Deloitte.



Viadux Phase 2 – Plots A, B and C, Manchester

EIA Scoping Report

December 2023

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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 development of Viadux Phase 2, which is situated on land adjacent to Albion Street and Great Bridgewater Street in Manchester City Centre ('the Site').

1.2 At the time of writing, the Applicant 'Salboy Central 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 a worst case scenario with regard to the identification and assessment of potentially significant environmental effects.

1.3 In preparing this report, it should be noted that the Site is the subject to two implemented planning permissions, which have been considered as part of the EIA Scoping exercise:

Planning Permission and Listed Building Consent were granted in 2017 for the redevelopment of the Former Bauer Miller Site, to deliver a 40-storey residential tower (Phase 1), and a 14-storey office block (115871/FO/2017 and 115872/LO/2017). The planning permission has been subject to several non- and minor-material amendments (126604/NMC/2020, 126868/JO/2020, 129152/NMC/2021 and 133998/JO/2022), including to increase the height of the office block by 1-storey. Planning Permission ref. 133998/JO/2022) has been implemented and Phase 1 is currently under construction. The Phase 2, 15-storey office block, whilst lawfully implemented, has not been delivered.

Planning Permission and Listed Building Consent for an 11-storey office block was granted in October 2003 as part of the wider consent for the demolition of an existing section of viaduct at Deansgate / Great Bridgewater Street / Trafford Street, to also allow the delivery of a 47-storey hotel and residential tower block, now commonly referred to as Beetham Tower (068662/FO/2003/C3 and 068663/LO/2003/C3). Whilst the consent was implemented and the Beetham Tower was completed in 2007, the office block was never built out, and this parcel of land has remained vacant since.

1.4 As annotated on the below:

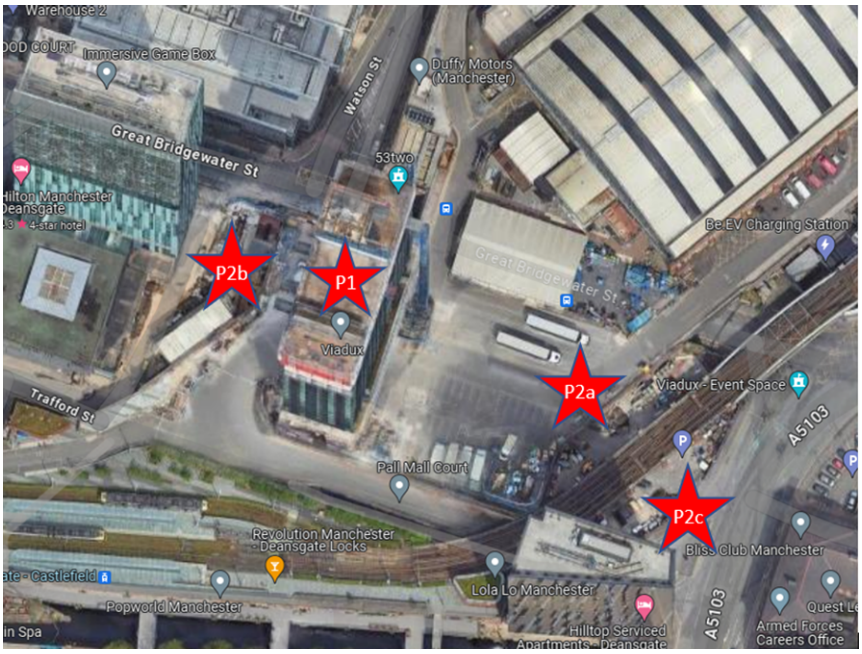
Phase 1 = Phase 1 tower consented (as amended) in 2017. Now constructed.

Phase 2A = Relates to the extant phase 2 office building which formed part of the 2017 (as amended) permission. Under the current proposed development this is to be developed for a 76-storey residential tower.

Phase 2B = Relates to the extant permission from 2003 which also consented the now built Beetham Tower. Under the current proposed development this is to be developed for a 23-storey affordable housing building.

Phase 2C = No extant permission related to the Site. Under the current proposed development this is to be developed for a 2-storey retail building.

Figure 1.2: Plan Demonstrating Site Layout



1.5 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

1.6 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.

1.7 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.

1.8 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)).

1.9 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.

1.10 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".

1.11 The Site covers an area of approximately 1.5 ha, which exceeds the threshold in relation to parts (i) 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

1.12 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.

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

1.14 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.

1.15 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 is situated in Manchester's City Centre, a key strategic area that has been highlighted as a primary economic driver to Manchester as a whole. The City Centre has seen a significant transformation over the last 20 years, defined by ongoing social, economic and physical regeneration.

2.2 Viadux is located within the Great Northern, Manchester Central and Castlefield Quay Strategic Regeneration Framework (SRF) (2017) area. The Framework recognises that the Site, alongside its immediate surroundings, presents a significant strategic opportunity to transform a currently underutilised and underperforming area of the City Centre. The SRF highlights that this Site represents one of the last remaining key projects to come forward, as identified in the Civic Quarter – Manchester Central Regeneration Framework (2010).

2.3 The priority for this area is to create a world class space, where the pedestrian environment is given priority over all forms of vehicular traffic, alongside high quality, modern public transport and new public realm, which embraces the 'greening' of the city.

Site and its Surroundings

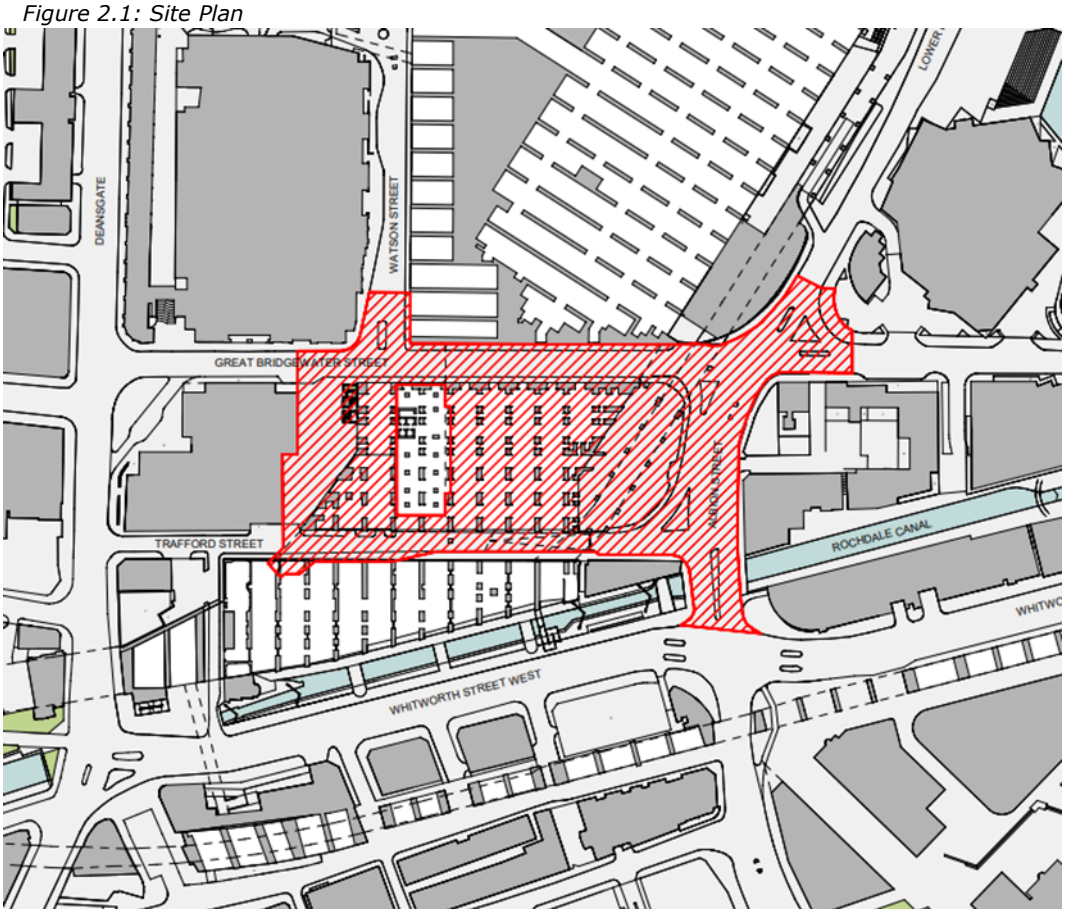
2.4 The Site is bound to the north by Manchester Central Convention Complex (MCCC); to the east by Albion Street (A5103); to the south by Deansgate-Castlefield Metrolink Station and Deansgate Locks; and to the west by the Beetham Tower.

2.5 It is located within Manchester City Centre as part of the wider Regional Centre and is surrounded by existing conference and concert facilities within Manchester Central and Bridgewater Hall, the local highway network and transport infrastructure at Deansgate Interchange and residential and hotel uses within the Beetham Tower. The wider area is characterised by a mix of commercial, hotel, leisure and residential uses, together with transport infrastructure commensurate with its City Centre location.

2.6 The Site is located within the Deansgate Ward. The Hulme Ward is located 500m to the south of the Site across the Mancunian Way, whilst Piccadilly Ward is located circa 380m to the east of the Site along Oxford Street.

2.7 The Site is identified on the Figure below:

Figure 2.1: Site Plan



2.8 The Site is split into three plots: 2a; 2b; and 2c. Plot 2a and comprises the eastern-most section of the Grade II Listed Castlefield Viaduct, immediately east of the under construction Viadux Phase 1 building. Plot 2b comprises a parcel of vacant land bound to the north by Great Bridgewater Street; to the east by the Viadux Phase 1 Site; to the south by Trafford Street; and to the west by Beetham Tower.

2.9 Plot 2c comprises land on Albion Street, bounded by the Metrolink line to the west, Albion Street to the east, and Trafford Street to the south.

2.10 For full details of the site layout in relation to the three plots please refer to figure 1.1.

2.11 The Site is in a highly accessible location via a range of transport modes, most notably via the Metrolink, with the Deansgate Interchange intersecting the Site offering a major gateway into the city centre from the south. Furthermore, due to its location within the City Centre the Site is within walking distance of a wide range of services and amenities.

2.12 Located on the southern edge of the city centre, the site sits amongst a broad range of uses:

- Residential uses including apartments located in Beetham tower to the west, Great Northern Tower to the north and Axis to the west.
- Entertainment and commercial uses located to the south such as Deansgate Locks and to the north e.g. Manchester Central.

- Transport infrastructure including the Metrolink and train line located to the south.

Furthermore, the form of this surrounding context in continually changing and evolving as planning consents come forward, such as the recently approved mixed use proposals at Great Northern, the new hotel under construction at 325 Deansgate, and the live application for a new residential tower on Albion Street, adjacent to the Briton's Protection pub.

Site Specific Environmental Designations

Air Quality

2.13 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

2.14 There are no Sites of Special Scientific Interest located on the Site with the closest, the Rochdale Canal, being located 8.38km 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 1.52km to the northwest of the Site.

Flood Risk and Drainage

2.15 The Site is located within Flood Zone 1, 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

2.16 The Site is not located within a Conservation Area. Several Conservation Areas lie to the north and west, including St. Peter's Square Conservation Area (400m), Albert Square Conservation Area (430m), Deansgate Conservation Area (275m), St John Street Conservation Area (290m), and Castlefield Conservation Area (140m).

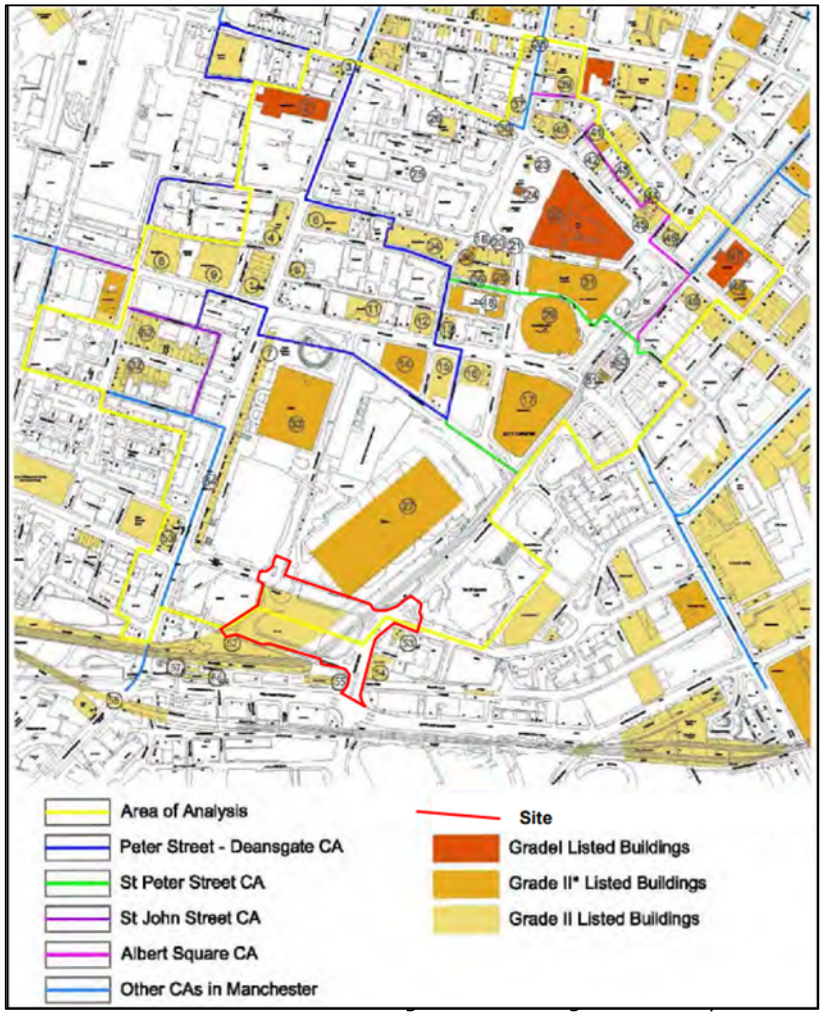
2.17 The Site comprises part of the Grade II Listed Castlefield Viaduct. The brick arches underneath, and the Great Bridgewater Street Bridge, are integral parts of the viaduct and are included under the listing.

2.18 Furthermore, there are 91 Listed Buildings within a 500m Radius of the Site, most notably including:

- Manchester Central (Grade II* Listed)
- Deansgate Station (Grade II Listed)
- Midland Hotel (Grade II* Listed)
- Central Library (Grade II* Listed)
- Town Hall (Grade I Listed)
- Albert Monument (Grade I Listed)
- Rochdale Canal Lock Number 90 (Grade II Listed)
- 13 to 17 Albion Street (Grade II Listed)
- The Britons Protection Public House (Grade II Listed)

- Rochdale Canal Lock Number 91 (Grade II Listed)
- Rochdale Canal Lock Keepers Cottage (Grade II Listed)

Figure 2.2 Heritage Assets Map



Proposed Development

2.19 The design is currently still within the development stage, meaning that the mix of uses and quantum of floorspace has not yet been fixed and continues to be reviewed. 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.

2.20 A circa 76-storey residential building is proposed on Plot 2a, a circa 23-storey affordable housing building on Plot 2b, and a circa 2-storey flexible commercial unit on Plot 2c.

2.21 Plots 2a and 2c will replace the previously approved 15-storey office block that was approved as part of the previous consent (133998/JO/2022 as amended). I

2.22 As noted above the design is being developed, however for the purposes of the Scoping Report the following set of realistic parameters have been assessed to assess a 'worst case' scenario.

	Viadux Phase 2a	Viadux Phase 2b	Viadux Phase 2c
Maximum height	Ground + 75 (76 storey) 241.00m, 276.93mAOD	Ground + 22 (23 storey) 70.035m, 105.655 AOD	Ground + 1 (2 Storey) 10.00m, 45.93mAOD
Maximum number of units	782 apartments (258 no. 1 beds, 510 no. 2 beds, 2 studios & 12 no. 2 bed penthouses)	133 apartments (76 no. 2 Beds 57 no. 1 beds) 200m2 Retail / Coffee Shop at Viaduct level 01	GIA 610 sqm (over 2 floors)
Use	Residential With various residential amenity uses, including reception, residents lounge, work space, private dining, gym, swimming pool, studios & spa (Possible cycle hub / café space)	Residential (Affordable Housing) With residential amenity & retail / coffee shop	Retail
Maximum number of car parking spaces	None	None	None

2.23 It is anticipated that the construction on the development will come forward in phases, with work on Plot 2a commencing first, then Plot 2b, then Plot 2c. Plots 2a and 2b are anticipated to become operational around the same time. Details of each phase and its components are being developed..

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
Simpson Haugh and Partners	Architecture and design
Salboy	Construction
Planit-ie	Townscape and Visual Impact
Heritage Architecture	Heritage
Hydrock	Air Quality
Jameson Acoustics	Noise and Vibration
GIA	Daylight/Sunlight/Overshadowing and Solar Glare
Renaissance	Water Resources
Architectural Aerodynamics	Wind
Ridge	Climate Change, Energy, Sustainability, BREEAM, Ventilation
Ekosgen	Socio Economic
Enfusion	Human Health
Pager Power	Broadband Connectivity, Aviation, TV Reception
Brownfield Solutions	Ground Conditions
SLR Consutling Ltd	Traffic and Transport, Waste
DFC	Fire
Penny Anderson	Ecology
Salford Archaeology	Archaeology
Greater Manchester Police	Crime and Security

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.

Topic	EIA Consultant	Qualifications
EIA Coordinator	Deloitte	PIEMA, MRTPI, MPlan, BA (Hons) IEMA Quality Mark Registered
Townscape and Visual Impact	Planit-ie	BA (Hons), MLA, Dip LA, CMLI
Heritage	Heritage Architecture	BA (Hons), MA (Hons), MSc, IHBC
Air Quality	Hydrock	BSc (Hons), MSc, MIAQM
Noise and Vibration	Jameson Acoustics	BSc (Hons), MIOA, MIET
Daylight/Sunlight/Overshadowing	GIA	LLB (Hons), BSc (Hons), MRICS
Solar Glare	GIA	LLB (Hons), BSc (Hons), MRICS
Wind	Architectural Aerodynamics	BEng(Hons), MSc, Eng, MIMechE, Engineering Doctorate
Climate Change	Ridge	BSc, MA, MSc, CEnv
Human Health	Enfusion	BSc, MSc, CEnv, FIEMA
Socio Economic	Ekosgen	BA (Hons)
Traffic and Transport	SLR Consulting Ltd	BSc(Hons), MSC in Transport Engineering & Planning, MCIHT, CMILT, BEng, CEng Chartered Highways & Transport Engineer, FCIHT

Table 3.2: EIA Team

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 The proposals are at a feasibility stage of development and the final design, mix of uses and quantum of floorspace has not yet been fixed. 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 (TfGM);
- 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. 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 Appendix 1 illustrates the Red Line Application Boundary, which represents the maximum extent of all temporary and permanent works (including primary mitigation) for the Proposed Scheme identified at this stage, during the project's life cycle. As such, it is not necessarily the boundary upon which the technical assessments presented in the ES will be based. Where required, technical specific study areas (informed by relevant best practice and guidance) will also be used. The study area for data collection for each environmental topic / effect will be fully defined within the ES.

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 would 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 This is considered to be a robust approach and aligns with the 2017 EIA Regulations.

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.

3.24 Where relevant to the respective technical chapter, the ES may make reference to the Alternative Baseline, which considers the environmental effects of the approved and implemented developments on Plots 2a, 2b and 2c.

Identification and Evaluation of Likely Significant Effects

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

3.26 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.

3.27 It is understood the proposed development will be phased – however the exact nature of the phasing is not yet known. It is expected the residential tower will come forward first however all consultants have considered whether Phasing coming forward in a different sequence would have an impact on the EIA Scoping input.

3.28 Scenarios are as follows so that environmental effects arising from the phasing of the development are robustly assessed - however as noted above consultants have considered the development being capable of coming forward at any stage of the development. This is to allow a degree of flexibility in preparing for and delivering the development and ensuring the completed buildings aligns with future occupier timescales.[1]

Scenario 1: (Existing Baseline) = Site as is today i.e. Phase 1 tower as built with the various amendments, Plots 2a, 2b and 2c in their existing use.

Scenario 1a: (Alternative Baseline) = Site as consented i.e. Phase 1 tower as built with the various amendments, the approved and implemented office building on Plots 2a and 2c built out, and the approved and implemented office building on Plot 2c built out.

Scenario 2: Baseline* + Viadux Plot 2a + Viadux Plot 2b;

Scenario 2a: Baseline* + Viadux Plot 2a + Viadux Plot 2b + cumulative;

Scenario 3: Baseline* + Viadux Plot 2a + Viadux Plot 2b + Viadux Plot 2c;

Scenario 3a: Baseline* + Viadux Plot 2a + Viadux Plot 2b + Viadux Plot 2c + cumulative;

** For those disciplines proposed to be Scoped In, consultants have advised where 'Existing Baseline' and 'Alternative Baseline' are to be assessed and provided the justification for this – contained within the Scoping Inputs at Section 5 of this Report.*

[1] **Terminology:**
Phase 1 – Existing Viadux tower currently under construction
Plot 2a – Proposed c. 76 storey residential tower
Plot 2b – Proposed c. 23 storey affordable housing block
Plot 2c – Proposed c. 2 storey retail unit on the corner of Albion Street

3.29 The table below provides a summary of the disciplines that are scoped in as part of each scenario, as well as which baseline is to be used. Further details and information for each of the disciplines is contained at Section 5.

EIA Discipline	Baseline to be tested	Scenario(s) to be tested
TVIA	Scenario 1: (Existing Baseline)	3, 3a
Heritage	Scenario 1: (Existing Baseline)	2, 2a, 3, 3a
Air Quality	Scenario 1: (Existing Baseline)	3, 3a
Noise and Vibration	Scenario 1: (Existing Baseline)	3, 3a
Daylight/Sunlight/Overshadowing	Scenario 1a: (Alternative Baseline	3, 3a
Solar Glare	n/a	3, 3a
Wind	Scenario 1: (Existing Baseline) And Scenario 1a: (Alternative Baseline)	2, 2a, 3, 3a
Climate Change	Scenario 1: (Existing Baseline)	3, 3a
Human Health	Scenario 1: (Existing Baseline)	3, 3a
Socio-Economic	Scenario 1: (Existing Baseline)	3, 3a
Traffic and Transport	Scenario 1: (Existing Baseline)	3, 3a

Table 3.3: EIA Discipline Focus

Prediction of Impact Magnitude

3.30 The methodology for determining the scale or magnitude of change caused by the impact is set out in Table 3.4.

Table 3.4: 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

3.31 The sensitivity of a receptor is based on the relative importance of the receptor using the scale set out in Table 3.5.

Table 3.5: 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

3.32 Effect significance will be calculated using the matrix in Table 3.6. This illustrates the interaction between impact magnitude and receptor sensitivity.

Table 3.6: Effect Significance Matrix

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

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

Mitigation Measures

3.33 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.

3.34 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

3.35 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.

3.36 Clear details of when and how the mitigation measures were carried out, or will be carried out, are to be given within the Environmental Statement. 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.

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

Cumulative Effects

3.38 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.

3.39 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.

3.40 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.

3.41 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.

3.42 The schedule of committed developments and their status has been agreed with the local authority via email exchange dated 01/11/23.

3.43 Full details of the committed developments to be included as part of the cumulative effects assessment are set out at Appendix 2.

Residual Effects

3.44 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 for 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. A copy of the template in contained at Appendix 3. 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.

4.3 In addition, 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.

Agricultural Circumstances

4.4 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.

Archaeology

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
Greater Manchester Archaeological Advisory Service (GMAAS)	Ian Miller, Heritage Management Director	14/09/2023 Email	Discussion of archaeological significance, impact and mitigation. GMAAS agree that archaeology can be scoped out of the EIA providing that a desk-

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
			based study is submitted with the planning application
GMAAS	Lesley Dunkley, Historic Environment Record (HER) Officer	15/09/2023 HER order placed by email	

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Manchester Central, Trafford Street, Manchester	Archaeological Desk-based Assessment undertaken by Salford Archaeology that covers the Phase 2 Site	2016
Manchester Central, Windmill Street, Manchester	Archaeological Desk-based Assessment undertaken by Salford Archaeology that covers the Phase 2 Site and wider area	2019
Viadux Hotel, Former Bauer Millet Site	Written Scheme of Investigation that outlines a programme of archaeological investigation across the Phase 1 and Phase 2 Sites	2020
Viadux Hotel, Former Bauer Millet Site	Excavation	2020
Slot Site (Viadux) Interim report	Interim Archaeological Evaluation Report. Three trial trenches were excavated within the north of the Phase 2b Site. The evaluation confirmed the presence of archaeological remains pertaining to the Roman period. The report concludes by highlighting the potential for further archaeological remains	2020

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
	and recommends areas that will require further mitigation.	
Slot Site Excavation	Forthcoming report	Interim report prepared in 2020

Baseline

4.5 The Site contains the Grade II Listed Viaduct. The Site most likely contains non-statutory archaeological remains of low and medium significance. An archaeological desk-based assessment carried out in September 2023 (Appendix 4) identified several possible archaeological sites, including Roman remains, medieval and post-medieval relict soils, an early 19th-century burial ground, Sunday School, rectory and workers' houses.

4.6 There is little evidence for prehistoric activity within Greater Manchester due to intensive development during the industrial revolution, though Castlefield may have been conducive for late prehistoric settlements. The nearest evidence of prehistoric activity was discovered at Liverpool Road, which consisted of two Mesolithic flints, a Neolithic/Bronze Age waste flake, and a single fragment of late Bronze Age/Iron Age pottery, with other artefacts discovered at Barton Street, located some 200m from the Site. However, no prehistoric finds are known to have come from within the Site.

4.7 The Site lies within the projected zone of the Roman *vicus*, flanking one of the roads leading out from the fort (HER 415.6.0). Roman remains have been excavated within the north-east part of the Phase 2b Site, comprising a Romano-British pit or linear feature and post-Roman plough soils. Important Roman remains have also been excavated immediately west of the Site, at Beetham Tower (HER 13938.1.0). The excavation exposed several phases of Roman activity with the most intense phase of occupation comprising structures built on a grid-like layout fronting onto a road or street, with commercial premises, possibly roadside shops. The Roman settlement had been abandoned by c AD 400.

4.8 The later medieval period saw the use of much of the area around the south of Deansgate, then known as Alport, as pannage. Whilst it is likely the area was turned to agricultural land and later woodland, it is possible the name 'Aldport' may refer to the Roman settlement and as such indicate continued use of the area following the collapse of the Roman Empire. Much of the area known as Castlefield was turned to arable cultivation in the late medieval period, and a small area of gardens developed in the 18th century.

4.9 By 1801 the Great Bridgewater Street Wesleyan Chapel had been erected immediately to the west of the Phase 2b plot. By 1809 a rectory, Sunday School, and the chapel's burial ground had been established within Phase 2b. In addition, two double-depth properties had been established on the south side of Trumpet Street, and a narrow rectangular commercial building. By 1831, the north-west corner of Union Iron Foundry extended within the south part of the Phase 2b Site.

