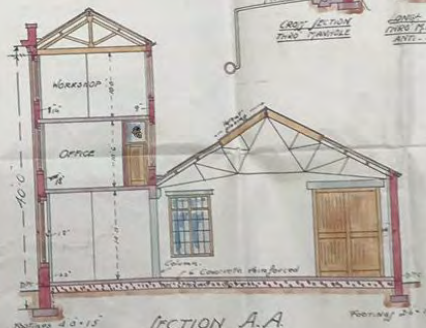
CROSS SECTION THRO' LAVATORY AND CHIMNEY

SECTION THRO' CHIMNEY

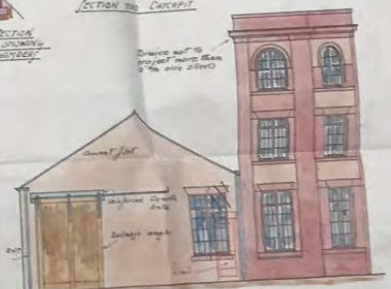

FRONT ELEVATION


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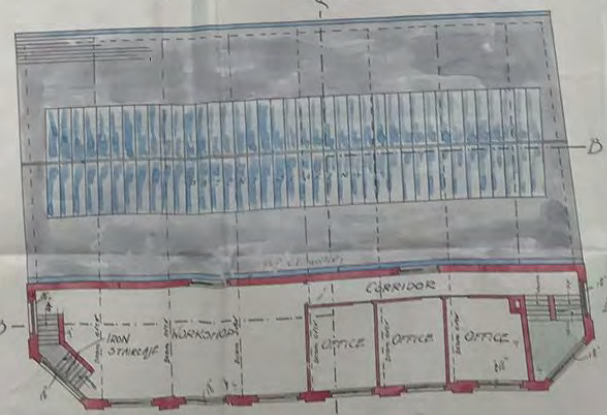


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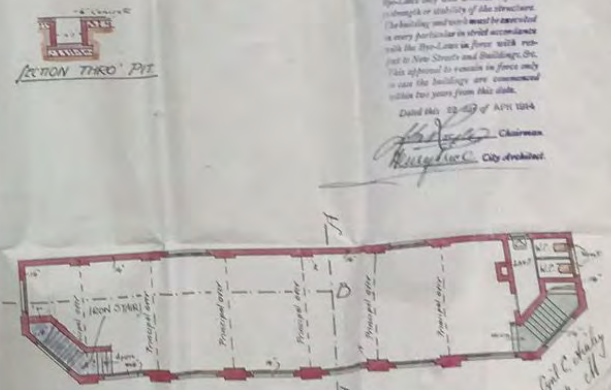

ELEVATION TO CHEETHAM ST.



GROUND FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN

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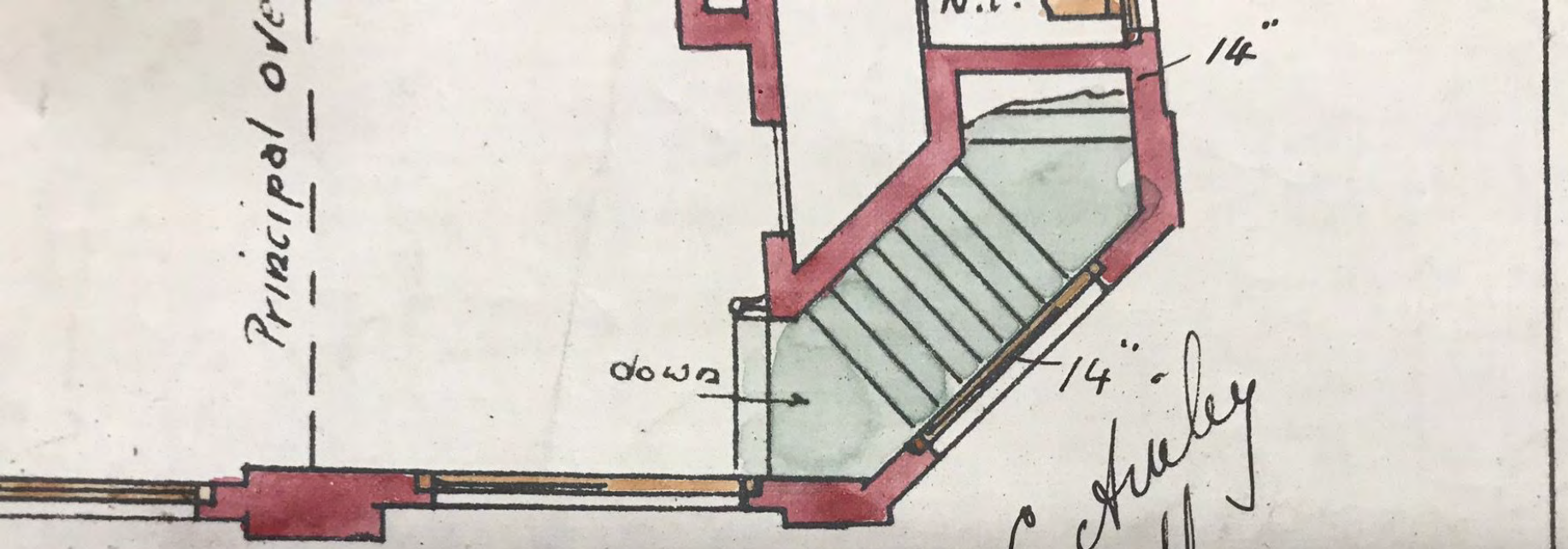
City of Manchester.

Approved to for as relates to the Bye-Laws only and without reference to strength or stability of this structure. The building and work must be executed in every particular in strict accordance with the Bye-Laws in force with respect to New Streets and Buildings, &c. This approval to remain in force only in case the buildings are commenced within two years from this date.

Dated this 22nd day of April 1914

Chairman.

City Architect.



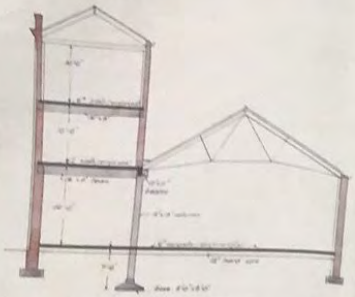
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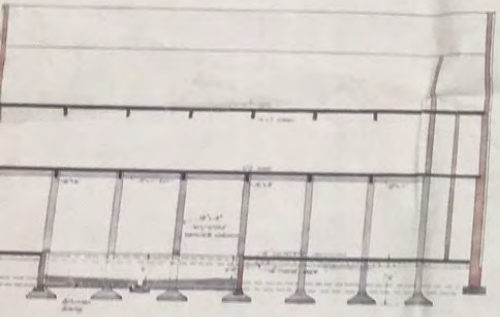
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architect
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Manchester.

april. 1914.

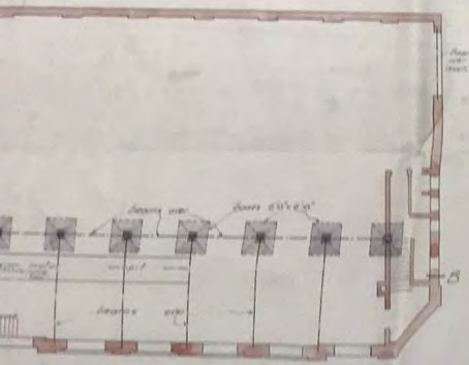
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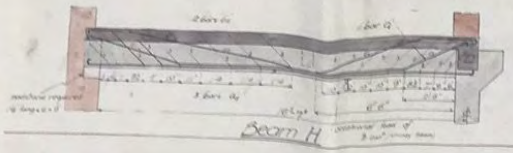
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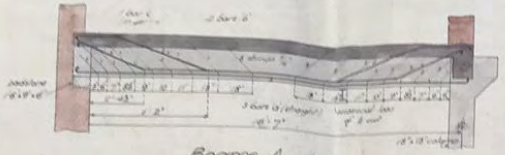


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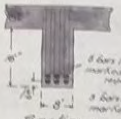


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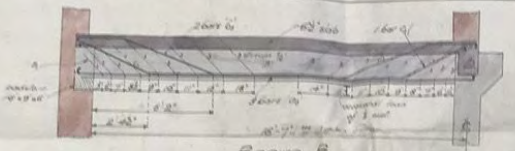




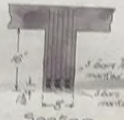
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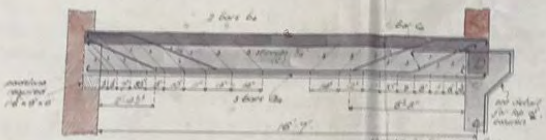
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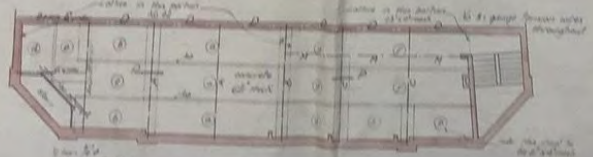
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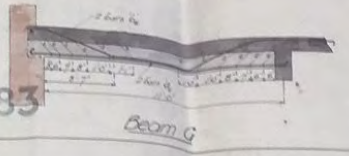
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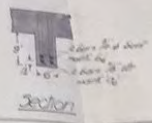
2nd Floor Plan



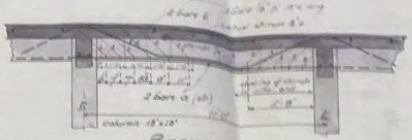
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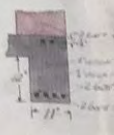
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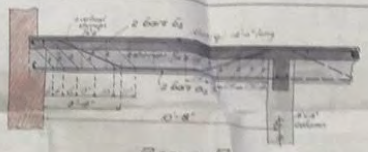
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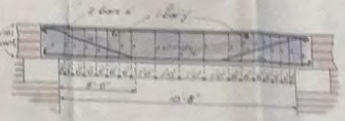
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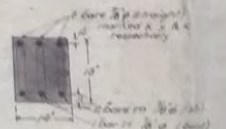
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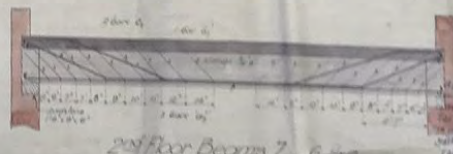
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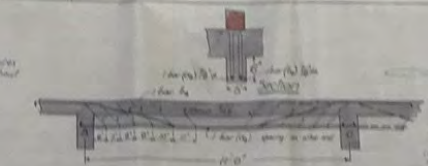
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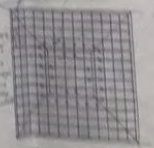
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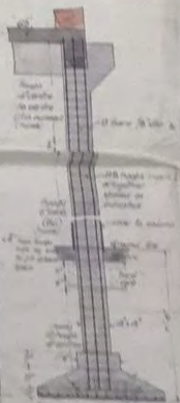
2nd Floor Beams Z 6 Nos



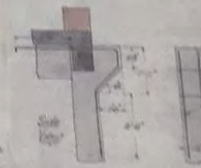
Beams M 3 Nos



Plan of Base



Elevation of Column





Column Section

GARAGE for HALLEY'S INDUSTRIAL MOTORS LTD
Normanby St. West Manchester
Reinforced Concrete Details

P.O. JOHNSON, CLAPHAM & MOORE LTD
CONSULTING CONCRETE ENGINEERS

IGE

consulting

IGE Consulting Ltd, Office 16, Bartle House, Oxford Court, Manchester, M2 3WQ

Tel: 0161 914 9170

Email: contact@igeconsulting.co.uk

Appendix 5: Preliminary Ecological Assessment

Ecological Appraisal

2-4 Whitworth Street

Deloitte

11 July 2024

35663-HML-XX-XX-RP-U-880001

Issue P01



Project Name:	2-4 Whitworth Street
Report Name:	Ecological Appraisal
Issue Status:	External - Draft
Reference:	35663-HML-XX-XX-RP-U-880001
Date of Issue:	11 July 2024
Issue:	P01
Author:	Tanishia Gearing
Checker:	Paul Bond
Approver:	Paul Bond
HM Project No:	35663

HM Office:

Shackleton House
Hays Galleria
4 Battlebridge Lane
London
SE1 2HP

T: +44 (0)20 7940 8888
hilsonmoran.com
@HilsonMoran
hilson_moran
Hilson Moran

Document History:

Issue	Date	Details
P01	11/7/2024	INTERIM UPDATE- BASELINE RESULTS ONLY

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Executive Summary

This ecological appraisal provides an assessment of the constraints and opportunities for 2-4 Whitworth Street, establishing a baseline using a desk-based study and a walkover survey, as well as identification of enhancement delivery and potential for additional opportunities through review of the architectural and landscaping proposals.

The baseline habitat has been established based on the findings of the desk study and a walkover survey as part of this ecological appraisal. This ensures that any ecological features assessed at and around the site are deemed to be up-to-date as of the issuing of this report.

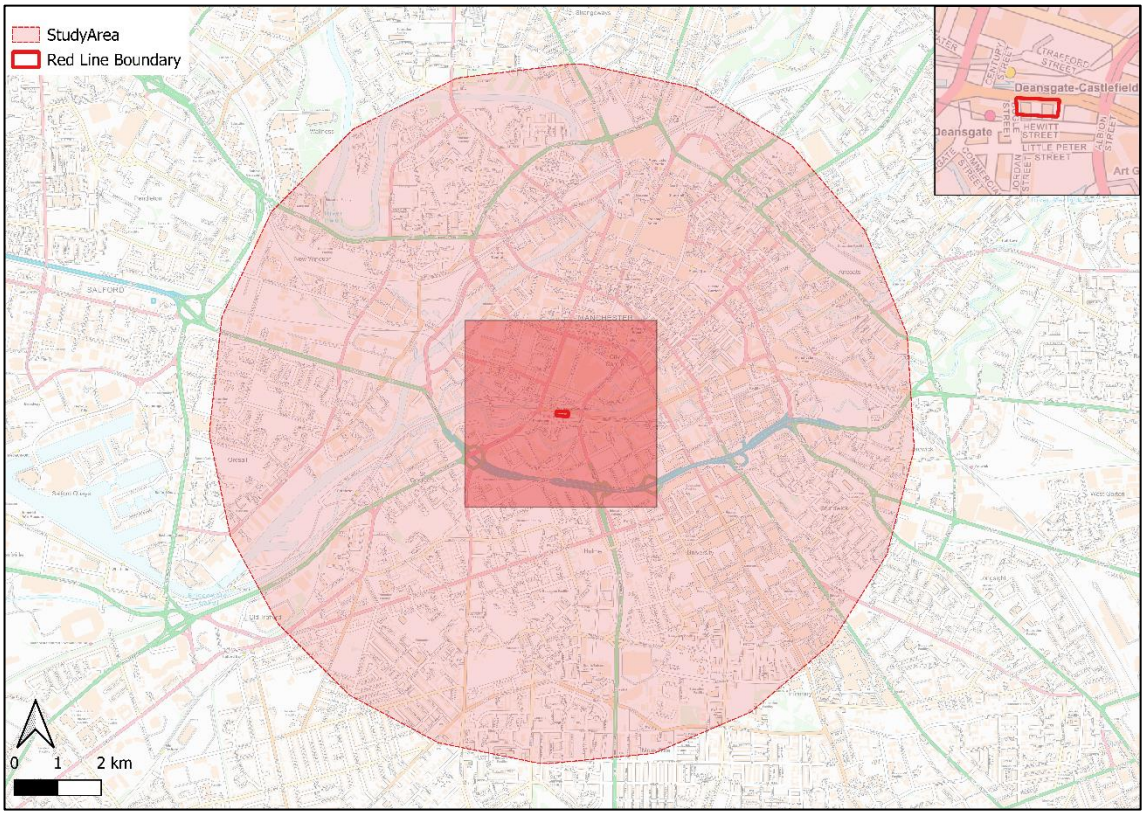
The site at the time of survey was entirely artificial habitat, namely sealed surfaces and buildings. No natural or semi-natural habitats were observed during the walkover survey. Evidence of nesting birds was observed in the eastern building within the southern half of the building, and within the furthest east stairwell. As a result, the habitat had a baseline score of 0.

1. Introduction

1.1. Background

Hilson Moran has been commissioned to complete an ecological appraisal of the land at Whitworth Street, Manchester, M1 5WY (National Grid Reference SJ 83516 97526). The location of the site is identified in Figure 1-1.

Figure 1-1 2-4 Whitworth Street Site Location *(Contains Ordnance Survey data © Crown copyright and database right 2022)*



1.2. Proposal

The proposal for the site is for a singled phased development which will consist of the demolition of the existing buildings and the construction of a residential development. The building will consist of up to 44 storeys, including the ground floor commercial uses and public realm works.

1.3. Purpose

This report has been prepared by Hilson Moran to assess the baseline line habitats and condition of the site in relation to ecology and biodiversity. The final development designs have been assessed against statutory biodiversity net gain criteria and Home Quality Mark accreditation criteria.

1.4. Structure

Following this introductory section, a brief overview of the relevant legislation and planning policy framework is given in Section 2. Section 3 summarises the methodology applied in the ecological appraisal and Section 4 details the baseline in biodiversity terms based on the findings of the desk-study and field survey.

This interim report does not include sections including potential implications of the development upon biodiversity features present and recommendations for mitigation, as landscape designs were not finalised at the time of issue. This report will be superseded once landscape designs are available.

Appendices and references can be found at the end of the document, with document control information included at the front.

1.5. Declaration of Conformity

The appraisal has been carried out by Tanishia Gearing, a Chartered Environmentalist and holds membership of the Chartered Institute of Ecology and Environmental Management (CIEEM) and, as such, is considered to be a suitably qualified ecologist.

I confirm that the field survey and reporting has been completed in accordance with best practice principles outlined by CIEEM and is an accurate and realistic assessment of site conditions and potential enhancement works. The report complies with the CIEEM Code of Conduct, British Standard 42020.

1.6. Disclaimer

This report has been prepared on behalf of and for the exclusive use of Deloitte for whom the services were undertaken and is subject to and issued in connection with the provisions of the agreement set out by Hilson Moran Partnership Ltd. Hilson Moran Partnership Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party. Furthermore, this report is subject to the following limitations:

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2. Legislative and Policy Context

This report has been prepared with due regard and consideration to applicable legislation and national and local planning policy. Detailed information regarding these documents is provided in Appendix A.

2.1. Legislation

Legislative protection is afforded to a range of sites, habitats and species through a number of national statutes. The principal means by which features of biodiversity interest are protected are:

- The Environment Act 2021[1];
- The Conservation of Habitats and Species Regulations 2017 (as amended)[2];
- The Wildlife and Countryside Act 1981 (as amended)[3];
- The Countryside and Rights of Way (CRoW) Act 2000[4]; and,
- The Natural Environment and Rural Communities (NERC) Act 2006[5].

The various national legislative statutes, including those identified above, provide protection to a range of ecologically significant sites and species. The legislative protection for the different sites and different species varies according to their sensitivity, rarity and the scale at which they are intrinsically valuable. Those of relevance to this assessment including: Local Nature Reserve (LNR), breeding birds, bats and plant species. Full details of the legislative protection for these sites and species are listed in Appendix A.

Additional sites of ecological importance can be identified by the local authority, such as Sites of Borough Importance for Nature Conservation, however these are not statutorily protected.

The Environment Act 2021 makes provision for targets, plans and policies for improving the natural environment. Section 98 in Part 6 of the Act makes provision for biodiversity gain to be a condition of planning permission, with Schedule 14 identifying the objective being at least 10 % when comparing the post-development site to the pre-development site.

2.2. Planning Policy

2.3. National

The National Planning Policy Framework (NPPF)[6] sets out policies which will apply to the preparation of local plans, and to development management decisions. The framework sets out the Government's economic, environmental and social planning policies for England. Taken together, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations. The NPPF is supported by planning practice guidance[7], which provides further information on key issues in the implementation of policies identified in the NPPF. Further information on the NPPF and supporting planning practice guidance are given in Appendix A.

2.3.1. Local

The core strategy for Manchester is derived from the Manchester Local Development Framework[8], which was adopted in July 2012. It is the key document in Manchester's Local Development Framework and covers a period of 15 years from 2012 to 2027. Divided into three broad sections (Manchester Now, the Local Strategic Context and Objectives), it describes Manchester today and outlines the 2027 Council's vision along with the planning policies which will be used to deliver that vision.

The Core Strategy Vision outlines development goals to be met by 2027, these include

- a successful sustainable and accessible City in the front rank of cities in Europe and the world
- meeting the challenge of climate change at the forefront of environmental initiatives and improvements and continuing to deliver sustainable development and a more effective Green Infrastructure
- a City with an increased and sustainable healthy population and a community which both benefits from and drives the City's productivity upwards
- a City with neighbourhoods where people choose to live all their lives because they offer a wide range of quality housing and an attractive environment where locally distinctive character is conserved and enhanced
- a City with thriving district centres, which have a distinct local character and provide a good range of accessible public services, retail and local facilities
- a City defined by excellence in urban design and environmental quality, where its distinctive historic environment is understood, valued, cared for and its potential fully realised a City where residents and visitors regularly enjoy a network of quality open spaces, parks and river valleys, enriched with biodiversity, which provide recreational routes and opportunities for sport across the City an international destination for tourism and culture with the Eastlands area of the Regional Centre a national attraction for sport, leisure and recreation

The vision is supported by five key themes for achieving a World Class City, which:

- is competitive and promoted opportunity;
- supports our communities;
- protects, promotes and enhances our environment;
- is vibrant and culturally rich;
- is safer and stronger.

The vision and five themes have been integrated into the Spatial Objectives of the Local Plan, which includes a number of policies of relevance to biodiversity and nature conservation, which are:

- Policy EN2: Tall Buildings – Unlike most major cities in the UK, Manchester has no height restrictions for buildings. Proposals for tall buildings will be supported where it can be demonstrated that they are of excellent design quality, appropriately located, contribute positively to sustainability and place making as well as bring significant regeneration benefits.