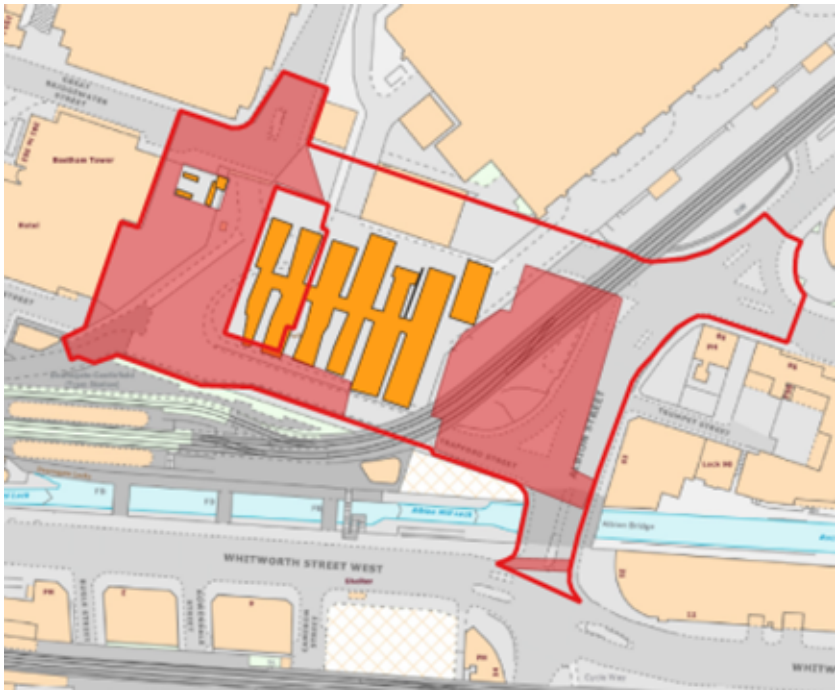
4.10 An iron foundry had been established in c 1806, at the junction of Great Bridgewater Street and Albion Street, within the Site. The foundry was set up by the Galloway brothers, sons of a millwright from Scotland, who occupied the foundry until the early 1830s, when it

became a machine works. The Great Bridgewater Foundry was converted into a cotton mill by the 1850s. Other industrial premises established within the Phase 2 Site included Marsden's mills (originally Commercial Mill), which consisted of two detached building on Trumpet Street in 1809. Double-depth and blind-back houses infilled the land between Trumpet Street and Great Bridgewater Street.

4.11 The Site was subject to significant reorganisation in the late 1880s, when a new railway viaduct was built, linking Central Station (built between 1876-9) to the existing network. Workers' housing within the Site had been cleared, presumably to facilitate the development. The viaduct across the centre of the Site essentially comprised three principal elements: a brick-arched undercroft; the Great Bridgewater Street Bridge; and a cast-iron viaduct running north-east/south-west. A report from 1898 suggests that the burial ground was 'swept away' prior to the construction of the Great Northern Railway Company's viaduct (to the west of the Site) in 1899.

4.12 An automobile engineering works had replaced the buildings formerly associated with the Great Bridgewater Street Methodist Chapel in the Phase 2b plot by 1922. According to the Ordnance Survey mapping from the 1940-60s, the former foundry on the eastern edge of the Site was utilised as an engineering works.

4.13 The Site was excavated in 2020 as part of the Viadux Phase 1 Scheme and may not require any further investigations. Extracted below is a figure contained within the desk based assessment. All areas highlighted in red have archaeological potential and will require excavation in the form of an evaluation (either trial trenches or strip, map and record). Areas in orange have already been excavated.



Scope of Assessment

Identification of Effect/s which are Not Significant

4.14 The results of the Archaeological desk-based assessment (**Appendix 4**) have been discussed with GMAAS (Greater Manchester Archaeological Advisory Service), who have agreed for

archaeological issues to be 'scoped out' on the basis that an archaeological desk-based assessment is produced and appropriate mitigation is undertaken.

4.15 The presence or absence of archaeological remains requires verification through intrusive archaeological investigation, prior to development and, pending the extent and significance of any surviving buried remains, further archaeological excavation may be required to mitigate the loss of buried remains during the proposed construction programme.

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Roman remains
Discussion of Effect					
Ground-breaking works have the potential to affect Roman remains that have been identified within the Site during previous intrusive archaeological investigations (see **Appendix 4**). Buried remains of Roman activity is likely to be associated with the Roman *vicus*, which has the potential to address several of the research agendas listed in the North West Regional Research Framework[2]. Previous archaeological excavations did not cover the entire Site, therefore, there is high potential for further Roman remains to survive within the Site. Roman remains potentially associated with the *Vicus* are considered to be of medium[3] importance based on criteria provided within the ICOMOS guidance[4].					
Mitigation Committed to in order to Avoid or Reduce Effect					
Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.					
Concluding Statement					
Effects on Roman remains are therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.					

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Late medieval to post-medieval relict soils
Discussion of Effect					
Ground-breaking works have the potential to affect late medieval to post-medieval remains that have been identified within the Site (see **Appendix 4**).					

[2] The North West Regional Research Framework (available to view at: https://researchframeworks.org/nwrf/)
[3] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[4] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.

The Site likely lay within an area of Manchester known as Alport during the late medieval to post-medieval period. This area was likely pannage and later used as arable land. Relict soils associated the late medieval and post-medieval periods could be of either low[5] or medium[6] importance based on criteria provided within the ICOMOS guidance[7].
Mitigation Committed to in order to Avoid or Reduce Effect
Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.
Concluding Statement
Effects on late medieval or post-medieval relict soils are therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Rectory
Discussion of Effect					
Ground-breaking works have the potential to affect the remains of an early 19th-century rectory that have been identified within the Site (see **Appendix 4**). The rectory is associated with the Great Bridgewater Street Wesleyan Chapel, which was situated to the west of the Site. The rectory has group value with the Sunday School and burial ground that have also been identified within the Site, and the Great Bridgewater Street Wesleyan Chapel that lies beyond the Site boundary. Buried structural remains of the rectory may survive within the Site as the building was cellared. Buried remains of the early 19th-century rectory are considered to be of low[8] importance based on criteria provided within the ICOMOS guidance[9].					
Mitigation Committed to in order to Avoid or Reduce Effect					
Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.					
Concluding Statement					

[5] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[6] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[7] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.
[8] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[9] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.

Effects on the remains of the early 19th-century rectory are therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Sunday School
Discussion of Effect					
Ground-breaking works have the potential to affect the remains of an early 19th-century Sunday School that have been identified within the Site (see **Appendix 4**). Buried structural remains of the Sunday School may survive within the Site as the building was likely cellared. The remains of the early 19th-century Sunday School are considered to be of low[10] importance based on criteria provided within the ICOMOS guidance[11] and are therefore not considered to be of archaeological or historical significance. Furthermore, several examples of workers' housing have been excavated in recent years and are not considered to be rare within Greater Manchester.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.					
Concluding Statement					
Effects on the remains of the early 19th-century Sunday School is therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.					

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Burial ground
Discussion of Effect					
Ground-breaking works have the potential to affect the remains of an early 19th-century burial ground that has been identified within the Site (see **Appendix 4**). The burial ground was likely established in 1801, potentially in the same year that the chapel was founded. The burial ground has group value with the Sunday School and rectory that have also been identified within the Site, and the Great Bridgewater Street Wesleyan Chapel that lies beyond the Site boundary. A report from 1898 suggests that the burial ground was 'swept away' prior to the construction of the Great Northern Railway Company's viaduct (to the west of the Site) in 1899. Furthermore, no human					

[10] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[11] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.

remains were encountered during the 2020 excavation at the 'Slot Site', however, 19th-century burials cannot be completely discounted and could survive within the south of the Phase 2b plot. The remains of the early 19th-century burial ground are considered to be of low[12] importance based on criteria provided within the ICOMOS guidance[13].
Mitigation Committed to in order to Avoid or Reduce Effect
Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.
Concluding Statement
Effects on the remains of the early 19th-century burial ground is therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.

Effect	Damage to or loss of remains	Applicable Development Phase (C / O)	C	Receptor	Union Foundry
Discussion of Effect					
Ground-breaking works have the potential to affect the north-west corner of an early 19th-century iron foundry that has been identified within the Site (see Appendix 4). Buried remains of the structure may survive within the Site. The remains of the early 19th-century foundry are considered to be of low[14] importance based on criteria provided within the ICOMOS guidance[15].					
Mitigation Committed to in order to Avoid or Reduce Effect					
Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.					
Concluding Statement					
Effects on the remains of the early 19th-century foundry is therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.					

[12] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[13] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.
[14] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[15] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Commercial building on Trumpet Street

Discussion of Effect

Ground-breaking works have the potential to affect the remains of early 19th-century commercial building that has been identified within the Site (see **Appendix 4**). Buried remains of the structure are unlikely to survive within the Site as it did not contain a cellar.

The remains of the early 19th-century commercial premises are considered to be of low[16] importance based on criteria provided within the ICOMOS guidance[17].

Mitigation Committed to in order to Avoid or Reduce Effect

Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.

Concluding Statement

Effects on the remains of the early 19th-century commercial premises are therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Workers' houses

Discussion of Effect

Ground-breaking works have the potential to affect the remains of early 19th-century double-depth domestic dwellings that have been identified within the Phase 2b plot, whilst the Phase 2a and c plots also contained blind-back houses (see **Appendix 4**). Buried remains of these structures are unlikely to survive within the Site as they did not contain cellars.

The remains of early 19th-century double-depth dwellings are considered to be of low[18] importance based on criteria provided within the ICOMOS guidance[19].

Mitigation Committed to in order to Avoid or Reduce Effect

[16] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[17] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.
[18] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[19] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.

Any effect would be mitigated prior to, or during, construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.
Concluding Statement
Effects on the remains of early 19th-century workers' houses are therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Iron Foundry
Discussion of Effect					
Ground-breaking works have the potential to affect the remains of an early 19th-century iron foundry that has been identified within the Site (see **Appendix 4**). Buried remains of the structure may survive within 2a and 2c plots. The iron foundry had been established in c 1806, at the junction of Great Bridgewater Street and Albion Street. The iron foundry functioned as a machine works in the 1830s, before it was converted into a cotton mill by 1850. Remains of the early 19th-century iron foundry are considered to be of low[20] or potentially medium importance based on criteria provided within the ICOMOS guidance[21].					
Mitigation Committed to in order to Avoid or Reduce Effect					
Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.					
Concluding Statement					
Effects on the remains of the early 19th-century iron foundry are therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.					

Effect	Damage to or loss of remains	**Applicable Development Phase (C / O)**	C	**Receptor**	Marsden's / Commercial Mill
Discussion of Effect					

[20] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[21] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.

Ground-breaking works has the potential to affect the remains of an early 19th-century cotton mill that has been identified within the Site (see **Appendix 4**). Buried remains of the mill may survive within the Phase 2a and Phase 2c plots. The remains of the early 19th-century mill are considered to be of low[22] or potentially medium importance based on criteria provided within the ICOMOS guidance[23].
Mitigation Committed to in order to Avoid or Reduce Effect
Any effect would be mitigated prior to construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 203 and 205 of the National Planning Policy Framework.
Concluding Statement
Effects on the remains of the early 19th-century mill are therefore not considered to be significant and will not be considered further in the EIA or reported within the ES.

Ground Conditions

Consultation

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

4.16 No specific consultation has been undertaken as part of the EIA, although various consultations and submissions have been made to the Local Authority Contaminated Land Officer and Environment Agency as part of the planning process.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Curtins Consulting Ltd, Phase I Preliminary Site Assessment, ref. B049266.002/RB/6812	Phase I (Desk Based) Geo-Environmental Assessment	6th June 2016
Brownfield Solutions Ltd (BSL) Phase II Geo-Environmental Assessment, ref. TM/C4460/10587	Intrusive ground investigation, geo-environmental risk assessment, waste soil	14th December 2021

[22] IEMA, IHBC, CIFE. 2021. Principles of Cultural Heritage Impact Assessment in the UK.
[23] ICOMOS (2011). Guidance on Heritage Impact Assessments for Cultural World Heritage Properties. Paris: International Council on Monuments and Sites.

	classification and assessment, outline remedial strategy	
BSL Remedial Strategy, ref. NS/C4460/9230 Rev C	Detail how remediation of the site will be undertaken and verified, to ensure delivery of a site suitable for its proposed end use.	Rev C – 4th January 2022
BSL Piling Risk Assessment, reference AJS/C4460/9231 Rev D	Assess impact of proposed piling methodology on human and environmental receptors	Rev D – 27th June 2022

4.17 The Site is located in Manchester City Centre and situated over two levels; the lower deck is at ground level and in brief comprises a former car park; the western half of the Site (Viadux Phase 1) has now been constructed. The upper deck comprises a service yard for the Manchester Central Convention Centre located to the north of Great Bridgewater Street and is also undergoing ongoing construction in the western areas as part of the Viadux Phase 1 development.

4.18 The Site has had previous development since 1848 for residential and commercial use including an iron foundry, cotton mill, railway infrastructure, burial ground, automobile engineering works and car parking.

4.19 Based on the extensive intrusive investigations carried out to date, the ground conditions beneath the lower deck are generally consistent and comprise the following:

- Hard surfacing present across the majority of the Site (except area encompassing phase 3)
- Made ground comprising gravelly sands to a depth of between 1.05m and 3.60m bgl.((meters below ground level)
- Natural superficial deposits comprising sand and gravel to between 4.50m and 5.30m bgl.
- Bedrock comprising sandstone of the Chester Formation proven to a maximum depth of 45.00m bgl
- Post siteworks groundwater monitoring revealed groundwater levels in the sandstone ranging between 11.30m and 11.49m bgl.

4.20 Chemical testing has revealed that the made ground locally contains elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) attributed to clinker and slag within the soil. No visual or olfactory evidence of contamination has been noted within soils and no sources of gross contamination have been identified on Site. Ground gas monitoring has been completed at the Site and confirms the risk from ground gases is low and no mitigation is required. The Site is not in a radon affected area.

4.21 The proposed development will involve construction of new buildings, which will involve disturbance of the soils during piling and groundworks, however the developed site will be almost entirely surfaced in buildings and hard standing (car parking, paving etc.) with only very limited areas of soft landscaping and therefore the developed site will not significantly

change the ground conditions and current source-pathway-receptor model with regards to contamination.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Exposure of construction workers to contaminated soils	**Applicable Development Phase (C / O)**	C	**Receptor**	Groundworkers / site personnel and adjacent properties
Discussion of Effect					
Exposure of groundworkers to elevated levels of contaminants via direct contact and inhalation, exposure of groundworkers and nearby properties / users to contaminated soils, and the generation of soils during earthworks / the development, which may require disposal off-site.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Site workers will be made aware of the possibility of encountering contamination through toolbox talks and good standards of personal hygiene, including welfare facilities on-site and the use of appropriate levels of personal protective equipment (PPE), will be enforced by the Principal Contractor as per CDM requirements (i.e. tertiary mitigation). Site workers will adhere to health, safety and environmental precautions in order to reduce the potential for any accidents and incidents. Methods will be used to reduce the amount of dust, e.g. dust suppression, washing down of vehicles wheels and the covering of any exposed soils.					
Concluding Statement					
No significantly elevated concentrations or gross contamination has been identified on the Site based on the extensive ground investigations completed to date. The risks to construction workers associated with dermal contact and inhalation, as well as dusty conditions affecting neighbouring properties, will be effectively mitigated by standard good construction practices such as toolbox talks, provision and use of welfare facilities, dampening of soils etc, as detailed in the Construction Management Plan.					

Effect	Exposure of future site users to contamination in soils	**Applicable Development Phase (C / O)**	O	**Receptor**	Future site users
Discussion of Effect					
Contaminated soils, if left exposed at the surface, could potentially impact site end users via plant uptake and ingestion, direct ingestion, direct contact and inhalation of dusts. However, these potential pathways are unlikely to be available for contaminants in the soil to impact end users,					

given the proposed usage of the Site (commercial and residential but without plant uptake), as well as the presence of buildings and hard surfacing across the Site. Ground gas monitoring confirms there are no harmful ground gases impacting the Site – no further consideration or mitigation required.
Mitigation Committed to in order to Avoid or Reduce Effect
As stated above, the nature of the redevelopment of the Site in itself will prevent end users from coming into contact with contaminated soils, due to the presence of newly-constructed buildings and renewed hard standing and hard landscaping (i.e. primary mitigation). Where limited areas of soft landscaping are incorporated into the proposed development at ground level, a clean cover system comprising 600mm of "clean" validated topsoil / subsoil will be provided, which will break any pathways between end users and contamination in the made ground, and act as a suitable growing medium (Secondary and tertiary mitigation). With respect to Phase 2b, the development in itself will positively impact the Site and surrounding areas, as this part of the Site is currently not surfaced in hard standing. Therefore, the new construction and hard landscaping will reduce the potential for end users to come into contact with any contaminants (i.e. primary mitigation).
Concluding Statement
Following development there will be no viable pathways between contaminants in the made ground and the Site end users – achieved predominantly by the new buildings and hard standing, as well as a clean cover system implemented in soft landscaping in accordance with the Remediation Strategy. Therefore, by virtue of the development taking place this will effectively mitigate any risks to end users associated with PAH contamination in the made ground, with a negligible residual impact.

Effect	Exposure of groundwater resources to contamination from the site	**Applicable Development Phase (C / O)**	C and O	**Receptor**	River Medlock Superficial Aquifer (Secondary A) Bedrock Aquifer (Principal)
Discussion of Effect					
The geo-environmental assessments to date have concluded that the overall risks to surface waters and groundwaters is low, and no specific remedial measures have been recommended based on the low risk. The risk assessments have considered the potential for leaching of contamination in the made ground and migration into the sensitive water resources within proximity of the Site. Proposed piling works have also been considered with respect to driving down solid contaminants and/or creation of new pathways for contaminant migration.					

However, the overall concentrations of contaminants within both soils and groundwater are generally low, no gross contamination has been encountered on site, and there is a lack of viable pathways to the identified receptors. The presence of hard standing across the developed site will continue to limit surface water infiltration and mitigate the risk of contaminants leaching from the shallow made ground (i.e. primary mitigation).
Mitigation Committed to in order to Avoid or Reduce Effect
The geo-environmental assessments have concluded the risks to controlled waters are low, therefore no specific remedial measures are required. A piling risk assessment has also been produced to specifically assess the risks associated with piling works, concluding the risk is low.
Concluding Statement
The redevelopment of the Site is not expected to have any adverse impact on sensitive controlled waters resources in the vicinity of the Site. The residual risk is low and no mitigation is required.

Aviation

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
None	None	None	None

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Radar Impact Assessment for Phase 1	Pager Power assessed the impact of the Viadux Scheme on the Secondary Surveillance (SSR) radar at Manchester Airport. The assessment identified an impact requiring mitigation, which was then implemented by NATS.	July 2020

4.22 The proposed development is located in the Manchester control zone (CTR) airspace, which extends from the ground to 3,500ft, and laterally within the Outer Horizontal Surface (OHS) associated with Manchester Airport. The Beetham Tower and Phase 1 of the development

are in the immediate vicinity of the proposed development and therefore two new physical obstructions would be added to the already urban area.

4.23 The Secondary Surveillance Radar (SSR) at Manchester Airport is located approximately 15.1km to the south of the proposed development. The proposed development is located behind other tall buildings in central Manchester relative to the radar; however, it may provide new structures that could cause impacts to the radar.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Radar Interference	**Applicable Development Phase (C / O)**	C and O	**Receptor**	Manchester Airport SSR
Discussion of Effect					
Buildings, structures and terrain can interfere with SSR. The level of interference normally depends on the size of the interfering structure and its distance from the radar. Reflections from a structure can potentially result in genuine aircraft returns being plotted in the wrong place as a result of the structure reflecting signals in a specular (mirror-like) way. This means that an air traffic controller could mis-manage aircraft, leading to safety implications. Both in-bound and out-bound signals are weakened due to reflections because they are reflected by a structure in both directions. The technical report to be undertaken will identify whether significant reflection effects are predicted and sent to NATS (who safeguard the radar) for their position. If a significant effect is predicted, mitigation will be required.					
Mitigation Committed to in order to Avoid or Reduce Effect					
If mitigation is required by NATS, it will be in the form of a technical fix applied to the radar. The solution is predicted to cost in the region of £45k.					
Concluding Statement					
Significant effect upon the SSR at Manchester Airport could be identified by the technical report prior to the implementation of mitigation. Once mitigation has been implemented, no effects which could be considered significant in the context of EIA regulations.					

Effect	Physical obstruction	**Applicable Development Phase (C / O)**	C and O	**Receptor**	Obstacle Limitation Surfaces
Discussion of Effect					

Obstacle Limitation Surfaces (OLS) are imaginary planes defined in three dimensions for physical safeguarding purposes (i.e. ensuring that physical structures do not present a safety hazard at an airfield) and are defined around licensed aerodromes.

The dimensions and geometry of the surfaces are constructed based on detailed rules defined in the UK Civil Aviation Authority's Civil Aviation Publication 168. The size of the surfaces is dependent on the number of runways, their dimensions and the procedures carried out at the aerodrome.

The technical report to be undertaken will identify whether the proposed development infringes the OLS. If it breaches, Manchester Airport must be satisfied the breach does not constitute a safety concern. Many buildings in central Manchester breach the OLS and are accommodated by an appropriate aviation lighting scheme.

Cranes used in construction will reach elevations greater than the final building height. In principle, safeguarding concerns for cranes are the same as for building developments. It is likely that a crane operation scheme will need to be agreed with Manchester Airport and aviation lighting will also be required for cranes. Lighting will be a mandatory requirement for any crane breaching the OLS.

Mitigation Committed to in order to Avoid or Reduce Effect

An appropriate lighting scheme will be produced in agreement with Manchester Airport to satisfy any concerns related to breach of the OLS by the building or cranes (if any). It is likely to involve steady red medium intensity lighting on the corners of each building, potentially with intermittent lighting down each side.

A crane operations scheme will also be produced in agreement with Manchester Airport. The CAA will also be notified regarding the proposed development and any cranes via the ACOMS service.

Concluding Statement

There is clear precedence in central Manchester for a breach of the OLS to be accommodated through an appropriate lighting scheme and crane operations scheme. As long as both are agreed with Manchester Airport, no significant effects in the context of EIA regulations are predicted, despite a likely breach of the OLS.

Effect	Physical obstruction	**Applicable Development Phase (C / O)**	C and O	**Receptor**	Helicopter operations

Discussion of Effect

Helicopter use in and around the city centre is most likely to be associated with the emergency services. Any tall building in principle has the potential to present a hazard to helicopters, particularly if they were to be operating at low-level. There are several helicopter landing site (HLS) surrounding Manchester.

The development is unlikely to present a significant risk to helicopter operations because the proposed development is located within the city centre where there is already significant

urbanisation with many similar types of building development. Helicopter pilots will be trained to fly in dynamic environments such as these. The greatest risk to helicopters related to the proposed development is likely to be the use of cranes, because they will be at a greater altitude and are in general harder to see from the air than buildings.

The lighting and marking requirements are predicted to be suitable for those identified with respect to the effects on the OLS. It is recommended that the Manchester Royal Infirmary is made aware of the proposed development as it is expected to be the closest HLS to the proposed development.

Mitigation Committed to in order to Avoid or Reduce Effect

Appropriate lighting scheme and crane operations scheme as per OLS mitigation and notice to low flying communities.

Concluding Statement

Significant effects upon helicopter operations are not predicted due to the lighting requirements of tall buildings and structures such as the proposed development and the associated cranes making them visible to pilots at night.

As long as this is appropriately covered and Manchester Royal Infirmary is notified, no significant effects to helicopter operations in the context of EIA regulations are predicted.

Effect	Physical obstruction	**Applicable Development Phase (C / O)**	C and O	**Receptor**	Aircraft flying Instrument Flight Rules (IFR)

Discussion of Effect

Instrument flight rules are rules and regulations to govern flight under conditions in which flight by outside visual reference is not safe. IFR rules which could be impacted by tall buildings are:

- Maximum Elevation Figures (MEF) shown on national aeronautical charts;
- Manchester Airport Surveillance Minimum Altitude Chart (SMAC);
- Manchester Airport Instrument Flight Procedures (IFPs):
    - Standard Instrument Departures (SIDs);
    - Standard Arrival Charts (STARs);
    - Instrument Approach Charts.

The appropriate vertical and/or horizontal clearance from each aspect will be assessed in the technical report. Regardless of whether a breach of the IFPs is identified by the technical report, it is likely that Manchester Airport will still require a detailed IFP assessment for the buildings themselves and cranes used during construction.

Mitigation Committed to in order to Avoid or Reduce Effect

No mitigation expected to be required. If mitigation is required, it will involve a reduction in building height and/or Notices to Airmen (NOTAMs) for the cranes.
Concluding Statement
Significant effect upon aircraft flying IFR are not anticipated but could be identified by the technical report prior to the implementation of mitigation. Once mitigation has been implemented in agreement with Manchester Airport, no effects would remain which could be considered significant in the context of EIA regulations.

Water Resources

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
Manchester City Council	LLFA	March 2017 - Baseline planning application.	Planning Approval of surface water drainage strategy with conditions.
Manchester City Council	LLFA	August 2020 - Baseline planning condition submission for Phase 1 & external works of Plot 2b.	Condition discharge of Phase 1 surface water drainage strategy.
United Utilities	Statutory sewerage provider	September 2020 – Pre development enquiry UU ref. 4200033608 for Plot 2b public realm.	Agreement in principle to connect early Phase 3 works into public sewer in Great Bridgewater Street.
United Utilities	Statutory sewerage provider	August 2020 - Phase 1 & partial Plot 2b S106 application to connect to public sewer.	Agreed connection of Phase 1 foul and surface water drainage into the public sewer. UU reference EC5169.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Baseline Flood Risk Assessment – Curtins revision E.	Flood Risk Assessment for the baseline planning application in accordance with National Planning Policy Framework. The report concludes the Site is in Flood Zone 1.	March 2017
Strategic Flood Risk Assessment for Manchester, Salford and Trafford Level 1 & Level 2.	Strategic Flood Risk Assessment.	Level 01 March 2010 Level 02 2011
Baseline Detailed Drainage Strategy Report – Renaissance. Report reference VIA-REN-0-XX-RP-C-00100.	Detailed drainage strategy for the baseline planning application.	August 2020
Development Phase 1 Site Investigation report reference TM/C4460/9347 by Brownfield Solutions Ltd.	Phase 2 Site Investigation Report for the Phase 1 development, to determine prevalent ground conditions and assess geotechnical and geoenvironmental site setting.	June 2020
Development Phase 3 Site Investigation report reference NS/C4623/9721 Rev A by Brownfield Solutions Ltd.	Phase 2 Site Investigation Report for the Northern part of the Plot 2b development, to determine prevalent ground conditions and assess geotechnical and geoenvironmental site setting.	Feb 2021
Development Phase 2 Site Investigation report reference TM/C4460/10587 by Brownfield Solutions Ltd.	Phase 2 Site Investigation Report for the Phase 2 development, to determine prevalent ground conditions and assess geotechnical and geoenvironmental site setting.	December 2021
Existing drainage network survey – Ground floor and Level 01 service yard (various).	Line, level and CCTV survey of existing private drainage networks on site.	November 2020 / June 2021

Baseline

4.24 Currently the Site is fully covered in hardstanding, with positive drainage of surface water to the surrounding public sewer network as identified in the existing below ground drainage network surveys. New onsite below ground drainage infrastructure including SUDS features associated with Phase 1 of the development are currently under construction.

4.25 The Proposed Development would provide a reduction in surface water run off from the Site and into the public sewer network via the use of on site SUDS. There would be an increase in foul water run off from the Site and into the public sewer network due to the construction of Phases 2 and 3 of the development.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Increase Flood Risk	**Applicable Development Phase (C / O)**	O	**Receptor**	Site End Users.
Discussion of Effect					
Development of the Site over the Baseline condition could potentially increase surface water and foul water flows leaving the Site. This would increase flows to the surrounding public sewers and the wider sewer network. For consideration of this effect, Baseline 1a is considered as the most onerous baseline condition. This is because the developed out Baseline 1a would incorporate a significant reduction in peak surface water flows leaving the Site over Baseline 1, due to the provision of SUDS and surface water flow attenuation as part of the Baseline 1a development. The significance of this effect is therefore considered in relation to Baseline 1a. The worst case development scenario is considered to be Scenario 2 whereby only Phase 2a of the development is delivered, as this scenario would result in the worst case peak total water run off from the development site. Existing unrestricted surface water flows would still be incoming from the Phase 2b plot in this scenario.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Phase 2a is to be developed in accordance with the LLFA requirements for reducing peak surface water flow run off from the development site. This would include the use of SUDS features and/or appropriately sized surface water attenuation systems. Flows would be calculated based on considering both horizontal and vertical catchment areas in accordance with BS EN 12056-3:2000 including for the wash down affect of the tower façade. The Phase 3 development plot would remain undeveloped in this scenario, with unrestricted flow into the public sewer network.					

Overland flood routing is to be considered for the development whereby any exceedance event or failure in the drainage network is to be considered, with exceedance flows routed away from sensitive areas of the development.
Concluding Statement
This is not considered to be a significant effect as the development site sits within Flood Zone 1. Any exceedance events will be considered and overland flood routes developed to ensure flood risk is not increased.

Effect	Exceeding existing sewer capacity	**Applicable Development Phase (C / O)**	O	**Receptor**	Public sewer
Discussion of Effect					
Development of the Site over the Baseline condition could potentially increase surface water and foul water flows leaving the Site. This would increase flows to the surrounding public sewers and the wider sewer network. For consideration of this effect, Baseline 1a is considered as the most onerous baseline condition. This is because the developed out Baseline 1a would incorporate a significant reduction in peak surface water flows leaving the Site over Baseline 1, due to the provision of SUDS and surface water flow attenuation as part of the Baseline 1a development. The significance of this effect is therefore considered in relation to Baseline 1a. The worst case development scenario is considered to be Scenario 2 whereby only Phase 2a of the development is delivered, as this scenario would result in the worst case peak total water run off from the development site. Existing unrestricted surface water flows would still be incoming from the Phase 2b plot in this scenario.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Phase 2a is to be developed in accordance with the LLFA requirements for reducing peak surface water flow run off from the development site. This would include the use of SUDS features and/or appropriately sized surface water attenuation systems to significantly reduce peak surface water flows. Flows would be calculated based on considering both horizontal and vertical catchment areas in accordance with BS EN 12056-3:2000 including for the wash down effect of the tower façade. The Phase 3 development plot would remain undeveloped in this scenario, with unrestricted flow into the public sewer network. The capacity of the local sewer network to receive the increased foul water flows from Phase 2a is assumed to be sufficient based on an overall reduction in peak flows over the existing condition.					

Concluding Statement
This is not considered to be a significant effect based on an overall reduction in peak flows over the existing condition.

Effect	Pollution to adjacent watercourse	Applicable Development Phase (C / O)	C	Receptor	Rochdale Canal

Discussion of Effect
The construction works to develop the Site could create pollution events to the Rochdale Canal which sits circa 25m to the south of the Site. For consideration of this effect, Baseline 1 is considered as the most onerous baseline condition. The worst case development scenario is considered to be Scenario 3 is this would be the largest amount of construction works proposed. During the construction works there will be a number of site activities that could impact on the quality of surface water run off from the Site and the creation of airbourne pollutants such as; - Materials handling, moving and stockpiling on site - Earthworks movements and disposal during excavation and filling works - Wet works such as concreting and mortaring - Use of hyrdocarbons for temporary electricity generation on site - Use of heavy construction plant and associated risk of hydrocarbon spills

Mitigation Committed to in order to Avoid or Reduce Effect
It is recommended that good environmental practices are adopted through out the duration of the Site works as detailed in the construction management plan. Key measures include (but not limited to); - The implementation of a temporary drainage system is to be adopted by the contractor to prevent overland surface water run off reaching the Rochdale Canal. - Wheel cleaning of vehicles prior to leaving the Site - Dust suppression techniques to be adopted - Works to be carried out in line with the approved remediation strategy and materials management plans for the Site

Concluding Statement
It is considered that adopting good environmental practices throughout the duration of the construction works will prevent this effect from being significant.

Effect	Pollution to existing sewer network	**Applicable Development Phase (C / O)**	C	**Receptor**	Public Sewer Network

Discussion of Effect

The construction works to develop the Site could create pollution events to the existing public sewer network which surrounds the Site.

For consideration of this effect, Baseline 1 is considered as the most onerous baseline condition. The worst case development scenario is considered to be Scenario 5 is this would be the largest amount of construction works proposed.

During the construction works there will be a number of site activities that could impact on the quality of drainage run off from the Site and the creation of airbourne pollutants such as;

- Materials handling, moving and stockpiling on site
- Earthworks movements and disposal during excavation and filling works
- Wet works such as concreting and mortaring
- Use of hyrdocarbons for temporary electricity generation on site
- Use of heavy construction plant and associated risk of hydrocarbon spills

Mitigation Committed to in order to Avoid or Reduce Effect

It is recommended that good environmental practices are adopted through out the duration of the Site works as detailed in the construction management plan. Key measures include (but not limited to);

- The implementation of a temporary drainage system is to be adopted by the contractor as required to suit the proposed works program. This will help to reduce overland flows and sediment build up in the effluent water.
- Wheel cleaning of vehicles prior to leaving the Site
- Dust suppression techniques to be adopted
- Works to be carried out in line with the approved remediation strategy and materials management plans for the Site
- Existing drainage networks are to be protected via capping off any temporary free ends, and protecting of existing gullies and downpipes to prevent sediment spills into the network.

Concluding Statement

It is considered that adopting good environmental practices throughout the duration of the construction works will prevent this effect from being significant.

Effect	Pollution to existing groundwater	**Applicable Development Phase (C / O)**	C	**Receptor**	Groundwater

Discussion of Effect
The construction works to develop the Site could create pollution events to the groundwater underlaying the Site. For consideration of this effect, Baseline 1 is considered as the most onerous baseline condition. The worst case development scenario is considered to be Scenario 3 is this would be the largest amount of construction works proposed. During the construction works there will be a number of site activities that could impact on the quality of drainage run off from the Site and the creation of airbourne pollutants such as; - Materials handling, moving and stockpiling on site - Earthworks movements and disposal during excavation and filling works - Wet works such as concreting and mortaring - Use of hyrdocarbons for temporary electricity generation on site - Use of heavy construction plant and associated risk of hydrocarbon spills
Mitigation Committed to in order to Avoid or Reduce Effect
It is recommended that good environmental practices are adopted throughout the duration of the site works as detailed in the construction management plan. Key measures include (but not limited to); - The implementation of a temporary drainage system is to be adopted by the contractor as required to suit the proposed works program. This will help to reduce overland flows and sediment build up in the effluent water. - Wheel cleaning of vehicles prior to leaving the Site - Dust suppression techniques to be adopted - Works to be carried out in line with the approved remediation strategy and materials management plans for the site - Existing drainage networks are to be protected via capping off any temporary free ends, and protecting of existing gullies and downpipes to prevent sediment spills into the network.
Concluding Statement
It is considered that adopting good environmental practices throughout the duration of the construction works will prevent this effect from being significant.

Ecology

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
GMLRC	Biological Records Data provider	Request for information on locally designated sites and records of protected/notable species within 2km of the application site	Information integrated into Preliminary Ecological Assessment report

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Preliminary Ecological Assessment	Desk review and Extended Phase 1 Habitat survey of the Site	October 2023

Baseline

4.26 The Site is currently (October 2023) dominated by built structures and hardstanding with small patches of ephemeral/short perennial vegetation scattered across the Site (Figure 1). No buildings are present on Site however there are several structures and bridges and Phase 2a of the scheme extends across two levels with vaulted brick arches below.

4.27 At ground level, the structure comprises an enclosed complex of vaulted arches supported by brick piers, previously used as a car park and now as storage of construction materials. This area could only be accessed via the entrance off Albion Street, where a small concrete loading area is present beneath the viaduct. Plot 2b comprises a small, exposed section of concrete hardstanding again in use for the storage of construction materials. The upper level (Phase 2a), accessed via a ramp at the southern side of the Site (Trafford Street), comprises an open area of hardstanding previously used as a car park.

4.28 Small patches of ephemeral/short perennial vegetation are present to the east of the EIA Site, whilst there was also some occasional vegetation growth from gaps in the external facades. All species present were common, widespread and typical of urban city centre sites. Species included occasional perennial rye-grass, butterfly-bush, common chickweed, springy turf-moss, and ivy-leaved toadflax (locally frequent). Rare occurrence of creeping buttercup, dandelion, groundsel, common ragwort, and willowherb species were also recorded.

4.29 A recommendation for additional detailed ground level inspections for bat roost potential was recommended for the vaulted brick arches as these features may have limited potential to support small numbers of roosting bats.

4.30 Over time, if the Proposed EIA Development were not to come forward, the habitats on site may develop into slightly more well-established tall herb vegetation with scattered self-seeded scrub species such as butterfly bush. The rate extent of colonisation by these species will depend on the degree of disturbance of the Site. Structures on site may increase their potential for use by roosting bats if they develop features such as crevices, gaps and other features or if disturbance levels in this area decrease.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Impacts on protected sites	**Applicable Development Phase (C / O)**	C & O	**Receptor**	Protected sites within 2km of the application site
Discussion of Effect					
No significant effects identified – all protected sites considered to be unconnected / too far from the application Site. Site boundary does not include any designated nature conservation sites.					
Mitigation Committed to in order to Avoid or Reduce Effect					
None required.					
Concluding Statement					
No significant impacts identified for nearby designated sites.					

Effect	Impacts on protected and notable species	**Applicable Development Phase (C / O)**	C & O	**Receptor**	Nesting birds, roosting bats and other protected or notable species
Discussion of Effect					
There is some potential for impacts on nesting birds due to redevelopment or the Site, due to nesting habitat being present on or close to the Site. There is potential for impacts on roosting bats due to roost features being identified on the application Site. Impacts on other protected/notable species are ruled out due to lack of suitable habitat being present on or adjacent to the Site]					
Mitigation Committed to in order to Avoid or Reduce Effect					

Nesting birds – avoid site clearance in the key nesting season and/or PWMS to confirm absence of nests prior to work. Roosting bats – further survey recommended to further assess potential impacts, if bats confirmed on site then suitable mitigation measures likely to include advance closure of roosts prior to works under licence and provision of alternative roosting opportunities on Site.
Concluding Statement
Potential impacts can be suitably managed to avoid significant impacts on the species of concern

Effect	Impacts on protected or priority habitats	**Applicable Development Phase (C / O)**	C	**Receptor**	Habitats on site
Discussion of Effect					
No notable or protected/Priority habitats present on Site					
Mitigation Committed to in order to Avoid or Reduce Effect					
No mitigation required					
Concluding Statement					
No predicted impacts on protected or Priority habitats. Enhancement opportunities are likely to be present, such as including biodiverse planting within any soft landscaping to achieve biodiversity net gain.					

Television, FM Radio and DAB Radio Reception

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
None	None	None	None

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
None	None	None

Baseline

Terrestrial Television

4.31 In general, there will be three 'zones' in the area behind the structure relative to the transmitter which could be negatively impacted by the proposed development:

Zone A - close behind the structure (typically a few tens of metres) there may be a large reduction in signal level with a possible complete loss of reception;

Zone B - further away (typically within 1km) the signal reduction is less severe and the shadow will be smaller as diffraction effects partially fill in the shadow. Depending on the size of the structure, some locations could still lose reception completely;

Zone C - some distance away (1-5km) the shadow will effectively have disappeared.

4.32 Winter Hill is one of the UK's main television transmitters, located approximately 24.2km northwest of the proposed development, and serves the area around the development. The zones defined above will therefore extend to the southeast of the proposed development.

4.33 The proposed development will not introduce two new structures into the zones that can affect television signals. Instead, the already affected area due to the Beetham Tower will be slightly increased due to the proposed development.

4.34 Residential dwellings with low level aerials in Zones A and B are at the highest risk of experiencing television interference. Based on a review of the aerial imagery, the shadow zone passes over the city centre which contains shops, non-residential buildings, and/or tall residential buildings likely to have aerials much higher than a traditional house.

Broadband Services

4.35 There is a requirement to ensure that new residences have access to superfast broadband download speeds (understood to mean a minimum of 24 Mbps) to ensure future occupants can obtain sufficient broadband services. Manchester City Council has previously stated the following requirement for a 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).

4.36 The *Data Ducting Infrastructure Guidance* mentions providing full fibre connections to existing and new developments should be a priority.

4.37 The Openreach fibre checker for the Beetham Tower (M3 4LQ) showed that broadband with speeds of up to 24 Mbps is currently available. Virgin Media online postcode checker did not yield any results; however, this does not necessarily mean that Virgin Media's infrastructure is not in place at nearby access points and ducts. Consultation with Virgin Media previously has indicated that the Virgin Media network is available throughout Manchester.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Terrestrial television interference	**Applicable Development Phase (C / O)**	O	**Receptor**	Surrounding residential dwellings

Discussion of Effect

Terrestrial television services are provided by means of electromagnetic waves in the Ultra High Frequency (UHF) range which propagate from land-based transmitters to receiving aerials. The quality of the image and sound on a television set is dependent on both the strength of the signal received directly from the transmitter (carrier signal) and the strength of any interference signals from other sources. To achieve good quality reception an aerial must receive a strong carrier signal but weak interference signals. Tall buildings and structures could disrupt wireless services.

The study areas for potential television interference are well defined within Ofcom guidance and based on previous experience of the technical consultant. Noticeable effects are most likely to materialise directly behind the building relative to the transmitter and within 1km of the building (Zones A and B as defined previously).

A television reception survey will be undertaken to measure the baseline reception in the area at the earliest opportunity and it is recommended a survey is undertaken post-construction to compare the reception levels. If a reduction in signal is attributable to the proposed development, mitigation should be implemented by the developer.

Mitigation Committed to in order to Avoid or Reduce Effect

Many technical solutions are likely to be available; however, the most common form of mitigation is the provision of Freesat for the affected residential dwellings.

Concluding Statement

Pager Power has never encountered a building development that has required modification on the basis of television signal issues. This is largely because technical solutions generally exist and are commercially viable. It is recommended television interference is covered by a suitable planning condition.

Provided any reported interference that is attributable to the proposed development is implemented following construction, no effects would remain which could be considered significant in the context of EIA regulations.

Effect	Appropriate broadband services	**Applicable Development Phase (C / O)**	O	**Receptor**	Internal residences

Discussion of Effect

A technical report will be provided which determines the availability of internet services at the proposed development. This will be explored in two ways:
 	
• Assessment via Openreach – which shows the availability of their fibre network at UK locations via an automated service on their website.
• Enquiries with three main high-speed broadband providers in the UK, namely:
  o BT (Uses Openreach broadband infrastructure network);
  o Sky (Uses Openreach broadband infrastructure network);
  o Virgin Media (Owns and maintains its own broadband network).
 	
The proposed development will likely consist of more than 19 plots. Therefore, Fibre To The Premises (FTTP) infrastructure is available free of charge for this development subject to application to Openreach.
 	
The report will detail the process for obtaining superfast services for Openreach and Virgin Media. Additional advice on infrastructure (internal and external) to ensure superfast services are installed for the proposed development are most likely to be provided by Openreach, Virgin Media, or other internet infrastructure stakeholders.

Mitigation Committed to in order to Avoid or Reduce Effect
The developer will commit to ensuring superfast broadband is available at the residences in the proposed development. This will be achieved through services from Openreach or Virgin Media and implemented prior to completion of the development.
Concluding Statement
Mechanisms are already in place to ensure that superfast broadband is provided so that building developments can comply with the data ducting requirements. As long as the proposed development complies with the data ducting requirements, no effects would remain which could be considered significant in the context of EIA regulations.

5 Environmental Statement Chapters

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

- Townscape and Visual Impact
- Heritage
- Air Quality
- Noise and Vibration
- Daylight/Sunlight/Overshadowing
- Solar Glare
- Wind
- Climate Change
- Human Health
- Socio-Economic
- Traffic and Transport

Townscape and Visual Impact

Consultation

5.2 The proposed key viewpoints plan was shared with Case Officer at MCC in October 2023. No changes were required as a result of this consultation. Two additional views – View 27: St Peter's Square (Town Hall Extension) and View 28: Albert Square (Friends Meeting House) - were added following consultation with Historic England on the 7th December 2023. The key viewpoints plan is included within this scoping report (Figure 1).

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Identification of key viewpoints	Site/city context walkover and desk top study of OS maps, topography and use of Google viewsheds to indicate likely visibility. A model of the Proposed Development has also been placed in Google Earth and has been used to refine proposed viewpoint locations.	August 2023

Townscape baseline assessment	Site/city context walkover and desk top survey.	August 2023

Baseline

Townscape Character and Heritage assets

5.3 The Site lies within Manchester City Centre, as defined by Manchester Core Strategy 2012-2017. 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.

5.4 The Site is located adjacent to the city centre's Civic Quarter and Central Business District within the Petersfield townscape character area, as defined by the Local Plan. 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. The Great Northern Warehouse is set to be transformed with the addition of 3 new buildings up to 34 storeys in height, which will include residential and high quality office use.

5.5 The site includes part of the Grade II listed Castlefield Railway Viaduct and there are a number of other listed buildings within the vicinity of the Site and within the Site's visual envelope.

Urban Grain

5.6 The wider study area presents predominantly a fairly coarse urban grain to the north reflecting the location in the city centre. The elevated metrolink line and viaduct form a significant north-south barrier between the centre and its surroundings. The grain is punctuated by occasional green open spaces. Although partially developed with Phase 1, the Site forms a void within the urban grain which adversely impacts on townscape character at what is a key arrival point into the city centre.

Land Use

5.7 The surrounding area is primarily commercial and retail lead with some hotel and residential functions. The Great Northern Warehouse Manchester Central Conference Centre (referred to hereafter as MCCC) are located to the north of the Site on Great Bridgewater Street. Great Northern Warehouse is a major leisure facility containing food and retail outlets, a multi-storey car park, a cinema complex and a casino. The Great Northern is set to be redeveloped with existing leisure use to be replaced with residential and office use. The MCCC is an exhibition and conference centre converted from the former Manchester Central railway station. The two developments are commercial in character and divided by Watson Street. Both buildings are Grade II* listed. In the immediate vicinity of the Site, but Viadux Phase 1 and the Beetham Tower are residential in use.

Building Heights

5.8 Building heights within the site context have increased significantly, with well defined clusters of tall buildings defining the city skyline. The Beetham Tower is a key landmark in Manchester city centre and a defining feature of the city skyline at 47 storeys in height. It is mixed-use development occupied by the Hilton Hotel and private apartments. Deansgate Square is located to the south of Deansgate railway station and north of the Mancunian

Way, bounded by Deansgate, Owen Street and the River Medlock. It includes a cluster of 4 towers, which have substantially changed the Manchester skyline since construction began in 2016. The tallest of the 4 towers stands at 67 storeys. Viadux phase 1 stands at 40 storeys, with the nearby Axis building at the corner of Whitworth Street west and Albion Street at 28 storeys. The tall building clusters contrast with the more horizontal massing of Manchester Central, the Great Northern Warehouse and more historic buildings within the southern portions of the city centre.

Movement and Linkages

5.9 The viaduct runs along the southern edge of the city on an east-west axis and functions as a primary public transport route for people travelling into and out of the city centre. Deansgate-Castlefield Metrolink Station, located immediately adjacent to the site to the south, forms a major arrival point into the city. The Site is located at a key nodal point at the convergence of key axis into and out of the city centre – Deansgate to the west, Lower Mosley Street to the east, and Whitworth Street West to the south.

5.10 Pedestrian permeability and connectivity between the Site and the surrounding context is currently adversely affected by the barrier effect of the viaduct, and ongoing construction works to Viadux Phase 1.

Public Realm and Public Open Space

5.11 The Site does not currently contain any public open space. The quality of the public realm is currently poor due to a lack of a defined use and ongoing construction works. Nearby, Castlefield Urban Heritage Park is located to the west and forms a green space in which to appreciate the significant history of the city. A substantial area of public realm to the north of Manchester Central forms an important meeting/gathering space. Similarly, the open amphitheatre space and Great Northern Square to the north of the Great Northern Warehouse forms an informal gathering space and flexible space for events and restaurant spill-out. Castlefield Viaduct forms a new attraction within the city and within close proximity to the Site. It aims to create a 'sky garden' and has been transformed by the National Trust.

Site Character

5.12 The Site is currently underutilised and detracts from what is a key nodal point and major arrival point into the city. The Site largely forms a void in the urban grain, and is disconnected from the surrounding context due to lack of clear function, major highways infrastructure, ongoing construction works and complex level changes.

Site Visibility

5.13 Views of the Site are experienced by a high number of viewers due to the city centre location, position adjacent to the Deansgate-Castlefield Metrolink Station, and close to the convergence of key routes. The Site also sits on elevated ground levels above the viaduct.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Change to topography	**Applicable Development Phase (C / O)**	[C / O]	**Receptor**	Townscape effects on topography within the study area.
Discussion of Effect					
Changes to existing topography to accommodate the Proposed Development					
Mitigation Committed to in order to Avoid or Reduce Effect					
None required					
Concluding Statement					
The existing topography within the Site is complex and has been extensively modified through previous development, and is therefore not considered to be a sensitive receptor.					

Effect	Changes to environmental designations	**Applicable Development Phase (C / O)**	[C / O]	**Receptor**	Environmentally designated areas within the study area.
Discussion of Effect					
Change to environmentally designated areas.					
Mitigation Committed to in order to Avoid or Reduce Effect					
None required					
Concluding Statement					
There are not environmental designations covering the Site. Any visual relationships between environmentally designated areas and the Site will be considered in the visual assessment.					

Identification of Effect/s which are Likely to be Significant

Effect	**Receptor**	**Applicable Development Phase (C / O)**
Changes to townscape character and heritage assets within the site context.	Petersfield townscape character area including heritage assets and wider townscape character areas as defined within the Local Plan.	[C / O]

Changes to urban grain.	The Site (direct effect) and local site context (potential indirect effect). The Phase 2a, 2b and 3 areas within the Site currently form 'gaps' in the urban grain at a key location, which adversely affects the Site and surrounding context.	[C / O]
Changes to land use	The Site (direct effect) and local site context (potential indirect effect). No clearly defined land use on the Site within the Phase 2a, 2b and 3 areas which adversely impact on the local context due to the prominent position of the Site.	[C / O]
Changes to building heights	The Site (direct effect) and local site context (potential indirect effect). No existing buildings on the Site within Phase 2a, 2b and 3 which detracts from the local context within the study area due to the prominent location of the site.	[C / O]
Changes to movement and linkages	The Site (direct effect) and local site context (potential indirect effect). The Site currently forms a void in the movement network within the study area.	[C / O]
Changes to public realm and public open space	The Site (direct effect) and local site context (potential indirect effect). The Site is currently adversely affected by ongoing construction work to Phase 1.	[C / O]
Changes to site character	Direct effects on Site character. The Phase 2a, 2b and 3 areas currently form voids in the urban fabric and adversely affect Site character.	[C / O]
Changes to the character and amenity of key views	**1** | View from Deansgate/Castlefield Metrolink **2** | View from Albion St/Whitworth St **3** | View from Great Bridgewater Street **4** *| View from Mosley Street ** **5** | View from Watson Street **6** | View from Deansgate/Quay Street **7** | View from Castlefield Viaduct	[C / O]

	8 | View from First Street, James Grigor Square **Mid-range views** **9** | View from Castle Street **10** | View from Medlock Street/A5103 **11** | View from Oxford Road/Portland Street **12** | View from Liverpool Road **13*** | View from Princess St/Mosley St **14** | View from Albert Square **15** | St. John's Gardens **Long-range views** **16** | View from A56/Chester Road **17** | View from Manchester Road **18** | View from Regent Road **19** | View from canal at Middlewood Locks **20** *| View from St Ann's Square/St Mary's Gate **21** | View from Corporation St Metrolink **22** | View from Piccadilly Gardens/Market Street **23** | View from Piccadilly Station/Fairfield Street **24** | View from Mayfield Park **25** | View from Hulme Park **26** | View from Epping Walk Bridge/Hulme Arch **27** | View from St Peter's Square -Town Hall Extension **28** | View from Albert Square - Friends Meeting House	

	*kinetic view **night-time view	

Assessment Methodology for Likely Significant Effects

Scenarios To Be Tested

5.14 As a result of the proposed phasing, it will be necessary to test a number of scenarios within the Townscape and Impact Assessment to ensure robustness. The TVIA scenarios to be assessed are:

- Scenario 1: (Existing Baseline) = Site as is today i.e. Phase 1 tower as built with the various amendments, noting the office scheme which forms part of Phase 1 consent not built out and Phase 3 (which originally formed part of the Beetham Tower consent) vacant;
- Scenario 3: Baseline + Viadux Phase 2 Plot a + Viadux Phase 2 Plot b + Viadux Phase 2 Plot c;
- Scenario 3a: Baseline + Viadux Phase 2 Plot a + Viadux Phase 2 Plot b + Viadux Phase 2 Plot c + cumulative;

5.15 The office scheme which formed part of the Phase 1 consented scheme has not been considered as part of the baseline assessment. The original scheme was given consent in 2017, however the city context has changed considerably in the intervening years, with Deansgate Square becoming a fully established landmark development in the city amongst others. The city centre context continues to rapidly change, and therefore the current baseline, i.e the Site as it is today, is considered an appropriate baseline from which to robustly assess townscape and visual effects of the Proposed Development.

The Study Area

5.16 The study area for the townscape assessment is approximately 500m from the centre of the Site, in order to encompass the full extents of the Site, the townscape context, and the immediately adjacent townscape character areas which the Proposed Development may significantly influence. The study area has been defined through a process of desktop and on-site survey and assessment, combined with professional judgement, in accordance with the Guidelines for Landscape and Visual Impact[i].

Baseline Surveys and Assessment

5.17 Desk based studies using OS maps, topographic information and Google Earth were carried out to collate and map baseline townscape information. A review of policy and guidance to was carried out to inform the assessment.

5.18 Potential viewpoints were initially identified through a process of desktop and onsite survey before being checked on site. Viewpoints were excluded where there was likely to be no significant impact beyond that which was already identified within the selected views. The proposed key viewpoint locations were tested and refined using a model of the Proposed Development positioned in Google Earth.

5.19 A total of 28 key viewpoints have been identified, which provide a representative range of views experienced by visual receptors. In line with guidance (Landscape Institutes Technical Guidance Note, Appendix 13[ii].) the photographs taken at viewpoints 1-8 (short-range views) will be taken using a tilt-shift lens, due to the height of the Proposed Development. A tilt-shift lens will be used for additional viewpoints if a need is identified

through the process of producing the visualisations. The 24mm tilt shift is typically used for visualisation work where viewpoints are located close to a development and the normal range of prime lenses will not capture the proposed site. If a tilt-shift lens is not able to capture the full height of the proposed development, an additional non-verified image will be provided for information illustrating the full height of the Proposed Development.

5.20 A selection of key views have been identified for the production of kinetic views to more accurately show the experience of the view as people move along a key axis or through key spaces. The kinetic views are proposed for views 4 (view from Mosley Street), 13 (View from Princess St/Mosley St) and 20 (St Ann's Square). Given the nature of the kinetic views, these will not be taken with a tilt-shift lens and therefore if one were to compare the kinetic views against the non-kinetic views they would not be comparable – this is however in line with guidance as noted above.

5.21 As identified within the 'Identification of Effect/s which are Likely to be Significant' table Viewpoint 4 will also be a 'night-time/dusk shot'.

Significant Criteria Effects

5.22 This assessment has been carried out with reference to the Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013 (referred to hereafter as "the Guidelines"). by Planit-IE Ltd, a registered practice of the Landscape Institute with considerable experience in landscape and visual assessment. The photography and preparation of any Visually Verified Montages (VVMs) will be prepared in accordance with the Landscape Institutes Technical Guidance Note[iii].

5.23 A three-stage assessment process has been adopted. Firstly, the nature of receptors (sensitivity) will be assessed by combining judgements on the susceptibility of the townscape receptor to the specific type of development proposed and the value attributed to that receptor combined with professional judgement. In assessing the sensitivity of visual receptors, key factors to be considered are the type of view and the number of viewers. Sensitivity of townscape and visual receptors will be assessed on a scale of **high**, **moderate** and **low**.

5.24 Secondly, the magnitude of change is considered on a scale of **major**, **moderate**, **minor** or **negligible**. The magnitude of a townscape or visual effect is assessed in terms of its size or scale, the geographical extent of the area influenced by that effect, its duration and degree of reversibility and the impact these are likely to have on the baseline character of the townscape element or view. 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.

5.25 From this, the overall significance of the identified effects on receptors will be assessed. Significant effects will be determined through combining judgements about the sensitivity of the receptor and the magnitude of the effects, combined with professional judgment using the following matrix.