- Policy EN4: Reducing CO2 Emission by Enabling Low and Zero Carbon Development
- Policy EN8: Adaptation to Climate Change
- Policy EN9: Green Infrastructure*
- Policy EN15: Biodiversity and Geological Conservation

*Key features of the Council's Green Infrastructure Strategies:

- 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. 188 12 Objective 6 Environment Manchester City Council | Manchester Core Strategy 2012 to 2027
- 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

Developers will be expected to enhance, restore or create new biodiversity, either on-site or adjacent to the site, with reference to 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.

2.4. Biodiversity Action Plan

2.4.1. National

The UK BAP has been replaced by the Post-2010 Biodiversity Framework[9], which addresses the changes in the strategic thinking of the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011 – 2020. The new Framework includes new priorities for UK-level work for the convention on Biological Diversity and provides a broad structure to enable action across the UK.

Whilst the BAP has been replaced, the UK priority habitat and species continue to be regarded as conservation priorities in the UK Post-2010 Biodiversity Framework[10].

The UK BAP identifies 65 habitats and 1,150 species that are considered to be of conservation concern.

2.4.2. Local

The Greater Manchester Biodiversity Action Plan provides a strategic focus to ensure species and habitats are understood and considered throughout the decision making process, and directly supports the overall aim of the Manchester City Council's Corporate

Plan to shape outstanding environments. The BAP provides a framework to ensure all legislative requirements and regional and national targets for protecting, conserving and enhancing biodiversity are met at a local level.

The document identifies 8 target habitats and 8 target species to identify conservation priorities for all ten districts in Greater Manchester, however additional habitats and species are considered through the action plans established.

Habitats	**Species**
Grasslands	Bats
Hedgerows	Black redstart
Lowland mosslands	Great crested newts
Reedbeds and bittern	Hares
Ponds and lodges	Native Black Poplar
Canals	Twite
Native woodlands	Water Vole
Urban managed greenspace	Willow tit

3. Methodology

3.1. British Standard 42020: Biodiversity- Code of Practice for Planning and Development

This ecological appraisal and reporting has been completed in line with, and with reference to, British Standard (BS) 42020: Biodiversity- Code of Practice For Planning and Development[11]. BS 42020 was developed to bridge the gap between specific best practice guidelines and professional Codes of Conduct and build upon relevant legislation and policy relating to biodiversity.

BS 42020 provides a framework for the assessment of biodiversity and recommendations for the content and detail of reporting on biodiversity features with the aim of improving standards within the profession. This ecological appraisal, including reporting, has been produced in consideration of and compliance with BS 42020.

3.2. Desk Study

Information regarding local biological records was collected through an online search of information sources and a data request to the local biological records centre, Greater Manchester Local Record Centre (GMLRC). Information requested from the local biological records centre included statutory and non-statutory designated sites, notable habitats and legally protected and ecologically significant species. To supplement this request, the following web-based resources were used to collate historical biological records and site conditions within the study area:

- Multi-Agency Geographic Information for the Countryside (MAGIC) website (**www.magic.defra.gov.uk**);
- National Biodiversity Network (NBN) Atlas website (**www.nbnatlas.net**)12;
- Aerial imagery from Google Earth;
- UK Biodiversity Action Plan website (http://jncc.defra.gov.uk);
- Manchester Biodiversity Strategy (**https://democracy.manchester.gov.uk**); and,
- Greater Manchester Local Record Centre (https://gmlrc.org/);

As species distributions are variable over time, information obtained through the desk study has been restricted to records from 2005 and onwards to ensure records are up-to-date. Any species with no record in the last 16 years are unlikely to remain present within the study area.

3.3. Habitat Appraisal

The habitats present within the field survey have been classified and mapped following the UK Habitat (UKHab) Classification methodology[13], a comprehensive habitat classification system that was developed to establish a single system that can be used to identify habitats and provide better coordination between the various existing classifications (*e.g.* Annex I habitats and BAP priority Habitats). The methodology is well suited to urban areas, with secondary classifications enabling clearer mapping of features of urban greening, and is well suited to application by both remote-sensing observation and walkover surveys, or a combination of both methods.

The UKHab classification is hierarchical, with the professional edition utilised for the appraisal and all habitats and assessments to be taken to Level 4 where possible[14]. Considering the scale of the proposal and the urban context of the site, where habitats are often present at small extent and provide contrast to the surrounding developed land, the fine-scale Minimum Mapping Unit (MMU) of 25m^2 for area-based habitats and 5m length for linear features has been utilised.

An initial appraisal of the site has been completed by remote sensing, using aerial imagery and existing site photography to establish habitats present on the site in as much detail as possible. As the site is principally urban in nature, many if the habitats are relatively common with a significant proportion of habitats present falling within the u1-built-areas and gardens category. From this, distinction between the Level 4 and, for developed land, Level 5 categories for the majority of the site is relatively straight forward and whilst Level 5 is not required, mapping to this level has been undertaken for urban habitats to provide distinction across the site. However, other habitats present in the survey area, including g-grassland and h3-dense scrub, can only be identified at a high level and require further investigation to identify accurately to Level 4.

Following of from the remote sensing exercise, a walkover survey of the site was carried out to ensure mapping of areas is accurate, establishing species lists for the various habitats and identify semi-natural habitats to Level 4 of the UKHab classification where this was not possible through remote sensing. The walkover survey was carried out on the 10th January 2024 by a suitably qualified ecologist, Tanishia Gearing MRes, CIEEM. The survey was undertaken on a day with fair weather. Vegetation present in the study area was identified in accordance with Blamey *et al*[15].

3.4. Assessment Methodology

CIEEM's guidelines on Preliminary Ecological Appraisal[16] identifies that the appraisals should provide an indication of the ecological value of features present following the methodology provided in CIEEM's Guidelines for Ecological Impact Assessment in the UK and Ireland[17].

For this, it is essential to distinguish between the biodiversity value of a receptor and its legal status. Features of high biodiversity value may not necessarily attract legal protection and vice versa. For example, a viable area of ancient woodland is likely to be of high biodiversity value even if it does not receive any formal statutory designation.

In accordance with the CIEEM guidelines, each biodiversity features should be assessed as valuable, or potentially valuable, based on the following geographic frame of reference; some examples of ecological receptors that may be potentially valuable at each geographic scale are presented below:

- International – e.g. existing or warranting designation as a Special Area of Conservation (SAC) and/or of significant conservation status for Europe;
- National – e.g. existing or warranting designation as a Site of Special Scientific Interest (SSSI) and/or of significant conservation status for England;
- Local – e.g. existing or warranting designation as a Site of Local Importance for Nature Conservation (SLINC) and/or of significant conservation status within a local context (e.g. within 1 km of the proposed scheme);

- Within the immediate survey area only – e.g. habitats or species populations of significant conservation status for the site and immediate surrounding lands;
- Negligible – e.g. habitats or species whose presence does not contribute to the local biodiversity resource or has negative effects on local biodiversity (e.g. invasive species).

3.5. Certification

Home Quality Mark version 6.0 is an assessment system that allows the sustainability of new homes to be established against a number of criteria, including transport and movement, comfort, energy and outdoors. The home developments are graded from 1 to 5 depending on the overall scoring across all the criteria.

Details of the "Outdoors" credits applicable to the development are given below.

3.5.1. Identifying Ecological Risks and Opportunities

The aim of these credits is to establish the ecological baseline and zone of influence of the site and to identify risks and opportunities for achieving the best ecological outcome for the site. There are 7 credits available for this criteria.

1st credit is awarded where evidence is provided to demonstrate that a suitably qualified ecologist (SQE) has been appointed at an early project stage, as to have influence over strategic planning decisions.

2nd credit is awarded where evidence is provided that a SQE has carried out the appropriate surveys and evaluation for the site and Zone of Influence to determine ecological baseline.

3rd credit is awarded where evidence is provided that information and data are collated and shared within the project team to inform later stages.

3 credits available where evidence of collaboration between stakeholders to identify, appraise and agree actions for the project resulting in optimal ecological outcomes in line with the mitigation hierarchy.

7th credit is awarded where evidence is provided that the wider site sustainability-related activities and potential benefits to the ecosystem services.

3.5.2. Managing impacts on Ecology

The aim of these credits is to ensure the avoidance, or limit as far as possible, any negative impacts on the site or ZoI ecology as a result of the project. There are 9 credits available for this criteria.

1st credit is awarded where evidence is provided that clear roles and responsibilities were allocated and implemented successfully, and early enough to influence concept design and design brief.

2nd credit is awarded where evidence is provided that the site preparation and construction works have been planned for implemented early, allowing for optimal ecological outcomes.

3rd credit is awarded where evidence is provided that the project team have collaborated with stakeholders, considering shared information and implemented relevant actions during the site preparation and construction works.

6 credits are available where evidence is provided that negative impacts from the site preparation and construction works have been managed according to the mitigation hierarchy, and **no overall loss** of ecological value has occurred. Or 3 credits are available when the loss of ecological value have been limited as far as possible.

3.5.3. Ecological Change and Enhancement

The aim of these credits is to ensure the enhancement of the ecological value of the site and ZoI to support local, regional and national priorities. There are up to 12 credits available for this criteria.

1st credit is available where evidence is provided that at least 75% of the proposed developments footprint is on previously occupied land.

Up to 8 credits are awarded where evidence is provided to demonstrate the change in ecological value:

- 2 credits where the loss of ecology is minimised
- 4 credits where there is no net loss of ecology
- 6 credits where there is net gain of ecology
- 8 credits where net gain is exceeded.

3.5.4. Long Term Ecological Management and Maintenance

The aim of these credits is to ensure the continuation on monitoring, management and maintenance of the site and its ecological features to achieve the intended long term outcomes There are 8 credits available for this criteria.

4 credits are available where evidence is provided of a Landscape and Ecology Management Plan has been developed and made accessible, providing the LEMP is appropriate for the type of site being assessed and builds of the actions previously decided to ensure the optimal ecological outcomes and ensures these are passed over to the tenants.

4 credits are available where evidence is provided that continued actions over the duration of the LEMP are in place, including formal commitments. Including monitoring and reporting of the action implemented, arrangements of ongoing management and maintaining the ecological value of the site and connection to the ZoI.

Table 3-1 Home Quality Mark available and targeted credits

Home Quality Mark		Criteria	Credits Available	Targeted Credits
Identifying ecological risks and opportunities	UK & EU Legislation	2.1-01	Pre	✓
	Survey & Evaluation	2.1-02	3	3

Home Quality Mark		Criteria	Credits Available	Targeted Credits
	Ecological Outcome	2.1-03	3	3
	Wider Site Sustainability	2.1-04	1	0
Managing impacts on ecology	Ecological Risks & Opportunities	2.2-01	Pre	✓
	Liaise, implement and data	2.2-02	3	3
	Manage negative impacts	2.2-03B	3 or 6	3
Ecological Change and Enhancement	Previously occupied land	2.3-01	2	2
	Ecological Risk & Opportunities	2.3-02	Pre	✓
	Liaise, implement and data C	2.3-03B	2	2
	Measuring the change (SQE only)	2.3-04	8	6
Long-term ecological management and maintenance	Home information	2.4-01	Pre	✓
	Liaison, review, management	2.4-02	Pre	✓
	Management Plan	2.4-03	Pre	✓
	Monitoring and updating	2.4-04	4	4
		2.4-05	4	4

3.6. Limitation

The methods employed for the completion of the ecological assessment are not considered to give rise to any significant limitations, following best practice guidance and utilising up-to-date information.

The main building was accessed and was assessed from basement to the roof. The front of the building (closer to Fleet Street) was not investigated directly, however was observed from the roof of the adjacent building and this was deemed suitable to assess the condition of the roof area and any terraces present.

The absence of desk study records is not relied upon to determine the absence of a particular species. 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, such as the presence or absence of potential supporting habitat, is used to infer likely presence or absence.

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 surveys were undertaken in June and therefore represent a valid sample of ecological evidence present during that season. The report is not designed, nor is it required to present a complete inventory of flora and fauna or NVC surveys.

The results and recommendations within this report are valid for up to two years from the date of survey, assuming there are no significant changes to the Site or its immediate surroundings.

4. Baseline

4.1. Desk Study

4.1.1. Statutory and Non-Statutory Designated Sites

Three sites of biological importance were reported within a 2km radius of the site. These consist of Rochdale Canal, River Irwell and Ashton Canal.

4.1.2. Notable Habitats

The study area does not have any areas of ancient woodland, however there are six areas priority habitats within the search area, these being deciduous woodland. The closest areas of priority habitat are within Ardwick Green Park and The Meadow approximately 1.55km southeast and northwest respectively. The study area has areas of deciduous woodland located across the whole area, with all areas being over 1.5km from the site boundary. All notable habitats have been identified within Figure 4-1.

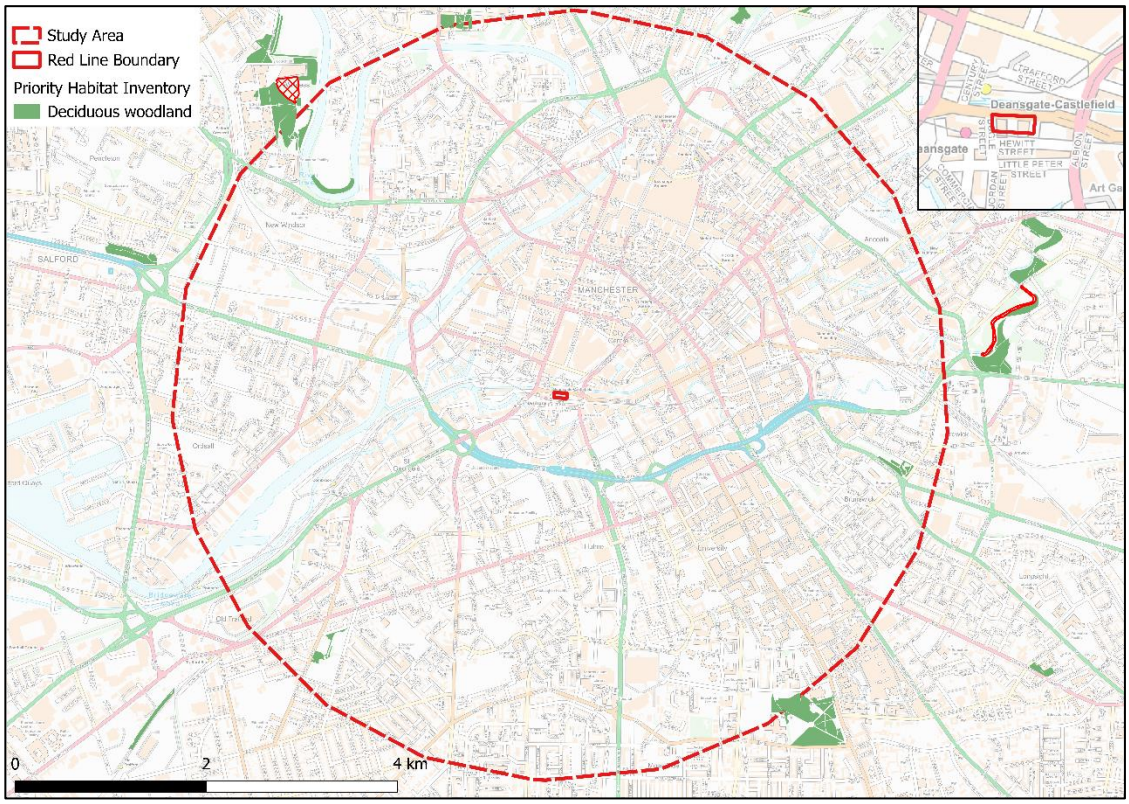


Figure 4-1 UK BAP Priority Habitats Within 2km of the Proposed Development Contains public sector information licensed under the Open Government Licence v3.0 and Ordnance Survey data © Crown copyright and database right 2022)

4.1.3. Protected and Ecologically Significant Species

Biological Records Centre

The data returned by GMLRC identified the presence of a number of legally protected and ecologically significant species within the study area, however this incorporates a wide range of habitat types including marine, parks and gardens, cemeteries as well as urban areas. Consequently, the information provided has been carefully analysed to identify species that are considered likely to be present within the habitats associated with the development site and surrounding areas, to help understand the species with potential to be utilising the development area.

The information provided by GMLR identified a total of 925 records of birds within the study area, which were classified as being specifically protected and/or ecologically significant, through identification as a BAP priority species, red or amber listed species of conservation concern or a local species if conservation concern. Those species potentially present within the development site and immediately surrounding habitats, based on proximity, most recent records and typical habitat requirements are identified in Table 4-1.

The most recent record was for a Black redstart (*Phoenicurus ochruros*) reported in June 2023. The closest record was for a dunnock (*Prunella modularis*) reported approximately 100m northwest of the site.

Table 4-1 Bird Species Associated with Development Site Habitats Identified within the Study Area

Species		Most Recent Record	Closest Record
Arctic Skua	*Parasitic jaeger*	2015	1.9km southwest
Black Redstart	*Phoenicurus ochruros*	2023	485m northeast
Bullfinch	*Pyrrhula pyrrhula*	2020	535m west
Cuckoo	*Cuculus canorus*	2017	1.3km north
Curlew	*Numenius arquata*	2020	700m northwest
Dunnock	*Prunella modularis*	2022	100m west
Herring Gull	*Larus argentatus*	2012	625m east
Hobby	*Falco subbuteo*	2008	1.25km north
House Sparrow	*Passer domesticus*	2022	455m north
Kingfisher	*Alcedo atthis*	2022	300m northeast
Lapwing	*Vanellus vanellus*	2017	725m northeast
Lesser Redpoll	*Acanthis cabaret*	2012	710m northwest
Linnet	*Linaria cannabina*	2019	1.25km northwest

Species		Most Recent Record	Closest Record
Little Ringed Plover	*Charadius dubius*	2012	1.25km south
Peregrine	*Falco peregrinus*	2023	105m west
Reed Bunting	*Emberiza schoeniclus*	2019	1.55km southwest
Skylark	*Alauda arvensis*	2014	875m northwest
Song Thrush	*Turdus philomelos*	2022	490m northwest
Spotted Flycatcher	*Muscicapa striata*	2015	1.25km north
Starling	*Sturnus vulgaris*	2020	440m northwest
Yellow Wagtail	*Motacilla flava*	2014	1.35KM northeast

A total of 246 observation records for bat roosts or activities were identified within the study area a being legally protected and/or ecologically significant. The most recent record was for a common pipistrelle bat, recorded in October 2013. The closest record was a for a common pipistrelle bat, reported approximately 110m southwest of the site boundary, recorded June 2009.

Table 4-2 Bat Species Associated with Development Site Habitats Identified in the Study Area

Species		Most Recent Record	Closest Record
Bat	*Chiroptera sp.*	2014	325m east
Brown Long-eared Bat	*Aurilus plecotus*	2013	455m northwest
Common Pipistrelle	*Pipistrellus pipistrellus*	2023	120m southwest
Daubenton's bat	*Myotis daunbentii*	2009	1.25km northwest
Myotis sp	*Myotis sp*	2015	1.5km northeast
Noctule	*Nycatulus noctula*	2022	2km southwest
Pipistrelle Bat species	*Pipistrellus*	2023	230 east
Soprano Pipistrelle	*Pipistrellus pygmaeus*	2022	600m northeast

Other notable species

Records were returned for several other protected species, including bee orchids, otters, hedgehogs and white letter hairstreak. The full species list can be seen in Table 4-3 Notable Species Associated with Development Site Habitats Identified in the Study Area. The most recent record was for a hedgehog, recorded in 2022 approximately 1.7km southeast of the site boundary.

Table 4-3 Notable Species Associated with Development Site Habitats Identified in the Study Area

Species		Most Recent Record	Closest Record
Bee orchid	*Ophrys apifera*	2022	840m northwest
Cinnabar	*Tyria jacobaeae*	2022	700m west
Common toad	*Bufo bufo*	2021	1.7km northwest
Hedgehog	*Erinaceus europaeus*	2022	460m west
Otter	*Lutra lutra*	2022	450m west
White letter hairstreak	*Satyrium w-album*	2019	1.35 northwest

MAGIC

A search of the MAGIC database identified that the site is located within two Sites of Special Scientific interest risk zones (SSSI risk zones), this being for Rochdale Canal and Hollinwood Branch Canal to the northeast of the site. The restrictions of this zone apply to air pollution and combustion, neither of which are predicted to be implicated within this development.

There are several records of Granted European Protected Species Applications, which are listed below:

- Brown long-eared bat 10/12/2012- 31/08/2015 (EPSM2012-5061)
- Common and soprano pipistrelle bats, 23/04/2014-30/06/2017 (2014-490-EPS-MIT)
- Common pipistrelle bats, 01/12/2015-16/02/2020 (2014-6380-EPS-MIT-1)
- Common pipistrelle bats, 01/12/2015-16/02/2020 (2014-6380-EPS-MIT)
- Common pipistrelle bats, 01/11/2015-31/07/2016 (2015-15766-EPS-MIT)

- Common pipistrelle bats, 28/01/2016-27/01/2021 (2015-16009-EPS-MIT)
- Common pipistrelle bats, 28/08/2012-30/09/2013 (EPSM2012-4767)
- Common pipistrelle bats, 04/07/2013-01/03/2015 (EPSM2013-5644)
- Common pipistrelle bats, 15/07/2016-01/01/2018 (2016-24504-EPS-MIT)
- Common pipistrelle bats, 15/08/2017-30/06/2023 (2014-6380-EPS-MIT-2)
- Common pipistrelle bats, 20/07/2016-20/07/2016 (2015-15766-EPS-MIT-1)
- Common pipistrelle bats, 26/10/2017-31/10/2019 (2017-31569-EPS-MIT)
- Common pipistrelle bats, 01/12/2016-01/12/2016 (2014-3531-EPS-MIT-2)
- Common pipistrelle bats, 21/11/2016-21/11/2016 (2016-24504-EPS-MIT-1)
- Common pipistrelle bats, 12/03/2018-30/04/2040 (2018-33674-EPS-MIT)
- Common pipistrelle bats, 14/02/2019-28/02/2021 (2019-38955-EPS-MIT)
- Common pipistrelle bats, 05/03/2020-01/01/2025 (2020-45213-EPS-MIT)
- Common pipistrelle bats, 22/01/2021-16/01/2022 (2020-50604-EPS-MIT)
- Common pipistrelle bats, 01/10/2014-30/09/2019 (2014-3531-EPS-MIT)
- Common pipistrelle bats, 06/01/2015-30/09/2020 (2014-3531-EPS-MIT-1)
- Common pipistrelle bats, 07/10/2014-30/11/2014 (2014-3569-EPS-MIT)
- Common pipistrelle bats, 23/12/2014-30/04/2015 (2014-4400-EPS-MIT)
- Common pipistrelle bats, 25/03/2015-30/04/2015 (2014-4400-EPS-MIT-1)
- Common pipistrelle bats, 23/05/2013-30/09/2016 (EPSM2013-5575)
- Common pipistrelle bats, 27/10/2014-31/10/2020 (2014-4219-EPS-MIT)

The site does not have any habitats listed within the Priority Habitat Index within the immediate vicinity, this being within 500m of the site boundary. There are six areas of deciduous woodland within the study area, these being:

- Ardwick Green Park approximately 1.55km southeast of the site;
- Whitworth Park approximately 2km southeast of the site;
- Hullard Park approximately 1.65 southwest of the site;
- The Meadow approximately 1.55km northwest of the site;
- Peel Park approximately 1.85km northwest of the site; and,
- Un-named area of woodland at Alexander Street 1.95km north of the site.