Heritage

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
Historic England	Statutory Consultee	Initial meeting held with HE 16/11/2023 with a follow up meeting on 07/12/23	Initial meeting was used to brief HE Officers on forthcoming proposals and present certain key views. It was agreed a follow up meeting would be held to provide more detail and present verified views.

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Heritage Statement and ES Chapter (Viadux 2017 and Phase 1)	Produced by SLHA, including visual impact assessment	2017, 2020
Zone of Visual Influence Study	Produced by Planit-IE	July 2023
Identification of key views	SLHA, Planit-IE	August 2023

Baseline

5.26 The Site comprises of a multi-layered plot above street level, on top of the Grade II Castlefield Viaduct, a portion of which falls within the defined site boundary (Plot 2a). A series of brick-built piers and arches are arranged at ground level, with the 'Great Bridgewater Street Bridge' forming part of the high-level former service yard to MCCC (Grade II*), which is situated just north of the Site boundary. A large portion of Plot 2a (west side) is currently a construction area, related to the Viadux Phase 1 development. The northern-most portion of Plot 2b is currently being developed with a new pedestrian stair which will provide access to the Deansgate Metrolink stop. The arches at street level along Great Bridgewater Street are also currently being redeveloped in accordance with the consented scheme for Viadux Phase 1.

5.27 In 2017, Heritage Architecture provided a Heritage Statement and ES for Viadux Phase 1 (Former Bauer Millett Site Albion Street), for which Planning Permission and Listed Building

Consent was approved by the Local Planning Authority on 27 July 2017 (refs: 115871/FO/2017 and 115872/LO/201). There has been a series of subsequent amendments to this consent, principally by the S106 application (126868/JO/2020) and the drop in application (127260/FO/2020), and latterly, with a Section 19 application to amend the LBC (127365/LO/2020). A number of non-material amendment applications have also been approved and are attached to the 2017 consent; these subsequent applications have resulted in an overall reduction of direct heritage impact on the Grade II listed Castlefield Viaduct.

5.28 For the purposes of this Scoping Report, and for the avoidance of doubt, the Existing Baseline (i.e Viadux Phase 1 – 40 storey residential tower) is understood to be implemented in line with the above, and as described in Section 3 of this report.

5.29 The baseline heritage assessment for Viadux Phase 2 will be undertaken using a combination of a desk-based review of plans, maps, records and other documents followed by on-site surveys in order to identify and assess the heritage significance of designated heritage assets within the study area (refer to Appednix 6). The baseline assessment will also establish the way in which the settings and the Site contribute to the heritage significance of these assets.

5.30 A 500m radius around the Site has provided the study area for assessment, utilising the Historic England National Heritage List data and Manchester City Council's website on Conservation Areas. Due to the high degree of existing built form around the Site, it is considered this radius is appropriate for the purposes of this assessment. Within this area, there are a number of built heritage assets including:

- 91 Listed Buildings
- Castlefield Conservation Area
- The Deansgate/Peter Street Conservation Area
- St John Street Conservation Area
- Albert Square Conservation Area
- St Peter's Square Conservation Area
- St Mary's Parsonage Gardens Conservation Area
- St Ann's Conservation Area

5.31 The heritage assets identified for assessment are valued, the impact of the Proposed Development on each is determined, and the impact is ascribed a significance of effect.

Scope of Assessment

Identification of Effect/s which are Not Significant

5.32 No effects are considered not significant within the scope of this assessment.

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)	Listed Buildings	[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

5.33 A Heritage Statement will be prepared to accompany the Planning and Listed Building Consent applications. 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.

5.34 The Heritage Statement will be prepared in general accordance with or with reference to the following legislation, policy and guidance:

- Planning (Listed Buildings & Conservation Areas) Act 1990;
- National Planning Policy Framework (NPPF) Conserving and enhancing the historic environment (2021);
- Manchester City Council Core Strategy (2012);
- Historic England guidance: Conservation Principles Policies and Guidance (2008);
- Historic England's Good Practice Advice Note 2: Managing Significance in Decision-Taking in the Historic Environment (2015);
- Historic England's Good Practice Advice Note 3: The Setting of Heritage Assets (2017);
- Historic England's Advice Note 4: Tall Buildings (2022);
- Historic England's Advice Note 12: Statements of Heritage Significance (2019).

5.35 The Heritage Statement will consider the potential impact of the Proposed Development on the setting (through indirect visual impact) of sensitive to receptors within the defined study area. For the purposes of this assessment, consideration has been given to the relevant part of Manchester City Centre that surrounds the Site within a 500m radius. Baseline data of the study area was collected utilising Historic England's Online Mapping tool (plotting structures identified on the National Heritage List for England) and Manchester City Council's online planning database (Conservation Area information). Google Earth was also utilised as part of the baseline data collection.

5.36 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 MCC and Historic England). The viewpoint locations are informed by Zone of Visual Influence Studies (produced by Planit-IE), site surveys and VU.CITY analysis (July and August 2023). A total of 12 key heritage views have been identified (views 1, 2, 3, 4, 5, 6, 9, 12, 13,14, 15 and 20, as defined in the TVIA and Appendix 6) for the heritage assessment. The proposed representative viewpoint locations are provided in Figure X.3 which were shared and agreed with MCC on 17th October 2023, shared and agreed with HE on 16th November 2023.

5.37 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.

5.38 The chapter will:

- Summarise the relevant central and local government legislation protecting the Cultural Heritage resource at the Site;
- Summarise the known and perceived Cultural Heritage potential of the Site and the surrounding area;
- Describe the potential impacts to the Cultural Heritage resource as a result of the Proposed Development; and
- Outline suitable mitigation measures to deal with the Cultural Heritage potential where affected by the Proposed Development.

5.39 The settings of any additional heritage assets, whether designated or non-designated, outside the 500m study area which have the potential to be affected by the Proposed Development are to be incorporated into the impact assessment where necessary. It should be noted that Manchester City Council have not adopted a local list identifying non-designated heritage assets.

5.40 The assessment methodology for the Historic Built Environment is a synthesis of established guidance, best practice and professional judgement. In accordance with an adapted form of the methodology set out in the ICOMOS Guidance on 'Heritage Impact Assessments' (Jan.2011), in which the value of heritage attributes is assessed in relation to statutory designations, and priorities or recommendations set out in national research agendas, and ascribed values. Professional judgement is then used to determine the importance of the resource. The heritage assets which might be affected by the Proposed Development are valued and the impact on them is assessed in order to give a significance of effect. Historic England Guidance has also informed this assessment.

5.41 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.

5.42 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. Due to the recent completion of high-rise towers to the south of the Site (including Axis, Deansgate Square residential towers and Crown Street developments), the townscape character has become demonstrably changed since 2017, and is now largely characterised by buildings of considerable height and scale.

5.43 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. Please refer to Table 3.6 in Section 3 of this Report for relevant methodology matrix.



Figure 5.1 – Zone of Visual Influence

5.44 The ZVI (see Appendix 6, and figure 5.1 above) has demonstrated that in the operational phases of the Proposed Development there is potential for indirect permanent visual impact on the wider historic environment including heritage assets outside of the 500m study area.

5.45 Upon review of the initial ZVI study and when considered against committed developments in the wider area, it will be evident the Proposed Development may incur some **significant effects** upon the settings of nearby Listed Buildings and Conservation Areas. As such, it is recommended that built heritage be **scoped in** for assessment.

Scenario Assessment

5.46 For the purposes of this EIA Scoping report, Scenario 1 will be the 'baseline' from which the subsequent scenarios are to be tested. The perceived impact of Scenarios 3 and 3a, 5 and 5a, are to be scoped out from further assessment, as it is considered this developed would incur limited to no additional visual and physical impact upon the built historic environment by virtue of its siting and scale.

Scenario 1 (baseline) – discussion

5.47 In September 2023, an additional Site Visit was undertaken. This visit enabled a better understanding of the baseline conditions, from which it is evident that Viadux – Phase 1 is

underway and nearing completion. The consented office development, which formed part of the 2017 consent was never implemented. The Phase 2c plot within the Site remains vacant (Scenario 1).

5.48 As the principal adverse heritage impact derived from the positioning of the 40 storey residential tower (now nearing completion), it is considered the conclusion of Moderate-**Major Adverse** (i.e. significant) effect on the Grade II* listed Manchester Central complex (construction and operational) remains unchanged. The consented 15-storey office building (Plot 2b), together with Viadux Phase 1, created a cumulatively harmful effect on the setting of Manchester Central. The approved development on Plot 2c (11-storey office) was considered to have limited impact upon the built historic environment.

5.49 The following scenarios will be tested against scenario 1 as the baseline. The alternative scenario baseline is referenced within the Heritage Statement conclusions where relevant.

Scenario 2

5.50 The construction of Viadux Phase 2a and b will result in considerably greater visual change, especially when compared to the existing baseline (Scenario 1). Whilst it is recognised that the townscape character has changed dramatically in recent years, and it is further understood that Scenario 2 is proposing less intervention to the Grade II listed Castlefield Viaduct, the additional height and scale proposed would likely incur greater impact upon the settings of nearby listed buildings and Conservation Areas in the wider townscape.

5.51 It is therefore considered that Scenario 2 has potential to give rise to some **significant (indirect) effects** and non-significant (direct) effects upon the built historic environment. This is to be tested in the ensuing Heritage Statement and ES Chapter.

Scenario 2a

5.52 In line with the assessment of Scenario 2, Phase 2a and b would likely give rise to some **significant (indirect) effects** and non-significant (direct) effects upon the built historic environment. This is to be tested in the ensuing Heritage Statement and ES Chapter.

5.53 The cumulative impact of committed developments within the area around the Site may result in greater, negative change or conversely, provide some mitigation through appropriate positioning and enhancement of townscape character. This cumulative change is to be assessed in the ensuing Heritage Statement and ES Chapter.

Scenario 3

5.54 The construction of Viadux Phase 2a and b is likely to give rise to **significant (indirect) effects** on the built historic environment. This impact will be further compounded by the construction of Viadux Phase 2c, which will have both an indirect and a potentially direct impact upon the Grade II listed Castlefield Viaduct.

Scenario 3a

5.55 The construction of Viadux Phase 2a and b is likely to give rise to **significant (indirect) effects** on the built historic environment. This impact will be further compounded by the cumulative development in the immediate area, including that of Viadux Phase 2c, which will have both an indirect and a potentially direct impact upon the Grade II listed Castlefield Viaduct.

Limitations and Assumptions

5.56 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.

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

Air Quality

Consultation

5.58 No consultation with relevant technical air quality specialists within Manchester City Council (MCC) or other statutory consultees has been undertaken to date.

Baseline Assessment

Relevant legislation, regulations, and policy

5.59 There are two sets of air quality legislation which include ambient air quality thresholds for the protection of public health that apply in England. These include legally binding limit values originally set by the European Union (EU) Directive 2008/50/EC[24] on ambient air quality and cleaner air for Europe; and regulations implementing national air quality objectives as set out in the revised 2023 Air Quality Strategy for England (AQS)[25] which local authorities are required to work towards achieving.

5.60 The EU (Withdrawal Agreement) Act 2020 sets out arrangement for implementing air quality limit values that are included in the EU Directive on ambient air quality and cleaner air for Europe (2008/50/EC) included in the following:

- Air Quality Regulations (SI 2010 No.1001)[26] and amended (SI 2016 No.1184)[27];
- The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (SI 2019 74)[28];
- The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (SI 2020 1313)[29] amend the Air Quality Regulations (SI 2010 No.1001) to account for EU withdrawal; and
- The AQS objectives are implemented in the Air Quality (England) Regulations 2000 (SI 2000/928)[30] and Air Quality (England) (Amendment) Regulations 2002 (SI 2002/3043)[31].

[24] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe Available at: https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0050
[25] https://www.gov.uk/government/publications/the-air-quality-strategy-for-england
[26] The National Archives. "The Air Quality Standards Regulations 2010". Available at: http://www.legislation.gov.uk/uksi/2010/1001/contents/made
[27] The National Archives (2016). "The Air Quality Standards (Amendment) Regulations 2016". Available at: https://www.legislation.gov.uk/uksi/2016/1184/contents/made
[28] The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 (legislation.gov.uk). Available at: https://www.legislation.gov.uk/uksi/2019/74/contents/made
[29] The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (legislation.gov.uk). Available at: https://www.legislation.gov.uk/uksi/2020/1313/contents/made
[30] The National Archives. "The Air Quality (England) Regulations 2000". Available at: http://www.legislation.gov.uk/uksi/2000/928/contents/made
[31] The National Archives. "The Air Quality (England) (Amended) Regulations 2002". Available at: http://www.legislation.gov.uk/uksi/2002/3043/contents

5.61 The 2023 AQS sets out the government's policies and framework for improving air quality in England with the aim of meeting the requirements of above legislation. The Air Quality Strategy also outlines the Limit Values, Target Values, Standards, Objectives, Critical Levels and Exposure Reduction Targets for the protection of human health and the environment (collectively termed Air Quality Assessment Levels (AQALs) throughout this report). The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[32] also brought forward a new target level for $PM_{2.5}$. Those relevant to this assessment is provided below:

Pollutant	Averaging Period	AQALs	
Nitrogen Dioxide (NO_2)	1 Hour Mean	200 µg/m^3	Not to be exceeded more than 18 times in a year
	Annual Mean	40 µg/m^3	-
Particulate Matter (PM_{10})	24 Hour Mean	50 µg/m^3	Not to be exceeded more than 35 times in a year
	Annual Mean	40 µg/m^3	-
Particulate Matter ($PM_{2.5}$)	Annual Mean (current)	20 µg/m^3	-
	Annual Mean (target)	10 µg/m^3	To be achieved in England by 2040
	-	Population Exposure Reduction Target ('exposure target')	35% reduction in population exposure by 2040 (compared to a base year of 2018)

5.62 Obligations under the Environment Act 2021[33] (which provides an amendment to the Environment Act 1995[34]) requires local authorities to review and assess air quality in their administrative boundaries. Where AQALs are predicted to be exceeded, the local authority must declare an Air Quality Management Area (AQMA) at sensitive receptor locations and formulate an Air Quality Action Plan (AQAP) to reduce pollution concentrations to values below AQALs.

Data sources

5.63 The baseline air quality conditions in the vicinity of the Site have been established through a desk-based review of appropriately sourced modelled and monitored air quality data, including:

- Data from the National Atmospheric Emissions Inventory (NAEI)[35], Environment Agency (EA)[36] and Defra's Pollutant Release and Transfer Register (PRTR)[37] data;
- Defra's modelled background concentrations of AQS pollutants (UK-AIR)[38];

[32] https://www.legislation.gov.uk/uksi/2023/96/contents/made
[33] UK Legislation (2021) Environment Act 2021, UK Public General Acts, https://bills.parliament.uk/bills/2593/publications
[34] UK Legislation (1995) Environment Act 1995, UK Public General Acts https://www.legislation.gov.uk/ukpga/1995/25/contents
[35] NAEI https://naei.beis.gov.uk/data/map-large-source
[36] Environment Agency https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory
[37] UK Pollutant Release and Transfer Register (PRTR) https://prtr.defra.gov.uk/map-search
[38] UK-AIR, "Background Mapping Data for Local Authorities - 2018," n.d., https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

- Local authority monitoring data from MCC, derived from their latest available air quality status report (which contains monitoring data up to the year 2020)[39], and

- Multi-Agency Graphic Information for the Countryside (MAGIC)[40] and Air Pollution Information Services (APIS)[41] for details on relevant ecological sites.

Local pollution sources and receptors

- The Site is located with the Greater Manchester Combined Authority (GMCA) AQMA, which covers a large area across all council areas within the GMCA administrative area. Specifically, within Manchester, the AQMA covers Manchester City Centre, the area around Manchester Airport and the main arterial traffic routes in the city. The AQMA was declared for exceedances of the annual mean NO_2 AQAL;

- The Site will be located within the proposed Greater Manchester Clean Air Zone (CAZ). While the proposed charging CAZ did not go ahead as planned, there are proposals due for a non-charging investment-led Clean Air Plan. Public consultation on these proposals is due to take place in 2023. In relation to the GM Air Quality Plan, there are 'over legal limit' road links in the vicinity of the Site (including Great Bridgewater Street to the north). Therefore, the Proposed Development should ensure that compliance is not worsened as a result of changes in emissions;

- The main source of pollution within proximity to the Sites assessed to be generated from road transport and the predominant source of air pollution affecting ambient air quality at the Site is considered to be emissions associated with vehicles travelling on Great Bridgewater Street to the north, Whitworth Street West to the south, Albion Street to the east and Deansgate to the west;

- There are a number of railway lines in proximity to the Site, which have been screened against Defra's LAQM.TG(22) for potential air quality impacts. The Manchester Piccadilly to Manchester Deansgate line is listed in Defra's table of 'Rail Lines with a Heavy Traffic of Diesel Passenger Trains'. However, the closest point of the track to the Site is approximately 80m, which is well beyond the 30m screening distance. In addition, lines closer to the track are understood to be associated with the Manchester Metrolink, which is electrified. Therefore, railway emissions are not considered to be a significant source of local pollution and do not require further assessment;

- No industrial point sources within 1km of the Site have been identified which would have a significant impact on local air quality at the Site; and,

- No ecological receptors have been identified within 1km of the Site.

Background Air Quality Data

5.64 Defra's UK-AIR background concentrations for the grid square within which the Site is located (x383500, y397500) are shown in the table below. Data are presented for 2019

[39] https://www.manchester.gov.uk/download/downloads/id/28108/greater_manchester_2020_air_quality_annual_status_report.pdf
[40] Magic Map Application (defra.gov.uk) https://magic.defra.gov.uk/MagicMap.aspx
[41] Air Pollution Information Services http://www.apis.ac.uk/

(pre-Covid baseline) and 2023 (current base year). All predicted background concentrations are below the relevant AQALs.

Pollutant	AQAL (µg/m^3)	Annual Mean Concentration (µg/m^3)	
		2019	2023
NO_2	40	26.1	22.1
PM_{10}	40	13.4	12.8
$PM_{2.5}$	20	8.7	8.2

5.65 Concentrations of all pollutants have been modelled to decline incrementally each year. This declining trend is modelled to continue beyond 2023 due to the forecast effect of the roll out of cleaner vehicles and strategies within the UK to reduce emissions across all sectors.

Local Monitoring Data

5.66 MCC undertake air quality monitoring across their administrative area. Recent monitoring data for locations closest to the Site (within <1km) are presented in the table below.

Site ID	**Site Type**	**Distance from Site (km)**	**Annual Mean NO_2 Concentrations (µg/m^3)**			
			2017	**2018**	**2019**	**2020**
MA77NO – Hewitt Street	Urban Background	0.1	38.8	**41.0**	**43.7**	26.9
MA29ANO – Oxford Street	Roadside	0.5	**57.7**	**58.8**	**55.4**	39.0
MA24NO – Princess Street	Kerbside	0.5	**44.7**	**40.3**	**40.8**	26.8
MA84NO – Oxford Road	Roadside	0.7	**56.2**	**54.0**	**52.0**	33.9
MA97NO – Chester Road	Roadside	0.8	-	-	32.3	23.4
Bold denotes exceedance of the annual mean AQAL for NO_2						

5.67 The monitoring data reported above show that there have been exceedances of the annual mean NO_2 AQAL in proximity to the Site in recent years. Therefore, small changes are more likely to result in significant effects as a result.

5.68 The monitoring locations are considered suitable for the purposes of dispersion model verification and are considered representative of the potential operational phase study area. Accordingly, it is proposed that no additional monitoring will be undertaken to inform the baseline assessment.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Ecological impacts	**Applicable Development Phase (C / O)**	C and O	**Receptor**	High sensitivity ecological receptors located within 500m of the Site
Discussion of Effect					
No high sensitivity ecological receptors have been identified in proximity to the Site that would reasonably be at risk of adverse effects from changes in construction phase and operational phase emissions.					
Mitigation Committed to in order to Avoid or Reduce Effect					
N/A					
Concluding Statement					
On this basis, air quality impacts and effects and ecological receptors will be scoped out of the assessment.					

Effect	Operational Phase Dust	**Applicable Development Phase (C / O)**	O	**Receptor**	High sensitivity human receptors located within 500m of the Site
Discussion of Effect					
The Proposed Development will not introduce any sources of operational dust emissions and there are no existing dust generating activities within the Site vicinity. As such, significant effects from operational dust emissions are considered unlikely.					
Mitigation Committed to in order to Avoid or Reduce Effect					
N/A					
Concluding Statement					
On this basis, operational dust will be scoped out of the assessment.					

Effect	Operational Phase Odour	**Applicable Development Phase (C / O)**	O	**Receptor**	High sensitivity human receptors located within 500m of the Site

Discussion of Effect
The Proposed Development is not expected to introduce any significant sources of odour. As such, significant effects from odour are considered unlikely.
Mitigation Committed to in order to Avoid or Reduce Effect
N/A
Concluding Statement
On this basis, odour will be scoped out of the assessment.

Identification of Effect/s which are Likely to be Significant

5.69 The likely significant air quality effects to be considered within the ES are as follows:

- Disturbance and nuisance from dust and particulate matter (PM_{10}) generated during the construction phase (including materials handling and movement);
- Changes in pollutant concentrations and potential adverse/beneficial impacts as a result of traffic related emissions generated by the construction and operational phases of the development, and
- Changes in pollutant concentrations and associated reduction in local air quality as a result of combustion plant related emissions (e.g., back-up generators, CHP, gas boilers etc).

5.70 All such effects will be considered for the Proposed Development in isolation and, insofar as information exists, for the Proposed Development together with relevant Cumulative Schemes.

Effect	Receptor	Applicable Development Phase (C / O)
Construction Phase Dust Emissions - Disturbance and nuisance from dust and particulate matter (PM_{10}) generated during the Construction Phase.	High and Medium sensitivity human receptors located within 500m of Construction Works.	C
Operational Phase Road Traffic Emissions - Increases in pollutant concentrations and associated reduction in local air quality as a result of traffic related emissions generated by the Operational Phase of the Proposed Development;	High sensitivity human receptors in proximity to the affected road network within the operational phase study area.	O
Operational Phase Point Source Emissions - Increases in pollutant concentrations and associated reduction in local air quality as a	High sensitivity human receptors within the operational phase study area.	O

result of combustion plant related emissions (e.g., back-up generators, CHP, gas boilers etc).		

Assessment Methodology for Likely Significant Effects

Guidance

5.71 The air quality assessment reported in the ES will be undertaken in accordance with the following guidance:

- Defra's Local Air Quality Management Technical Guidance (LAQM.TG (22)[42];
- MCC's Air Quality & Planning Technical Guidance (2022)[43];
- Environmental Protection UK (EPUK) & IAQM Land-use Planning & Development Control: Planning for Air Quality[44];
- Institute of Air Quality Management's (IAQM) guidance on the assessment of dust from demolition and construction[45]; and
- DMRB LA105 (2019)[46].

Construction Phase assessment methodology

5.72 There is the potential for fugitive dust emissions to occur as a result of construction phase activities (e.g., Demolition, Earthworks, Construction and Trackout). Therefore, a construction dust risk assessment will be prepared as part of the ES in accordance with the methodology outlined within the latest IAQM guidance

5.73 In accordance with this guidance, where relevant, multiple screening assessments may be completed for different development phases (e.g., Viadux Phase 2a, Phase 2b and Phase 2c).

5.74 The assessment approach classifies the risk posed by construction phase activities on the basis of the scale, duration and nature of the activities, and the sensitivity and proximity of dust-sensitive receptors.

5.75 Activities on construction sites with the potential to generate dust and particulate emissions can be categorised into four types of activities, which will then be assessed separately:

- Demolition – any activities associated with the removal of existing structures on site;
- Earthworks – includes the processes of soil-stripping, ground-levelling, excavation and landscaping;

[42] https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf
[43] https://www.manchester.gov.uk/downloads/download/5199/environmental_and_public_protection_information_for_developers
[44] https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf
[45] https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-dust-2023-BG-v6-amendments.pdf
[46] https://www.standardsforhighways.co.uk/tses/attachments/10191621-07df-44a3-892e-c1d5c7a28d90?inline=true

- Construction – any activities relating to the provision of new structures on site; and
- Trackout – the transport of dust and dirt from the construction site onto the public road network where it may be deposited and re-suspended by traffic using the network.

5.76 Based on the potential risks identified, appropriate mitigation measures and best practice methods will be recommended based on IAQM guidance, for inclusion within a Construction Environmental Management Plan (CEMP), which is an example of tertiary mitigation.

5.77 Construction related traffic will be screened against the IAQM's threshold criteria for detailed assessment (i.e., >100 HDV per day). Where traffic movements exceed this threshold, detailed modelling of construction traffic emissions will also be included using the methodology outlined below for the completed and operational development.

Operational Phase assessment methodology

Traffic Emissions

5.78 The scope of assessment will be determined against the EPUK and IAQM's two stage checklist criteria. The Stage 1 Criteria identifies whether a development requires an air quality assessment. Based on the scale of the Proposed Development, it is determined that consideration of Stage 2 is required.

5.79 Stage 2 includes some criteria which are not directly relevant to the Proposed Development, such as those related to the realignment of roads within an AQMA, introduction of a new bus station, new road junctions and underground car parks. These have been excluded from the assessment and only relevant screening criteria has been included in the table below. The relevant checklist criteria shown in the table below identifies whether a detailed assessment of operational phase air quality impacts is required.

Criteria	The Development will:	Indicative Criteria to Proceed to a Detailed AQA:
1	Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV - cars and small vans <3.5t gross vehicle weight)	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere.
2	Cause a significant change in Heavy Duty (HDV) flows on local roads with relevant receptors (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
3	Have one of more substantial combustion processes, where	Typically, any combustion plant where the single or combined NO_x emission rate is less than 5mg/sec is unlikely to give rise to impacts, provided that the

Criteria	The Development will:	Indicative Criteria to Proceed to a Detailed AQA:
	there is a risk of impacts at relevant receptors (A)	emissions are released from a vent stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situation where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emissions rates.
(A)This includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping		

5.80 Should the Proposed Development exceed the above criteria, a detailed air quality modelling assessment will be undertaken following the approach outlined below. It should be noted that the criteria above will be tested for both the Proposed Development in isolation, and in combination with relevant Cumulative Schemes.

5.81 Changes in emissions from operational phase of the Proposed Development will be quantified and assessed for adverse and beneficial impacts, and to assess the risk of exceedances of the AQALs for NO_2, PM_{10} and $PM_{2.5}$ using the latest version of ADMS-Urban (version 5.1). This modelling software has been validated and approved by Defra for use as an appropriate assessment tool for calculating the dispersion of pollutants from traffic on UK roads. Emission rates used for the dispersion modelling assessment will be calculated from the latest Emissions Factor Toolkit (v.11).

5.82 The following scenarios will be tested within the air quality assessment:

- Model Verification;
    - Based on the availability of current baseline information, a pre-Covid 2019 baseline scenario will be assessed for the purposes of model verification. Should 2022 or 2023 baseline information be published by MCC, then this base year will be considered for model verification;
- Scenario 1: “Future Base Year”;
    - Site as is today i.e., Phase 1 tower as built with the various amendments, noting the office scheme which forms part of Phase 1 consent not built out and Phase 3 (which originally formed part of the Beetham Tower consent) is vacant;
- Scenario 2: “Do Something 1”;
    - Scenario 1 + Viadux Plot 2a + Viadux Plot 2b;
- Scenario 3: “Do Something 2”;
    - Scenario 1 + Viadux Plot 2a + Viadux Plot 2b + Viadux Plot 2c;

- Scenario 3a: "Do Maximum";
    - Scenario 1 + Viadux Plot 2a + Viadux Plot 2b + Viadux Plot 2c + Cumulative.

5.83 It should be noted that Scenario 3a has been selected as the 'Do Maximum' scenario and will include worst-case completed opening year traffic data associated with Plots 2a, 2b and 2c and any relevant committed developments in the area. In order to ensure that this is a worst-case robust scenario assessment, emission factors and background concentrations utilised within Scenario 3a will reflect those that would have been utilised in Scenario 2a and assume no improvements upon Pot 2a and 2b opening year. This removes the requirement to assessment Scenario 3a as an individual cumulative impact assessment scenario.