4.2. Field Survey

4.2.1. Habitats

The following sections describe the habitats that were identified in the field survey area according to the UKHab classification definitions and following CIEEM best practice

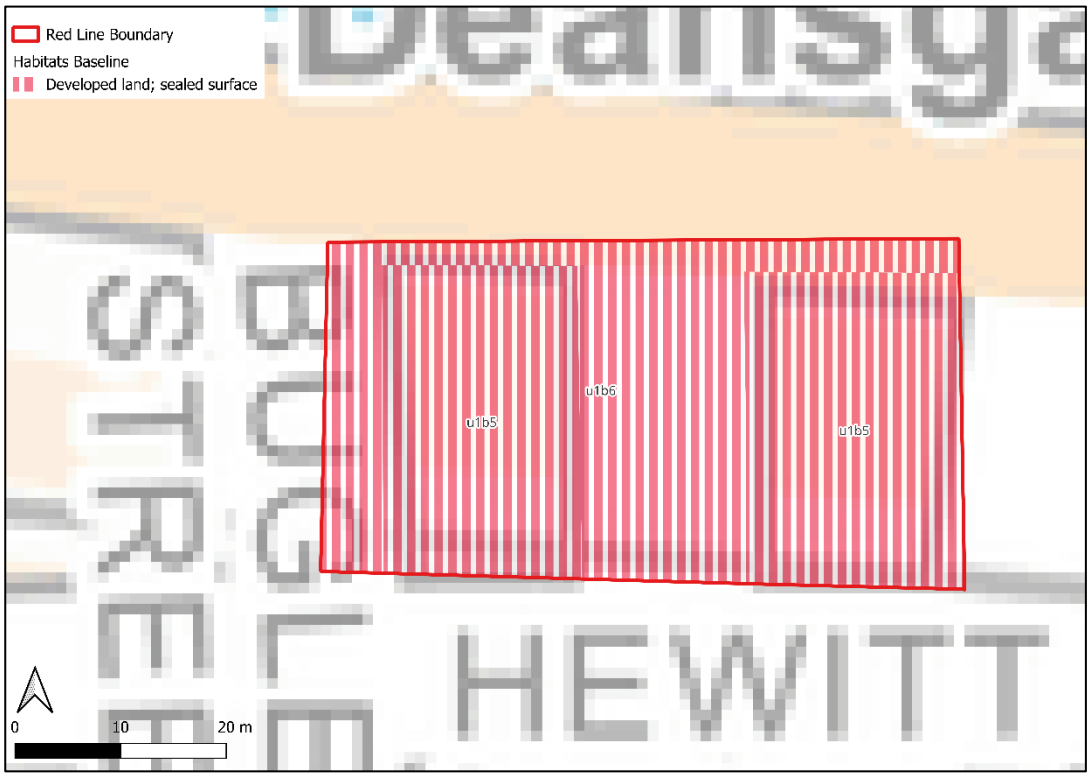


Figure 4-2 UK Habitat Classification Map

guidance. The habitat descriptions should be read in conjunction with the UKHab classification survey map, with Figure 4-2 identifying the area-based, with secondary codes identified in Table 4-4**.** Site photographs are included in Appendix B

Table 4-4 UK Habitat Classification Secondary Codes Identified on Site

Code	Description	Code	Description
u1b5	Buildings	U1b6	Other hardstanding

The site entirely comprised u1b habitat (developed land; sealed surfaces) with almost the entire site being u1b5 (buildings) with a small area in the centre of the development being u1b6 (other developed land).

4.2.2. Species

Flora

Small areas of growth, namely buddleia (*Buddleja sp.*) were located throughout the site, however this did not meet minimum mapping. As a result, the site was deemed to be of **negligible ecological value** with regard to flora.

Fauna

No fauna was observed during the site walkover. There was evidence within the eastern most building (no. 4) of nesting birds within the ground floor area and within the stairwell in the east of the site. As a result, the site was deemed to be of **ecological value** in regard to fauna and the presence of nesting birds should be considered throughout the planning and development stage of the project.

Some of the roofing on the eastern building are loose or cracked, which could be suitable habitat for bats, however the lack of connectivity to the wider environment and lack of relevant records within the immediate vicinity of the site, bring the suitability of the building to negligible.

4.3. Conclusion

The site entirely comprised hard standing: sealed surfaces, with no additional measurable greening, resulting in the site being deemed to be of low to negligible ecological value at the time of survey.

There was evidence within the site, namely the eastern building ground floor area and stairwell in the east of the eastern building. No evidence of nesting birds was observed within the western building. It should be noted that the roof level was not accessible at the time of survey, so it any absences of birds are assumed unlikely absence, not confirmed.

The site was deemed to be of low to negligible suitability for bats, owing to the proximity of the site to natural or semi-natural habitats and the location of several nightclubs and highly lit areas.

Appendix A Legislative and Planning Context

A.1 Legislative Framework

A.1.1 Environment Act 2021

The Environment Act 2021 makes provision for targets, plans and policies for improving the natural environment. Part 6 of the Act deals with nature and biodiversity, principally setting out the requirement for biodiversity net gain in planning but also including requirements relating to local nature recovery strategies and conservation.

Section 98 of the Act makes provision for biodiversity gain to be a condition of planning permission, with Schedule 14 identifying the objective being at least 10 % when comparing the post-development site to the pre-development site. Schedule 14 also identifies the methodology by which this is established and the process by which offsite biodiversity gains can be delivered.

The Act incorporates a transition period for biodiversity net gain of 2 years between its Royal Assent and enforcement of the requirement, bringing the mandatory net gain requirement in place in late 2023.

A.1.2 Conservation of Habitats and Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended), which consolidate the Conservation of Habitats and Species Regulations 2010 and subsequent amending instruments, is the main legislation governing the protection of biodiversity and is derived from European Council Directive 92/43/EEC (otherwise known as the Habitats Directive). These Regulations provide protection for sites, habitats and species that are of conservation importance at the European or international level. The Regulations provide the framework for the designation and protection of 'European sites', including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). The Regulations also provide legislative protection to species, identified as 'European Protected Species' (EPS) within Schedule 2 of the Regulations.

The Conservation of Habitats and Species Regulations 2017 are amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which ensures the continuity of the legislation following the departure of the UK from the European Union.

A.1.3 Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) comprises the principal means of protecting wildlife in the UK, including the identification and protection of Sites of Special Scientific Interest (SSSIs), and provides the mechanism by which a number of international directives are implemented in the UK.

A.1.4 Countryside and Rights of Way (CRoW) Act 2000

The Countryside and Rights of Way (CRoW) Act 2000 strengthens the Wildlife and Countryside Act 1981 (as amended) in relation to the protection of SSSIs and threatened species.

A.1.5 Natural Environment and Rural Communities (NERC) Act 2000

The Natural Environment and Rural Communities (NERC) Act 2006 places an obligation on public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity.

A.2 Statutory Protected Sites and Species

A.2.1 Sites

Statutory protection for sites of ecological importance or value has derived from various international conventions, European Directives and national legislation. The designations for protected sites in the UK include:

- Special Area of Conservation (SAC) – designated under the European Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, targeting particulate habitats (listed on Annex I) and/or species (listed on Annex II) identified as being of European Importance;
- Special Protection Area (SPA) – designated under the European Council Directive on the Conservation of Wild Birds for the protection of wild birds and their habitats (including particularly rare and vulnerable species listed in Annex I of the Directive, and migratory species);
- Ramsar – listed under the Convention on Wetlands of International Importance for the protection of internationally important wetland habitat, especially as waterfowl habitat. Although not directly legislated, through the NPPF the government expects them to be given the same level of protection as SACs and SPAs;
- Site of Special Scientific Interest (SSSI – notified under the Wildlife and Countryside Act 1981 (as amended) or the National Parks and Access to the Countryside Act 1914, as being of special nature conservation interest for its plant or animal communities, habitats, geological or landform features;
- National Nature Reserve (NNR) – designated under the Wildlife and Countryside Act 1981 (as amended) as a nationally important nature reserve on account of its habitat, flora or fauna interest;
- Local Nature Reserve (LNR) – established by Local Authorities under s21 of the National Parks and Access to the Countryside Act 1914 as a locally important nature reserve on account of its habitat, flora or fauna interest.

A.2.2 Species

The following summarises the legislative protection afforded to species identified as potentially present within the field survey area.

Flora

All wild plants are protected under Schedule 13 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to uproot a plant, defined as to '*dig up or otherwise remove the plant from the land on which it is growing*', without permission from the landowner or occupier. A number of higher and lower plants receive additional protection under Schedule 8 of the Act, which makes it an offence to intentionally pick, uproot, destroy or trade in these plants.

Schedule 9 of the Act identifies invasive plant species and makes it an offence to plant these species or otherwise cause them to grow in the wild. The protection has been strengthened through the inclusion of a new schedule, as a result of Section 23 of the Infrastructure Act 2015, which enables environmental authorities to required works to be undertaken to remove or prevent their establishment. Any material containing Japanese knotweed (*Fallopia japonica*), or giant hogweed (*Heracleum mantegazzianum*) is identified as 'controlled waste' under the Environmental Protection Act 1990 and must be disposed of appropriately.

Birds

All wild birds in England and Wales are protected under Part 1 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird, or take, damage or destroy the nest (whilst being built or in use) or its eggs. Additional protection is afforded to species listed in Schedule 1 of the Act from disturbance whilst it is building a nest, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Furthermore, provisions under Section 10, Part 1, of the Conservation of Habitats and Species Regulations 2017 require local planning authorities to have regard to '*the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the UK*' in the exercising of their functions. As a result, it is important to consider any habitat loss as a result of development and opportunities for the provision of habitats.

European Protected Species

All European Protected Species (EPS) in England and Wales are fully protected through inclusion within the Conservation of Habitats and Species Regulations 2017 (as amended). Under this legislation it is an offence to deliberately capture, injure or kill individuals of any native EPS. It is also a strict liability offence to damage or destroy sites or places which EPS use as a breeding site or resting place. EPS are also protected under the Regulations from deliberate disturbance which is likely to:

a) impair its ability:
    i. to survive, breed or reproduce, or to rear or nurture their young; or,
    ii. in the case of animals of a hibernating or migratory species to hibernate or migrate; or,
b) to affect significantly the local distribution or abundance of the species to which they belong.

It may be possible to apply for a licence from Natural England to allow activities that would otherwise be an offence under these Regulations. However, it is an offence to breach a condition imposed by any such licence.

All EPS are also partially protected in England and Wales through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation, it is an offence to intentionally or recklessly disturb a bat whilst it is using a place of rest or shelter.

EPS potentially present within the masterplan site and immediately surrounding areas include all species of bats.

A.3 Planning Policy

A.3.1 National Planning Policy

National planning policy guidance in relation to ecology and nature conservation is provided through the National Planning Policy Framework (NPPF), with planning practice guidance provided by the Ministry of Housing, Communities and Local Government. The conservation and enhancement of the natural environment is a key strategic policy in the NPPF, and Chapter 15 of the NPPF sets out the Government's planning policies on this. Paragraph 174 states that '*planning policies and decisions should contribute to and enhance the natural and local environment by:*

- *protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils;*

- *recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
- *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*.

The NPPF also states in Paragraph 175 that '*plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries*.

Paragraph 180 of the NPPF identifies a number of principles that should be applied by local planning authorities in the determination of planning applications, which include:

- '*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 SSSI, 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 SSSIs;*
- *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 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*'.

Planning practice guidance provided by the Ministry of Housing, Communities and Local Government includes further guidance on biodiversity, ecosystems and green infrastructure within the planning process. Paragraph 018 (Reference ID 8-018-20190721) identifies that information on biodiversity impacts and opportunities should inform all stages of development, with planning applications requiring an ecological survey where the type and location of development are such that the impact on biodiversity may be significant and existing information is lacking or inadequate. The guidance also identified that detailed species surveys should only be required by local planning authorities where clearly justified, for example if there is a reasonable likelihood of a protected species being present and affected by the development.

A.3.3 Local Planning Policy

The core strategy for Manchester is derived from the Manchester Local Development Framework, which was adopted in July 2012. It is the key document in Manchester's Local Development Framework and covers a period of 15 years from 2012 to 2027. Divided into three broad sections (Manchester Now, the Local Strategic Context and Objectives), it describes Manchester today and outlines the 2027 Council's vision along with the planning policies which will be used to deliver that vision.

The Local Plan includes a number of policies of relevance to this assessment, which include the following.

Policy EN 2: Tall Buildings

Tall buildings are defined as buildings which are substantially taller than their neighbourhoods and/or which significantly change the skyline. Proposals for tall buildings will be supported where it can be demonstrated that they

- Are of excellent design quality,
- Are appropriately located,
- Contribute positively to sustainability,
- Contribute positively to place making, for example as a landmark, by terminating a view, or by signposting a facility of significance, and
- Will bring significant regeneration benefits.

A fundamental design objective will be to ensure that tall buildings complement the City's key existing building assets and make a positive contribution to the evolution of a unique, attractive and distinctive Manchester, including to its skyline and approach views.

Suitable locations will include sites within and immediately adjacent to the City Centre with particular encouragement given to non-conservation areas and sites which can easily be served by public transport nodes.

Elsewhere within Manchester tall building development will only be supported where, in addition to the requirements listed above, it can be shown to play a positive role in a coordinated place-making approach to a wider area. Suitable locations are likely to relate to existing district centres. The height of tall buildings in such locations should relate more to the local, rather than the City Centre, urban context.

By their very size tall buildings can have a significant impact on the local environment and its micro-climate. It is therefore expected that this impact be modelled and that submissions for tall buildings also include appropriate measures to create an attractive, pedestrian friendly local environment.

It will be necessary for the applicant/developer to demonstrate that proposals for tall buildings are viable and deliverable.

Policy EN 4: Reducing CO2 Emissions by Enabling Low and Zero Carbon Development

The Council will seek to reduce fuel poverty and decouple growth in the economy, growth in CO2 emissions, and rising fossil fuel prices, through the following actions:

- All development must follow the principle of the Energy Hierarchy, being designed:
    - to reduce the need for energy through design features that provide passive heating, natural lighting and cooling
    - to reduce the need for energy through energy efficient features such as improved insulation and glazing
    - to meet residual energy requirements through the use of low or zero carbon energy generating technologies
- Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies.

- Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplies to existing buildings.
- Where appropriate new development and retrofit projects will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing / potential decentralised energy schemes.
- The use of building materials with low embodied carbon in new development and refurbishment schemes.

Policy EN 8: Adaptation to Climate Change

All new development will be expected to be adaptable to climate change in terms of the design, layout, siting and function of both buildings and associated external spaces. In achieving developments which are adaptable to climate change developers should have regard to the following, although this is not an exhaustive list:

- Minimisation of flood risk by appropriate siting, drainage, and treatment of surface areas to ensure rain water permeability
- Reduction in urban heat island effect through the use of Green Infrastructure such as green roofs, green walls, increased tree cover and waterways
- The need to control overheating of buildings through passive design
- The opportunity to provide linked and diverse green space to enhance natural habitats which will assist species adaptation

Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO2 mitigation under Policy EN6, subject to sufficient evidence to quantify their contribution to compliance.

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 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.

A.4 Biodiversity Action Plans

A.4.1 UK Biodiversity Action Plan

The UK BAP has been replaced by the Post-2010 Biodiversity Framework, which addresses the changes in the strategic thinking of the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011-2020. The new Framework includes new priorities for UK-level work for the Convention on Biological Diversity and provides a broad structure to enable action across the UK. Whilst the UK BAP has been replaced, the UK BAP priority habitats and species continue to be regarded as conservation priorities in the UK Post-2010 Biodiversity Framework.

The UK BAP identifies 65 habitats and 1,150 species that are considered to be of conservation concern.

Although a number of the species present within the study area are included in the UK BAP, only common pipistrelle and song thrush have been included in a Species Action Plan.

Common Pipistrelle

Although it remains the most abundant and widespread bat species in the UK, the pipistrelle is thought to have undergone a significant decline in numbers. Estimates from the National Bat Colony Survey suggest a population decline of approximately 70% between 1978 and 1993. Factors identified as causing loss or decline of the species population include:

- A reduction in insect prey abundance, due to high intensity farming practice and inappropriate riparian management;
- Loss of insect-rich feeding habitats and flyways, due to loss of wetlands, hedgerows and other suitable prey habitats;
- Loss of winter roosting sites in buildings and old trees;
- Disturbance and destruction of roosts, including the loss of maternity roosts due to the use of toxic timber treatment chemicals.

The Species Action Plan identifies the objectives and targets as the maintenance of existing populations and range of pipistrelle, and restoration of populations to pre-1970 numbers.

Song Thrush

Although a common and widespread species, song thrush are declining throughout the UK as a result of changes in food supply and availability of nest sites as a result of changes in farming practice, predation by corvids and foxes and competition with blackbirds. The aims of the Species Action Plan are to halt the decline in numbers by 2000, maintain the range and population levels of the species and, where possible, restore them to that of the 1970 estimate, and identify and implement priority research in order to formulate future conservation action.

A.4.3 Local Biodiversity Action Plan

The Greater Manchester BAP provides a strategic focus to ensure species and habitats are understood and considered throughout the decision making process, and directly supports the overall aim of the Manchester City Council's Corporate Plan to shape outstanding environments. The BAP provides a framework to ensure all legislative requirements and regional and national targets for protecting, conserving and enhancing biodiversity are met at a local level.

The document identifies 8 target habitats and 8 target species to identify conservation priorities for all ten districts in Greater Manchester, however additional habitats and species are considered through the action plans established. Those of potential relevance to this ecological assessment are discussed below.

Grasslands

This plan for the conservation of important grassland habitats in Greater Manchester has resulted from a review of three separate Habitat Action Plans included in the current Biodiversity Action Plan for Greater Manchester, published in 2003. These Action Plans were for:

- Unimproved neutral grassland
- Acid grassland
- Marshy grassland

This new Habitat Action Plan has incorporated all these habitat types into one plan because, after review, it was considered that the threats and actions needed to conserve these grassland types were similar across Greater Manchester. A fourth grassland category, grassland of high ecological value on previously developed land, has now been included in the plan because of the increased recognition of the value of this habitat type for biodiversity and because this grassland type is regarded as highly threatened.

Hedgerows

Hedgerows are an intrinsic part of the farmed landscape and provide shelter and food for many species of farmland birds, insects and mammals and also provide important corridors for wildlife movement across the landscape. The particular mix of shrub and tree species in a hedgerow, which reflects both the age of the hedgerow and local management customs, contributes to local landscape character distinctiveness.

The latest estimate for hedgerow extent in Greater Manchester is 3,293 km this represents approximately 0.6% of the England total and 6.4% of the estimated extent for the North West region. In Greater Manchester few hedgerows qualified as UK priority habitats under the ancient/species rich definition, two are known in Stockport and some in Trafford. However, even species-poor hedgerows provide important feeding, breeding and resting sites for a variety of birds,

mammals and invertebrates. Uptake statistics from the first 2 years of Environmental Stewardship in Greater Manchester show there are approximately 70 agreements, which include options for management of Hedgerows covering length of almost 247 km.

Lowland mosslands

The mossland within Greater Manchester has been significantly altered and all the remnant sites are cutover examples of the habitat. The Manchester mosslands either support secondary semi-natural vegetation or are currently bare peat sites as a result of current extraction. Due to the rate of loss of the habitat and its increased rarity, all uncultivated examples that have the potential to be restored (whether they are vegetated or not) are to be considered as important and a key part of the regions critical environmental capital.

Reedbeds and bittern

Nationally the largest reedbeds are found in river floodplains and low lying coastal areas such as estuaries, but can occur wherever water levels seasonally fluctuate and/or are no more than a metre in depth, such as lake margins, ditches and slow flowing rivers. In Greater Manchester the largest reedbeds are associated with waterbodies created by mining subsidence known locally as Flashes.

There are 700 invertebrate species in the UK associated with reedbed. Some 40 of these are entirely dependent upon them, several of which occur in Greater Manchester.

The Bittern is confined almost entirely to wetlands dominated by reeds, where it feeds on fish, amphibians and other small water animals. The bird re-colonised the UK after extinction last century but has declined steadily as a breeding species in the last 30 years. The decline is due to direct habitat loss and habitat degradation through lack of appropriate management and eutrophication. In recent years there has been an increase in the number of Bitterns over-wintering in the UK and within the north west of England.

Ponds and lodges

Ponds for the purpose of the UK BAP priority habitat classification are defined as permanent and sea sonal standing water bodies from 1m ² up to 2 ha in extent, which meet one or more of the following criteria:

- Ponds that meet criteria under Annex 1 of the Habitats Directive.
- Ponds with important species such as Red Data Book species, BAP species, species on Schedule 5 and 8 of t h e Wildlife and Countryside Act, Habitats Directive Annex II species, a Nationally Scarce wetland plant species, or three Nationally Scarce aquatic invertebrate species.
- Ponds with exceptional species assemblages or large populations of key species such as amphibians and dragonflies, or exceptionally rich sites for plants or invertebrates (supporting 30 or more wetland plant species or 50 or more aquatic macroinvertebrate species).
- Ponds of high ecological quality, as defined by Pond Conservation's Predictive System for Multimetrics (PSYM).
- Other ponds important because of their age, rarity of type or landscape context.

In Greater Manchester all ponds and lodges are considered of value and this action plan therefore covers all such features not just those covered by the UK BAP definition.

Canals

Canals are inland waterways constructed to meet the transport needs of the Industrial Revolution in the 18th and 19th centuries. At the time when canals were built, they were of a similar importance and influence to our modern day motorways. Today, many aspects of canals such as water filled channels, cuttings, embankments and bridges have an important role to play in the conservation of both biodiversity and landscapes. Many canals differ from natural watercourses because of their range of habitats, as well as their controlled levels and slow flows, although not all canals are now in use for boat traffic. The canal corridor forms a linear mosaic of habitats including woodland and scrub offsides, hedgerows, flower rich towpath verges and diverse emergent 'reed' fringes. The corridor helps link habitats fragmented by urbanisation and uniquely forms a wetland corridor between river catchments.

There are approximately 4000 miles of canals in the UK. In UK Biodiversity Action Plan terms, canals are included within the broad habitat of Standing Open Waters and Canals; within this category they are recognised as an individual habitat type. There are presently three canals of national importance in Greater Manchester; Hollinwood Branch Canal SSSI, Huddersfield Narrow Canal SSSI and Rochdale Canal SSSI. All three are part of a national network of designated areas.

Native woodlands

This plan has resulted from a revie w of two separate Habitat Action Plans included in the current Biodiversity Action Plan for Greater Manchester, published in 2003. These Action Plans were for:

- Lowland Broadleaved Woodland
- Upland Oak Woodland

This new Habitat Action Plan has incorporated both habitat types into one plan because, aft er review, it was conside red that the threats and actions needed to conserve these woodland types were similar across Greater Manchester. The Plan also no w includes w et woodland, which was not previously covered in the Greater Manchester Biodiversity Action Plan, as this is identified as one of the UK's biodiversity habitats.

Lowland broadleaved woodland is classified as a scarce habitat within Greater Manchester and is thought to cover approximately 2.5% of the land area of Greater Manchester. Within Greater Manchester the total coverage of upland oak wood is unknown, and has experienced a long decline as woodlands have been clear felled, or have fallen into poor condition through over grazing and as a result of recreational pressures. The remaining areas of upland oak woodland are also fragmented, existing in small isolated blocks on the edge of urban areas often surrounded by plantation or secondary woodland.

Urban managed greenspace

This category includes amenity grassland (i.e. intensively managed and regularly mown grassland), private gardens, allotments, town parks of many types, planted shrubberies, playing fields, golf courses, grounds of buildings, churchyards and cemeteries. These areas are all managed to some degree for their particular purpose, however, they can still be important reservoirs for wildlife in urban settings.

In addition, they provide green breaks in development and contribute to the health and well-being of local people. Their proximity to schools and housing make them an ideal resource for learning about the natural world. In addition to the grassland that dominates these sites, remnants of a diverse range of semi-natural habitats including woods, scrub or ponds are often found within their boundaries or next to them. These may have been in existence for many years - providing well-established continuity of biodiversity. They can also act as sanctuaries for biodiversity as outside of the managed areas they often receive relatively little human interference.

Bats

Nine of the bat species found in the UK have been recorded in Greater Manchester. Bats have one baby each year and females gather together during the summer in warm, clean, draft free maternity roosts to give birth. The young are generally born in June and are dependent on their mothers for approximately six weeks. When the youngsters are able to hunt independently the summer maternity colony is dispersed. In autumn male bats roost singularly and are visited by small numbers of females in order to mate. The females then store the sperm inside their bodies until spring, when they become pregnant. Bats hibernate during the winter in cool, humid places with stable conditions. Therefore, they require different sites for summer and winter roosting.

In the UK, all species of bat are insectivorous and the adults will feed wherever insects occur. They particularly favour woodlands, their edges and the rides within them, hedges, unimproved pasture/parkland, sheltered gardens and areas where there is standing or flowing water, usually with native shrubs and trees adjacent. Bats follow linear landscape features such as lines of trees, hedges and waterways in order to commute from their roost sites to their feeding grounds. They also use these features to navigate between feeding areas and alternative roosts. Bats use a range of feeding sites over the course of a night and concentrate on different feeding sites on different nights according to the weather conditions and insect availability.

Black redstart

The Black Redstart (*Phoenicurus ochruros*) is a small member of the Thrush family (Turdidae), similar in size and shape to Robin (*Erithacus rubecula*). I n breeding plumage the male is dusky slate grey with a black face and an off white wing panel. The most striking plumage feature is the bright chestnut rump and tail. The name ‘Redstart’ comes from the Saxon red *steort*, which means red tail. The adult female is grey brown with the rump and tail less chestnut than the male. The species breeds in a range of habitats from maritime to montane all characterised by sparse vegetation and rocky, craggy terrain. Forests, meadows and areas of dense vegetation of any height are avoided. The frequency and convenience of nest sites in walls or roofs of buildings has led to the evolution of a close commensalism with man, with populations now present in many large cities in mainland Europe. The presence of waste patches colonised by weed species, with man y bare disturbed areas of soil, and an ample supply of song posts and cavities for nest building provides an ideal habitat for this species. The Black Redstart is notable amongst small ground feeding passerines by its preference for high song posts, often at 20 metres or more on open perches, natural or artificial but avoiding trees and shrubs (Cramp 1988).

Great nested newts

The great crested newt *(Triturus cristatus*) is the largest of the three British native newt species, reaching a maximum length of 15cm for males and 17cm for females1 . It has a dark, often black

warty skin speckled with tiny white spots and an orange or yellow belly with black blotches. During the breeding season in spring, the males develop a high wavy crest along their backs.

Great crested newts are considered to be common but declining in Greater Manchester. The exact population of the species in the county is unknown, as are the locations of all ponds that support newts. Some areas such as Wigan, Bury, Bolton and parts of Salford have been well studied and surveyed. Elsewhere knowledge is more limited. It is believed that Greater Manchester has a high concentration of great crested newt ponds that could be significant in national terms. Great crested newts are believed to breed in all districts of Greater Manchester. Particularly high concentrations of great crested newts are found in Wigan, and the border between Salford and Bolton.

Hares

Two species of hare occur in Greater Manchester Brown Hare (*Lepus europeaus*) and Mountain Hare (*Lepus timidus*).

Brown Hares are generally found in farmland areas, where they live entirely above ground. They are larger than rabbits, with longer limbs, and black-tipped ears that are equal in length to the head. The tail is held down when running, showing its black upper surface. Their fur is often described as being a “warm-coloured brown” with orange–yellow fur on the face, throat and flanks. It is believed that the Romans introduced them to Britain. They are mainly nocturnal, foraging at dusk and dawn. They require extensive areas of open grassland and are typically associated with agricultural land including semi-natural grasslands, pasture and springsown arable. Their main food is tender grass shoots, inducing cereal crops. They require tall vegetation as cover particularly during the breeding season Breeding takes place between February and September. Females can rear three to four litters a year. Foxes are the main predators, especially of young. Adult hares normally live between 3 and 4 years.

Mountain Hares are indigenous to Britain, although those in Greater Manchester are descendants from animals released in Victoria time for hunting. In Britain they are associated with heather moorland. They are smaller than Brown Hares with a more rounded shape and shorter ears and legs. In summer, they have a grey/black coat, and in winter they are partly or completely white.

Native black poplar

Native black poplars (*Populus nigra* subsp *betulifolia*) in the wild are usually found in wet areas and floodplains, typically along side streams and rivers. They are characterised by their large, often leaning and ungainly appearance with massively arching, downcurved branches and heavily burred trunks. In the past they have been frequently pollarded but this practice has since lapsed. In the spring, the male and female trees produce red and green catkins respectively. Although generally neater in appearance, hybrid black poplars are often mistaken for the now rare native black poplar.

In Greater Manchester the tree’s tolerance to industrial pollution has meant that it was widely planted as an urban tree (known as the ‘Manchester Poplar’) in the late nineteenth and early twentieth century and until recently survived almost anywhere. The largest specimen in Greater Manchester is up to 25m high and just over 1m in diameter at breast height.

A virulent disease, diagnosed as poplar scab *Venturia populina*, has infected a majority of Greater Manchester’s native black poplar and the current trend is that once infected, the tree will die within 5 years. An action plan is needed for native black poplars because of their national rarity and the fact that although planted, Greater Manchester has the highest concentration of native black poplar in

the United Kingdom. This coupled with the fact that poplar scab is decimating this internationally important population means urgent attention is required.

Twite

Twite (*Carduelis flavirostris*) is a small dark brown finch. In breeding plumage the male has a bright pink rump, warm buff face, and white wing panel. The female is similar but lacks the pink rump and the face and wing panel are usually less bright. Open moorland is favoured for nesting, and birds in the South Pennines show a strong selection for nesting in old growth Bracken beds, often in old quarries or steep cloughs close to the moorland edge, and often near reservoirs. Mature Heather is also frequently used and birds will also nest amongst Bilberry, Cotton Grass, rush tussocks and beneath stones and boulders. The predominant factor that prevents Twite from selecting an area as a potential nest site is the prevalence of upland grasses, such as Nardus and Molinia.

Water vole

The water vole (*Arvicola terrestris*) is the largest of the British vole species weighing between 225-310g. Although often mistaken for rats, they are significantly different: a rich brown shaggy coat, a blunt nose, short furry tail and small ears are just some of the differences.

Water vole populations are widespread and locally common in Greater Manchester, although populations are often fragmented and susceptible to local extinctions. The records mostly indicate that water vole populations across the 10 boroughs are relatively sporadic and isolated. There are exceptions: robust populations exist in and around the areas between Wigan and Pennington Flashes; throughout the streams and ditch network of the Mosslands in the east of the Trafford and Salford borough and in the headwaters and tributaries of the Roch, Irwell and Tame. The challenge for the BAP is to enable these populations to expand.

Willow tit

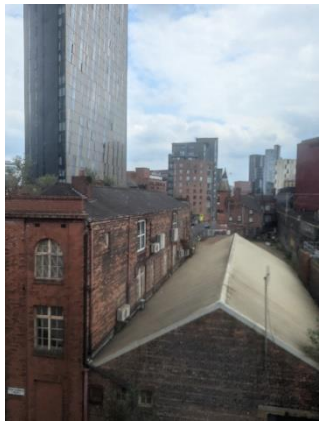
Willow Tit (*Poecile montanus*) is a brown, black-capped Tit with white cheeks and a bullnecked appearance, and both sexes are similar. It was not described as a separate species until 1900, and prior to this all brownplumaged Tits were considered to be Marsh Tit Poecile palustris. British Willow Tit is of the endemic race *kleinschmidti*.

In the UK the favoured habitat is damp, early successional woodland, particularly patches of Elder, Alder and Birch scrub, and riparian woodlands often at the edges of wetlands. They will also nest in urban areas, especially in marginal scrub around gravel pits and flashes. In Europe the southern montane population inhabits mainly conifer forest, while populations at lower levels inhabit similar scrub and damp woodland habitat as British breeders.

Appendix B Site Photographs



Photograph 1: Northern aspect of western building



Photograph 2: Two roof tops present on the eastern building, including slate tiles to north.



Photograph 3: Northern aspect of the eastern building



Photograph 4: Evidence of nesting birds within the southeast building.



Photograph 5: Buddleia growing from northern aspect of western building.



Photograph 6: Eastern most boundary of the site.

Appendix C Pre-Planning Habitat Map


Red Line Boundary
Habitats Baseline
Developed land; sealed surface
u1b5
u1b6
u1b5
0
10
20 m

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Appendix 6: TV and Radio Reception Impact Assessment

GTech Surveys Limited

2 - 4 Whitworth Street West

Television and Radio Reception Impact Assessment

CHANGE HISTORY

Issue	Date	Details of Changes
0.0	24/05/2024	Working draft
0.1	04/06/2024	First draft issue for review
0.2	20/06/2024	Second draft issue for review - description of area surrounding the Site enhanced and other minor editing
Author: G Phillips		Reviewer: O Lloyd

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Appendix **23**

Television Transmission Frequencies

VHF (FM) Radio Transmission Frequencies

Signal Measurements

An Overview of Signal Measurements

Survey Equipment

Calculation of Received Field Strength

References

Mapping Data

Planning Policies - Regional and Local Planning Policies and Guidance

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GTech Surveys Limited is a Midlands based broadcast and telecommunications consultancy conducting projects throughout the entire UK. We undertake mobile phone network, television and radio reception surveys (pre- and post-construction signal surveys), conduct broadcast interference and reception investigations, and support telecommunications planning work for wind energy developers, construction companies, architects, broadcasters and Local Planning Authorities.

In addition to radio interference modelling services and television reception surveys, we produce EIA and ES Telecommunications Chapters (also known as an 'Electronic Interference Chapter'); satisfying the requirements of Part 5, Regulation 18 (Parts 5a and 5b) of The Town and Country Planning EIA Regulations 2017. We peer review ES and EIA work, liaising with telecommunications providers (Arqiva, BT etc.) and advise developers with respect to associated Section 106 (Town and Country Planning Act 1990) and Section 75 (Town and Country Planning (Scotland) Act 1997) agreements.

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GTech Surveys Ltd.
Accountancy House,
4 Priory Road,
Kenilworth,
Warwickshire,
CV8 1LL.

T: +44(0) 1926 744771

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Executive Summary

A signal survey and reception impact assessment have been undertaken to determine the potential effects on the local reception of television and radio broadcast services from the proposed 2 - 4 Whitworth Street West development. As requested by Manchester City Council (MCC) planning guidance, any development over four storeys requires a TV and radio reception impact assessment. Consequently, this report has been produced to support the planning application submission and to provide the existing reception data to assist with any further studies. Accordingly, impacts to the reception of VHF (FM) radio, digital terrestrial television ((DTT) also known as *Freeview*) and digital satellite television services (such as Freesat and Sky), have been assessed. Impacts to the reception of analogue television services have not been assessed in this study because analogue terrestrial television services were switched off in Manchester (Granada TV region) during 2009 and throughout the rest of the UK by 2012.

Digital Terrestrial Television (DTT) - Freeview

The Proposed Development is not expected to cause any interference to the reception of digital terrestrial television (DTT) services. DTT is commercially known as *'Freeview'*.

Digital Satellite Television - Freesat & Sky

The use of cranes (during the construction phase) and the Proposed Development itself is likely to cause disruption to the reception of digital satellite television services in areas to the immediate northwest of the Site, up to 312m from the base of the proposed structure. In this area (Burton Street and Southern Street in particular), crane structures and the Proposed Development could obscure the required clear views of the southeastern skies (where the satellites are located), resulting in interference. If any interference does occur, the repositioning of satellite dishes to new locations without an obscured line-of-sight view to the serving satellites should restore reception. If this is not possible to achieve, the use of DTT receiving equipment would also offer any affected satellite television viewer an alternative source of digital television broadcasts. In addition, TV over broadband and TV over fibre would also offer affected viewers alternative sources of television broadcasts. Any sporadic interference arising from crane use is expected to be limited in duration (only occurring during working hours) and will cease completely when the cranes are taken down.

VHF (FM) Radio

The Proposed Development is unlikely to adversely impact the reception of VHF(FM) radio broadcasts due to the existing good coverage in the survey area and the technology used to encode and decode radio signals.

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Overall, the use of cranes and the Proposed Development is likely to cause disruption to the reception of digital satellite television services in areas to the immediate north of the Site. In the identified areas, clear line-of-sight views of the southeastern skies could be obscured, resulting in interference. If interference does occur, the repositioning of satellite dishes to new locations without an obscured line-of-sight view to the serving satellites should restore reception. If satellite dish relocations are not possible, the use of DTT receiving equipment or TV over broadband / fibre is likely to offer any affected satellite television viewer an alternative source of some digital television broadcasts. These are acceptable, standard and easy to adopt mitigation solutions in situations where construction work and new development has degraded local television reception.

This assessment provides the existing level and quality television signal reception within the survey area and can be used for reference. This assessment has been produced to support the planning application submission.

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1 - Introduction

This assessment details the findings of a reception impact assessment and pre-construction signal reception survey to determine the viewing preference of receptors located around the proposed 2 - 4 Whitworth Street West development and identifies what effects the Proposed Development may have on the reception of television and radio broadcast services. This assessment has been prepared by GTech Surveys Limited for the applicant, Glenbrook WWS Limited.

The Proposed Development

The Proposed Development will comprise of the demolition of existing buildings and development of a residential development of up to 44 stories, including ground floor commercial uses and public realm works. The development will be delivered in a single phase.

The Site and Existing Building on the Site

The Site comprises circa 0.16 hectares of brownfield land located within Manchester City Centre at 2 - 4 Whitworth Street West. The Site's location is shown in more detail in Figure 1.

The Site is bound by Whitworth Street West to the north, with the listed railway viaduct and Deansgate Station platform immediately to the south and at first floor level to the existing buildings. Rowendale Street bisects the Site travelling under the railway viaduct providing vehicle and pedestrian links to Hewitt Street to the south. The Site is bound by Cameron Street to the east and Bugle Street to the west, which also provide vehicle and pedestrian access into the Knott Mill area, characterised by a mix of employment and residential buildings. Beyond Bugle Street is a live music venue (Rebellion) and Deansgate Station is beyond this.

Existing structures on the Site include 2 Whitworth Street West, a four-storey red-brick building which is vacant and 4 Whitworth Street West, which is a three-storey red brick building, also vacant.

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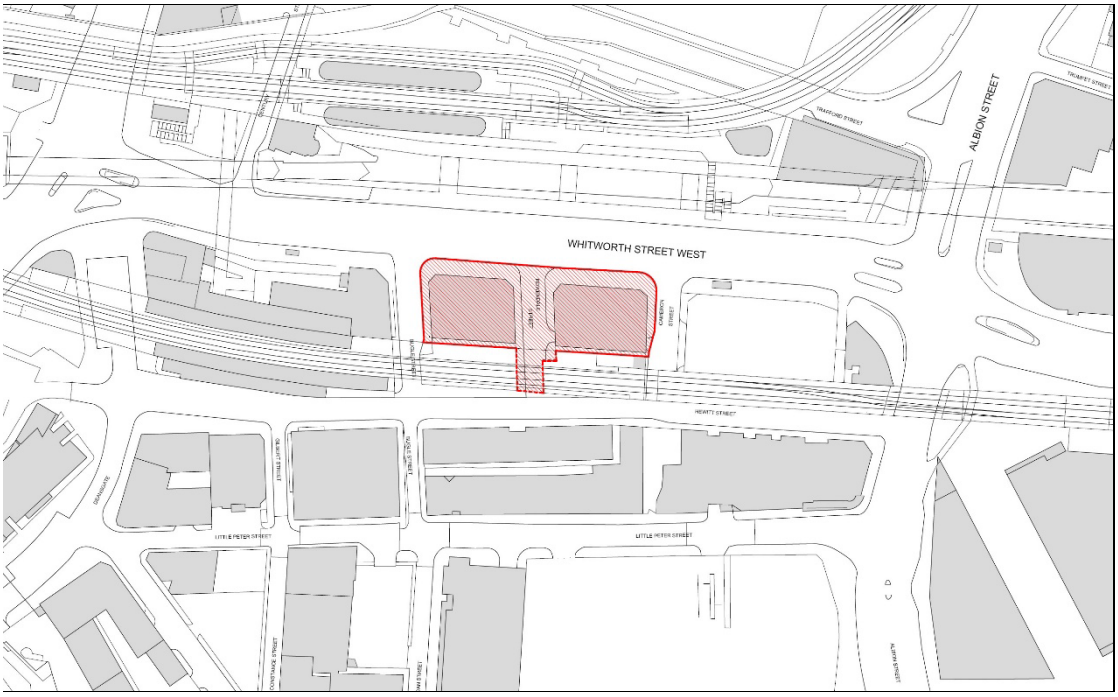


Figure 1 - The location of the Site (delineated in red)

The Assessment

Manchester City Council (MCC) requires applications for developments over four storeys in height to include a TV and radio reception impact assessment. Further guidance can be found in the document; *"Full, Outline, Reserved Matters & Variation / Removal of Conditions Planning Applications - Is Your Application Valid?"*, September 2018 (revised January 2020), MCC. The requirement states;

> *Television Reception*
>
> *MCC planning guidance, any development over four storeys requires a TV reception impact assessment.*
>
> *Information on TV and radio reception and interference. Please provide a report on the possible interference created by the proposed development on TV and radio reception within the area. (Core Strategy Policy EN2)*

A desktop study was first undertaken, based on broadcast transmission information, plans of the Proposed Development and maps of the area. The relevant TV and radio signal survey area for the Proposed Development was identified and a site visit was then subsequently conducted to establish the baseline television reception conditions. Modelling techniques and field assessments of viewers' choice of television and likely radio transmitter were then used to predict the potential effects upon television and radio broadcast reception in the area. The impacts from the Proposed Development are consequently analysed, and together with various mitigation options,

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conclusions are drawn on the overall effects of the Proposed Development on television and radio broadcast service reception for local residents.