5.84 Traffic data used in the modelling will be provided by the project transport consultant and meteorological data will be derived from the closest regionally representative station (considered to be Manchester Airport).

5.85 The operational phase study area will be determined by the extent of changes in traffic flows which trigger the EPUK & IAQM stage 2 screening thresholds which is not currently known. Within this study area, modelling will be undertaken at worst-case high-sensitivity human receptor locations (e.g., residential properties, schools and hospitals) located within 200m of roads which could reasonably see an increase in traffic above relevant EPUK & IAQM threshold criteria as a result of the Proposed Development ('the affected road network (ARN)').

5.86 In addition, a verification study will be undertaken in accordance with LAQM.TG (22) using the latest available baseline air quality monitoring data within the operational phase study area.

Plant Emissions

5.87 Should the Proposed Development include an energy centre, CHP, or any other form of combustion processes for energy / heating / hot water, plant emissions may require consideration in the air quality assessment. The plant emissions will be screened against the EPUK & IAQM criteria; whereby the single or combined NO_x emission rate is more than 5mg/sec. Where emissions exceed this criterion, a detailed assessment through dispersion modelling will also be undertaken.

Damage Costs

5.88 MCC's Air Quality technical guidance recommends the application of the damage cost approach for major developments. As such, damage cost calculation will be undertaken to determine the indicative value of mitigation measures required to offset any change in emissions associated with the Proposed Development.

5.89 Changes in pollutant emissions (NO_X and $PM_{2.5}$) caused by the Proposed Development over a 5-year appraisal period will be estimated using development traffic data and EFT v.11. The latest version of Defra's Air Quality Appraisal: Damage Costs Toolkit[47] will be used to apply the 'damage costs', which are a set of impact values, defined per tonne of emission by pollutant, to the change in emissions. The result will be an indicative monetary value to be

[47] https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance

allocated for secondary mitigation measures to reduce incremental worsening in local ambient air quality from new development, including cumulative impacts.

Magnitude of Impact and Significance of Effect criteria

5.90 As previously noted, the likely significant effects of the Proposed Development together with relevant Cumulative Schemes will be assessed insofar as relevant information exists. Accordingly, the below methodologies will be applied to the assessment of likely significant cumulative effects, where possible.

Construction Phase

5.91 The construction phase assessment is undertaken pre-mitigation to determine the risk of impacts and requirements for mitigation. IAQM recommends that significance is only assigned to the effect after considering the construction activity with mitigation.

5.92 For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation.

5.93 Implementation of proportionate tertiary mitigation to control dust release during construction phase works will, in most cases, reduce the risk of impacts to negligible, and therefore will result in an environment effect which is unlikely to be significant.

Operational Phase

5.94 The magnitude of operational phase impacts will be determined using the following matrix, derived from EPUK & IAQM guidance. For consistency with the terminology proposed to be used throughout the ES when discussing impact magnitude, the following changes have been made:

- Slight = Minor, and
- Substantial = Major

5.95 Note that the matrix can be applied to both adverse and beneficial impacts:

Long term average concentrations at receptor in assessment year	% Change in concentration relative to AQAL			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Minor	Moderate
76-94% of AQAL	Negligible	Minor	Moderate	Moderate
95-102% of AQAL	Minor	Moderate	Moderate	Major
103-109% of AQAL	Moderate	Moderate	Major	Major
110% or more of AQAL	Moderate	Major	Major	Major

5.96 The assessment of likely significant effects at sensitive receptors will consider the sensitivity of the receptor (on a scale of High, Medium and Low) and the magnitude of change (on a scale of Major, Moderate and Minor) to determine the level of effect (on a scale of major, moderate, minor and negligible).

5.97 Negligible impacts will be described as Not Significant effects and Moderate and Substantial impacts will be described as Significant effects. Where impacts are determined as Slight, professional judgement will be used to determine significance of effect based on considerations such as the approximate number of receptors and their sensitivity exposed to impacts of this severity, in addition to whether concentrations are assessed to exceed relevant AQALs, and if mitigation measures can be adopted to reduce the magnitude of impact.

5.98 Where significant effects are identified, appropriate mitigation measures will be recommended, in accordance with the damage cost approach in line with MCC's Air Quality technical guidance.

Limitations and Assumptions

5.99 Dispersion modelling inherently contains the following limitations:

- Model uncertainty – due to model formulations;
- Data uncertainty – due to assumptions in the input data, including traffic data, emissions estimates and meteorology; and
- Variability – randomness of measurements used.

5.100 It is not possible to remove all uncertainty from dispersion modelling. As such, Root Mean Square Error (RMSE) can be calculated to define the average error or uncertainty of the model. According to LAQM.TG(22), the RMSE is acceptable where it is within 25% of the respective AQAL. The model verification process will calculate the RMSE value and make necessary adjustments where the RMSE is outside the acceptable range of uncertainty.

5.101 Unless otherwise specified, all distances relate to the shortest distance between two described points. For example, the distance between the Site and the feature of interest is presented as the linear ("as the crow flies") distance between the closest points on their respective boundaries.

5.102 It is recognised that the baseline assessment does not list all relevant receptors which will be assessed for the construction phase and operational phase air quality assessments. However, the methodology section includes details of the parameters which will be applied to identify relevant receptors for inclusion in the air quality assessment.

Noise and Vibration

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
-	-	-	None

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
2023 Noise Survey	Jameson Acoustics survey to establishing currently prevailing environmental noise levels in/around the Site by means of continuous noise monitoring over a 7-day period.	8 September 2023
2017 EIA Vibration Survey Data	Fisher Acoustics vibration survey data from tram passbys. This data will be referenced in a verification exercise of our own vibration survey readings.	Pre 2017

Baseline

5.103 The main noise and vibration sources impacting and surrounding the Site broadly consist of the following:

- PLots 2a and 2c (noise) – road traffic on Albion Street and Great Bridgewater Street to the east and north respectively, as well as tram movements on elevated rail lines running in between Plots 2a and 2c. Plot 2a (residential tower) may also be impacted by nightlife noise from the operation of nearby bars and clubs, including Deansgate Locks to the south and The Britons Protection to the east. Noise from 'high noise generating' events held at the MCCC may also be a factor. Vehicle access to the MCCC service yard is via a ramp off Albion Street and through the Phase 1 site. Vehicle movements on this access road may also be influential.
- Plot 2b (noise) – road traffic on Great Bridgewater Street and Deansgate to the north and west respectively, as well as tram movements through Deansgate-Castlefield tram station to the south. Service vehicle movements and loading/unloading activities on Trafford Street (serving the Hilton Hotel at Beetham Tower) may be influential.
- Plots 2a and 2c (vibration) – vibration and subsequent re-radiated noise induced by tram movements over the steel bridge across Great Bridgewater Street to the east.

'High' sensitivity receptors would include hotel/residential properties and the Manchester Central Convention Complex. Office receptors would be of a 'moderate' sensitivity. The most notable noise/vibration sensitive properties surrounding the Site include the Beetham Tower (hotel/residential) to the west, Vision Tower (residential, in construction – future receptor) to the south, Axis Tower (residential) to the south, the Leonardo Hotel Manchester Central (hotel) to the east, the MCCC (conference & events facility) to the north, and Viadux Phase 1 (residential, in construction – future receptor) in between Plot 2a and Plot 2b. The Plot 2a and 2b developments will be future noise/vibration sensitive receptors.

5.104 The noise and vibration assessments shall consider the 'Existing Baseline', as defined in Section 3

Scope of Assessment

Identification of Effect/s which are Not Significant

N/A

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Noise impacts from construction, including temporary addition to traffic flows on local roads (construction traffic), breaking out of existing structures, and construction of proposed development	All named existing receptors, and possibly future receptors too depending on overlap of construction programme & occupation	C
Vibration impacts from construction, primarily with piling activities	All named existing receptors, and possibly future receptors too depending on overlap of construction programme & occupation	C
Effects of changes in traffic flows on surrounding roads on noise levels	All existing receptors	O
Achieving acceptable noise levels within proposed dwellings, outdoor living spaces and office accommodation	Plots 2a and 2b	O
Tram-induced vibration and subsequent re-radiated noise levels within proposed dwellings and office accommodation	Plots 2a and 2b	
Noise emissions from proposed items of external plant (building services)	All existing & future receptors	O
Noise breakout from the operation of proposed commercial units and amenity spaces	All existing & future receptors	O
Noise transfer from the operation of proposed commercial units and	Plots 2a and 2b	O

amenity spaces to any structurally connected receptors		

Assessment Methodology for Likely Significant Effects

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

1. Review all relevant planning policies, regulations, industry standards and good practice design guides, including (but not limited to):
   a) The National Planning Policy Framework (NPPF), 2021
   b) The Noise Policy Statement for England (NPSE), 2010
   c) Planning Practice Guidance: Noise (PPGN), 2019
   d) Manchester City Council, Planning and Noise Technical Guidance, Oct 2022
   e) ProPG: Planning & Noise: Professional Practice Guidance on Planning & Noise, 2017
   f) Building Regulations Approved Document O (ADO): Overheating, 2022
   g) British Standard (BS) 7445: 2003 Description and Measurement of Environmental Noise
   h) BS 5228-1: 2009+A1: 2014 Code of practice for noise and vibration control on construction and open sites – Noise
   i) BS 5228-2: 2009+A1: 2014 Code of practice for noise and vibration control on construction and open sites – Vibration
   j) BS 6472-1: 2008 Guide to evaluation of human exposure to vibration in buildings: Vibration sources other than blasting
   k) BS 7385: 1990 Evaluation and measurement of vibration in buildings
   l) BS 8233: 2014 Sound insulation and noise reduction for buildings
   m) World Health Organisation, European noise guidelines, 2018
   n) The Highways Agency, Design Manual for Roads and Bridges (DMRB) Volume 11 Part 3 Section 7, 2011
   o) BS 4142: 2014 Methods for rating and assessing industrial & commercial sound
2. If/where necessary, consult with Manchester City Council Environmental Health Team to agree assessment methods, criteria and/or receptors.
3. Carry out a comprehensive baseline noise survey of the Site. This shall comprise automated noise monitoring over representative periods not less than 5 days (encompassing a weekend) at a sufficient number of locations to gain a full understanding of all principle noise sources around the Site. This shall be supported by additional manned noise level measurements where necessary (e.g. nightlife/event noise impacts).
4. Carry out manned vibration level measurements of individual tram-passbys. This shall be conducted at various positions across the Site, at positions representative of building locations and foundation piling positions. Measurements may also be taken within the Viadux 1 super-structure, to obtain representative transfer functions for ground to building assessments (i.e. building amplification factors).
5. Assess the spread of environmental and other specific (e.g. nightlife) noise levels across the Proposed Development's facades and to outdoor living spaces using noise modelling software. The model shall be calibrated using the aforementioned

noise survey readings. The model shall inform an assessment of noise intrusion to residential/office accommodation against MCC/BS 8233/WHO guidelines for determining façade sound insulation requirements.

6. Assess vibration and subsequent re-radiated noise levels from tram movements within the Proposed Development. Vibration levels shall be assessed in terms of Vibration Dose Values (VDV) to BS 6472. Re-radiated noise levels shall be calculated using in-house software and based on sub- and super-structure design information provided by the structural engineers.
7. Collate data relating to the expected changes in traffic flows on surrounding roads and subsequently assess the effects on noise levels (adverse or beneficial) on all relevant noise sensitive receptors. The assessment shall use DMRB calculation methods based on changes to flow rates and % changes to HGV traffic.
8. Consider plant noise emissions in accordance with BS 4142 and set limits in accordance with Manchester City Council's Technical Guidance document. Consideration will be given to the location, size and proposed mechanical plant of designated external building services compounds. Compliance with the proposed limits would result in Negligible impact.
9. Assess noise breakout and transfer from the operation of commercial units and amenity spaces (e.g. gyms, private cinemas). The sound insulation properties of proposed construction shall be considered and used, in conjunction with operational noise limits set in accordance with Manchester City Council's Technical Guidance document, to calculate maximum operational noise limits for all commercial/amenity spaces. Compliance with the proposed limits would result in Negligible impact.
10. Assess construction noise effects in accordance with BS 5228-1. Each phase of works will be assessed separately, considering published source noise data for all likely plant/machinery to be used. Corrections shall be applied for the number of plant items, on-times, distance/screening corrections, etc.. The typical case and worst-case 10-hour working day L_{Aeq} noise level shall be determined for each phase at all agreed noise sensitive receptors, pre- and post-mitigation. The significance of construction noise shall be evaluated using the BS 5228 'ABC method', which determines appropriate construction noise limits depending on site context and baseline noise conditions.
11. Assess risks associated with construction vibration in accordance with BS 5228-2 during piling. Consideration will be given to proposed methods of piling (e.g. CFA) and source data published in BS 5228. Vibration levels vary significantly from site-to-site and therefore prediction methods are limited in accuracy. However, n accordance with BS 5228, the risks of vibration causing building damage to off-site receptors are expected to be low and therefore insignificant (or Negligible) subject to review.

5.106 The assessment will consider Scenario 3a in which the full scheme (Phase 2a,2b, 2c and cumulative) is assessed against the existing baseline (Scenario 1).

Limitations and Assumptions

5.107 The precise methods and plant used for construction are not known and, therefore, our assessment shall draw upon source noise/vibration data from BS 5228. For vibration, the dispersion of vibration varies significantly from site-to-site due to variations in ground/soil make ups and therefore calculation procedures are limited in accuracy. Published data in

BS 5228-2 or by manufacturers that are most relevant to this site shall be considered and used to evaluate risks. However, in accordance with BS 5228, these risks are likely to be low and therefore insignificant (or Negligible) subject to review.

5.108 The noise modelling software used industry recognised standards for calculating the radiation of noise sources, including DMRB, CRN, BS 5228 and ISO 9613. However, the software cannot accurately account for variations in noise levels due to changes in meteorological conditions. As is standard for all noise mapping software used for this purpose, the model shall consider 'neutral' meteorological conditions.

Daylight/Sunlight/Overshadowing

Consultation

5.109 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.

5.110 Discussions on daylight and sunlight 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 residential and hotel sensitive receptors surrounding the Site	Site visit and review of council tax records	September 2023
Identification of external amenity space sensitive receptors surrounding the Site	Site visit and review of Proposed Development and aerial photography	September 2023
Location of floor plans for the sensitive receptors	Review of MCC planning portal, leases and online marketing details	In Progress

Baseline

Daylight & Sunlight

5.111 The BRE Guidelines[48] suggest that residential properties have the highest requirement for daylight and sunlight and states that:

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

5.112 The scope of entirely residential properties, properties that contain an element of residential accommodation or hotels being of a transient residential nature (sensitive receptors) that will be assessed has been determined through professional judgement, considering their orientation and proximity to the Site.

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

5.113 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).

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

Plan Reference	Property Address	Use
1	Great Northern Tower	Residential
2	Radisson Blu Edwardian	Hotel
3	Midland Hotel, 16 Peter Street	Hotel
4	Chepstow House	Residential
5	Axis Tower	Residential
6	50 Great Bridgewater Street	Pub & Residential
7	Jurys Inn Manchester	Hotel
8	80 Great Bridgewater Street	Pub & Residential
9	84 Great Bridgewaer Street	Residential
10	35 Whitworth Street	Residential
11	The Hacienda	Residential
12	2 Tony Wilson Place 1 First Street Junk Yard Golf Club 8 First Street	Hotel & commercial
13	The Nile	Residential
14	30 City Road East	Residential
15	Lumierie Building	Residential
16	The Rhine	Residential
17	The Danube	Residential
18	Hill Quays	Residential
19	The Ropeworks 35 Little Peter Street	Residential
20	14 Albion Street	Pub & Resi
21	10-12 Whitworth Street	Residential
22	The Ropeworks, 33 Little Peter Street	Residential
23	12 Hewitt Street 21 Little Peter Street	Commercial & Resi
24	8-10 Hewitt Street 21 Little Peter Street	Commercial & Resi
25	10A Little Peter Street & 1 Constance Streert	Commercial & Resi
26	Riverside Mews	Commercial & Resi
27	357-361 Deansgate	Commercial & Resi
28	2 Hewitt Street 355 Deansgate	Commercial & Resi
29	382-386 Deansgate	Residential
30	Deansgate Locks 325-327 Deansgate	Commercial & Apart Hotel (UC)

Plan Reference	Property Address	Use
31	321 Deansgate	Pub & Resi
32	Beetham Tower	Hotel & Resi
33	2 Southern Street 13-25 Liverpool Road	Commercial & Resi
34	White Lion, 43 Liverpool Road	Pub & Resi
35	Oxnoble Inn, 71 Liverpool Road	Pub & Resi
36	Westpoint, 3-9 Duke Street	Residential
37	14 Stone Street	Residential
38	12 Stone Street	Residential
39	10 Stone Street	Residential
40	8 Stone Stree	Residential
41	6 Stone Street	Residential
42	7 Collier Street	Residential
43	4 Barton Street	Residential
44	6-12 Barton Street	Residential
45	3 Barton Street	Residential
46	9 Barton Street	Residential
47	8 BridgewaterStreet	Residential
48	20 Southern Street	Residential
49	14 Southern Street	Residential
50	12 Southern Street	Residential
51	10 Southern Street	Residential
52	8 Southern Street	Residential

5.115 The location of the above sensitive receptors relative to the Site can be seen in Figure 5.1.

Figure 5.1: Sensitive Receptors



Overshadowing

5.116 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).

Scope of Assessment

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 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 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 will not be assessed.

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 Scheme on daylight and sunlight to surrounding properties 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 Scheme, 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. Therefore, reduced daylight and sunlight amenity within the surrounding residential receptors 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 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 surrounding residential receptors during demolition and construction phase will not be assessed.					

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.					
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 will not be assessed.					

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Reduction in daylight amenity	See above list and plan in Figure 5.1	O

Reduction in sunlight amenity	See above list and plan in Figure 5.1	O
Increase in shadow to surrounding amenity spaces	TBC from transient overshadowing assessments	O

Assessment Methodology for Likely Significant Effects

Daylight & Sunlight Assessment Methodologies

5.117 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.

5.118 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.

5.119 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

5.120 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.

5.121 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.

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

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

5.123 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 Assessed

5.124 Paragraph F7 of the BRE Guidelines states:-

"Sometimes there may be an extant planning permission for a site but the developer wants to change the design. In assessing the loss of light to existing windows nearby, a local authority may allow the vertical sky component (VSC) and annual probable sunlight hours (APSH) for the permitted scheme to be used as alternative benchmarks."

5.125 On the basis that the currently unconstructed office buildings for the 2003 Beetham Tower consent and the 2017 Viadux 1 consent are both extant, the results of the following assessment scenarios will be reviewed and reported. Accordingly, the scenarios to be tested within the EIA are:

- Scenario 1a: Alternative Baseline (Site as consented i.e. Phase 1 tower as built with the various amendments, noting the office scheme which forms part of Phase 1 consent built out and Phase 2b (which originally formed part of the Beetham Tower consent) built out)
- Scenario 3: Existing Baseline + Viadux Plot 2a + Viadux Plot 2b + Viadux Plot 2c; and
- Scenario 3a: Existing Baseline + Viadux Phase 2a + Viadux Plot 2b + Viadux Plot 2c+ cumulative.

5.126 The results of Scenario 3 and 3a will be assessed and compared to the results for the extant permission in accordance with paragraph F7 of the VRE guideline as set out below.

Assessment Criteria

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

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.

5.128 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.

5.129 When assigning significance criteria for daylight and sunlight effects, professional judgement will be used in conjunction with the significance criteria in Table 3.6 in Section 3 of this Report. 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.

5.130 When assigning significance criteria for sun hours on ground effects professional judgement will be used in conjunction with the significance criteria in Table 3.6 in Section 3 of this

Report. 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.

5.131 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

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

- Where floor plans 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

5.133 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.

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

Completed Background Studies / Available Baseline Information

5.135 No background studies have been undertaken for solar glare.

Baseline

5.136 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.

5.137 However, it should be noted that the Proposed Development will be located on a Site where its existing state is split-level car parking, 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	Solar Glare impacting 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 Sites 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 scoped out.					

Identification of Effect/s which are Likely to be Significant

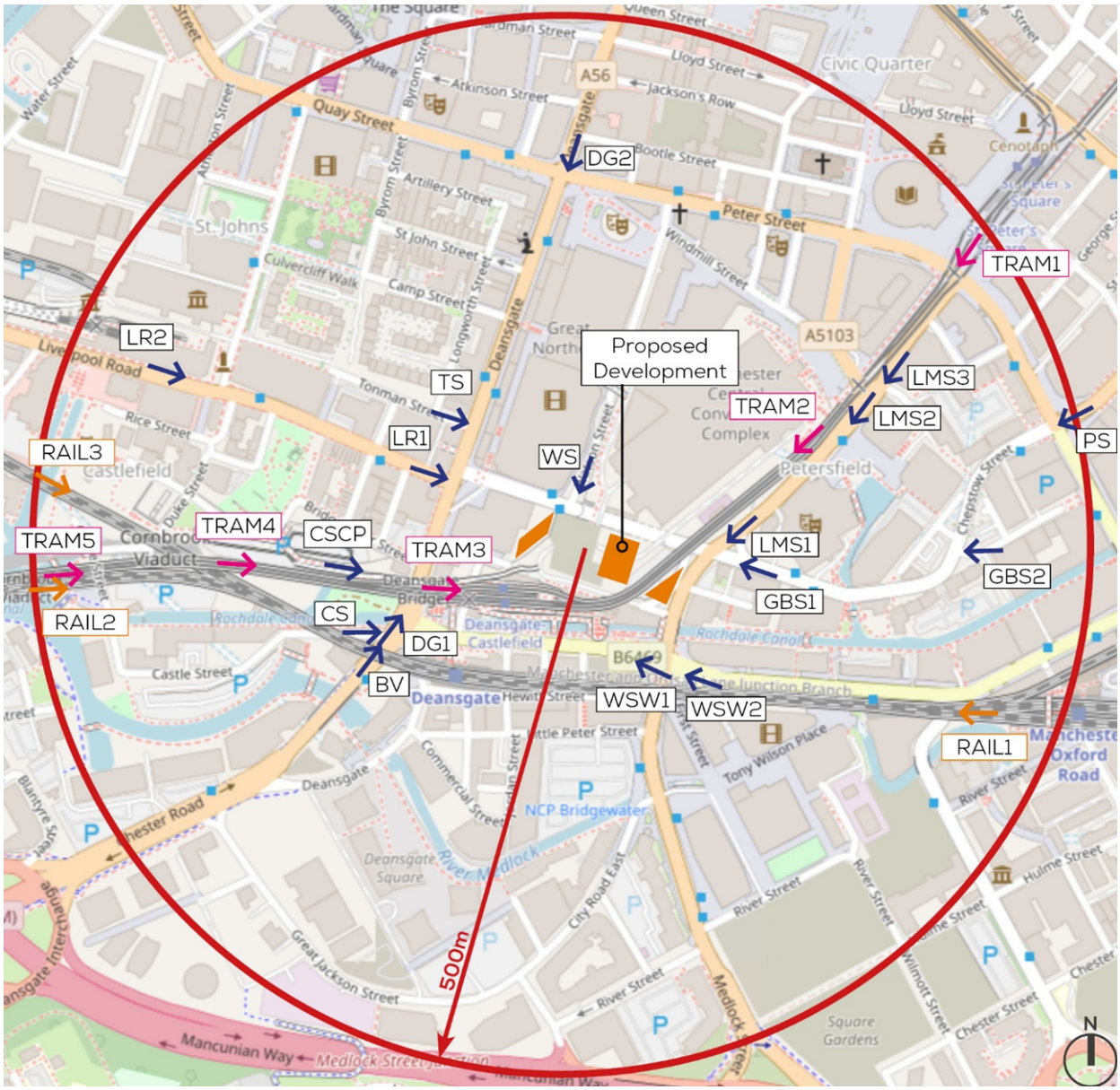
Effect	Receptor	Applicable Development Phase (C / O)
Solar Glare safety issues concerning transit through critical intersections and junctions	Solar Glare impacting visibility of road users at selected viewpoints within 500m of the Site where the Proposed Development is visible	O
Solar Glare safety issues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

Assessment Methodology for Likely Significant Effects

Assessment Methodology

5.138 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.

5.139 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 junction and train/tram tracks as receptors sensitive to solar glare.



Scenarios to be Tested

5.140 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.

5.141 It is unlikely that phased solar reflections would be generated in isolation that do not occur in the complete and operational Proposed Development scenario. As such, the most appropriate scenario is considered to be Baseline + Viadux Phase 2a + Viadux Phase 2b + Viadux Phase 2c (Scenario 3).

5.142 As the Proposed Development is a phased application, there is the potential that changes in the intended construction programme may occur. Due to the location of the buildings in relation to the sensitive viewpoints, and the scale of neighbouring buildings separating the phases, based on professional judgement, the residual effects are not expected to differ from those of the fully implemented Proposed Development, Scenario 3.

5.143 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.

5.144 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, the following committed development are included within the surrounding context as their completed form due to their construction having commenced:

- Viadux Phase 1 excluding the Phase 2 office (115871/FO/2017;
- 70 Great Bridgewater Street (129081/FO/2021);
- Plot 11 First Street (125573/FO/2019;
- Plot 9 First Street (132600/FO/2021;
- Land Bounded By Jacksons Row, Bootle Street, Southmill Street & 201 Deansgate (114664/FO/2016);
- 325 - 327 Deansgate (125804/FO/2019); and
- Plot 10b First Street (136170/FO/2023).

Assessment Methodology

5.145 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.

5.146 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.

5.147 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.

5.148 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.

Scale of Effect	Possible factors
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.

5.149 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'.

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

Limitations and Assumptions

5.151 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

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
To-date no consultation has been undertaken with technical specialists of the planning authority.			

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
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.	August 2023
Preliminary Study via CFD Simulation	Carried out preliminary CFD study to provide the initial predictions on the level of windiness in the area to inform the design development team and aid in the development of mitigation measure.	September 2023

Baseline

5.152 The baseline wind microclimate in the area is driven by a relatively wide sector of winds blowing from south round to the west. This is typical of Manchester wind climate.

5.153 With existing tall buildings enclosed by the Site (Viadux Phase 1), existing buildings to the west (Beetham Tower) and to the southeast (AXIS) of the Site, there is a likelihood that the baseline environment may be somewhat windy in places, such as between the AXIS building and the Site, near the southwest corner of the Viadux Phase 1 and the northwest of the Viadux podium.

5.154 Described in terms of the Lawson Comfort Criteria (LCC), wind conditions within the area are likely to be generally suitable for strolling on thoroughfares and for short-term standing / sitting at entrances for building within the existing surrounding area, though also with other some areas suitable for fast walking and for little other than brisk thoroughfare.

Scope of Assessment

Identification of Effect/s which are Not Significant

5.155 No wind microclimate effects will be scoped out of the EIA.

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Exceedance of the industry standard Lawson criteria for pedestrian safety.	Thoroughfares, entrances and waiting areas neighbouring the Site, within in the vicinity of the taller elements of the Proposed Scheme, where acceleration of wind has the potential to be most significant.	C
Exceedance of the industry standard Lawson criteria for pedestrian comfort.	Thoroughfares, entrances and waiting areas neighbouring the Site, where acceleration of wind has the potential for the greatest level of effect or where pedestrian activities are most sensitive to wind and require the most benign conditions.	C
Exceedance of the industry standard Lawson criteria for pedestrian safety.	Thoroughfares, entrances, waiting areas and recreational spaces within and around the Site, where acceleration of wind has the potential to be most significant for the greatest level of effect.	O

Effect	Receptor	Applicable Development Phase (C / O)
Exceedance of the industry standard Lawson criteria for pedestrian comfort.	Thoroughfares, entrances, waiting areas and recreational spaces within and around the Site, where acceleration of wind has the potential to be most signific for the greatest level of effect ant or where pedestrian activities are most sensitive to wind and require the most benign conditions.	O

Assessment Methodology for Likely Significant Effects

5.156 The following methodology for assessment is proposed:

- The assessment will be informed by wind climate characterisation based upon at least 15 years of wind climate data from Manchester Airport and used to undertake a statistical analysis of the wind climate prevailing across the area.
- The assessment will take into account the following factors:
    - The effect of the geometry, height, massing, exposure and orientation of the Proposed Development; and
    - 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.
    - 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.