This study was undertaken to investigate whether the Proposed Development could cause interference to local television and radio broadcast reception. The effects on VHF (FM) radio, digital terrestrial television and digital satellite television service reception are discussed. The report also details the baseline reception conditions for future reference. This report follows the following structure:

Chapter 1 introduces the work, the Proposed Development, the Site and format of the assessment

Chapter 2 discusses the different forms of structure generated television and radio interference and how these can impact the reception of different television and radio broadcast platforms

Chapter 3 describes the available television and radio services in the survey area

Chapter 4 describes the pre-construction television and radio reception conditions around the Site

Chapter 5 describes the predicted impacts of the Proposed Development upon television and radio broadcast reception before any mitigation measures are applied

Chapter 6 describes any suitable mitigation measures for any affected TV viewer or radio listener

Chapter 7 presents the conclusion

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2 - The Mechanisms of Interference to Television and Radio Broadcast Services

Terrestrial Television Services

Any structure will produce two zones of potential disruption to television reception. One zone is where the development creates a ‘shadow’ (affects all television broadcast platforms) and the other where it gives rise to a ‘reflection’. At the frequencies used for broadcasting, the processes of creating a ‘shadow’ or a ‘reflection’ are somewhat more complicated than with visible light but thinking of the problem in these terms is still a helpful way of approaching the matter.

Signal ‘Shadowing’ Effects

In the area behind the structure, the television transmitter is effectively screened from the viewer and the strength of the signal is reduced - Figures 2 and 3.

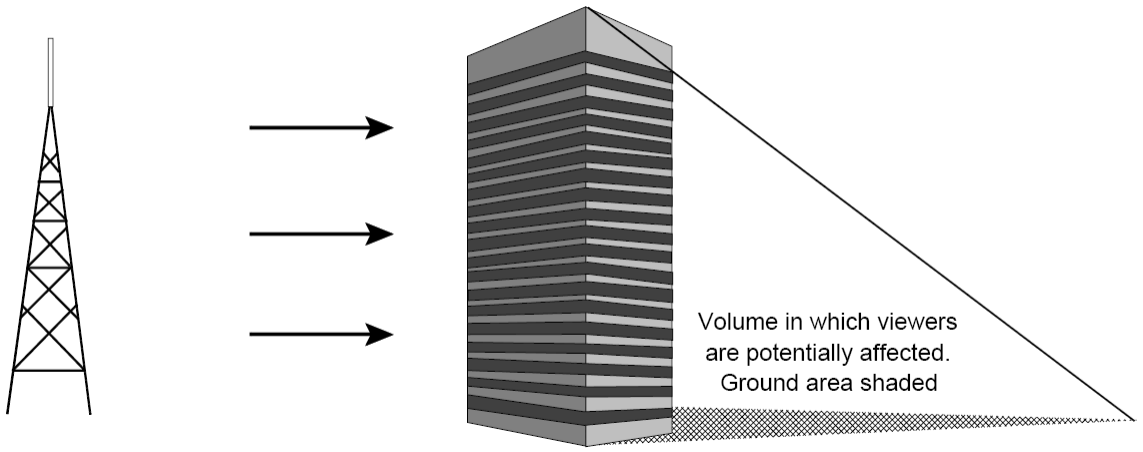


Figure 2 - Affected area in the ‘shadow’ zone behind the structure

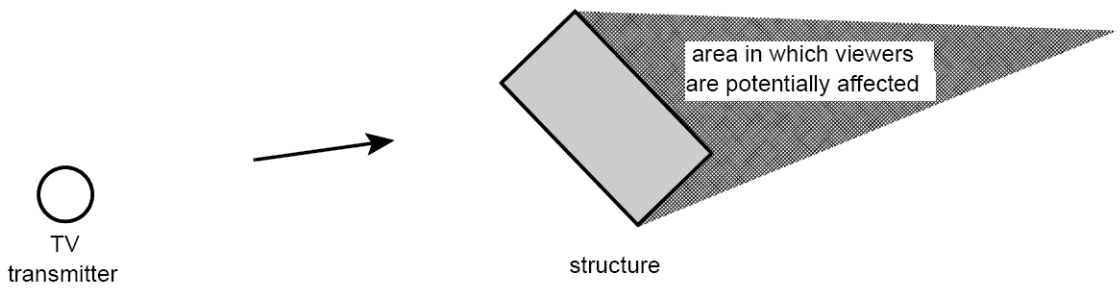


Figure 3 - Plan view of the ‘shadow’ zone

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Television signals do not create such a ‘hard’ shadow as visible light, and for the purposes of explanation, a ‘shadow’ zone must be considered which is divided into three sub-zones.

i. Within a few tens of metres from a solid structure, over the region where optical view of the transmitter is lost, the reduction in signal strength is critically dependent on the specific design and composition of the structure. For most brick and concrete buildings, the reduction can be severe and, in some cases, almost total if existing reception conditions are poor.

ii. Further away from the structure (e.g. beyond 25 to 50 metres, but this varies depending on its size) the limit of the ‘shadow’ zone and signal reduction are determined by diffraction at the edges of the structure and reflection off surrounding structures. The simple condition of whether or not a location has an optical view of the transmitter is not enough to classify the potential interference zone adequately. In general, the effect is that the signal appears to bend around the sides of the structure; the shadow zone reduces in size and the signal strength is reduced by much less than simple ray optics would suggest.

iii. Even further away from the structure (e.g. 250m) complex multiple reflections and diffraction, caused by structures in the locality, may result in the ‘shadow’ zone becoming almost non-existent, against interfering signals that arrive on significantly different bearings. This can result in an increase in the ratio of wanted to unwanted signal as presented to the television receiver.

Signal ‘Reflection’ Effects

The second zone of potential interference is produced by ‘reflection’ or ‘scattering’ of the incident signal, see Figure 4.

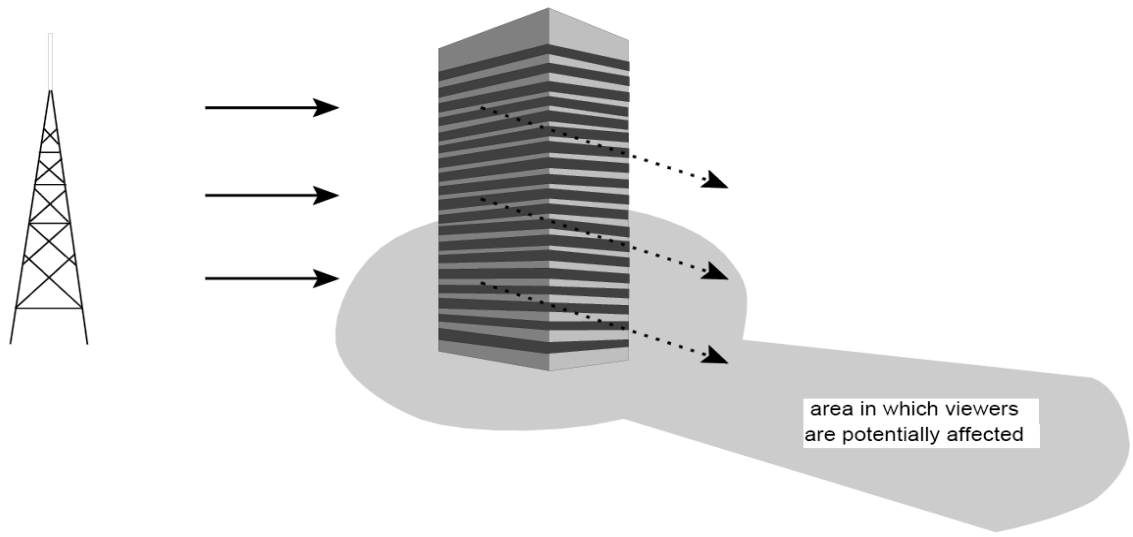


Figure 4 - Affected areas in the ‘reflected’ zone of the structure

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Consider Figure 5, the direct signal travels a distance P1 to the viewer, whilst the signal reflected from the structure travels slightly further, distance (P2 + P3). Although travelling at the speed of light, the different path lengths can mean that one signal arrives with a significant delay relative to the other. This results in a degradation in signal quality.

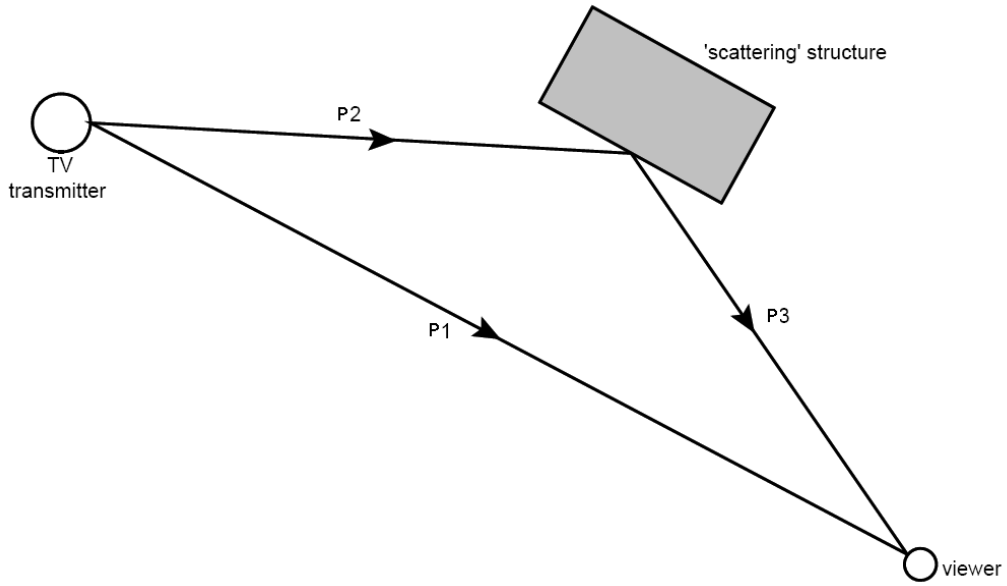


Figure 5 - Direct and Indirect Signal Paths

To avoid interference, it is necessary to ensure that the ratio of wanted signal along the direct path (P1) to the unwanted signal along indirect paths (P2+P3) is sufficiently high. Domestic TV receiving antennas generally have a significant directional response to incoming signals, which means that the antenna may discriminate against interfering signals that arrive on significantly different bearings. This can result in an increase in the ratio of wanted to unwanted signal, as presented to the television receiver.

Digital Terrestrial Television (DTT) - Freeview

The digital television broadcast platform offers many advantages over older analogue broadcast technologies. Due to the way picture signals are encoded and broadcast, digital television offers a much more resilient platform against interference. The construction of digital signals ensures that they are much more impervious to the effects of interference from indirect secondary reflections, which consequently ensures good quality and coherent data stream integrity at the receiver, resulting in an interference free picture. Disruption to DTT services is normally caused by a poor-quality receiving antenna system or locally generated wideband electrical noise. Signal blocking caused by buildings can also degrade received signal quality.

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Digital Satellite Television Services - Freesat & Sky

Digital satellite television services are provided by geo-stationary earth orbiting satellites positioned above the equator. To ensure good reception of digital satellite television services, satellite receive antennas (satellite dishes) are normally positioned away from trees and other clutter and are orientated to face the southeastern horizon.

Disruption to digital satellite television services is normally caused by an obstruction on the line-of-sight from the satellite to the receive antenna e.g. a tall building or tall trees. Adverse weather can also influence reception. In the United Kingdom, Freesat and Sky services come from the 28.2 degrees east ASTRA satellite cluster.

Figure 6 below shows typical clearance distances and obstruction heights for interference free satellite television reception.

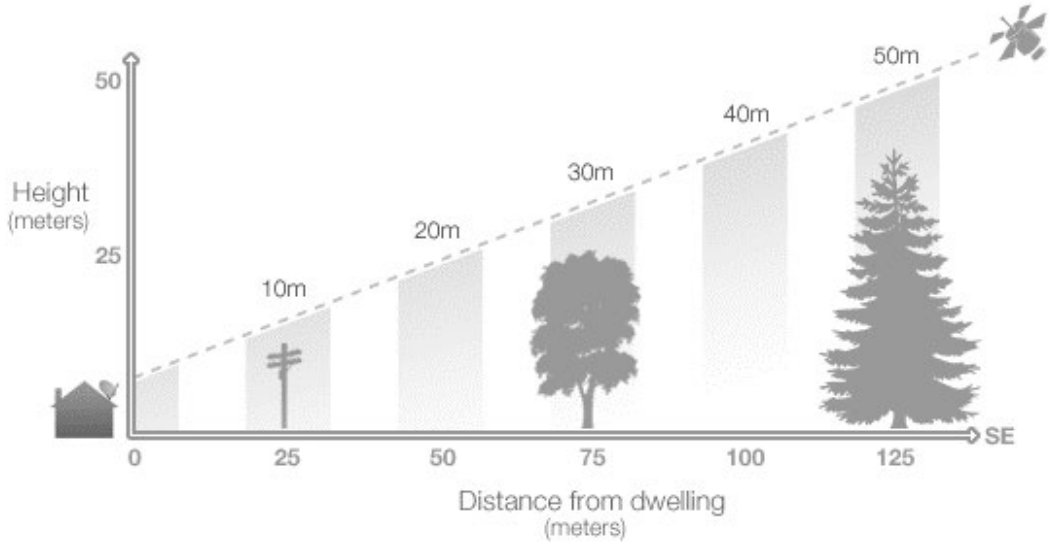


Figure 6 - Typical Clearance Distances and Obstruction Heights for Interference Free Satellite Television Reception

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VHF (FM) Radio

VHF (FM) radio services are broadcast from similar structures as terrestrial television services. Many things can cause radio interference, however simple remedies exist that can quickly reduce the effects. Most reception problems on FM radio are caused either by a weak signal or by some kind of interference.

Radio transmission signals will reflect into ‘shadow’ areas and also reflect from structures to cause ‘multi-path’ effects. The effect of multiple signals is to create zones of signal cancellation and signal enhancement. This is often demonstrated by the need to carefully position portable radio receivers for good reception or the fluctuation in signal quality whilst listening to VHF (FM) broadcasts in a vehicle. Due to the wavelength of the VHF (FM) signal (at 100 MHz, the wavelength is 3 metres), zones of interference can quickly and easily physically move around, as the interference is generated from the sum interaction of all incoming signals. Consequently, prediction of VHF (FM) interference is not practically possible due to the complex interaction of reflected signals with wanted signals, the design of radio receivers and radio signal propagation characteristics.

Buildings rarely cause radio interference but there is little that can be done during the design stage to reduce any adverse effects. Due to the lower frequencies in use for radio transmission (with respect to television services) and the methods by which the radio signals are encoded, it is very unlikely that a new structure in an already cluttered urban environment will disrupt the reception of radio services.

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3 - Available Television and Radio Broadcast Services

Terrestrial Television Services

The area around the Site is no longer served by analogue television transmissions due to the completed Digital Television Switchover. All analogue services were switched off in the Granada television region during 2009.

Digital Terrestrial Television (DTT) - Freeview

The survey area is served by DTT services (Granada TV region) from the Winter Hill transmitter (grid reference SD 66053 14463), on a bearing of 312° (with respect to true north) and 25km away. The Winter Hill transmitter is shown with respect to the Site in Figure 7.

Technical transmission information for each DTT service broadcast from the Winter Hill transmitter site is detailed in Table A, found in the Appendix - *Television Transmission Frequencies*.

Up to date technical information regarding the Granada TV region and Winter Hill transmitter group can be found on the Digital UK website[1].

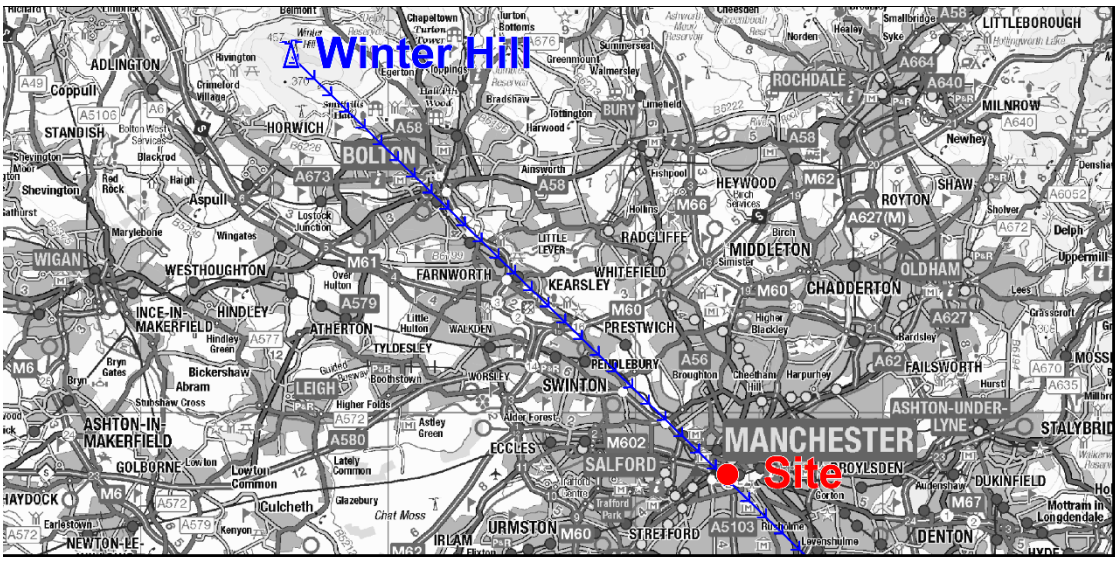


Figure 7 - The Locations of the Winter Hill Transmitter, the Site and the direction of the incoming DTT signals at the Site (indicated by the blue arrowed line)

1 - http://www.digitaluk.co.uk

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Non-Terrestrial Television Services (Digital Satellite Television)

For the reception of the 28.2 degrees east ASTRA satellite cluster (Freesat and Sky services), dish elevations of 22.9 degrees are required at this latitude. Optimal receive dish azimuths are 143.8 degrees with respect to true north (approximately southeast).

VHF (FM) Radio

The areas around the Site are served by VHF (FM) radio services of

BBC Radio 1, 2, 3, and 4 from the Holme Moss transmitter (NGR SE 09550 04050)

Technical transmission information for each radio service broadcast from the Holme Moss transmitter are detailed in Table B in the Appendix - *VHF (FM) Radio Transmission Frequencies.*

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4 - Survey Methodology & Description of Baseline

Due to the complex nature of television interference in cluttered urban environments, field investigations must be undertaken in the general area around a site to fully evaluate any potential effects. In this study, measurements were undertaken up to one kilometre from the Site The survey mainly focused around the Site and areas to the immediate northwest and southeast, the areas where predicted (modelled) interference may occur. These are identified in Figure 8, and the measurements are detailed in Tables C and D, found in the Appendix - *Signal Measurements*. The following data was recorded:

- Field strength and technical signal measurements of DTT transmissions from the main serving transmitter
- Viewing preference (choice of television transmitter) of residents in all areas visited
- Field strengths of VHF (FM) radio transmissions from the serving transmitter

All television measurements were carried out using a UHF log-periodic receive antenna. VHF (FM) radio field strength measurements were taken with a resonant half wavelength folded dipole antenna at 2 metres AGL, industry standard height for such work. During the survey, no assessment was made of reception conditions within viewers' homes. Equipment details are detailed in the Appendix - *Survey Equipment*.

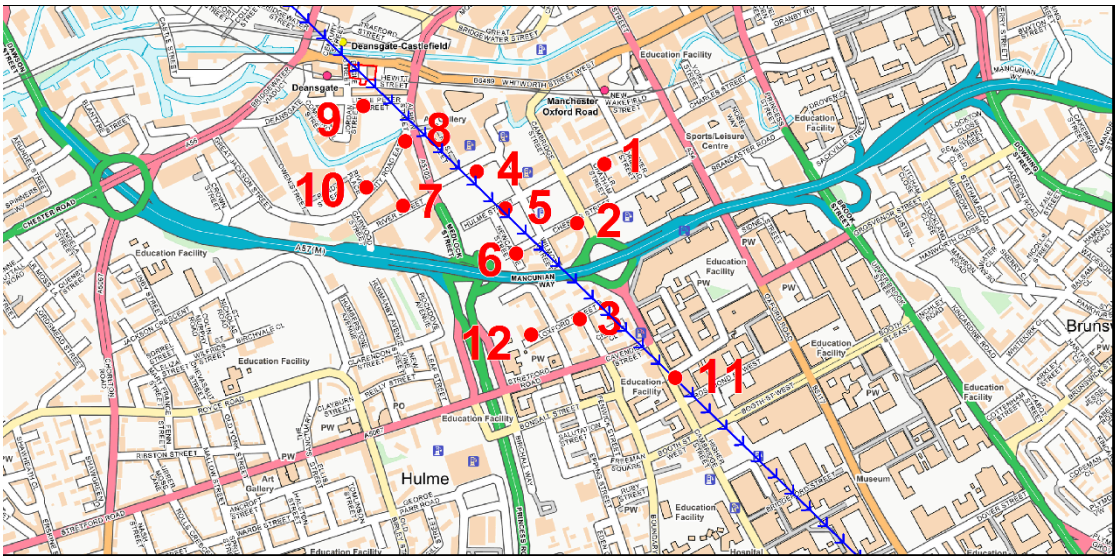


Figure 8 - Surveyed Locations. The blue arrow indicates the direction of the incoming DTT signals from Winter Hill transmitter. The Site is delineated in red

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Survey Results and Observations

In general, building use around the Site is mainly for place of transportation, commercial, retail and accommodation use. There are a number of existing tall and wide buildings in close proximity to the Site, including The Beetham Tower, Apart Hotel, Mercer Tower, Axis and Viadux. These existing significant structures are likely to influence local reception conditions. There are no typical two storey domestic dwellings within the study area.

Digital Terrestrial Television (DTT) - Freeview

DTT services were available at all surveyed locations from the Winter Hill transmitter. Signal strengths at all locations exceeded recommended minimum levels[2], indicating good technical signal quality. It was observed that all terrestrial TV antennas in the study area were aligned with the Winter Hill DTT transmitter. This alignment is expected since Winter Hill serves as the primary regional DTT transmitter for the northwest region, including Manchester.