5.157 Digital and physical models of the Site and surrounding area will be constructed, and simulations will be performed for a minimum of 16 wind directions, to represent all directions. The assessment of operational effects will be informed by physical wind tunnel testing and supported by computational modelling (CFD).

5.158 A considerable number of potential scenarios have been identified, including those set out below, which (beyond the Baseline scenarios) consider specific phases of the Proposed Development, with and without the introduction of cumulative surrounding developments.

- Scenario 1: (Existing Baseline) = Site as is today i.e. Phase 1 tower as built with the various amendments, noting the office scheme which forms part of Phase 1 consent not built out and Phase 2c (which originally formed part of the Beetham Tower consent) vacant

- Scenario 1a: (Alternative Baseline) = Site as consented i.e. Phase 1 tower as built with the various amendments, noting the office scheme which forms part of Phase 1 consent built out and Phase 2c (which originally formed part of the Beetham Tower consent) built out
- Scenario 2: Baseline* + Viadux Plot 2a and 2b
- Scenario 2a: Baseline* + Viadux Plot 2a and 2b+ cumulative
- Scenario 3: Baseline* + Viadux Plot 2a and 2b + Viadux Plot 2c
- Scenario 3a: Baseline* + Viadux Plot 2a and 2b + Viadux Plot 2c + cumulative

5.159 To determine a proportionate yet robust approach, CFD will be employed to identify which scenarios are most relevant to the assessment of wind microclimate and should be carried forward for further assessment via wind tunnel testing and reported within the ES.

5.160 Wind tunnel testing will be carried out using a 1:400 scale model of the Site and the surrounding buildings within a radius of up to 600m.

5.161 An assessment of operational effects would represent an appropriate approximation of a worst-case scenario during construction and therefore, the assessment of construction effects will be considered qualitatively within the ES Chapter and will be substantially informed by the operational assessment.

5.162 Gust and mean wind speed ratios (e.g. pedestrian level wind speeds as a ratio of a reference wind speed at a known height above ground) will be measured at key locations within the Site where increased windiness is expected as a result of the buildings' geometry and in areas of wind-sensitive activities, such as public entrances or pedestrian pathways.

5.163 Wind speed ratios measured in the wind tunnel will be combined with statistics of the local wind climate in Manchester to determine the net windiness at the Site. The wind statistics for Manchester will be obtained from historical wind data from Manchester Airport and will be corrected for terrain roughness around the airport and over the Site.

5.164 The results of the wind tunnel modelling will be presented, showing the adherence of conditions at all points to the LDDC variant of the Lawson Criteria and will be presented within a comprehensive report submitted as a technical appendix to the ES. The ES Chapter will provide the assessment of the environmental effects/receptor locations where significant effects are identified.

5.165 The LDDC variant of the comfort criteria (shown below) provides wind speed thresholds that should not be exceeded for more than 5% of the time in a season to be acceptable for the stated pedestrian activity. The safety criteria identifies areas where someone could find walking difficult, or even stumble and fall. This criterion provides a wind speed threshold (15 m/s) that should not be exceeded more than once per year.

Comfort Category	**5% Exceedance Threshold**	**Description**
Long-term sitting	4 m/s	Light breezes desired for outdoor restaurants and seating areas where one can read a paper or comfortably sit for long periods.

Short-term sitting / standing	6 m/s	Gentle breezes suitable for main building entrances, pick-up/drop-off points and bus stops.
Strolling	8 m/s	Moderate breezes that would be appropriate for strolling along a city/town centre street, plaza or park.
Fast walking	10 m/s	Higher speeds that can be tolerated if one's objective is to walk, run or cycle without lingering.
Uncomfortable	>10 m/s	Winds considered a nuisance for most activities.

5.166 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. In the case of windiness levels in excess of the tolerable limits for intended pedestrian use, mitigation measures will be developed in the wind tunnel.

5.167 Receptors are defined to be pedestrians and cyclists on the thoroughfares within the Development and surrounding areas. All receptors are equally sensitive to the presence or absence of an acceptable wind microclimate. An unacceptable microclimate exists at a receptor when either an exceedance of the safety criteria exists, or when the comfort criteria is not met for the existing / planned pedestrian use at a receptor. All receptors are considered to be highly sensitive to the local wind microclimate conditions and are given an equal weighting.

5.168 The assessment of likely significant effects on sensitive receptors will consider the sensitivity of the receptor, the adherence (or not) to the LDDC criteria and the magnitude of change, if any, between 'target' and predicted comfort levels to determine significance, on a scale of major, moderate, minor and negligible. Significant effects will be determined through professional judgment.

5.169 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, such effects are deemed to be of moderate impact magnitude. Where the comfort criteria are marginally exceeded, to the extent that the exceedance is expected to be perceptible, but tolerable, such effects are deemed to be of minor impact magnitude.

5.170 Major and moderate effects are considered to be significant in EIA terms. Minor effects, as noted above being tolerable, are not considered to be significant.

5.171 The following are the significance criteria used to assess likely wind conditions as a result of the introduction of the Development:

- Major Beneficial: Any effect on wind conditions which is expected to improve pedestrian safety, namely an improvement in conditions from being considered unsafe to being considered safe. This is considered to be significant.
- Moderate Beneficial: Any effect on wind conditions which is expected to improve pedestrian comfort from unsuitable to suitable for planned activities. This is considered to be significant.
- Minor Beneficial: Any effect on wind conditions which is expected to improve pedestrian comfort from unsuitable to marginal/tolerable for planned activities, or from marginal/tolerable to suitable for planned activities. This is not considered to be significant.
- Negligible: Any effect that does not alter the suitability of existing wind conditions with respect to planned activities. This is not considered to be significant.
- Minor Adverse: Any effect on wind conditions which worsens pedestrian comfort from suitable to marginal/tolerable for planned activities, or from marginal/tolerable to unsuitable for planned activities. This is not considered to be significant.
- Moderate Adverse: Any effect on wind conditions that worsens pedestrian comfort from suitable to unsuitable for planned activities. This is considered to be significant.
- Major Adverse: Any effect on wind conditions adversely affecting pedestrian safety, namely a deterioration in conditions from being considered safe to being considered unsafe. This is considered to be significant.

Limitations and Assumptions

5.172 A wind tunnel-based approach will adopt a discrete measurement approach, where sensors will be positioned in sensitive locations and those locations that are expected by veteran practitioners to experience the most significant acceleration of winds. A long-standing approach of this nature would be expected to capture worst-case conditions. Sensor position will also be informed by preliminary CFD studies which will illustrate expected regions of high wind speeds.

Climate Change

Consultation

5.173 No consultation has been undertaken to date.

Completed Background Studies / Available Baseline Information

5.174 No studies been undertaken prior to this EIA Scoping process.

Baseline

Impact of the project on climate change

5.175 In relation to the impact of the project on climate change, i.e. Greenhouse Gas (GHG) emissions, the baseline is a scenario whereby the Proposed Development does not proceed and the s

5.176 Site remains as it is. As the Site is vacant there are no significant GHG emissions associated with the Site in the baseline scenario. It is proposed that Scenario 1 (Existing baseline as the Site is today) is therefore used for this assessment. As no climate change assessment was undertaken for the planning permission for Phase 1 (and therefore this was not taken into consideration at this point) it is not considered that there is any merit in assessing Scenario 1a (Alternative baseline as consented).

Climate change resilience

Current climate

5.177 The existing baseline for the climate change resilience assessment is the current climate 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 and shows an increase in the average annual maximum daily temperature.

5.178 Historic climate data recorded by the closest meteorological station

Climate Period	1981-2010		1991-2020	
Climatic factor	Month	Figure	Month	Figure
Average annual maximum daily temperature (°C)	-	13.2°C	-	13.6°C
Warmest month on average (°C)	July	20.2°C	July	20.7°C
Coldest month on average (°C)	January	6.9°C	January	7.1°C
Mean annual rainfall levels (mm)	-	867.05mm	-	868.40mm
Wettest month on average (mm)	October	98.83mm	December	96.98mm
Driest month on average (mm)	February	51.46mm	March	52.53mm

5.179 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.

5.180 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

Climate period	Mean maximum annual temperatures (°C)	Mean annual rainfall (mm)
1971-2000	12.04°C	1274.77mm
1981-2010	12.35°C	1304.57mm
1991-2020	12.66°C	1337.87mm

5.181 The Met Office website (accessed September 2023) confirms that past severe weather events in the last 5 years have included record breaking heatwaves, severe flooding, severe winter weather with significant snowfalls, and storm and high wind events.

Future climate

5.182 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. The Table below provides a summary of predications for summer and winter changes by the 2070s (Met Office, 2018).

5.183 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 Not Significant

5.184 No non-significant effects are identified at this stage.

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Construction related GHG emissions	Global Climate	C
Operational GHG emissions	Global Climate	O
Climate Change Hazards	Building Occupants Buildings and infrastructure	O

	Planting	

Assessment Methodology for Likely Significant Effects

5.185 In accordance with the EIA regulations this chapter will address:

- The impact of the project on climate change, in line with IEMA (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance[49]
- The vulnerability of the project to climate change (climate change resilience) in line with IEMA (2020) EIA Guide to: Climate Change Resilience & Adaptation[50]

5.186 Scenario 1 is considered as the baseline (do nothing) as this represents the current situation (i.e. zero emissions) and will therefore enable a clear indication of the climate change impacts of this project. Scenario 3 is being assessed this will again enable an undertaking of the worst possible scenario in terms of carbon emissions.

5.187 The assessment of cumulative effects in conjunction with other developments in the area presents a challenge from a climate change standpoint. All carbon emissions contribute to climate change and therefore it could be argued that all sources of these emissions result in cumulative effects. It is unreasonable for the purposes of a planning application to quantify all sources of emissions from other third-party developments for the following reasons:

- The emissions from other developments fall under Scope 3*, which do not form part of the assessment under the methodology outlined.
- Large technical data requirements from other developments which are not accessible.
- A significant interlinking scope of assessment that would exceed that expected of planning application for any one development.
- It is not feasible to undertake a high-level chemical assessment to analyse likely synergistic impacts between different emissions from varying developments.
- Complicated, unpredictable chemical reactions driven by atmospheric, climatic, and behavioural factors beyond the applicant's control.

5.188 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.

**Scope 1 covers emissions from sources that an organisation owns or controls directly*

Scope 2 are emissions that a company causes indirectly and come from where the energy it purchases and uses is produced

Scope 3 encompasses emissions that are not produced by the company itself and are not the result of activities from assets owned or controlled by them, but by those that it's indirectly

[49] IEMA (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance
[50] IEMA (2020) EIA Guide to: Climate Change Resilience & Adaptation

responsible for up and down its value chain. Scope 3 emissions include all sources not within the scope 1 and 2 boundaries.

Impact of the project on climate change

5.189 Given that the scheme is at an early stage of design there is insufficient detail (e.g. Bill of Quantities) to undertake a full Whole Life Carbon (WLC) assessment to accurately determine the GHG emissions associated with the project. However, this can be estimated using high level Life Cycle Assessment (LCA) modelling using estimated materials and assumptions in line with typical benchmarks, initial energy modelling and use of predicted travel data from the transport assessment. In line with IEMA Guidance (2022) a reasonable worst-case approach will be undertaken.

5.190 The following information will be used to inform the assessment:

- Operational Energy Calculations (BRUKL and SAP)
- Embodied Carbon Calculation using One-Click LCA software
- Transport Assessment

5.191 IEMA guidance (IEMA, 2022) has been used as a basis for assessing the significance of both construction and operational impacts. This guidance states that:

'The crux of significance'… 'is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050.'

5.192 Significance should therefore be measured against how the project's whole life GHG emissions align with the UK's net zero carbon compatible trajectory. The following approach will therefore be taken:

Receptors:

5.193 The receptor for assessment of the impact of the project on climate change is the global climate. The receptor is considered to be of high sensitivity.

Magnitude:

5.194 Magnitude will be determined in accordance with the below table which is based on the IEMA (2022) Guide and references the RIBA Climate Challenge v2 (2021):

Magnitude of Impact	Criteria for assessing impact
Major Adverse	The project's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does 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 for projects of this type. 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 for projects of this type. 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 for projects of this type, 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.

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.'*

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

Significance:

5.196 The significance of an environmental impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. The impact Significance Matrix is set out in the table below.

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

Climate Change Resilience Assessment

5.197 To assess the vulnerability of the Proposed Development to climate change, a climate change resilience assessment in line with the Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation (IEMA, 2020) will be undertaken using the following approach:

Receptors:

5.198 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).

- 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.

Receptor sensitivity

	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)

Magnitude:

5.199 Magnitude will be based on a combination of likelihood (the chance of the effect occurring over the lifespan of the project if the risk is not mitigated) and consequence (which will reflect the geographical extent of the effect or the number of receptors affected, the complexity of the effect, degree of harm to those affected and the duration, frequency and reversibility of effect).

- Low likelihood: The event may occur once or on limited occasions during the lifetime of the development.
- Moderate likelihood: The event may occur several times during the lifetime of the development.
- High likelihood: The event will occur on multiple occasions during the lifetime of the development.
- Low consequence: Minor disruption to business operations / no risk to building occupants / no damage to buildings / infrastructure.
- Moderate consequence: Some disruption to building operations / slight risk to building occupants / slight damage to buildings / infrastructure.
- High consequence: Major disruption to business operations / risk to building occupants / significant damage to buildings / infrastructure.

Magnitude

	1 (Low consequence)	2 (Moderate consequence)	3 (High consequence)
1 (Low likelihood)	1 (Minor magnitude)	2 (Minor magnitude)	3 (Moderate magnitude)
2 (Moderate likelihood)	2 (Minor magnitude)	4 (Moderate magnitude)	6 (Major magnitude)
3 (High likelihood)	3 (Moderate magnitude)	6 (Major magnitude)	9 (Major magnitude)

Significance:

5.200 The significance of an environmental impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. The impact Significance Matrix is set out in the table below.

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

5.201 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.

5.202 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

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
None			

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Health data from MCC Intelligence Hub[51]	General health & IMD by Ward	20 September 2023
Health data from Office for Health Improvement & Disparities (previously Public Health England)[52]	Local population & health data by Ward compared with subregional (Manchester) & national - England	20 September 2023

Baseline

5.203 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

[51] https://www.manchester.gov.uk/info/200088/statistics_and_intelligence/7611/intelligence_hub
[52] https://fingertips.phe.org.uk/profile/wider-determinants/supporting-information/built-and-natural-environment

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.

5.204 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.

5.205 The Index of Multiple deprivation (IMD) is an overall relative measure of deprivation constructed by combining seven domains of deprivation – Income; Employment; Education; Skills & Training; Health & Disability; Crime; Barriers to Housing Services and Living Environment. The Site is located within the Deansgate Ward where the IMD score (2019)53 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.

5.206 Data for Local Health (2021)54 reports population by age group % 2020 by Ward and compared with Manchester 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.

Scope of Assessment

Identification of Effect/s which are Not Significant

5.207 No effects were found to not be significant within the scope of this assessment.

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Health & wellbeing – air, noise, safety	On-site workers	C

[53] https://www.manchester.gov.uk/info/200088/statistics_and_intelligence/7611/intelligence_hub
[54] https://localhealth.org.uk/#c=report&chapter=c01&report=r01&selgeo1=ward_2021.E05011361

	Nearby residents, including any particularly sensitive receptors such care homes, schools	
Health & wellbeing – air, noise	New & nearby residents & visitors Workers & visitors at new office building	O
Health & wellbeing – flood risk/water resources; daylight, sunlight & overshadowing; solar glare; wind; climate change	New & nearby residents & visitors Workers & visitors at new office building	O
Health & wellbeing – townscape & visual impact	New & nearby residents & visitors Workers & visitors at new office building	C & O
Health & wellbeing – socioeconomic including housing; employment & economy; services & facilities, open/green space	Local & wider communities	C & O
Health & wellbeing – crime, safety	New & nearby residents & visitors	O

Assessment Methodology for Likely Significant Effects

5.208 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".

5.209 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.

5.210 It is proposed that the assessment will consider the themes for health and wellbeing, as 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.

5.211 Housing/Building Design is fundamental for health and wellbeing, together with accessibility to health and social care 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 and will be considered within the Human Health impact assessment. 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. Limited elements of social cohesion and inclusive design may be relevant to the Proposed Development. 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.

5.212 The overall approach to human health will be to consider the summary findings of each relevant technical topic – air quality; flood risk/water resources; noise and vibration; socioeconomic; townscape and visual impacts; climate change; daylight/sunlight/overshadowing; and wind microclimate - 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.

5.213 Overall, the study area will be the Site with local surrounds, and the wider study area of Manchester City for the themes for healthy urban living and based upon professional judgement.

5.214 The Human Health chapter will consider Scenario 1 as the baseline (i.e. site as existing(and Scenario 3 and 3a c(Baseline + Viadux Phase 2a + Viadux 2b + Viadux Plot 2c + cumulative).

5.215 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

5.216 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

5.217 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.

Limitations and Assumptions

5.218 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

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
None to Date			

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Socio-economic Analysis	Analysis of local authority level socio-economic data sets including population and employment statistics from the Census 2021 and Business Register of Employment Survey (BRES)	19.09.2023

Baseline

5.219 The local area (the Piccadilly and Deansgate wards) was estimated to have a population of 25,360 in the ONS 2021 Census population estimates55 and is characterised by a substantially higher proportion of working age (16-64) residents (95%) compared to Manchester (70 %), the North West (62 %) and England (63%) for the same year56.

5.220 Total employment (jobs) in the local area stood at 178,900 in 2021, accounting for 42% of total employment across Manchester as a whole. In terms of the employment structure, 24% of employment within the local area is within the 'Professional, scientific and technical' sector and is significantly overrepresented compared to the English national average (9%). In combination with other sectors of the economy (such as 'Financial and insurance', 'Information and communication' and 'Administrative and support services') these account for 59 % of employment across the local area. This compares to 23% across the North West of England and 28% across Greater Manchester and 26% across England. This is reflective of the predominance of office-based, service economy activities within this part of the city centre. Other areas of significant employment include 'Retail' (7%) and 'Accommodation and Food Services' (10%)57.

5.221 The Greater Manchester construction sector supports economic output (as measured in terms of Gross Value Added) of approximately £4.41 billion58. For every full time equivalent (FTE) construction job this equates to an average GVA contribution of £92,254 per annum. This represents a higher output average compared to the all-sector average for Greater Manchester (£74,136). Average annual economic output per FTE is also higher than the all-sector average for the following Greater Manchester sectors: 'Information and communications' (£94,167) and 'Financial and Insurance Activities' (£154,697). The 'Professional, Scientific and Technical' sector is lower than the all-sector average (£50,036).

5.222 The local area's claimant count (1%) is significantly lower than that of the benchmark areas of Manchester (6.2%), Greater Manchester (4.9%), the North West region (4.2%) and the English National Average (3.8%)59. The unemployment rate for the local impact area (3%) is also lower than that of the benchmark areas of Manchester (4%) and Greater Manchester

55 https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/lowersuperoutputareamidyearpopulationestimatesnationalstatistics

56 Nomis, 2022, Annual Population Survey, Economic Activity Rate July 2019-June 2020

57 Nomis, 2021, Business Register and Employment Survey

58 Nomis, 2021, Regional GVA by industry and region

59 Nomis, August 2023, Claimant count data

(3.2%). However, it is higher than the benchmarked areas of the region of the North West (2.8%) and England (2.9%)60. The local area has a high number of people in employment in (72%) within professional, managerial and technical occupations (SOCs 1-3) and has a higher proportion of residents qualified to NVQ 4+ level (62.4%) compared to benchmarked areas. The proportion of residents with no formal qualifications in the local area (4.2%) is also low compared to benchmark areas61.

5.223 In terms of local educational provision, within 1 mile walking distance of the Site there are 6 primary schools run by the Manchester and Salford local authorities. There are 8 secondary schools located within a 2-mile walking distance of the Site. 62 The latest data indicates that 18% of primary schools and 38% of secondary schools in the Manchester Local Authority area are over capacity. The proposed development may lead to an increase in demand for school places arising from the population yield of the new residential units, however, this is likely to be relatively small given the much higher prevalence of working age population within the city centre.

5.224 In terms of local service provision, there are 4 GP practices located within 1 mile of the Site. According to latest available data, these are currently operating at an average of 2,672 patients to every FTE GP which is above the Healthy Urban Development Unit benchmark of 1,800 patients per FTE GP. With the two closest GPs 'The Docs Practise' and 'The City Health Centre' operating at an average of 1,913 and 3,108 patients to every FTE GP respectively63. In terms of local dental provision, there are 8 dentists within a 1 mile radius, the nearest of which is 207 dental care, located 0.3 miles away64.

5.225 The nearest leisure centre is Sudgen Sports Centre which is a 20-minute walk away. There are a number of other recreational sites within walking distance of the Site such as St. Johns Gardens and Castlefield Urban Heritage Park. Being a city centre site there are numerous leisure sites within close proximity to the Site such as Odean cinema, the Great Northern shopping and entertainment complex and the Manchester Opera house. As well as this, it is a close walk into the rest of the city centre, the Deansgate tram station is within a 5-minute walk from the Site and Manchester Oxford Road railway station is within a 13-minute walk from the Site, providing easy access to the wider city.

5.226 Collectively, council tax and business rates income form one of the largest components of Manchester City Council's income stream, accounting for a total £454.5m in 2022, almost one quarter of the annual income. Receipts are used to pay for essential local services including police, fire and waste collection.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Reduction in Crime or fear of Crime	**Applicable Development Phase (C / O)**	O	**Receptor**	Resident Population

[60] Nomis, Census 2021 unemployment data
[61] Nomis, Census 2021 qualifications data
[62] Get Information about Schools - GOV.UK (get-information-schools.service.gov.uk)

[63] NHS Digital Data, Accessed September 2023
[64] Dentists near M3 4ED - NHS (www.nhs.uk)

Discussion of Effect
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. Whilst beneficial, these are unlikely to be significant in EIA terms and therefore recommended to be scoped out.
Mitigation Committed to in order to Avoid or Reduce Effect
N/A
Concluding Statement:
Reduction in Crime of fear of Crime to be scoped out of Socio-economics

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Temporary employment uplift during the construction stage Effect relevant to Scenarios 2, 2a, 3 and 3a[65]	Individuals seeking construction employment	C
Net change in direct operational employment Effect relevant to Scenarios 5 and 5a. Scenarios 2 and 2a would be unlikely to generate significant employment.	Individuals seeking employment	O
Uplift in Household Spend and GVA Effect relevant to all Scenarios	Local economy	O
Additional demand for healthcare facilities (GP services and dentists) as a result of the uplift in population. Effect relevant to Scenarios 2, 2a, 3 and 3a	Primary healthcare facilities	O

[65] The scenarios to be included in the socio-economics impact assessment are considered in the following section 'Assessment Methodology for Likely Significant Effects'

Effect	Receptor	Applicable Development Phase (C / O)
Additional demand for the use of the existing open space and amenity space and children's play space within close proximity to the Site. Effect relevant to Scenarios 2, 2a, 3 and 3a	Users of Open space and children's play space	O
Additional demand for early years, primary and secondary school places arising from the uplift in population Effect relevant to Scenarios 2, 2a, 3 and 3a	Education facilities	O
Uplift in annual fiscal contributions in the form of business rates and council tax contributions. Effect relevant to Scenarios 2, 2a, 3 and 3a	Manchester CC total business rates and council tax collections	O

Assessment Methodology for Likely Significant Effects

Scenarios to be tested

The scenarios to be tested that are relevant for the topic of socio-economics include:

Scenario 1: Existing Baseline
Scenario 2: Existing Baseline + Viadux Phase 2a and 2b
Scenario 2a: Existing Baseline + Viadux Phase 2a and 2b+ Cumulative
Scenario 3: Existing Baseline + Viadux Phase 2a + Phase 2b + Phase 2c
Scenario 3a: Existing Baseline + Viadux Phase 2a + Phase 2b + Phase 2c + Cumulative

The Study Area

5.227 In respect of socio-economics, the relevant study area can vary according to different receptors; however, broadly, socio-economic impacts can be assessed with reference to a spectrum of spatial scales, ranging from the immediate local catchment through to the wider, sub-regional scale. The study area is also influenced by the availability of baseline data which may not always be available down to a local catchment area level.

5.228 In the case of the Proposed Development, the study area should reflect the Site's anticipated immediate local catchment. This can be defined using the ward the Site sits within ('Deansgate' ward) and the neighbouring ward ('Picadilly'), which together comprise the City Centre of Manchester. This area reflects the city's commercial core in which the

proposed development will be situated. The wider study area reflects both the Manchester City Council area (district) and the Greater Manchester City Region (comprising of the 10 Greater Manchester districts).

5.229 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).

5.230 Wherever possible, the baseline characteristics of the study area will be benchmarked against borough level (i.e. Manchester City Council) comparators as well as comparators at the sub-regional (Greater Manchester), regional and national level.

Baseline Surveys and Impact Assessment

5.231 Baseline data have been derived from a range of publicly available secondary datasets, including (but not limited to) the 2021 Census of Population, Business Register and Employment Survey, Department for Education School Census, and NHS General Practice workforce data. The most recent available data for the study area will be obtained, wherever possible.

5.232 All committed developments identified are relevant to this Chapter; however, due to data availability and time lags in reporting updates, it is unlikely that publicly available baseline data will reflect these committed developments.

5.233 The assessment of likely and residual socio-economic effects will be undertaken quantitatively wherever possible, utilising appropriate guidance such as the HCA's Additionality Guide.

5.234 An estimation of the jobs generated during the construction phase will be made using data on construction spend estimates and turnover per FTEs in the construction industry to derive estimates of the likely number of temporary construction workers per annum during the construction phase.

5.235 An estimation of the new residential site population will be made based on the proposed mix of units applied to the average household size and age structure. This will also be compared with the pupil yields for different sizes and types of properties based on newly released data from the Department of Education (DfE) for Manchester[66].

5.236 The impact on employment and the local economy will be based on an assessment of the number of new jobs supported on-site and off-site as well as GVA and household spending. The number of new jobs will be estimated by applying standard Homes and Community Agency (HCA)[67] employment densities to the amount of commercial floorspace provided on-site. The resulting GVA will be estimated based on GVA per FTE drawing on data from the ONS Business Register and Employment Survey, whilst household spending will be estimated based on data the ONS's Family Expenditure Survey.

5.237 An assessment of the likely effects of the proposed development's additional population on the capacity of existing early years provision and local primary and secondary schools, as well as the capacity of primary healthcare facilities, open space provision and children's

[66] DfE, August 2023, Estimating Pupil Yield from Housing Development
[67] Homes and Communities Agency (2015) Employment Densities Guide, 3rd Edition

play space will be made. Where relevant, established standards for provision set out within local and sub-regional policy will be referred to.

5.238 A cumulative assessment will be undertaken for those schemes within 500m of the Site and will be based on the same methodology of impact assessment as outlined above.

Significant Criteria Effects

5.239 Since there are no specific technical criteria to assess the significance of socio-economic effects, assessment will take place in accordance with the overarching EIA methodology and will apply professional judgement informed by experience of similar projects. The overarching approach towards the assessment of the magnitude, sensitivity and overall significance of impacts is set out in Tables 3.4 – 3.6 in Section 3 of this Report.

5.240 The magnitude of socio-economic impacts will be assessed in line with the approach outlined in Table 3.6. In addition to the magnitude, the duration of impact will also be taken into account with the impacts ranging from those that are likely to be temporary or permanent.

5.241 The sensitivity of a receptor is based on the relative importance of the receptor using the framework outline in Table 3.5 and taking account of the baseline position.

5.242 The significance of the impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. The Impact Significance Matrix is set out in Table 3.6. All impacts assessed as 'moderate' or 'major' are considered to be 'significant' in EIA terms.

Limitations and Assumptions

5.243 There are no recognised criteria for the assessment of socio-economic impacts, and therefore ekosgen, drawing on their expertise, knowledge of overarching guidance and experience of working in the subject area, have taken a structured approach to quantifying and assessing the scale and nature of potential impacts relative to baseline conditions. In cases where impacts cannot be quantified, a qualitative judgement has been made, drawing on professional experience.

5.244 The most up to date data from official published sources has been used wherever possible; however, there are some limitations in the baseline data. Where this is the case, ekosgen have gathered data most closely aligning to the chosen Study Area and clearly stated what geography the data collected refers to.

Traffic and Transport

Consultation

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
Manchester City Council	Development Control	May – August 2016 June 2017	Approval on Access Strategy and principles

	Highway/Transport Assessment Road Closure Order	01/2022-02/2023 Engaging with MCC on Stopping Up Order. May – August 2016	of highway layout improvements Closure Approved by MCC
TfGM	Traffic Signal Operation /Traffic Modelling	91/5/2017 Emails Re metrolink May -Aug 2016.	Principles of highway operation and layout for the previous application agreed
Manchester Central			Agreement on changes to Man Central service yard for the previous planning application

Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Transport Assessment & Travel Plan prepared for the Existing Baseline Planning Application.	The TA establishes the Existing Baseline assessment for development on the site.	April 2022
Traffic Survey & Queue Survey covering junctions in the local area.	Traffic & Queue Length Survey.	30th March 2022 & 10th May 2022

Baseline

5.245 The Baseline situation has been established with the previous planning approvals:

5.246 (115871/FO/2017), approved on 27 July 2017 amended by S106 application (126868/JO/2020) and the drop in application (127260/ FO/2020) with a Section 19 application to amend the LBC (127365/ LO/2020).

5.247 The scheme currently being built out is covered by planning permissions 126868/JO/2020 (main consent), 127260/FO/2020 (drop-in consent for new staircase arrangement) and Listed Building Consent 129168/JO/2021.

5.248 For clarity the Baseline Scenario considered as part of this Assessment is Baseline Scenario 1. Scenario 1: Existing site (existing baseline as the site is today (September 2023) I.e., office scheme which forms part of Phase 1 consent not built out and Phase 2b vacant).

5.249 To obtain the original planning approval, supporting information was provided for the previous applications, with a Transport Assessment, Travel Plan and Waste & Servicing

Strategy. That analysis was supported by Traffic Surveys from 2022 and traffic modelling of the signals on Gt Bridgewater Street with Watson Street and Albion Street. This was supported by road safety analysis covering the previous 5 year accident data.

5.250 An Environmental Impact Assessment was conducted to test the environmental implications of development during its Construction and Operational Phases for the initial Planning Application(s) and then updated with further Amended Applications.

5.251 That Assessment followed the IEMA scoping guidance and methodology for assessment and in traffic terms we scoped in Severance; Driver Delay; Pedestrian Amenity; Accidents & Safety; Hazardous Loads; and Dust & Dirt. Other implications identified by IEMA including Noise; Vibration; Visual Impact Air Pollution; Ecological Impact; and Heritage was covered by other consultants on the team.

5.252 The potential sensitive receptors were identified as nearby residents and vulnerable road users (Pedestrians and cyclists).

5.253 The site is not considered sensitive to changes in road traffic as the road network carries moderately high traffic flows including HGVs. For a measurable impact on the environmental issues described above a rise in traffic of around 30% is often needed. However, in Scoping Environmental Issues IEMA applies a threshold of a 10% change, or 5% in Sensitive Locations. A further threshold that may be applied is a nett increase in Cars/Light Goods Vehicles of 100 per day or an increase of 25 Heavy Duty Vehicles per day.

5.254 In traffic terms, the key environmental consideration is the availability of parking which in turn generates traffic flows.

5.255 In general terms the site is in a highly accessible location so that all residents and occupiers are able to access the site without the need for a car.

5.256 The original Transport Assessment work for the 2017 consent included a 31,756sqm office development which attracted cars to the on site car park as well as taxis and service vehicles. This information submitted at the time was based on the TRICS database v7.10.3.

5.257 That office development will be replaced by the Phase 2a tower and in addition we add the Phase 2b Affordable Housing development and finally Phase 2c, a retail unit on Albion Street.

5.258 We set out in the Table below the consented trip forecasts for the extant office development and the forecast trips for Phase 2a, Phase 2b and Phase 2c. The vehicle trips for Phases 2a, 2b and2c will include taxi and service vehicle trips to the site.

5.259 The Trips forecasts for the proposed development show a low increase in the Daily Trip forecasts. In terms of a percentage change in exiting traffic flow, this Nett Change equates to around a 1% change in traffic flow.

5.260 This modest increase traffic will only trigger a Minor Negligible or Minor Adverse impact following mitigation in its Operational Phase.

Effect	Consented Office Trips	Proposed Development Trips for Phase 2a, 2b & 2c	Nett Change
Car Trips	63	0	+50
Taxi Trips	33	56	
LGV Trips	52	142	
HDV Trips	5	12	+7

5.261 Phase 1 construction and in practical terms the daily volumes are expected to be similar to the current Phase 1 activity on Albion Street although due to the larger scale it will take longer to construct.

5.262 The Phase 2a, 2b and 2c site construction activity would represent an increase in traffic on the network although as the traffic is spread over the day the volumes will not be as evident to the potential receptors.

Scope of Assessment

Identification of Effect/s which are Not Significant

5.263 The Effects considered are:

5.264 Severance; Driver Delay; Pedestrian Amenity; Accidents & Safety; Hazardous Loads; and Dust & Dirt.

5.265 Other implications identified by IEMA including Noise; Vibration; Visual Impact Air Pollution; Ecological Impact; and Heritage was covered by other consultants on the team.

5.266 While the proposed development will deliver a large increase in the number of occupiers on site, this is in effect a car free development therefore, the effect resultant change in traffic flows compared to Baseline conditions is quite modest.

5.267 There will be a modest increase in service vehicle activity with development compared to the baseline scenario. It is noted that the increase in service vehicle trips is not proportional to the scale of development as service vehicles often make multiple deliveries from a single vehicle trip.

5.268 We expect a modest increase in Taxi Drop-off/Pickup activity with development.

5.269 The consideration of this increase in traffic activity compared to the Baseline Scenario as below is a nett increase of 50 cars/ light goods vehicles and 7 heavy duty vehicles.

Effect	Consented Office Trips	Proposed Development Trips for Phase 2a, 2b & 2c	Nett Change
Car Trips	63	0	+50
Taxi Trips	33	56	
LGV Trips	52	142	
HDV Trips	5	12	+7

Effect	Severance; Driver Delay; Pedestrian Amenity; Accidents & Safety; Hazardous Loads; and Dust & Dirt	Applicable Development Phase (C / O)	C	Receptor	Local Residents, Vulnerable Road Users (Pedestrians & Cyclists)
Discussion of Effect					
During Construction, there is considered to be only a marginal increase in service vehicles accessing the site compared to the baseline situation. The construction phase will be longer but the intensity of vehicles accessing the site is not expected to rise significantly above the current levels.					

Potentially, an increase in traffic can give rise to an adverse effect of Severance, Driver Delay, Pedestrian Amenity, Road Safety, Hazardous Loads and Dust & Dirt. However, as the Baseline Scenario already accounts for Construction traffic and we note that Construction traffic is regulated over the course of a day as it is constrained by the available space and handling capability of deliveries. Also the arrival of contractor vans is also limited as there is no parking on site and drivers would need to park elsewhere.
Mitigation Committed to in order to Avoid or Reduce Effect
The Construction phase is time limited and therefore any effect is also limited. A secondary mitigation effect is that Construction activity will benefit from a Construction Management Plan that will ensure: • safe practices for vehicles arriving on site, • the appropriate routeing of vehicles along non-sensitive routes • applying best safe driving practices for drivers to protect vulnerable road users, notably cyclists, • safe management of hazardous loads, and • Management and Cleaning of Dust and Dirt that may arise from construction activity and vehicles.
Concluding Statement
Compared to the Baseline Scenario the daily volumes of Construction Traffic arriving on site are not expected to change significantly, although the timescales of construction will be longer. The impacts on sensitive environmental receptors compared to that Baseline is considered to be, at worst, a minor adverse impact. However with mitigation of an effective Construction Management Plan, this limited impact is expected to be reduced to a Negligible Adverse Impact on local sensitive receptors for the environmental issues considered. Overall the environmental implications of development Construction Traffic is not considered to be significant.

Effect	Severance; Driver Delay; Pedestrian Amenity; Accidents & Safety; Hazardous Loads; and Dust & Dirt	Applicable Development Phase (C / O)	O	Receptor	Local Residents, Vulnerable Road Users (Pedestrians & Cyclists)
Discussion of Effect					
During the Operational Phase, there is expected to be a small increase in traffic activity due to service vehicle movements and taxi drop-off/pickups compared to the Baseline Scenario. A rise in traffic flows can give rise to an adverse effect of Severance, Driver Delay, Pedestrian Amenity, Road Safety, Hazardous Loads and Dust & Dirt. However, these volumes are modest and					

would lie well below a threshold of 10% of the background traffic flows. This means that the impact without mitigations could be considered to be minor adverse.
Mitigation Committed to in order to Avoid or Reduce Effect
The site benefits from a number of factors that mitigate the implications of development traffic. Firstly, as a Tertiary Level of mitigation, the site is in a highly accessible location within the City Centre, close all the amenities which allow people to live here successfully without the need for a car. As a Secondary Level mitigation, the site is car free and will benefit from having amenities on site to serve key needs of residents and sufficient cycle parking to meet demand. As Primary Mitigation, the development will be supported by a Travel Plan which will assist residents to travel sustainably. The development will result in a transformation of the signals in the area to benefit pedestrians and make them safer for cyclists. The Watson Street signals are upgraded to make pedestrians crossing the highway easier along with road narrowing and public realm upgrades of Watson Street itself. The Albion St/Gt Bridgewater St signals will be upgraded include wider pavements and incorporate signalled pedestrian crossing facilities which will be a great benefit to the many future pedestrians expected use using this junction.
Concluding Statement
Compared to the Baseline Scenario the daily volumes of Operational Traffic to the site are expected to result in only a modest increase in Service Vehicles and Taxis/Drop-offs. The application of mitigation measures would ensure that the potential minor adverse environmental implications of development are mitigated so that we expect a minor beneficial change for vulnerable road users. The experience of local residents is expected to be only a minor negligible impact due to the small change in traffic flows with development. In conclusion, the environmental implications of development Operational Traffic is not considered to be significant.

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Severance;	Local Residents, Vulnerable Road Users (Pedestrians & Cyclists)	[C / O]
Driver Delay	Local Residents, Vulnerable Road Users (Pedestrians & Cyclists)	[C / O]
Pedestrian Amenity	Local Residents, Vulnerable Road Users (Pedestrians & Cyclists)	[C / O]
Accidents & Safety	Local Residents, Vulnerable Road Users (Pedestrians & Cyclists)	[C / O]

Hazardous Loads	Local Residents, Vulnerable Road Users (Pedestrians & Cyclists)	C
Dust & Dirt	Local Residents, Vulnerable Road Users (Pedestrians & Cyclists)	C

Assessment Methodology for Likely Significant Effects

5.270 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.

Construction (including Demolition) Phase

5.271 The forecast construction traffic flows would represent a more significant increase in traffic and HDVs in particular as they arrive to the site. Albion Street carries around 15000 vehicles a day (4.5% HDVs) and Great Bridgewater Street around 9000 (1.3% HDVs). Therefore, the existing streets already carry large traffic volumes and that includes construction traffic associated with Phase 1. Therefore, the network already attracts construction traffic associated with Phase 1 construction and in practical terms the daily volumes are expected to be similar to the current Phase 1 activity on Albion Street although due to the larger scale it will take longer to construct. The Phase 2c site construction activity would represent an increase in traffic on the network although as the traffic is spread over the day the volumes will not be as evident to the potential receptors.

5.272 Therefore, it is considered that the effect of Construction Traffic will result in a minor shift away from baseline conditions. There would be a small impact or alteration for potential receptors which will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstance/situation.

5.273 Given the current highway conditions of relatively high traffic flows and construction activity, the potential receptors of Local Residents and vulnerable road users are considered to have a moderate capacity to absorb change without significantly altering its present character.

5.274 Therefore, the magnitude and significance of the impact associated with construction traffic on residents or vulnerable road users is considered to be Minor Adverse.

5.275 The application of a Construction Environmental Management Plan will help in mitigating the safe operations with Banksmen on hand at the accesses and driver training for delivery drivers.

Operational Phase

5.276 The Assessment Methodology is based on the forecast change in traffic volumes. Where the traffic volumes exceed a 10% threshold as in the IEMA guidance or a figure of 100 Cars/Light Goods Vehicles and /or 25 Heavy Duty Vehicles a day.

5.277 We have demonstrated that for the operational phase the daily nett increase in traffic equates to an extra 50 cars/taxis/LGVs and an extra 7 HDVs with development. This

equates to around a 1% increase in the daily traffic flow on Albion Street or Great Bridgewater Street.

5.278 To establish whether this is significant we have compared the percentage increase against the IEMA thresholds for a significant increase on the highway where a 10% increase would be deemed to be significant and worthy of further study. Clearly the marginal change in traffic volumes is not sufficient to give a significant impact in environmental terms.

5.279 This marginal change is also well within the thresholds for further assessment for Noise and Air Quality.

5.280 Therefore, it is considered that the effect of Operational Traffic will result in a minor shift away from baseline conditions. There would be a small impact or alteration for potential receptors which will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstance/situation.

5.281 Given the current highway conditions with relatively high traffic flows, the potential receptors of Local Residents and vulnerable road users are considered to have a moderate capacity to absorb change without significantly altering its present character.

5.282 Therefore, the magnitude and significance of the impact associated with construction traffic on residents or vulnerable road users is considered to be Minor Adverse.

5.283 The lack of parking on site, the excellent cycle parking and Cycle Hub, and the application of a Travel Plan helps sustainable travel behaviours and the highway improvements would transform the pedestrian environment with new pedestrian crossing facilities at the Albion Street/ Great Bridgewater Street signals, wider pavement there and environmental improvement under Great Bridgewater Street viaduct.

Limitations and Assumptions

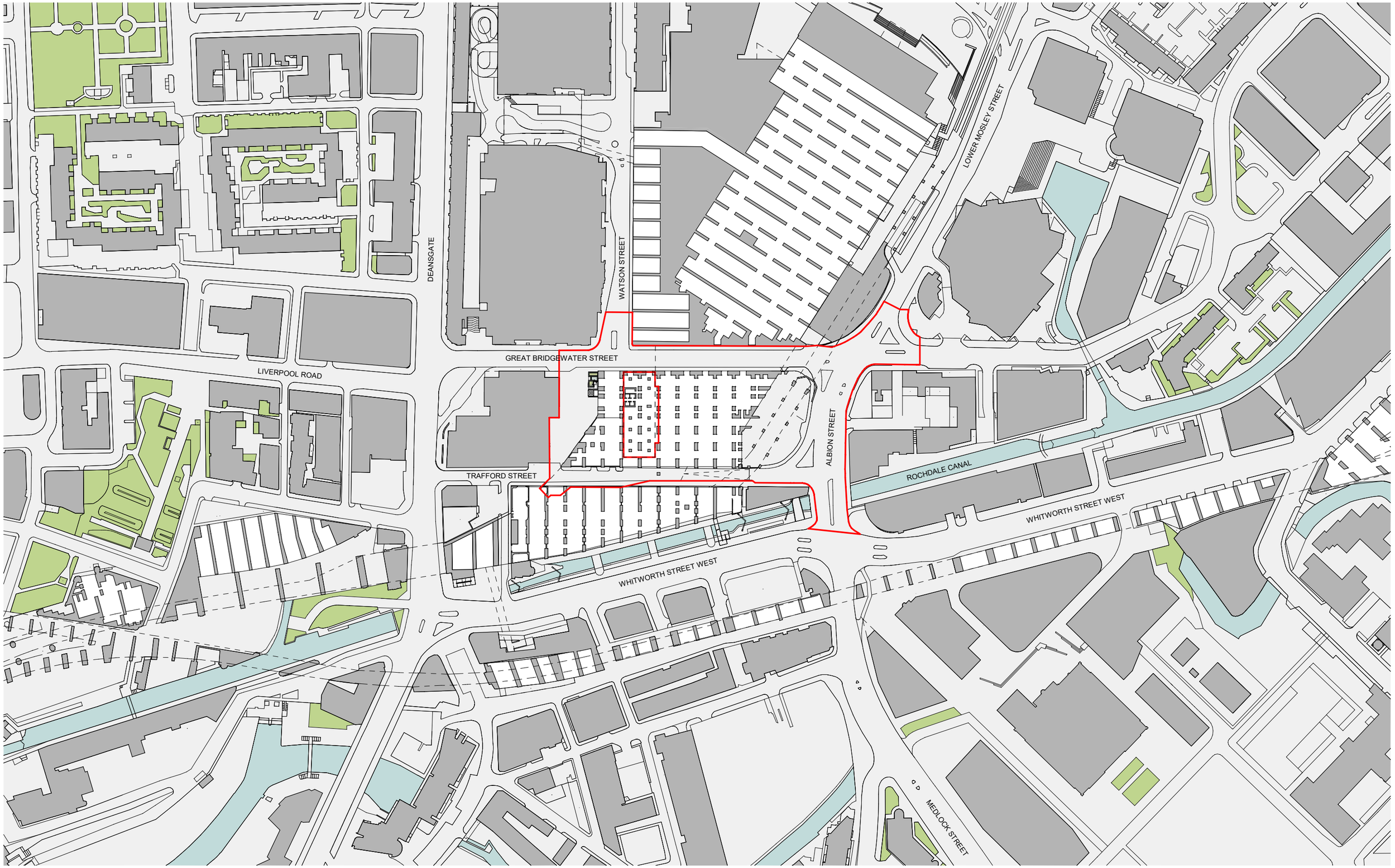
5.284 The traffic forecasts are based on single day traffic surveys and this can be subject to change from day-day.

5.285 The trip forecasts are based on the TRICS database and while the appropriate parameters have been applied there is no site as large as that proposed and that alongside changes in travel behaviour can lead to some variability.

5.286 This is to ensure transparency within the EIA process as required by the EIA regulations.

Appendices

Appendix 1 Site Location Plan



This drawing is copyright
Do not scale off dimensions.
All dimensions to be checked on site by Contractor.
Contractor to report any dimensional discrepancies, errors or omissions prior to commencing on site.

Site area: 14866 m²
1.4866 ha

SCALE 1:1000

0 20m 40m 60m 100m

NORTH

Rev	Date	Description
P01	01-12-2023	Design Freeze

DRAFT

Project Title
Viadux Phase 2A, 2B & 2C
Manchester

Status
FOR INFORMATION

Drawing Title
Viadux Phase 2A, 2B & 2C
Existing Site Location Plan
Level 00

Job No
10448

Scale
1:2000 @ A3
1 : 1000@ A1

SHP Drawing Code
10448-SHP-ZZ- A-B5D9-G000-XP-00-001

Revision
P01

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Appendix 2 Committed Developments

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Viadux Phase 2 and 3 - Committed Developments List

Date:	26 October 2023
Subject	Viadux Phase 2 & 3 – Committed Developments List

Introduction

This note comprises a Committed Developments List most recently updated on 26 October 2023relevant to the Viadux 2 & 3 Site – within 500m radius given its central location in Manchester City Centre. A number of sites within the 500m radius benefit from extant Planning Permission or are currently under consideration by the Local Planning Authority. They are set out in the table below.

Committed Developments

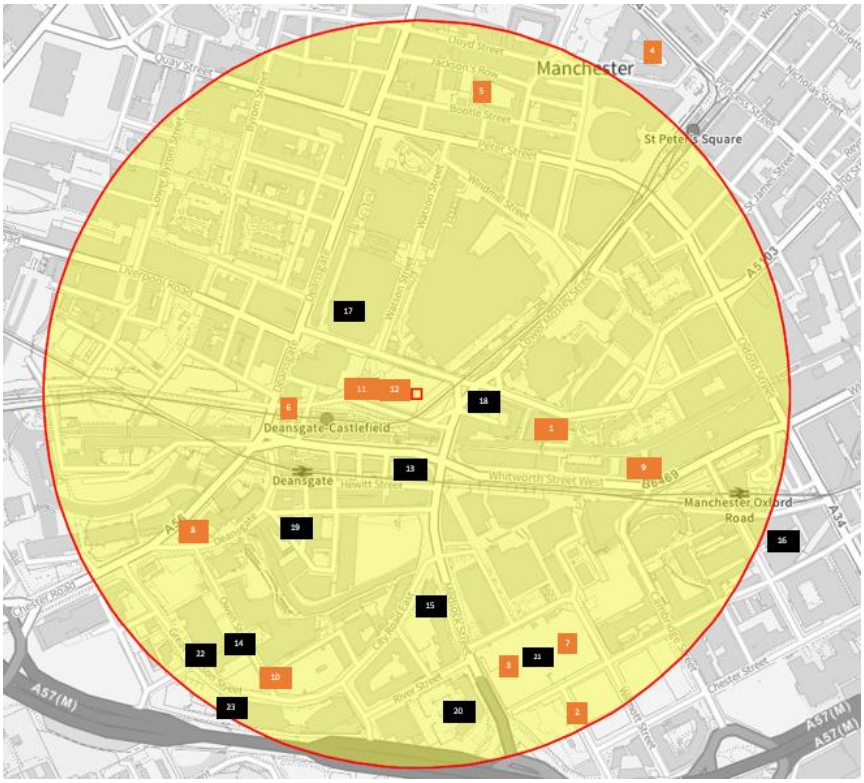


Figure 1.1 500m radius of the Site (The Site indicated by red square, baseline developments by orange boxes, and committed developments by black boxes)

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	Site/Location	Planning Permission Ref:	Description of Development	Status
Existing Baseline				
Site	Viadux Phase 1 and 2	115871/FO/2017	Erection of a 40 storey building to form 375 residential apartments (Use Class C3a) and 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	Approved 6th April 2017 Construction Commenced 28th October 2020 NOTE: Existing Baseline - the Site as is currently in September 2023 i.e. no current Phase 2 (office) built out and slot site vacant)
1.	70 Great Bridgewater Street	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 23rd April 2021 Construction commenced 17th May 2022
2.	Plot 11 First Street	125573/FO/2019	Construction of four buildings of heights varying from 10 storeys to 45 storeys together comprising Co-living bedspaces (use class sui generis) and associated	Approved 9th March 2021 Construction commenced 21st March 2022

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	Site/Location	Planning Permission Ref:	Description of Development	Status
			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.	
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 roof top terrace, winter gardens, gym/ yoga studio, basement car parking (26 spaces) and cycle parking (130 spaces) landscaping and other associated works.	Approved 14th April 2022 Construction commenced 11th October 2022
4.	Town Hall Albert Square	119106/LO/2018	LISTED BUILDING CONSENT for Internal and external intrusive surveys to the Grade I Listed Old Town Hall in order to inform the Our Town Hall Project to include intrusive survey works within Albert Square adjacent to the Grade II Listed Frasers Statue, the Grade II Listed Jubilee Fountain, the Grade II Listed Brights Statue, the Grade I Listed Albert Memorial, the Grade II Listed Heywoods Statue and the Grade II Listed Gladstones statue.	Approved 18th April 2018 Expected completion in 2024
5.	Land Bounded By Jacksons Row, Bootle Street, Southmill	114664/FO/2016	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	Approved 20th June 2018 Construction commenced 6th July 2022

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	Site/Location	Planning Permission Ref:	Description of Development	Status
	Street & 201 Deansgate		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.	
6.	325 - 327 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 (Use Class A1, A2, A3, A4, D2), access, landscaping and other associated works	Approved 26th June 2020 Under construction
7.	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 01/06/2023 Construction commenced 14/08/23
8.	Deansgate South	129406/FO/2021	Full planning permission for a 28-storey purpose built student accommodation building (Sui Generis)	Approved 18th May 2022 Groundworks Commenced 04th September 2023
9.	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 08 October 2021 Under Construction

	Site/Location	Planning Permission Ref:	Description of Development	Status
10.	Plot F Great Jackson Street	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 1st July 2022 Permission expires 1st July 2025 Started construction 24th September 2021
Alternative Baseline				
11.	Land Bound By Deansgate/ Great Bridgewater Street/ Trafford Street And The G Mex Viaduct	068662/FO/2003/C3	Demolition of existing section of viaduct and redevelopment to create a hotel (Class C1) incorporating associated retailing, restaurants, bars and cafes (A1. A2, A3), conferencing, other associated facilities including a health and fitness centre (Class D2) with 219 residential units (Class C3) above and a sky bar (Class A3), with related access, servicing, basement car parking, landscaping and associated works. The construction of an office building, (Class B1) with related access, servicing, car parking, landscaping and associated works and incorporating a public lift and stair linking to the G-Mex podium	Approved 31st October 2003 Hotel Site Built Out and Opened 2007 Office Building development has been implemented
12.	Viadux Phase 1 and 2	133998/JO/2022	Erection of a 40 storey building to form 375 residential apartments (Use Class C3a) and the erection of a 14 storey building for form offices (Use Class B1) (31,756 sqm) together with ground floor commercial	Approved 6th April 2017 Construction Commenced 28th October 2020 Phase 1 residential development approaching completion.

	Site/Location	Planning Permission Ref:	Description of Development	Status
			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	Phase 1 Office Development Implemented NOTE: Alternative Baseline – noting that the Site has planning consent i.e. including current Phase 2
Committed Development				
13.	10-12 Whitworth Street	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 11th April 2016 Groundworks Started Expected completion in 2025
14.	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 6th February 2023 Permission expires 6th February 2026
15.	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 (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	Approved 26th January 2021 Permission expires 26th January 2024

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	Site/Location	Planning Permission Ref:	Description of Development	Status
16.	Great Marlborough Street Car Park Great Marlborough Street	121252/FO/2018	Partial reconfiguration of existing Multi-Storey Car Park (MSCP), including temporary access off Great Marlborough Street, construction of 5 storey external ramps, closure of vehicular access to top level; and construction of new facade; and partial demolition of the surplus part of existing MSCP and erection of a part 55, part 11 storey, part 4 storey mixed-use building comprising 853 Purpose Built Student Accommodation units (sui generis), ancillary amenity space and support facilities, and 786sqm (GIA) SME incubator workspace (Use Class B1), including public realm improvements and other associated work	Approved 23rd July 2021 Permission expires 23rd July 2024
17.	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	Approved subject to S106 agreement in February 2023, Decision Notice not yet issued

	Site/Location	Planning Permission Ref:	Description of Development	Status
			(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 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	

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	Site/Location	Planning Permission Ref:	Description of Development	Status
18.	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 residential use to floors three to six containing 4 no. apartments (Use Class C3) with associated parking and servicing	Validated 09th 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
19.	1 Commercial Street	128433/FO/2020	Proposed development of seven townhouses on current brownfield site	Approved 5th March 2021 Permission expires 5th March 2024
20.	One Medlock Street	135419/FO/2022	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.	Approved 1st June 2022 (Committee)
21.	Land Bounded By River Street To The North,	136043/FO/2023	Erection of 13-storey office building (Use Class E) with associated public realm,	Approved subject to S106 agreement 12th May 2023, Decision Notice not yet issued

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	Site/Location	Planning Permission Ref:	Description of Development	Status
	Plot 10B To The East, Hulme Street To The South And The Development Plot 9A To The West		external roof terraces (floors 11 and 12) and other associated works including external amenity spaces (Plot 10A)	
22.	Part Of Plot C And Plot E Great Jackson Street	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 (Sui Generis), basement car parking, cycle parking, landscaping and public realm, servicing and access arrangements, highways alterations and associated works.	Validated on 26th 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
23.	Plot D Great Jackson Street	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 26th 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

Appendix 3 Scoping Template

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Viadux Phase 2 and 3 Manchester
EIA Scoping Template

To:	EIA Consultants
From:	Deloitte LLP
Date:	September 2023

Guidance for Completion of Input

This template has been prepared by Deloitte for consultants to complete your technical inputs into the EIA Scoping Report and process. Your completed inputs will be used to compile the EIA Scoping Report, which will be managed by Deloitte.