Overall, DTT services currently provide good coverage and service in the study area.

Digital Satellite Television - Freesat & Sky

Given the prevalent building use in the study area (nonresidential), few satellite dishes were observed mounted on existing buildings surrounding the Site. This occurrence was anticipated considering the predominant building utilisation within the study area. Dishes were noted on buildings along Bridgewater Street, Burton Street and Southern Street, located to the northwest of the Site.

VHF (FM) Radio

VHF (FM) radio reception conditions were deemed to be good[3] throughout the study area. In-car reception was deemed to be good at all locations. This is due to the proximity of the Holme Moss high-power radio transmitter with respect to the Site.

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2 - Signal levels as specified by the CAI - Association for Audio Visual Professionals Code of Practice (COP) For the Installation of Aerials/Antennas & Receiving Equipment in the Single Dwelling Unit CAI COP 2: September 2022

Additional technical information regarding the Freeview signal can be found in the Appendix - An Overview of Signal Measurements

3 - Minimum Recommended Field Strengths for Acceptable Levels of VHF (FM) Radio Service

Monophonic audio - 40 dBµV/m
Stereophonic audio (excellent quality) - 54 dBµV/m

Source - https://www.ofcom.org.uk/__data/assets/pdf_file/0013/54310/annex-f.pdf

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5 - Predicted Impacts and Effects

Methodology

To assess the effects of the Proposed Development upon television and radio broadcast service reception, the structures were considered to create interference to services in the immediate areas around the Site, in signal reflection areas and in the signal shadow zones. These methods, used in conjunction with broadcast transmission information, development plans, maps of the study area and modelling techniques, contribute towards predicting the potential effects upon television and radio broadcast reception in the study area.

The field survey then investigated the areas identified as being at risk of interference and assessed all available services and the transmitter viewing preferences of residents in order to determine if the computed risk is practically valid. The collected data was finally used to determine what actual risks exist and what viable solutions are available to minimise any adverse effects. The predicted effects on television and radio broadcast reception are discussed below and summarised in Table 1.

Digital Terrestrial Television (DTT) - Freeview

Widespread interference is not expected to occur due to the existing good coverage in the study area, the lack of receptor antennas located in any theoretical signal shadow area and the robust nature of the DTT signal with respect to unwanted signal interaction. As no interference is expected, no mitigation measures to restore DTT reception are required.

Digital Satellite Television - Freesat and Sky

Tall structures, trees and buildings can disrupt digital satellite television reception by causing obstructions on the line-of-sight to the signal receive dish from the serving satellite and is discussed further in Chapter 2. Using trigonometry, the approximate maximum height of the proposed building[4] and the angle and orientation of the incoming satellite signals, theoretical signal shadow zones for the 28.2E ASTRA satellite cluster are as indicated;

Element	**Max. Signal Shadow Length (m)**
Proposed Structure	312

This area extends in a northwesterly direction (324 degrees with respect to true north) from the proposed structure's base and is depicted in Figure 9.

4 - 131.95m. Circa 166m AOD (subject to GF level). 44 storeys (incl. level 00)

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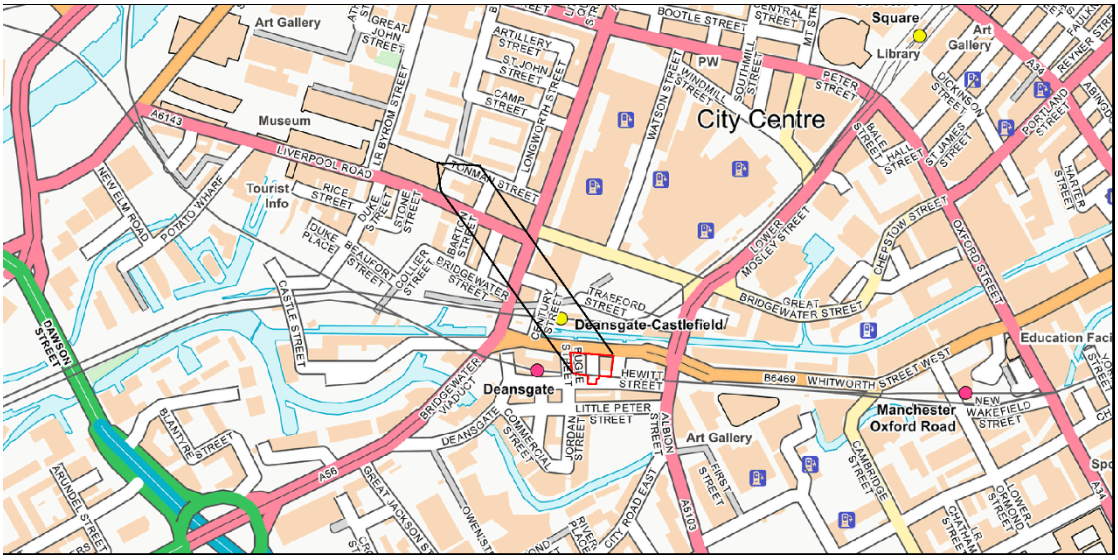


Figure 9 - Theoretical Satellite Television Signal Shadow Delineated in Black

Whilst it is considered that widespread interference would not occur to the reception of digital satellite services, as satellite dishes are located on buildings on Burton Street and Southern Street and may be in use to receive satellite TV services, interference could occur at these locations. Suitable mitigation, as discussed in Chapter 6, is likely to restore the reception of digital satellite television services for any affected viewer.

VHF (FM) Radio

Modelling VHF (FM) radio interference in a cluttered urban environment is not possible due to the number of constantly changing variables. VHF(FM) broadcast radio reception is robust throughout Manchester, evident by the survey results and signal availability with a typical car radio. Whilst any new development or structure will change local radio signal propagation and reception characteristics, due to the technical methods involved with encoding and receiving these transmissions, good reception will remain possible. Furthermore, as the reliance on VHF (FM) radio reception decreases due to the uptake of DAB receivers in cars and dwellings[5], and online streaming in properties, any possible impact effects are further reduced. Overall, the Proposed Development is not expected to impact the reception of VHF (FM) radio broadcasts.

5 - The Road Vehicles (Approval) Regulations 2020 came into force on 1 September 2020 and has implemented the provisions of the EU Directive covering the compulsory fitment of digital radio in passenger cars and buses that come fitted with a radio.

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Broadcast platform	Area(s) of predicted interference	Risk of interference & reasoning	Mitigation
DTT (Freeview)	Non-identified	No because coverage is robust	Not required
Digital Satellite TV (Freesat and Sky)	Up to 312m to the immediate northwest from the base of the Proposed Development	Yes, because there are satellite dishes located in the identified areas	Satellite dish relocation or use of alternative technology (DTT, fibre, cable etc.) to receive television content
VHF(FM) Radio	Non-identified	No because coverage is robust	Not required

Table 1 - Summary of Predicted Interference

Predicted Effects - Conclusions

The Proposed Development is not expected to impact the reception of DTT (Freeview) services.

The Proposed Development is likely to cause reception issues for the reception of digital satellite television services in areas to the immediate northwest of the Site, up to 312m from the base of the proposed structure. The use of cranes during the construction phase could also cause signal disruption in similar areas. Should satellite dishes be located and in use in this area (properties near to the Site on Burton Street and Southern Street), repositioning satellite dishes to new locations where views of the south-eastern skies are no longer obscured would restore services for any affected user. If this is required, it is advised that a registered antenna installer undertakes all required work, as detailed in Chapter 6. Additionally, the use of DTT receiving equipment would also offer viewers (receptors) alternative sources of broadcasts if satellite dishes cannot be relocated or cannot be moved to a new location where the signal shadow no longer impacts optimal signal reception. TV over broadband and fibre also offers viewers alternative sources of television broadcasts if desired.

The Proposed Development is not expected to affect VHF(FM) radio reception.

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6 - Mitigation Measures

For any affected digital satellite television user located to the northwest of the Site (in particular on Burton Street and Southern Street), relocating satellite dishes to new locations where views to the southeast horizon are no longer obscured should restore the reception of satellite television services. Affected digital satellite television viewers could also use DTT reception equipment to restore services. Additionally, some satellite television broadcasts may now be available via broadband or cable.

These are common and simple mitigation solutions for similar situations where local digital satellite television reception conditions have been affected by adjacent new development and construction work. A registered installer should be able to advise on the most effective mitigation measures once the existing installed satellite dish system has been inspected and construction-generated interference has been identified.

It is recommended that all antenna work (dish moving, relocating etc.) is undertaken by a registered installer (CAI accredited) and any system components used must be CAI benchmarked. More information regarding the Confederation of Aerial Industries can be found on the following website[6]. The CAI's benchmarking scheme ensures that the cables and antennas have passed minimum requirements for the use of digital satellite television reception. The use on non-benchmarked products in an antenna system would degrade overall performance and effectiveness of the system, increasing the risk from interference. More information on CAI benchmarked products can be found on the CAI's website[7].

It should be noted that because tower cranes are normally taller than the structure being built and tower cranes operate over a wide area, moving satellite dishes to different locations may not resolve all reception issues during the construction phase of the Proposed Development. To reduce tower crane interference, it is advised that the crane jibs / arms are positioned in a northwesterly to southeasterly facing orientation at the end of the lifting operations, hence reducing the overall cross-sectional area presented to the incoming satellite signals. This action reduces interference because the satellite transmissions originate on a bearing of c. 145 degrees with respect to true north (for Freesat and Sky digital satellite television services), and so encounter less of the crane's structure if parallel to the direction of the incoming satellite signals.

6 - http://www.cai.org.uk/index.php

7 - https://www.cai.org.uk/index.php/services/product-certification-scheme

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7 - Conclusions

A desktop-based study and baseline survey have been performed to assess the possible effects and impacts on the reception of television and radio broadcast services from the proposed 2-4 Whitworth Street West development. The study has focused on the reception of VHF (FM) radio and the two television broadcast platforms that could possibly be impacted by the Proposed Development - digital terrestrial television (DTT) and digital satellite television services.

Digital Terrestrial Television (DTT) - Freeview

The Proposed Development is not expected to cause any interference to the reception of DTT services. DTT is commercially known as Freeview.

Digital Satellite Television - Freesat & Sky

The use of cranes and the Proposed Development itself is likely to cause disruption to the reception of digital satellite television services in areas to the immediate northwest of the Site, up to 312m from the base of the proposed structure. In this area (Burton Street and Southern Street in particular), crane structures and the Proposed Development could obscure the required views of the southeastern skies (where the satellites are located), resulting in interference. If any interference does occur, the repositioning of satellite dishes to new locations without an obscured line-of-sight view to the serving satellites should restore reception. If this is not possible, the use of DTT receiving equipment would also offer any affected viewer an alternative source of digital television broadcasts. In addition, TV over broadband and TV over fibre would also offer viewers alternative sources of television broadcasts. Any sporadic interference arising from crane use is expected to be limited in duration (only occurring during working hours) and will cease completely when the cranes are taken down.

VHF(FM) Radio

Due to the existing good coverage and robust technical nature of the broadcast radio network with respect to building-generated signal interference, the Proposed Development is not expected to affect the reception of VHF(FM) radio services.

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Overall, the use of cranes and the Proposed Development itself is likely to cause disruption to the reception of digital satellite television services in isolated areas to the northwest of the Site: Burton Street and Southern Street. In these areas, clear views of the southeastern skies (where the satellites are located) could be obscured, resulting in interference. If interference does occur, the repositioning of satellite dishes to new locations without an obscured line-of-sight view to the serving satellites should restore all services. If satellite dish relocations are not possible, the use of DTT receiving equipment would also offer any affected viewer an alternative source of digital television broadcasts.

This assessment has been prepared for the applicant to support the planning application submission.

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APPENDIX

Television Transmission Frequencies

VHF (FM) Radio Transmission Frequencies

Signal Measurements

An Overview of Signal Measurements

Survey Equipment

Calculation of Received Field Strength

References

Mapping Data

Planning Policies - Regional and Local Planning Policies and Guidance

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Television Transmission Frequencies[8]

Digital TV Multiplex	Multiplex Operator	UHF Channel Number[9]	Channel Frequency Fc (MHz)[10]	Transmitter Power (kW)
BBC A	BBC	32	562.00	100
D3&4	Digital 3 & 4	34	578.00	100
BBC B (HD)	BBC	35	586.00	100
SDN	SDN	29	538.00	100
Arqiva A	Arqiva	31	554.00	100
Arqiva B	Arqiva	37	602.00	100

Table A - Main Winter Hill Digital Terrestrial Television Services

Public Service Broadcaster (PSB) Digital Multiplexes
Commercial (COM) Digital Multiplexes

VHF (FM) Radio Transmission Frequencies

Service	Frequency (MHz)	Transmitter Power (kW)
BBC Radio 1	98.90	250
BBC Radio 2	89.30	250
BBC Radio 3	91.50	250
BBC Radio 4	93.70	250

Table B - Holme Moss VHF (FM) Radio Services

8 - Information correct at time of writing. Information provided by DigitalUK and Arqiva

9 - Digital multiplexes with a "+" or "-" sign operate with a frequency offset making the channel frequency + or - 167 kHz

10 - The nominal channel frequency, Fc (in Megahertz) of the multiplex can be calculated using Fc = 8n+306, where 'n' is the UHF channel number

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Signal Measurements

Measurement Point Number	Channel	32	34	35	29	31	37
	Frequency	562.00	578.00	586.00	538.00	554.00	602.00
	Service	BBC A	D3&4	BBC B	SDN	Arqiva A	Arqiva B
1	FS	87.2	88.9	78.1	90.0	90.7	81.5
	CSI	21.6	21.3	-	23.2	19.2	20.9
	MER	31.2	30.4	-	31.6	30.0	31.1
2	FS	93.4	89.3	86.2	90.7	89.8	80.1
	CSI	21.6	20.8	-	22.9	19.0	21.2
	MER	31.3	32.8	-	30.1	30.2	31.5
3	FS	92.1	86.2	87.8	89.0	89.0	87.5
	CSI	19.9	18.4	-	18.7	19.8	21.0
	MER	31.2	31.0	-	29.8	29.7	32.5
4	FS	80.1	83.6	87.4	92.2	95.8	79.2
	CSI	19.3	22.8	-	22.6	20.0	18.2
	MER	31.1	31.5	-	31.0	32.5	30.7
5	FS	91.8	96.1	94.6	94.6	90.9	80.0
	CSI	21.0	20.0	-	22.5	22.3	19.0
	MER	31.0	32.2	-	31.5	31.3	31.0
6	FS	85.5	82.1	81.5	83.8	86.7	88.8
	CSI	18.9	20.9	-	21.3	19.0	21.2
	MER	31.8	30.7	-	31.2	31.3	29.3
7	FS	91.0	86.1	80.8	87.7	91.1	87.4
	CSI	20.5	20.5	-	20.6	18.4	19.0
	MER	31.9	29.0	-	31.0	30.9	31.4
8	FS	85.9	92.7	84.3	89.0	92.2	78.9
	CSI	20.8	22.0	-	22.1	19.6	21.9
	MER	30.5	31.8	-	31.5	31.5	29.8
9	FS	92.3	83.0	86.2	86.7	90.9	87.5
	CSI	18.4	19.0	-	20.0	18.9	17.5
	MER	31.3	30.5	-	30.9	32.3	32.2
10	FS	80.9	90.5	94.7	93.1	87.5	91.5
	CSI	20.0	23.8	-	22.7	20.6	18.9
	MER	31.7	30.2	-	21.2	30.3	29.9
11	FS	91.5	83.1	83.3	87.7	87.2	86.1
	CSI	19.0	19.3	-	20.2	18.9	17.8
	MER	32.0	31.5	-	29.8	31.2	32.0
12	FS	90.0	88.1	91.5	90.3	88.0	84.4
	CSI	23.5	19.0	-	19.8	20.0	21.5
	MER	32.3	29.8	-	31.8	31.4	30.0

Table C - Main Winter Hill Digital Television Services

Frequencies listed are in MHz
Field strength (FS) values are indicated in dBμV/m
CSI Channel Status Information (%)
MER Modulation Error Ratio (dB)

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Location	Service	Radio 1	Radio 2	Radio 3	Radio 4
1		57.6	54.2	58.1	60.2
2		57.0	60.6	61.6	57.7
3		60.0	59.9	60.4	56.7
4		56.8	52.3	60.0	54.1
5		57.9	57.1	62.5	59.1
6		57.9	56.4	61.6	59.2
7		60.7	59.8	59.0	60.3
8		57.3	57.9	56.7	59.0
9		59.4	58.6	58.7	59.0
10		53.8	57.5	61.1	55.6
11		55.3	61.0	61.2	56.2
12		55.9	56.6	61.3	60.0

Table D - Field Strength Measurements of Holme Moss VHF(FM) Radio Services

Values are indicated in dBμV/m

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An Overview of Signal Measurements

The first and easiest parameter to check is signal level (also referred to as amplitude or terminated signal strength). In many cases this gives a good indication of the available decoding margin, or the extent of any shortfall.

At the receiver input, the terminated level of a DTT signal is measured in the usual units of dBμV (a maximum signal level of 70 dBμV and a minimum signal level of 50 dBμV). It is helpful to understand that the level of a DTT signal represents the total power of all the carriers in the Coded Orthogonal Frequency Division Multiplexing (COFDM) signal and not the level of each individual COFDM carrier. For satisfactory reception of digital signals, it is important the signals applied to the receiver are within these ranges. These maximum and minimum levels define a so-called window of operation for the receiver.

Common practice dictates that in order to measure the quality of a received DTT signal we have to look at one or more of the following parameters: Bit-Error Rate (BER), Channel BER (CBER), Carrier-to-Noise Ratio (CNR) and Modulation Error Ratio (MER). The Channel State Information (CSI) feature available in DTT measurement equipment is a very valuable tool providing additional insight into the quality of reception in a typical domestic or professional DTT installation.

Using the BER alone is an ill-advised “hit-or-miss” strategy because of the 'cliff-edge effect' characteristic of any digital TV system. A BER reading below the reference quasi error free (QEF) value of 2×10-4 might wrongly lead us to conclude that the receiving conditions are satisfactory.

However, the BER provides a very narrow signal measurement range. Even for vanishingly small BER readings, a small drop in the level of received DTT signal can push the DTT receiver over the digital cliff edge beyond the point of system failure. The CBER is closely related to the BER providing a wider signal measurement range. Depending on the type(s) of unknown disturbance(s) affecting our DTT installation (noise, co-channel or adjacent PAL, co-channel DTT, etc.), the CBER corresponding to the reference QEF BER of 2×10-4 varies between 4 and 7 in 100. Unfortunately, the CBER is not a reliable indicator of how far the digital cliff edge is.

DTT engineers need a tool with a wide measurement range that solves the shortcomings of the BER and CBER. This measurement tool should provide some estimate of the noise margin of the DTT installation. A first candidate comes to mind: CNR or, alternatively, its sibling the MER.

The CNR is defined as the ratio of the average RF power of the DTT signal to the power of the noise present in the UHF channel. Similarly, the MER is defined as the ratio of the average power of the DTT signal to the average power of the constellation errors. It can therefore be used to give a more direct indication of decoding margin when, as is often the case, there is co-channel

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interference as well as noise in the channel. The higher the MER value, the **better** the reception conditions.

In situations where there is no multipath propagation so that the channel frequency response remains reasonably flat, CNR and MER are in principle the same thing. In practice, the accuracy of the measured CNR is limited by the noise floor of the measurement equipment and by the presence of other disturbances on adjacent UHF channels. Likewise, both the receiver's noise floor and other issues resulting from its practical implementation degrade the MER estimate.

Channel State Information (CSI)

Some flavour of CSI is used internally by all commercial DTT receivers to achieve the recommended target system performance[11]. The CSI counts the effect of both the noise present in the channel and the shape of the transmission channel itself. In other words, the CSI gives a measure of the reliability of the received DTT signal. We measure the average of the CSI across the UHF channel occupied by the DTT signal. The higher the percentage value of CSI, the **less** reliable DTT reception is.

As explained, the CSI can be used as a means to measure the noise margin in a DTT installation. Let us call CSI_{QEF} the percentage CSI measured at the point where the measurement equipment displays the reference QEF BER. The noise margin in dB is then approximately given by –

$$NM\ (dB) = \frac{CSI_{QEF} - CSI}{2.6}$$

This empirical approximation represents a good estimate for NM below 8dB. The CSI alone, on the other hand, has a wider measurement range, providing meaningful results for NM of up to 15dB.

11 - *J. Lago-Fernández, "Using Channel State Information (CSI) to Characterize DVB-T Reception", IBC, Amsterdam, 12-17 September 2002*

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Survey Equipment

1 x Antiference ASM02 Digital TV / SAT Spectrum Analyser

1 x Sony Wide screen CRT Reference Receiver KV–16TIU – Serial Number 4014480

1 x Professional Broadcast Wideband Log Periodic 8 element antenna (Amphenol Jaybeam (details below))

Amphenol JAYBEAM

468-860 MHz

A Log Periodic antenna designed for UHF Broadcast, TETRA and Cellular communications applications. This antenna is often used in a stacked array to form a rugged, high power, extended range antenna. Produced to the highest quality standards, these robust antenna designs will insure reliable operation in harsh environmental conditions.

LPU/Rx

V-Pol or H-Pol | Log Periodic | 70° | 7.9 dBd

Replace "x" with desired model number option.

Electrical Characteristics		
Frequency band	468-860 MHz	
Model number options (x)	Model Number LPU/R-N LPU/R-7/16	Connector type N-Female 7/16-DIN Female
Polarization	Vertical or Horizontal	
Horizontal beamwidth	70°	
Gain	7.9 dBd	
Impedance	50Ω	
VSWR	<1.3:1	
Maximum power	250 W	
Connector type	see model number options above	
Lightning protection	DC grounded	
Mechanical Characteristics		
Materials	Aluminium Alloy	
Dimensions (Length x Width)	1210 x 320 mm	47.6 x 12.6 in
Weight without bracket	3.5 kg	7.7 lbs
Mounting Options		
Mounting	Mounting bracket included to fit 38-50 mm dia. pipe.	



Technical Specification for an Amphenol Jaybeam Professional Broadcast Wideband Log Periodic 8-Element Antenna

All RF cables, interconnects and systems of professional quality and calibrated to determine feeder losses and antenna gains. These are factored into the results, providing accurate descriptions of actual field strength values – see *Calculation of Received Field Strength*

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Calculation of Received Field Strength

The Field Strength (dBµV/m) is derived from the Terminated Level (dBµV) as measured at the input of the measurement receiver.

Field Strength (dBµV/m) = Terminated Level (dBµV) – Aerial Gain (a) + Dipole Factor (b) + Feeder Loss (c)

where -

Dipole Factor (to matched load)	(b)	$20Log(\frac{2\pi}{\lambda})$ *Where λ = Transmission Wavelength (m)*
Feeder Loss	(c)	3 dB
Aerial Gain (dB_{dipole})	(a)	10 dB

References

The building information found in Chapter 2 was sourced from the following Ofcom document[12].

Mapping Data

This report includes mapping and mapping data provided by Ordnance Survey (OS), under the terms of the Open Government Licence, OS data Crown copyright and database copyright (2024).

12 - http://licensing.ofcom.org.uk/binaries/spectrum/fixed-terrestrial-links/wind-farms/tall_structures.pdf

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Planning Policies - Regional and Local Planning Policies and Guidance

Manchester City Council (MCC), "Full, Outline, Reserved Matters & Variation/Removal of Conditions Planning Applications - Is Your Application Valid?", September 2018 (revised January 2020), MCC

Broadband Connectivity Assessment

All new build residential developments must incorporate measures to facilitate digital connectivity for all new build residential properties having regard to the Data Ducting Infrastructure Guidance produced by the Department for Communities and Local Government. (Section 10 NPPF, above)

Television Reception

MCC planning guidance, any development over four storeys requires a TV reception impact assessment.

Information on TV and radio reception and interference. Please provide a report on the possible interference created by the proposed development on TV and radio reception within the area. You may wish to contact the Office of Communications (Ofcom) on tel. 0207 981 3000 for suggestions of companies who may be able to carry out such work. (Core Strategy Policy EN2)

Tall Buildings

If the proposed building is considered to be a 'Tall Building', you will need to make a case for the height of the tall element and take into consideration Historic England and Design Council guidance on 'Tall Buildings'. The design statement should make reference to Design Council guidance to assess its impact on the surrounding area. A visual impact assessment with visualisations of the building form key views needs to be included. The statement should include details of pre-application discussions held with local residents and the outcome of these discussions. If the Proposal is a Tall Building, it may require an Environmental Statement, as it would have the potential to generate significant impacts over and above the existing use(s) on site. Most notably impacts relating to visual impact; wind microclimate; sunlight / daylight / shading / solar dazzle / privacy and overlooking; transport issues; noise and vibration; air quality; ground conditions and contamination; water resources hydrology; ***radio and television interference****; and sustainability. (Core Strategy Policy EN2)*

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The UK's terrestrial television and radio networks are highly complex engineering systems and are constantly being modified, re-designed, upgraded and maintained. The reception conditions detailed in this report were those prevailing at the time of the survey in the study area. Engineering work at transmitter sites, weather conditions and the time of the year will influence the quality and coverage of terrestrial services and their susceptibility to interference. Whilst every effort was made to accurately measure and assess the available television and radio transmissions and services at the time of the survey, GTech Surveys Limited cannot assume that any part of the television or radio broadcast network or transmission from any transmitter was operating in required specification or correctly to any design criteria. The signal measurements undertaken during the survey work were used to define the possible impacts to television and radio reception for this project. Although best practice has been applied in understanding the potential impacts, due to the complex nature of the subject, GTech Surveys Limited is not accountable in anyway whatsoever if unpredicted impacts occur at any location anywhere in the study area.

Modelling parameters assume that all installed UHF antenna systems are mounted at least 10m AGL and installed to a modern standard, with all components meeting CAI quality standards. Antennas mounted at lower heights and poor-quality installations will be more prone to the effects of interference from external sources and as such, reception conditions to installations with the aforementioned characteristics have not been accounted for in any impact modelling. Consequently, properties with such installations may be prone to interference effects that have not been identified. Such installations are commonly found in camping and caravan parks, on bungalows and properties where it is not possible to attach an antenna to the exterior roof. Antennas mounted in lofts are also more prone to interference effects arising from the signal attenuation caused by roofing materials. Again, reception conditions to properties with the aforementioned antenna installation characteristics have not been accounted for in any impact modelling and as such, properties with these installations may be prone to interference effects that have not been identified.

Digital terrestrial television (Freeview) coverage may vary as a result of engineering works or any frequency changes authorised by Ofcom. We advise that consumers always check future reception predictions (http://www.digitaluk.co.uk/coveragechecker/) before buying TV equipment. GTech Surveys Limited, Ofcom and Digital UK are not responsible for household TV reception arrangements.

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Any questions or matters arising from this Report should be addressed in the first instance to the Project Manager.

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Appendix 7: Broadband Connectivity Assessment

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2 - 4 Whitworth Street West

Broadband Connectivity Assessment

CHANGE HISTORY

Issue	Date	Details of Changes	
0.0	24/05/2024	Working draft	
0.1	20/06/2024	First draft issue	
Author: G Phillips			Reviewer: O Lloyd

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2 - External Infrastructure Telecommunications Utility Providers **8**

3 - BT Openreach External Infrastructure Availability **9**

4 - Virgin Media External Infrastructure Availability **11**

5 - Conclusions **12**

Appendix **13**

Broadband Connection Definitions

Data Ducting Infrastructure for New Homes - Guidance Note, March 2008, Department for Communities and Local Government

Planning Policies - National Planning Policies

Local Planning Requirements

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GTech Surveys Limited

GTech Surveys Limited is a Midlands based broadcast and telecommunications consultancy conducting projects throughout the entire UK. We undertake mobile phone network, television and radio reception surveys (pre- and post-construction signal surveys), conduct broadcast interference and reception investigations, and support telecommunications planning work for wind energy developers, construction companies, architects, broadcasters and Local Planning Authorities.

In addition to radio interference modelling services and television reception surveys, we produce EIA and ES Telecommunications Chapters (also known as an 'Electronic Interference Chapter'); satisfying the requirements of Part 5, Regulation 18 (Parts 5a and 5b) of The Town and Country Planning EIA Regulations 2017. We peer review ES and EIA work, liaising with telecommunications providers (Arqiva, BT etc.) and advise developers with respect to associated Section 106 (Town and Country Planning Act 1990) and Section 75 (Town and Country Planning (Scotland) Act 1997) agreements.

GTech Surveys Limited is a consultant member of the Trade Association for Content Delivery - (Confederation of Aerial Industries Ltd - CAI) and the RDI - the digital sector's professional body and trade organisation. We are listed on Constructionline and verified as a Safety Schemes in Procurement (SSIP) member by Safety Management Advisory Services (SMAS), making us compliant with the industry standard PAS 91:2013 + A1:2017.

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GTech Surveys Ltd.
Accountancy House,
4 Priory Road,
Kenilworth,
Warwickshire,
CV8 1LL.

T: +44(0) 1926 744771

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Executive Summary

A desk-based assessment has been undertaken to determine the current availability of broadband services near to and adjacent to the proposed 2 - 4 Whitworth Street West development. Under Manchester City Council (MCC) planning guidance, certain sized developments require a broadband connectivity assessment. Further guidance can be found in this document; "*Full, Outline, Reserved Matters & Variation/Removal of Conditions Planning Applications - Is Your Application Valid?*", September 2018 (revised January 2020), MCC. The requirement states;

Broadband Connectivity Assessment

> *All new build residential developments must incorporate measures to facilitate digital connectivity for all new build residential properties having regard to the Data Ducting Infrastructure Guidance produced by the Department for Communities and Local Government. (Section 10 - National Planning Policy Framework (NPPF))*

The findings of this broadband connectivity assessment indicate that existing broadband infrastructure and good connectivity is already available in the study area, with existing fibre installed along streets adjacent to the Site. Fast download speeds are likely to be experienced. It is suggested that the developer engages with BT Openreach to facilitate a connection to their fibre network.

The developer will commit to enable the Proposed Development for robust connectivity and future-proof upgrading by following the guidance presented in *Data Ducting Infrastructure for New Homes - Guidance Note*, March 2008, Department for Communities and Local Government.

This broadband connectivity assessment can be used for reference and to support the 2 - 4 Whitworth Street West planning application submission.

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1 - Introduction

This assessment has been prepared to support an application for planning permission for the proposed 2 - 4 Whitworth Street West development. The assessment details the findings of licensed and other available information to address requirements regarding potential broadband connectivity for the Proposed Development. This assessment has been prepared by GTech Surveys Limited for the applicant, Glenbrook WWS Limited.

The Proposed Development

The Proposed Development will comprise of the demolition of existing buildings and development of a residential development of up to 44 stories, including ground floor commercial uses and public realm works. The development will be delivered in a single phase.

The Site and Existing Building on the Site

The Site comprises circa 0.16 hectares of brownfield land located within Manchester City Centre at 2 - 4 Whitworth Street West. The Site's location is shown in more detail in Figure 1.

The Site is bound by Whitworth Street West to the north, with the listed railway viaduct and Deansgate Station platform immediately to the south and at first floor level to the existing buildings. Rowendale Street bisects the Site travelling under the railway viaduct providing vehicle and pedestrian links to Hewitt Street to the south. The Site is bound by Cameron Street to the east and Bugle Street to the west, which also provide vehicle and pedestrian access into the Knott Mill area, characterised by a mix of employment and residential buildings. Beyond Bugle Street is a live music venue (Rebellion) and Deansgate Station is beyond this.

Existing structures on the Site include 2 Whitworth Street West, a four-storey red-brick building which is vacant and 4 Whitworth Street West, which is a three-storey red brick building, also vacant.

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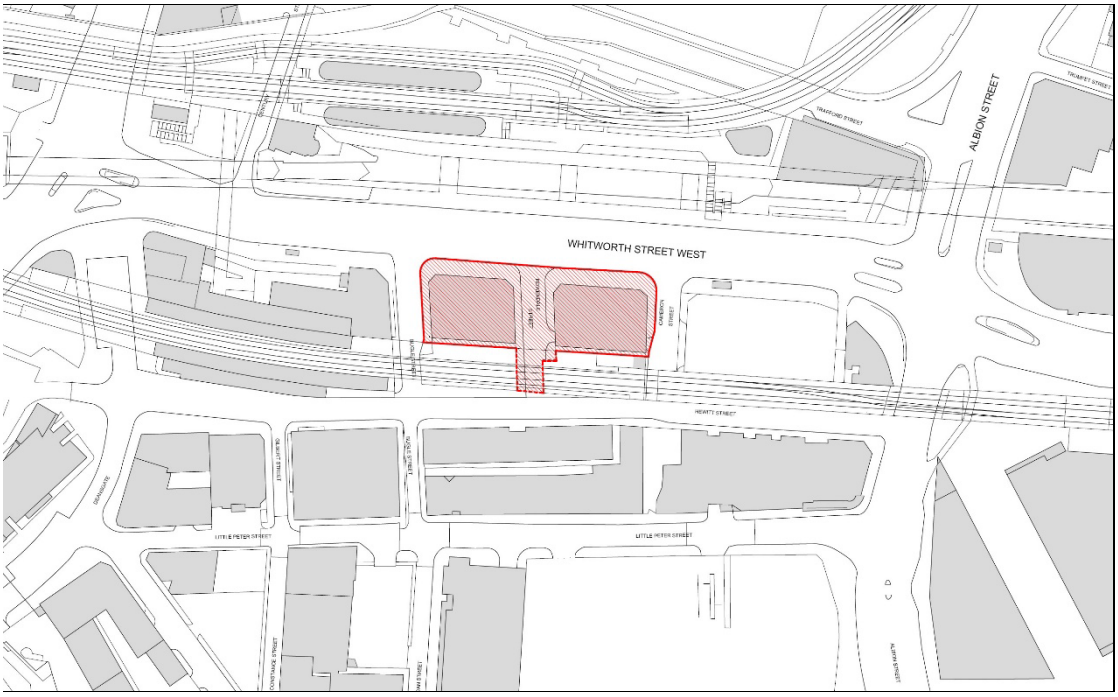


Figure 1 - The location of the Site (delineated in red)

The Assessment Requirements

Manchester City Council (MCC) requires applications for certain sized developments to include a broadband connectivity assessment. Further guidance can be found in the document; "*Full, Outline, Reserved Matters & Variation/Removal of Conditions Planning Applications - Is Your Application Valid?*", September 2018 (revised January 2020), MCC. The requirement states;

Broadband Connectivity Assessment

All new build residential developments must incorporate measures to facilitate digital connectivity for all new build residential properties having regard to the Data Ducting Infrastructure Guidance produced by the Department for Communities and Local Government. (Section 10 - National Planning Policy Framework (NPPF))

Additionally, in Places for Everyone Joint Development Plan Document 2022 - 2039, March 2024, it is stated in Policy JP-C2: Digital Connectivity, Part 2 that;

Requiring all new development to have full fibre to premises connections, unless technically infeasible and/or unviable, and to incorporate multiple-ducting compliant with telecoms standards, to facilitate future-proof gigabit-capable network connections. It is expected that internet connections will be operational and immediately accessible to network providers when occupiers move into new properties

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Overall, it is considered that all new build developments must incorporate measures to facilitate digital connectivity for all new build residential properties having regard to the Data Ducting Infrastructure Guidance produced by the Department for Levelling Up, Housing and Communities. (Section 10 - National Planning Policy Framework (NPPF)[1])

Developer's Guidance and Responsibility - At the Pre-Application Stage

Broadband connectivity is most helpfully and effectively raised at the earliest possible stage of the planning process. This can help to ensure that the need to provide superfast broadband connectivity is considered in prospective applicants' layout planning and costings before proposals reach the planning application stage. At the pre-application stage, prospective applicants:

- Will be reminded of the requirements of local guidance and Section 10 (NPPF) concerning broadband connectivity, i.e. the provision of superfast broadband connectivity;

- Will be advised that occupiers of the Proposed Development should be able to arrange access to superfast broadband immediately at the point of occupation; and

- Will be encouraged to liaise with broadband providers at an early stage to identify whether the Proposed Development could be connected to existing infrastructure or whether additional infrastructure would be required, and how this would be provided.

Developer's Guidance and Responsibility - At the Application Stage

Applications for planning permission for major development should be accompanied by evidence of the superfast broadband connectivity of the site, such as this report. This should take the form of a connectivity assessment, or similar proof, from one or more broadband infrastructure providers evidencing the availability of at least superfast broadband speeds. This can be submitted as part of a sustainability statement accompanying the application.

Where superfast broadband connectivity is available, the development should include the infrastructure to connect to this service and make it available to occupiers. Where superfast broadband connectivity is not currently available:

1 - NPPF Section 10, December 2023, (Department for Levelling Up, Housing and Communities)

10. Supporting high quality communications

118. Advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being. Planning policies and decisions should support the expansion of electronic communications networks, including next generation mobile technology (such as 5G) and full fibre broadband connections. Policies should set out how high-quality digital infrastructure, providing access to services from a range of providers, is expected to be delivered and upgraded over time; and should prioritise full fibre connections to existing and new developments (as these connections will, in almost all cases, provide the optimum solution).

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- Applications should be accompanied by evidence that discussions have been held with a range of providers to upgrade infrastructure to deliver superfast broadband or full fibre connections.

- Where one or more providers have agreed to provide superfast broadband connectivity, the development should be designed to connect to this service and make it available to occupiers.

- Where no provider has agreed to provide superfast broadband connectivity, the development should incorporate additional dedicated telecommunications ducting to enable the provision of superfast broadband in future.

The Broadband Connectivity Assessment

This assessment can be used for reference and to support the planning application submission and has been prepared by GTech Surveys Limited for the applicant. This assessment was undertaken during June 2024 to provide information regarding the connectivity around the Site and the availability of local broadband services.

This report follows the following structure:

Chapter 1 introduces the work, the assessment's requirements, the Proposed Development and Site

Chapter 2 lists which external infrastructure telecommunications utility providers are operating in the study area, with which technology and what likely upload and download speeds are available

Chapter 3 describes the existing local BT Openreach infrastructure around the Site (as of 20 June 2024)

Chapter 4 describes the existing local Virgin Media infrastructure around the Site (as of 20 June 2024)

Chapter 5 presents the conclusion

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2 - External Infrastructure Telecommunications Utility Providers

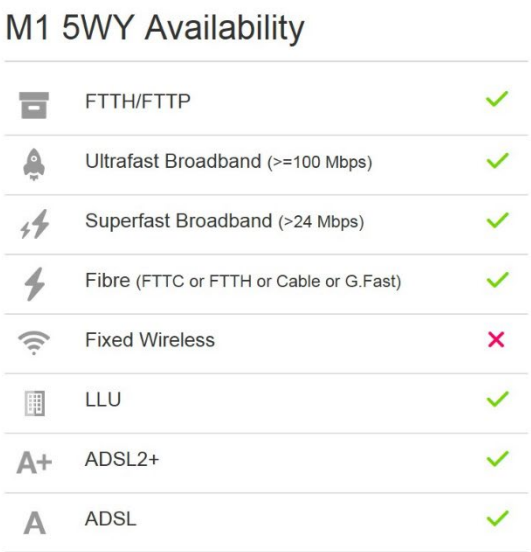
Existing Broadband Providers in the Study Area

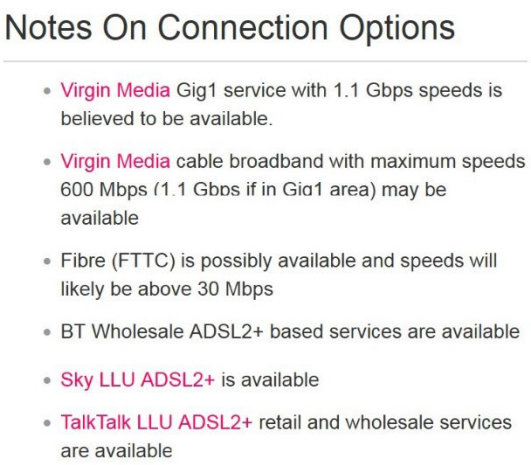
A number of telecommunications companies and broadband providers exist and operate in Manchester. Database integration indicates that the following providers are active around the Site's postcode centroid.

Provider	Type of Service[2]
BT Wholesale	ADSL
BT Wholesale	ADSL Max
BT Wholesale	WBC (21CN)
BT Wholesale	SDSL
BT	FTTC
Sky Broadband	LLU
TalkTalk (CPW)[3]	LLU
Vodafone	LLU

Potential Download Speeds

The postcode centroid is likely to be well served due to existing fibre in the area.





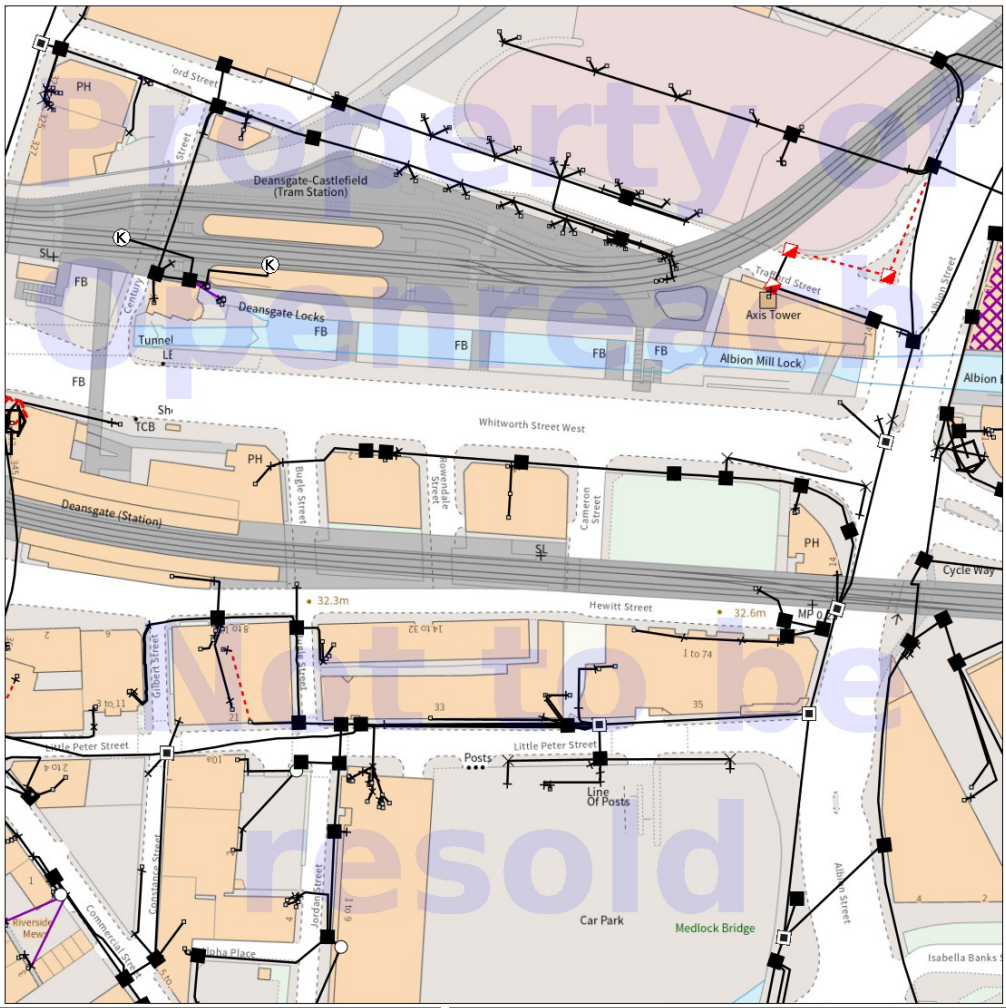
2 - Appendix - Broadband Connection Definitions for definitions

3 - Car Phone Warehouse (CPW)

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3 - BT Openreach External Infrastructure Availability

Maps on Demand Plant Information Reply



Property of Openreach Not to be resold

IMPORTANT WARNING

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

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CLICK BEFORE YOU DIG

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

email nnhc@openreach.co.uk

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

Accidents happen

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

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KEY TO BT SYMBOLS

	Planned	Live
PCP		
Pole		
Box		
Manhole		
Cabinet		

Change Of State	
Split Coupling	
Duct Tee	
Building	
Kiosk	

Hatchings	
Built	
Planned	
Inferred	
Duct	

Other proposed plant is shown using dashed lines. BT Symbols not listed above may be disregarded. Existing BT Plant may not be recorded. Information valid at time of preparation. Maps are only valid for 90 days after the date of publication.

	Pending Add	In Place	Pending Remove	Not In Use
Power Cable				
Power Duct				N/A

BT Ref : QDV09073D
Map Reference : (centre) SJ8353197520
Easting/Northing : (centre) 383531,397520
Scale : 1:250
Issued : 20/06/2024 09:07:25

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

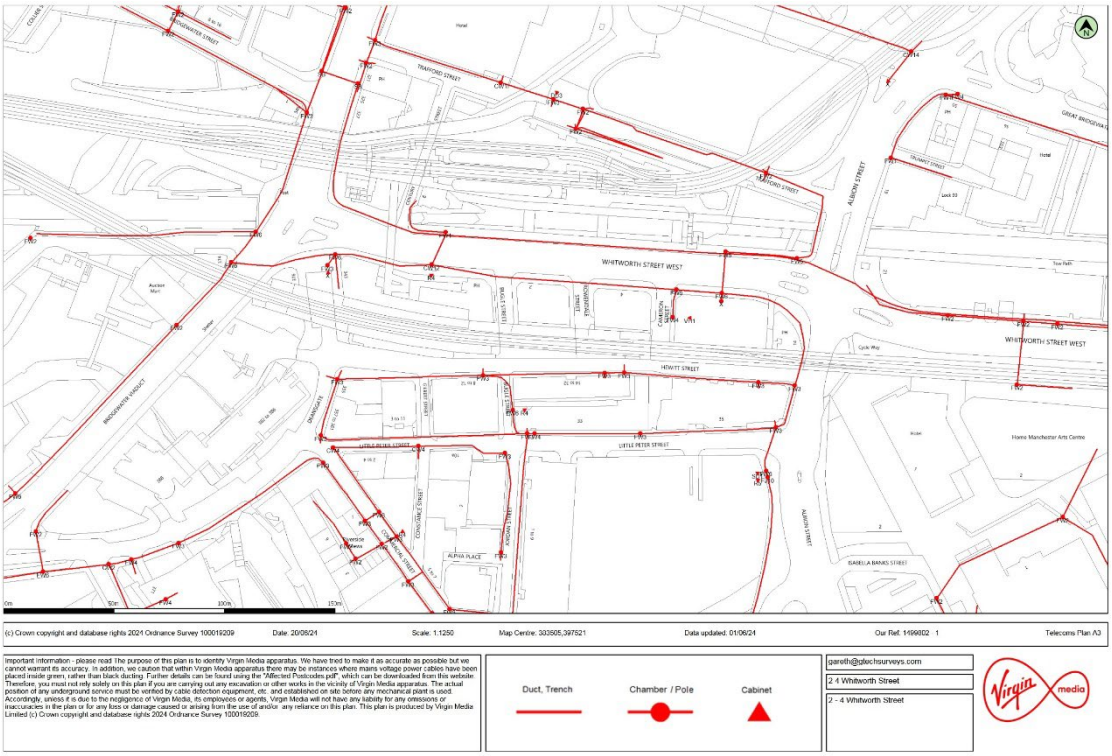
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BT Openreach had a universal service obligation (USO) granting remote households the right to request broadband speeds of at least 10 Mbit/s by 2020. As a result of this obligation, BT Openreach has been aggressively installing new fibre and broadband infrastructure throughout the UK, enhancing coverage in major cities.

Based on BT database interrogation on 20th June 2024, there is existing BT Openreach (fibre) infrastructure surrounding the Site and to the Site itself.

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4 - Virgin Media External Infrastructure Availability



Based on Virgin Media's reply on 20th June 2024, there is existing Virgin Media infrastructure adjacent to the Site, but not to the Site itself.

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5 - Conclusions

A desktop study has been undertaken to assess the potential for broadband connectivity to the proposed 2 – 4 Whitworth Street West development. The study has utilised licensed information and current technical data regarding connectivity from a number of sources.

The area already is likely to have excellent download speeds (expected to be at least 100 megabits per second). Only BT Openreach has existing fibre infrastructure near to the application Site. Whilst Virgin Media has some existing infrastructure in the study area, it is not to the Site itself. BT Openreach is able to enable a full fibre connection for the Proposed Development.

It is recommended that the developer engage with a broadband infrastructure provider in order to establish the most optimal data infrastructure solution for the Proposed Development. It is considered that BT Openreach offers the most optimal connection, due to the beneficial locations and high number of network connection nodes adjacent and into the Site. BT Openreach can be contacted via their website[4].

Full fibre connections represent the most future-proof form of infrastructure. New development should look to increase the spread of full fibre connections, which have the potential to boost the city's economy; help businesses grow and be more productive; help Manchester compete with other cities and provide more symmetrical upload / download speeds for residents and businesses. Full fibre connections also offer greater reliability and lower energy / maintenance costs.

The developer ensures that the Proposed Development will have the correct data ducting infrastructure in place to facilitate future-proof connectivity for all potential occupants, as presented in *Data Ducting Infrastructure for New Homes - Guidance Note*, March 2008, Department for Communities and Local Government.

This broadband connectivity assessment can be used for reference and to support the proposed 2 – 4 Whitworth Street West development planning application submission.

4 - https://www.openreach.com/building-developers-and-projects/fibre-for-developers/registering-your-site

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APPENDIX

Broadband Connection Definitions

Data Ducting Infrastructure for New Homes - Guidance Note, March 2008, Department for Communities and Local Government

Planning Policies - National Planning Policies

Local Planning Requirements

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Broadband Connection Definitions

ADSL - Asymmetric Digital Subscriber Line broadband is a connection provided over home telephone lines. Openreach owns the UK's landline infrastructure, so when you have an ADSL connection, you need to rent your phone line from Openreach. If you already have an existing phone line, the broadband is added onto the package. Openreach was previously owned by BT, but ADSL packages can be sold by providers other than BT through a process known as local loop unbundling (LLU). This means that a secondary provider, for example Plusnet or TalkTalk, put their own software in the telephone exchanges and rent line and exchange space from Openreach. Although not as fast as fibre broadband, ADSL provides a high-quality, reliable connection. But if you live far away from your telephone exchange, or if the cable has degraded, then speeds can drop dramatically.

FTTB (fibre to the building/basement) - Fibre-optic cables run all the way to your premises, which is why this is sometimes called **FTTP** (fibre to the premises). For those in flats in a large building, the fibre terminates at the building rather than the individual dwelling. It still provides very fast speeds.

FTTC (fibre to the cabinet) - Fibre-optic cables run all the way to the cabinet in the street, which can be up to 300m away. The cabinet is connected to the property with regular copper wires, which results in a loss of speed. This is the most common connection.

FTTH (fibre to the home) - Fibre-optic cables run all the way to the outside of the property. This is the quickest service, delivering speeds of up to 900Mbps, but it's not widely available.

FTTN (fibre to the node) - Roughly the same as above, only the street cabinet can be further away; up to several km away, with the rest of the distance to the property being covered by regular copper wiring.

LLU - LLU stands for local loop unbundling and applies to ADSL (BT line) internet connections. A 'local loop' is another term for the actual cable through which a user will receive broadband and telephone calls.

SDSL - A symmetric digital subscriber line is a digital subscriber line that transmits digital data over the copper wires of the telephone network, where the bandwidth in the downstream direction, from the network to the subscriber, is identical to the bandwidth in the upstream direction, from the subscriber to the network.

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21CN wholesale broadband products - There are two main flavours of 21CN broadband product, which are summarised below:

IPStream Connect - A 21CN variant of the existing IPStream product, with all of the same options and pricing.

Wholesale Broadband Connect (WBC) - The broadband product offers up to 24Mbps ADSL2+, QoS and considerably more flexibility for ISPs. In addition to WBC, there also exists WBMC (Wholesale Broadband Managed Connect) and WBCC (Wholesale Broadband Connect Converge).

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Data Ducting Infrastructure for New Homes - Guidance Note, March 2008, Department for Communities and Local Government

With respect to the internal layouts and necessary infrastructure to provide connectivity in the Proposed Development, guidance has been published. The recommendations presented to the developer are specified in “Data Ducting Infrastructure for New Homes - Guidance Note”, March 2008, Department for Communities and Local Government.

This presentation by Virgin Media provides an excellent visual guide to how installations should be planned -

https://www.virginmedia.com/content/dam/virginmedia/dotcom/images/shop/downloads/New-Build-Handbook-v1-63.pdf

2.3 Internal Infrastructure

2.3.1 Understanding the needs

Although this document is intended to provide guidance with respect to data services it is important that the support of such services within the dwelling be considered in the wider context of other cable distribution requirements. Appendix C.2 identifies some of the equipment that may require cabling within a typical dwelling. In summary these may be considered as:

• Communications, entertainment and other equipment that require broadband or at least basic internet connectivity. The connection of such equipment is the prime focus of this guidance

• Other equipment that may require an external network connection other than the internet

• Systems and equipment that require cabling within the dwelling but may or may not have any need for external connectivity.

Equipment within the dwelling may employ a wide range of cabling of both a standard and proprietary type. Some may also connect using a wireless technology. Both cabling and wireless solutions are evolving, and any internal infrastructure will need to offer sufficient capacity and flexibility to meet future requirements.

It should be noted that some of the data connectivity requirements within a dwelling may be met using a wireless rather than cabled solution. The use of wireless technologies is outside the scope of this document. However, ducting is still required to support cabling to wireless hardware.

It is clearly impossible to pre-cable a dwelling to support all possible applications. Indeed, the current provision of telephone and television sockets in homes is often inadequate and lacking in flexibility. The result is that many

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dwellings have extensive cabling that is often surface mounted or trailed across floors.

2.3.2 What is required

Occupants of dwellings are likely to require:

• Data sockets at ‘useful locations’ throughout the dwelling

• A ‘readily accessible’ location where network equipment can be installed with a simple ‘user-friendly’ method of connecting the network equipment to ‘live’ data sockets

• Mains electricity sockets that are located near the data sockets.

The possibility of installing data sockets at ‘useful locations’ will depend on the nature of the dwellings and the type of occupancy. However, diverse user needs can only be met by a flexible infrastructure that will allow sockets to be readily installed as and where required.

Such a flexible infrastructure would also offer the potential for supporting other cabling distribution requirements. It is not envisaged that developers install data sockets, data cabling or the associated network equipment although some may choose to do so. Rather developers should install internal ducting that enable the later installation of data cabling, faceplates and sockets, and network equipment with minimal disturbance to either previously installed cables or the fabric of the building. The aim should be to facilitate cable installation by an electrician or a qualified competent person.

The internal infrastructure should be limited to the supporting faceplates and sockets at ‘normal height’ but consideration should be given for sockets and faceplates that maybe located at a higher location within the dwelling to facilitate a wireless solution or wall mounted media systems such as a flat screen television. The internal infrastructure should also be designed to support the installation of devices at ceiling level such as sensors for home security and telecare and ceiling mounted loudspeakers.

2.3.3 Topology and layout

The following issues need be considered in determining the topology and layout of the internal infrastructure for a dwelling:

• Access to the external infrastructure via an external terminal box

• The possible requirement to later accommodate a joint between external and internal grade cabling

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• The location of an equipment cabinet that may later accommodate equipment to support the distribution of data services within the dwelling (see Appendix C.2)

• The likely location of any television aerials/dishes, coax and primary sockets of the type often installed by developers. Such consideration should include the needs of digital television and the possible use of a shared television reception system (see Appendix C.2)

• The likely location of any standard telephone sockets and wiring of the type often installed by developers

• Locations where users may realistically be expected to require a data connection. This needs to be considered in determining the size of the ducting to the areas within a dwelling

• The cable installation requirements (which are likely to be not fully known at the time of infrastructure design and construction) including:

- the number of cables per duct (can be estimated as noted in previous point)
- the length of cable runs – a maximum of 90m from the equipment cabinet is recommended for ‘standard’ data cables (reference Appendix B.2)
- cable installation requirements including the minimum bending radius (see guidance based on cabling in Appendix D.2) will impact of duct sizing, types of bends and access requirements.

From the above it can be seen that ducts should be routed from an equipment cabinet (located near to the external infrastructure) to at least the main living areas, kitchen and the bedrooms. The ducts should not be restricted to data network use and suitable access points should be included to enable the ducts to be used for other cabling applications (excluding power).

2.3.4 Terminal box

An external terminal box should be installed at each dwelling house or multi occupancy dwelling to facilitate cable. The terminal box may also be required to accommodate joints between internal and external grade cables. The terminal box should be located such that cables can readily pass through the wall to the equipment cabinet.

The terminal box should have minimum dimensions of 300mm height by 300mm width by 150mm depth. The terminal box should have a full-size door (i.e. 300mm by 300mm) that should be lockable, ideally with a standard service key. The terminal box should be designed for external mounting and constructed to withstand minor impacts. In some developments, depending on the location, ‘terminal boxes’ may be installed as a matter of course to aid in the delivery of local telecommunications and TV-based services. They may be installed by service providers or developers. This document does not rule out

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the use of these ‘terminal boxes’ for the above use, but it is recommended that minimum specifications in this guidance be adhered to and ownership and access rights considered.

2.3.5 Equipment cabinet

An equipment cabinet should be installed in each dwelling. The equipment cabinet may be required to later accommodate network termination and network distribution equipment installed by a data service provider and/or resident. This is considered further in Appendix C.2. The equipment cabinet should be located in a dry area that will not be subject to environmental extremes. This essentially dictates a location within the dwelling. Ideally the equipment cabinet should be located to align with the entry into the dwelling of the duct from the terminal box. The equipment cabinet should also be easily accessible by residents including those with disabilities (in accordance with the appropriate Building Regulations/ Standards). The equipment cabinet should have minimum dimensions of 300mm height by 300mm width by 150mm depth. However, a larger size equipment cabinet would be preferable and may indeed be essential to support the cable patching requirements in larger dwellings.

The equipment cabinet should have a full-size door (i.e. 300mm by 300mm) that allows easy access for residents or suppliers to draw cables from. The equipment cabinet should be lockable using a manual locking mechanism that is easy to use by residents. It is not recommended that the equipment cabinet is locked using a key that can be removed.

The equipment cabinet should be specifically designed to accommodate network equipment, patch panels and a mains power strip. It should be constructed to facilitate the connection of the ducting detailed above and should be ventilated. Any mains distribution strip must be installed by a qualified competent person in compliance with the appropriate regulation/standard.

The equipment cabinet should be constructed to withstand minor impacts. The equipment cabinet may be required to house wireless network equipment and therefore should not be constructed from a material that will impact the performance of the wireless network.

2.3.6 Building ducts

This document is not intended to provide guidance on specific types of ducts in new and existing buildings. There is likely to be a compromise between cost, aesthetics, flexibility and ease of access. Options that developers may consider, include:

- Vertical duct concealed with other services in riser
- Ducts in-wall with possibly predefined access and socket positions
- Dado ducting
- Skirting ducting (if not intended for sockets)
- Simple surface mounted ducting.

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The ducts should be installed such that later cabling, and associated faceplates and sockets, can be installed with minimal disturbance to either previously installed cables or the fabric of the building. The aim should be to facilitate cable installation by an electrician or a qualified competent person. Developers should note that the type and specification of cabling used in dwellings may change. The cable specification upon which this guidance is based (Appendix D.2) should therefore be confirmed with the cable installer or cable vendor. The size of ducts required would depend on the number and diameter of cables that are likely to be installed at any point. This in turn will be impacted on by the topology of the infrastructure which itself will depend on the design of the building and the availability of duct routes. It is therefore not considered appropriate to specify duct sizes in this document. However, for guidance the following duct cable capacities are offered:

• Main ducts (that run from the equipment cabinet both vertically and horizontally) should have a minimum cross-sectional area of 800mm2, with the smallest dimension being 20mm (i.e. a 20mm x 40mm duct)

• Other ducts that spur from main ducts to each room should have a minimum cross sectional area of 400mm2, with the smallest dimension being 20mm (i.e. a 20mm x 20mm duct).

Developers are advised to employ larger ducts than specified above where space and / or dwelling construction permits giving consideration to the maximum number of sockets that may be wired in each area/room served. The ducts should enable cables to be installed with a minimum (long term) bending radius of 60mm.

Bends in the ducts should be kept to a minimum. Access points should be provided where there are multiple bends or bends greater than 45 degrees. Access points to under floor horizontal ducting should remain available through floorboards or other floor components. The ducts for data services should be separate from main electricity cables and comply with cable separation and routing standards. Where a vertical duct runs between floors the relevant provisions of the Building Regulations/ Standards should be followed, notably with respect to fire safety, resistance to moisture and resistance to sound.

Ducts should be positioned is such a way that damage from ‘DIY’ is minimised. A similar approach to the best practice installation of electrical cables and sockets should be considered. The ducts should enable ‘standard size’ face plates and data sockets to be readily installed for example:

• By removing/cutting a section of ducting to directly insert a faceplate – using ducting that has ideally been designed for the purpose

• Locating faceplates (with appropriate back boxes) adjacent to accessible ducting.

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Data sockets (and other sockets supported by the internal infrastructure) must be located at a height above finished level floor that is in accordance with Building Regulations/Standards. Any data sockets located in the loft area should be located in such a position as not to put the resident at risk from trailing cables etc. This document does not provide any guidance on the installation of mains electricity cabling and sockets. However, developers need to recognise that the quantity and location of power sockets may be an issue given the provision of a flexible data services infrastructure. Developers should therefore consider options for a more flexible power provision in accordance with Building Regulations/ Standards.

2.3.7 Multi-dwelling buildings

The above guidance for a dwelling house also applies to multi-dwelling buildings such as flats or maisonettes with the following exceptions. Each dwelling within the building could have a separate equipment cabinet or a cabinet per floor in a public area. The dwelling ducting from the equipment cabinet should not be routed outside of the dwelling served. The duct(s) from the terminal chamber should be routed to the equipment cabinets in a common duct with controlled access and restrictions allowing only authorised person's access. The common duct may be routed vertically and/ or horizontally. The common duct should have a minimum cross-sectional area of 2000mm2, with the smallest dimension being 40mm (i.e. a 40mm x 50mm duct). This size should serve up to 15 dwellings, but larger duct should be employed if space permits. The common duct cross sectional area should be increased by 2000mm2 for each additional 15 dwellings.

Where a common duct runs between floors, or horizontally between dwellings, the relevant provisions of the Building Regulations/ Standards should be followed. This is especially important with respect to fire safety, resistance to moisture, gas leaks, air tightness and resistance to sound.

2.3.8 Boundaries

At each dwelling the boundary between the external and internal infrastructure should be adjacent to the place where the data service providers' cable may later enter the building. The resident would remain the owner of the ducting that houses the data cable from the service provider. In a multi-dwelling building the boundary between the external and internal infrastructure should be adjacent to the place where the data service providers' cable may later enter the building. The landlord shall therefore have responsibility for a part of the internal infrastructure (including the terminal box and common duct) that may accommodate cables and network equipment that is owned by a data service provider. Subject to the terms of the lease of multi-dwelling buildings, the landlord may also be responsible for the equipment cabinet and ducting within each dwelling. Boundaries for ducting between two premises start and end at the dividing wall. The ownership of the infrastructure within the ducting may remain with the service provider or the original infrastructure owner.

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Planning Policies - National Planning Policies

National Planning Policy Framework (NPPF), Department for Levelling Up, Housing and Communities, December 2023

10. Supporting high quality communications

114. Advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being. Planning policies and decisions should support the expansion of electronic communications networks, including next generation mobile technology (such as 5G) and full fibre broadband connections. Policies should set out how high quality digital infrastructure, providing access to services from a range of providers, is expected to be delivered and upgraded over time; and should prioritise full fibre connections to existing and new developments (as these connections will, in almost all cases, provide the optimum solution).

Local Planning Requirements

Manchester City Council (MCC), "Full, Outline, Reserved Matters & Variation/Removal of Conditions Planning Applications - Is Your Application Valid?", September 2018 (revised January 2020), MCC

Broadband Connectivity Assessment

All new build residential developments must incorporate measures to facilitate digital connectivity for all new build residential properties having regard to the Data Ducting Infrastructure Guidance produced by the Department for Communities and Local Government. (Section 10 NPPF, above)

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The findings in this document were correct and accurate on the day of draft issue (1st May 2024) but cannot be guaranteed to remain the same for any defined period. This report assumes that there will be changes to telecommunications networks and other surrounding structures, which may result in different broadband technologies becoming unavailable or degraded. GTech Surveys Limited will not be held liable for costs of any requirement to conduct more diagnostic assessments due to changes within the surveyed environment, or due to changes in networks in the study area. BT Openreach information is valid only for 90 days from issue.

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Appendix 8: Proposed Location of TVIA Viewpoints

Verified Views

Proposed Viewpoints

1. St Peter's Square
2. Midland Hotel Lower Moseley St
3. Manchester Central
4. Briton's Protection
5. Whitworth Street- East
6. Medlock Street
7. Whitworth Street-West
8. St George's Church Chester Rd
9. Castlefield
10. Albert Square
11. St. Anne's Square



GLENBROOK

Sheppard Robson