Please replace the grey highlighted text with your inputs.

If your topic is scoped out in its entirety, then you do not need to complete the 'Identification of Effect/s which are Likely to be Significant' or the sections that follow this.

Technical Competence

These details are required to inform the statement of technical competence to comply with the EIA Regulations.

Technical Competence in [insert topic] and EIA		
	Lead Author	Reviewer
Name	[Insert text]	[Insert text]
Company	[Insert text]	[Insert text]
Qualifications/Accreditations relevant to technical area	[Insert text]	[Insert text]
Does the practitioner hold any IEMA qualification?	[Insert text]	[Insert text]

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Company hold IEMA QMark?	[Insert text]	
Years technical experience (in technical area)	[Insert text]	[Insert text]
Number of EIA's delivered to date	[Insert text]	[Insert text]

Consultation

As part of the EIA process technical consultation should be undertaken with relevant technical specialists within Manchester City Council or other statutory consultees (where applicable). Please provide a summary of any consultation undertaken to date within the table below. Add a new row in the table for each consultation activity.

If no consultation has been undertaken then please state this.

Consultee (Body/Organisation)	Role	Date and Form of Consultation	Summary and Outcome of Consultation
[insert text]	[insert text]	[insert text]	[insert text]

Completed Background Studies / Available Baseline Information

Please use the table below to document the details of studies, surveys, technical analysis/evaluation(s) that have already been undertaken prior to this EIA Scoping process and therefore inform the baseline and scope of assessment set out below.

Please only provide details of work that has been completed. Work to be completed later in the process will be set out within later sections of the template.

Add a new row in the table for each baseline study / survey etc.

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
[Insert Title]	[Insert Brief Overview]	[Date Completed]

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Baseline

This should include a description of the environment as it is currently (in 2023) and as it is expected to change as a result of the Proposed Development, as well as how it would change if the Proposed Development did not come forward (as relevant).

Some baseline data can be obtained from existing data sources, but additional data may be required. The method used to obtain this information should be clearly identified. Baseline data should 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 likely effects of the proposed changes can be predicted.

This text should be factual but succinct (i.e. a few paragraphs). In addition it should provide the baseline situation for all 'receptors' identified in later sections below, as well as any appropriate technical study areas (i.e. Zone of Influences). This section can include figures and or maps, however, please provide these as separate documents/PDFs within appropriate frames detailing the project, the company (and logo), revision number, etc.

[insert baseline text here]

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Scope of Assessment

Identification of Effect/s which are Not Significant

The aim of this section is to identify effects that will be scoped out of the EIA.

Please use the tables below to outline each effect which is not significant.

The consideration of effects not considered significant can take account of Primary and Tertiary mitigation, however, where this has been considered these mitigation measures need to be clearly identified.

For clarity the definitions of the types of mitigation to be considered; and are as follows:

- ***Primary mitigation:*** *modifications to the location or design of the Proposed Development or measures specifically included in the design of the proposed development to mitigate a known issue and are therefore an inherent part of the project;*

- ***Secondary mitigation:*** *action that will require further activity in order to achieve the anticipated outcome. These would be included within the ES following the assessment of effect, under the 'mitigation' section, before the reporting of the 'residual' effects. It is anticipated that such measures would be secured by condition; and*

- ***Tertiary mitigation:*** *actions that would occur with or without the EIA. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.*

If we do not have certainty, effects will need to be scoped in until such time as we have certainty. Please complete a new table for each effect. 'C' is for the construction phase including demolition if relevant and 'O' is for operation. If there are no effects that are not significant, this section can be left blank.

Effect	[insert effect]	Applicable Development Phase (C / O)	[C / O]	Receptor	[insert receptor]
Discussion of Effect					
[insert overview of effect]					
Mitigation Committed to in order to Avoid or Reduce Effect					
[insert mitigation]					
Concluding Statement					
[insert concluding statement]					

*<< **Please note:** If there are no significant effects identified (i.e. your topic is scoped out in its entirety), your input will stop here and you do not need to complete the remaining parts of the template. >>*

Identification of Effect/s which are Likely to be Significant

The following table should identify the likely significant effects that will be scoped in for assessment in the ES. This section should identify likely significant environmental effects (positive and negative) resulting from the Proposed Development. Construction and operational effects should be considered separately.

The receptors should match to the names of the receptors under the 'Receptor' section above. 'C' is for the construction phase including demolition if relevant and 'O' is for operation.

Please insert a new row in the table for each effect.

Effect	Receptor	Applicable Development Phase (C / O)
[insert effect name]	[insert receptor]	[C / O]

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Assessment Methodology for Likely Significant Effects

This section is to provide the reader (and consultees) sufficient detail of the methodology that will be adopted to assess the likely significant environmental effects identified above, whilst also being concise.

A clear explanation of the methods used in undertaking the study with reference to published standards, guidelines and best practice should be provided.

The application of significance criteria (in Appendix 1) used should be discussed within this section.

Please use the significance criteria set out in this document unless industry best practice in your field determines otherwise; where alternative significance criteria is used an explanation of this should be provided including why it is appropriate.

Please note the proposed development will come forward in phases. The details of how the development will be phased and scenarios are included in the briefing note. All consultants are to consider which scenarios are required to be tested as part of their discipline.

***Please Note**, all assessments should consider all relevant phases of the Proposed Development (i.e. construction [including demolition] and operational phases) which should align with the anticipated timeline for the project. Deviations from these proposed timeframes should be discussed with the EIA lead prior to completing this section.*

Please use a bulleted list or succinct paragraphs in chronological order to provide clear but concise description of the methodology to be adopted, using the above points as a checklist. For any reference to guidance please use the guidance name and reference in full through footnotes.

***Please note**, the following text will be included in the assessment methodology. "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."*

This is the standard terminology we will be adopting within the ES and your input should comply with this. Any concerns regarding this should be directed to the EIA Team to discuss how we approach this.

[insert methodology here]

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Limitations and Assumptions

This section should set out any assumptions made in the assessment including potential limitations to the information used.

This is to ensure transparency within the EIA process as required by the EIA regulations.

[Insert limitations / assumptions]

Appendix 1 - Methodology for Determining Impact Magnitude

Magnitude of Impact	Criteria for assessing impact
Major	Total loss or major/substantial alteration to key element/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 circumstance/situation.

The sensitivity of a receptor is based on relative importance of the receptor using the scale in the table below:

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 no local importance.

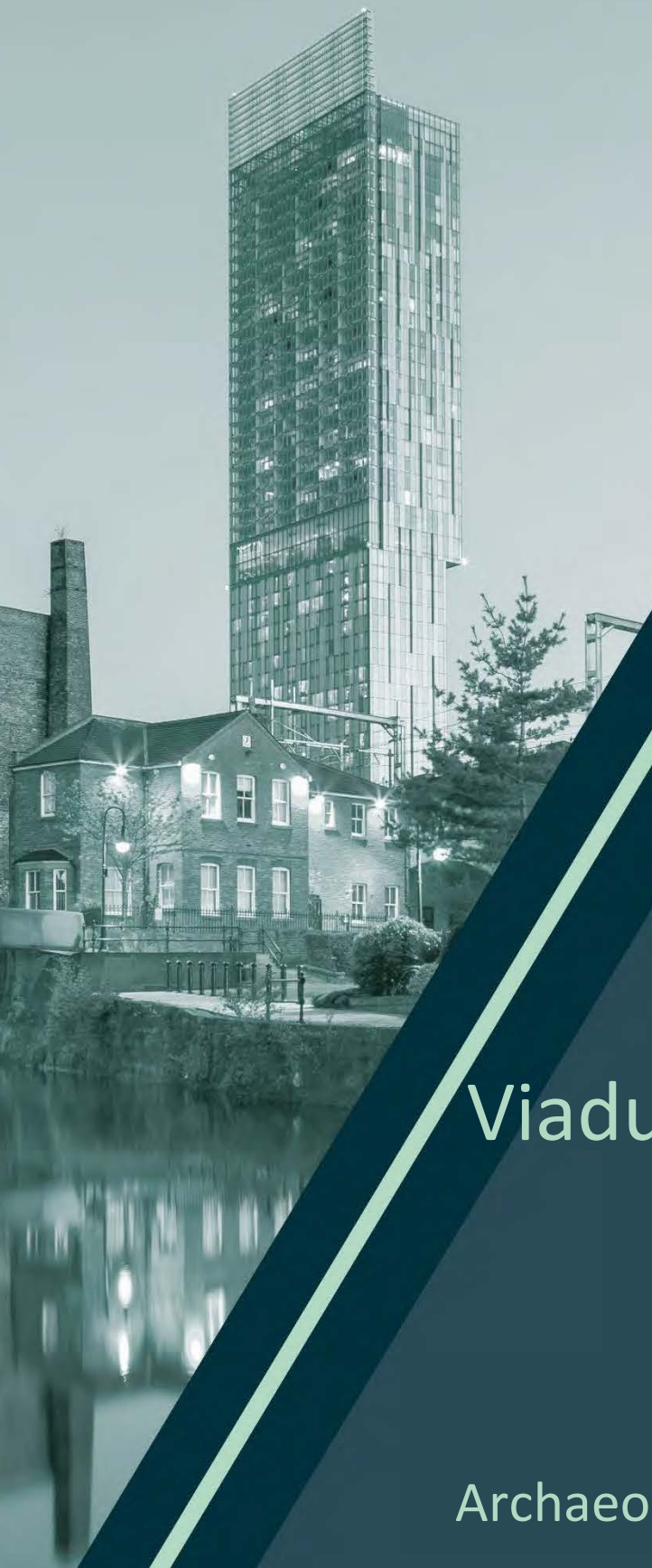
The significance of an environmental impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. The impact Significance Matrix is set out in the table below.

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Impact Signifiance Matrix

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

Appendix 4 Archaeological Desk Based Assessment



SALFORD ARCHAEOLOGY
University of Salford

Salboy Central Ltd

Issue: v1

SA/2023/83

Viadux Plot 2a, 2b and 2c, Manchester

Archaeological Desk-based Assessment

Salford Environmental Consultancy

Built / Historic / Natural

REGISTERED ORGANISATION CIfA

QMS ISO 14001: 2015 45001: 2018

QMS ISO 9001: 2015

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1. Summary

Salboy Central Ltd is devising proposals for the redevelopment of land at Albion Street and Great Bridgewater Street, Manchester City Centre (centred on NGR 383596, 397620). In order to support the planning applications for the scheme Salboy Central 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 area of Manchester, which is believed to have been conducive for prehistoric activity based on a number of finds that have been excavated in the area. During an excavation that took place in 2020 associated with Phase 1, two potential prehistoric pits were excavated near to the present site.

The site lies within the Area of Castlefield Roman Vicus. Previous investigations revealed Roman remains within the north-west part of the Site, comprising a Romano-British pit or linear feature. Further remains were discovered within broadly the centre of the site, including revealed 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. In addition, previous Roman findspots lie within the site, together with a section of Roman road associated with either the Manchester to Oldham, or the Manchester to Buxton road and the Roman road from Manchester to Buxton.

No medieval activity is known within the site and it lies beyond Manchester's medieval core, though several medieval findspots are within the vicinity of the site. The site was most likely arable land associated with farming and divided by field boundaries in the post-medieval period. In addition, three cottages had been established within the site by the late 18th century, together with a row of single-depth dwellings on the south side of Strand Court.

By 1801 the Great Bridgewater Street Wesleyan Chapel had been erected, and by 1809 a rectory, Sunday School, and the chapel's burial ground had been established. In addition, two double-depth properties had been established on the south side of Trumpet Street, and a narrow rectangular commercial building. An iron foundry had been established in *c.*1806, at the junction of Great Bridgewater Street and Albion Street, and Commercial Mill (Marsden's Mill), had been erected by 1809, between Trumpet Street and Trafford Street.

By 1824/1831, the remainder of the Site had been developed including Union Iron Foundry, and various types of workers' housing, including double-depths, blind-backs and back-to-backs. Open yards occupied the south side of Trumpet Street.

The site was subject to significant reorganisation in the late 1880s, when a new railway viaduct was built linking Central Station to the existing network (Castlefield Viaduct; List Entry 1292315), which is currently extant and is designated as a Grade II Listed Building. The construction of the viaduct led to the clearance of all of the houses, Union Iron Foundry, the open yards and some of the buildings associated with the chapel. The burial ground was reported to have been 'swept away' prior to the construction of the Great Northern Railway Company's viaduct, however, the burial ground is still marked on maps following the

construction of the railway viaduct. Several businesses occupied the brick arches beneath the viaduct.

An automobile engineering works had replaced the buildings formerly associated with the Great Bridgewater Street Methodist Chapel in the west of the site by 1922. By the 1940-60s, the former foundry on the eastern edge of the site was utilised as an engineering works.

An excavation associated with Phase 1 was undertaken in 2020. The excavation correlates with much of Plot 2a, and revealed potential prehistoric pits, Roman remains, 19th-century workers' houses and part of an early 19th-century mill. A small portion of the north-west corner of the site was also excavated (covering the north-east edge of Plot 2b) and indicates that the remainder of the site has high potential to contain archaeological remains.

The potential for the site to contain buried archaeological remains is considered to be high. Remains may include prehistoric remains, Roman activity, late medieval to post-medieval relict soils and field boundaries, a burial ground and associated religious buildings, an early 19th-century cotton mill and early 19th-century foundries. Any remains that do exist within the Site are likely to be of low (local) to medium (regional) significance and, without a programmed of mitigation, the scheme could damage or destroy these remains.

The exact scope and extent of any such further investigation of the Site will be determined by the Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as archaeological advisor to Manchester City Council. However, following consultation with GMAAS, it is anticipated that, in the first instance, a programme of archaeological evaluation (either consisting of a strip, map and record or trial trenches) should take place within the Site with to establish the presence or absence of buried archaeological remains, and if present, their extent and significance. In addition, archaeological monitoring in the form of a watching brief should take place during any ground-breaking works beneath the main roads and the road junction in the north-eastern corner of the site.

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

Salboy Central Ltd have prepared a planning application for the redevelopment of land at Albion Street and Great Bridgewater Street, Manchester City Centre.

2.1 Site location

The Site is located in Manchester city centre. It is bounded by the Manchester Central Conference Complex and Great Northern Warehouse to the north, Albion Street to the east, the Deansgate Castlefield Metrolink station and Deansgate Locks to the south, and the Beetham Tower to the west. It extends to 1.49 ha.

The Proposed Development will deliver 915 residential apartments, including 133 affordable homes, within two buildings; flexible retail space; residential amenities; secure cycle parking; public realm improvements and new green landscaping; *and associated works to the public highway.*

The Proposed Development will be delivered across three plots:

Plot 2a is located at the centre of the Site, immediately east of the nearly completed Phase 1 building, on land currently comprising the grade II listed Castlefield Viaduct. This plot will deliver a 76-storey residential tower comprising 782 1- and 2-bed apartments (Use Class C3). Residents' amenity spaces and commercial units (Use Class E) are provided within the arches at ground floor opening onto Great Bridgewater Street. 910 secure cycle spaces, serving this and the Phase 1 building, are provided within the basement. At viaduct level, a redesigned service yard for the conference centre is enclosed by a new podium structure with residents' external amenity space above. A section of the Great Bridgewater Street bridge is removed to bring light into the street below.

Plot 2b, located at the western-most section of the Site between the viaduct and Beetham Tower, consists of a 23-storey residential building accommodating 133 affordable 1-, 2- and 3-bed apartments (Use Class C3), 133 secure cycle parking spaces, circa 200 sq m flexible commercial units (Use Class E) opening onto the viaduct, and public realm enhancements on Great Bridgewater Street.

Plot 2c, located at the eastern-most part of the site between the Metrolink line and Albion Street, comprises 459 sq m flexible commercial space (Use Class E) across two storeys, and public realm enhancements and associated changes to the highway layout on Albion Street.

The desk-based study aimed to identify as far as possible the nature, extent and significance of the sub-surface archaeological resource within the site so as to enable informed recommendations to be made for the future treatment of any surviving remains.

The proposed development site lies within the Castlefield area of Manchester and is centred on NGR 383596, 397620 (herein referred to as the Site). The former Manchester Grade II* Central Railway Station (now known as the G MEX) lies a short distance to the north of the Site. The Site comprises a section of the Castlefield Viaduct, which is afforded statutory protection as a Grade II listed building.

At street level it comprises railway arches underneath the viaduct. On top of the viaduct is a former car par, now occupied by Viaducts showroom. Former vehicular access to the Site is

via Trafford Street, which incorporates a ramp up to the deck on top of the viaduct. Pedestrian access to the viaduct deck is taken via the Metrolink Station or Great Northern Warehouse.



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 32m 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 superficial Devensian, Glaciofluvial Sheet deposits, which formed between 116 and 11.8 thousand years ago during the Quaternary Period (British Geological Society, 2021).

2.3 Designations

The Site contains one designated heritage assets, comprising a 19th-century railway viaduct that is afford statutory protection as a Grade II listed building (Table 1). It does not contain any Scheduled Monuments or Registered Parks and Gardens.

Description	Designation	List Entry	Location
Castlefield railway viaduct from G MEX to Dawson Street	Grade II Listed Building	1292315	SJ 83220 97620 (point south-west of the Site)

Table 1 Designated heritage assets within the Site

The Site is located within 100m of 12 listed buildings and 250m of 25 listed buildings (Table 2). The Site is located *c.*70m east of the Castlefield Conservation Area (Table 2). The proposed development will not have a direct physical impact on these designated heritage assets. A detailed consideration of the above-ground historic environment is presented in a separate heritage appraisal that has been prepared and 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
Manchester South Junction and Altrincham Railway Viaduct	Grade II Listed Building	11681.1.0	Centred SJ 8382 9770 (2031m by 487m)
Manchester Central (formerly GMex; former Central Station) (Area of Roman Manchester)	Grade II* Listed Building	129.1.0	SJ 8370 9775 (point)
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) a E 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

K6 Telephone Kiosk (south-west corner of 330 Deansgate)	Grade II Listed Building	8460.1.0	SJ 83408 97710
The Briton's Protection Public House	Grade II Listed Building	8412.1.0	SJ 83658 97582
235-291 (formerly 235-295) Deansgate	Grade II Listed Building	8384.1.0	SJ 83468 97744
Castlefield Information Centre, 322-330 Deansgate	Grade II Listed Building	8378.1.0	SJ 83419 97715
13-17 Albion Street	Grade II Listed Building	List Entry: 1279694	SJ 83658 97582
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 3-9), 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 for Levelling Up, Housing & Communities , 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 189-208), 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 194 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 203 states that the effect of a proposal on non-designated heritage assets (designated assets are covered in paragraphs 199-202) should be taken into account in determining a planning application.

Paragraph 205 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.'

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 2).

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).

An open area excavation took place in 2020 beneath the viaduct during Phase 1 of the scheme. The excavation trench partly encompasses the present Plot 2a (Fig. 13). A preliminary report suggests that two potential prehistoric pits were excavated within Bay 9 (Salford Archaeology Archive, internal ref: SECL 2006), which lies within the Site (Salford Archaeology, 2023).

During an excavation at Liverpool Road, *c.*450m north-west from the Site, two Mesolithic finds, one Neolithic/Bronze Age waste flake, and a single fragment of late Bronze Age/Iron Age pottery were recovered (HER 13944.1.0), although none were found in securely stratified deposits. Additional finds were retrieved from rescue excavations at Barton Street, located *c.*191m west from the Site. The nearest prehistoric find to the Site was discovered at Tonman Street, *c.*140m north-west from the Site, which consisted of a late Neolithic to Early Bronze Age barbed arrowhead was found in Tonman Street, (HER 126.1.0). Such finds complement growing regional evidence for prehistoric settlement and other activities, known to be

concentrated on well-drained sand and gravel sites adjacent to rivers and moss lands (HER 13944.1.0).

5.1.1 Archaeological potential

A preliminary report suggests that two potential prehistoric pits were excavated within the immediate vicinity of the Site, raising the potential for prehistoric buried archaeological remains within the Site.

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. Castlefield Roman Vicus and Area of Roman Manchester falls within the Site (HER 415.2.0).

Part of the vicus was excavated in 1972 and 1981, revealing 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 Site lies within the Area of Castlefield Roman fort and vicus (HER 415.2.0), an area of intense Roman activity. An archaeological evaluation was undertaken on Great Bridgewater Street in 2020, within the north-west of the Site. One out of the three trenches that was excavated 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 (See Fig. 13).

In addition, an archaeological excavation that took place before the construction of Phase 1 also uncovered several Roman features (Salford Archaeology, 2023). The excavation took place within broadly the centre of the Site (partly covering Plot 2a) and 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 majority of the Roman remains were excavated within bays 5, 7 ,8 and 9.

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 third century AD. The projected course of the Roman road from Manchester to Ribchester ran in a northerly direction *c.*70m west of the Site (HER 14.1.0), whilst the route of the Roman road from Manchester to Buxton (Levenshulme section) ran roughly east to west, through the south-east part of the Site (HER 28.1.3). In addition, a section of a Roman road was revealed an during an excavation that took place to the south of the Central Railway Station (within the Site). 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.

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 immediately west of the Site, on the site of Beetham Tower at the junction of Deansgate, Great Bridgewater Street and Trafford Street (HER 13938.1.0). An excavation was undertaken here 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).

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, 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 Site and its immediate vicinity. The neck of large amphora was found at Trafford Street in 1903, within the Site (HER 415.4.28). Other nearby Roman finds include a hoard of 200 coins that were discovered in 1840 (HER 415.4.23), *c* 47m to the south-west of the Site. During the rebuilding of the Crown Inn,

Deansgate, in 1904, pottery, charcoal, iron, 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* 54m west of the Site. In addition, a Roman urn and three Samian Ware dishes (HER 415.4.26) were discovered *c* 74m east of the Site. A bronze statuette of Jupiter, a ring and a silver coin were excavated during the digging of the foundations for the Hall of Science (HER 415.4.10), *c* 133m to the north-west of the Site.

Perhaps some of the best-known Roman finds come from the south side of the River Medlock, located *c.*250m south-west of the Site. Three structured stones were found at a depth of *c.*2m by workmen sinking a drain in 1821. One has been identified as *Cautopates*, a figure associated with the worship of Mithras, from which it is inferred that a Mithraeum, or building used for the worship of the god, stood in locality (HER 13951.1.0). The precise spot at which the three stones were found is not certain, but they are described as having been discovered 'in the line of the Roman road from Manchester to Chester, and only a few hundred-yard south-west of the Roman fort' (Bruton, 1909). Another altar to the goddess *Fortuna Conservatris* was found in 1612 'under the roote of an oak in Medlock neere Knott Mill' (Bruton, 1909, p. 20; HER 415.4.24).

An excavation on the junction of Chester Road and Great Jackson Street provided important new information on the character of the area when a Roman altar was discovered (HER 415.4.18; *c.*250m south-west of Site). This had been dumped into a pit away from the road, suggesting that the area was reused for other purposes. Physical evidence for a sequence of inter-cutting pits, agricultural ditches and an enclosed ditch were also identified. The discovery lines the Roman road from Chester as it dropped down to the ford across the River Medlock.

5.2.1 Archaeological potential

The Site lies within an area of intense Roman activity. Romano-British remains have been excavated during Phase 1 of the Viadux scheme, therefore, there is high potential for Roman archaeological remains to survive *in-situ* within the rest of 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). A gold finger ring (HER 9916.1.0), discovered in antiquity, has been traced to the Castlefield area (*c.*300m to the south-west of the Site), providing rare physical evidence for human activity in Manchester during this period.

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) was discovered whilst digging the foundations for Campfield Library in 1899. The hoard included eight sceattas dating to AD 450-600 located *c* 100m north-west of the Site. Similarly, along Tonman Street in 1821, nine sceattas were unearthed while digging the foundations of St Matthew's Church, *c*.200m north-west of the Site (HER 124.1.0).

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*.70m east of Deansgate but is over *c.*1km to the south-west of Manchester's medieval core.

A deer park, named 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.* 50m to the north-east 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).

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 very 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 the excavation of the Slot Site, prior to Phase 1 (Salford Archaeology, 2020). This layer was exposed within the north-east corner of the present Phase 3 Site and overlaid post-Roman relict soil. Further post-medieval buried soils have been identified in the study area. The soils were excavated during an archaeological evaluation undertaken in 1982, *c.*250m to the east of the Site (GMAU, 1982). Trench F of 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 postmedieval period (HER 415.1.3).

5.4.1 Archaeological potential

The Site was most likely arable land in the post-medieval period. The intense development of the land in the industrial period has most likely impacted the survival of the pre-18th landscape, however the potential for relict soils to survive in discrete areas of the Site is high.

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).

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. The canal offices were likely to have been built at a similar time.

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 2). 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 was also situated near to the Bridgewater canal basin (HER 16846.1.0). Several coal (HER 16217.1.0) and slate wharves (HER 13875.1.0) contemporary with the opening of the Bridgewater Canal were also established at the Castlefield canal terminus (HER 120.1.0), located *c.*270m to the south-west of the Site.

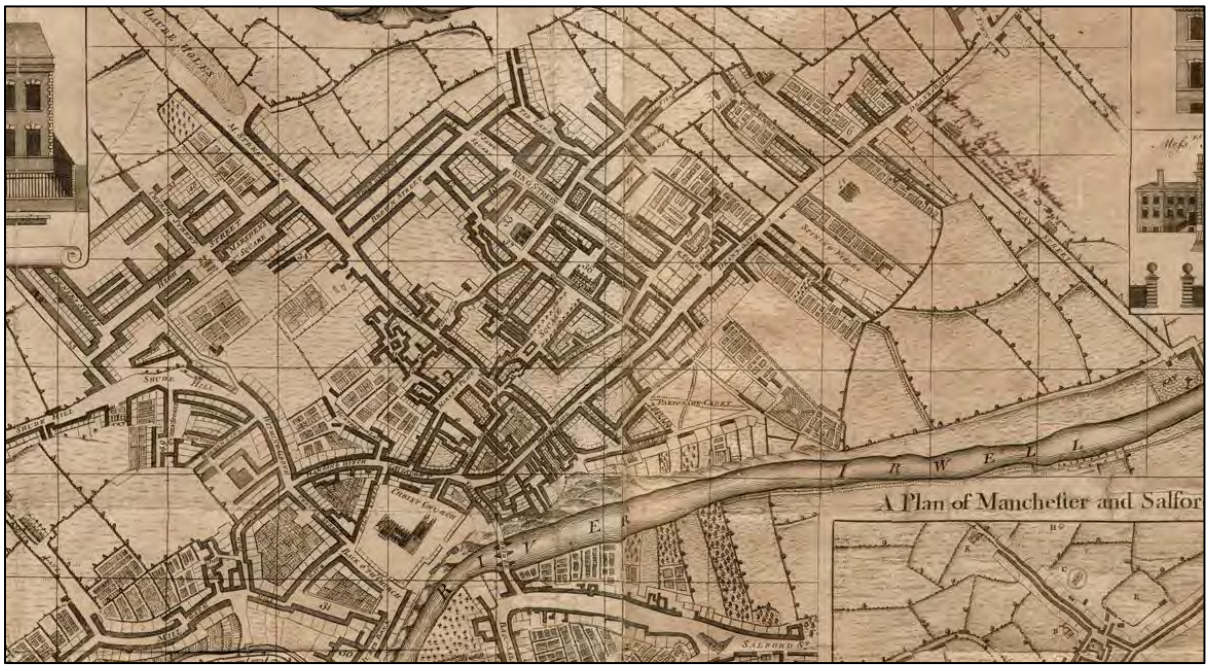


Plate 2 Extract from Casson and Berry's map of 1741, showing approximate Site location

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.270m to the south-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.

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). 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 dye works and printworks, which are shown along its course on late 18th-century mapping.

With textiles as the driving force, Manchester emerged as a complex industrial city, producing goods of every description. Warehouses were built to store the mass-produced goods and to supply the needs of the rapidly growing population of Manchester, the fastest growing city in the world in the 19th century. Several wharfs were built around the Castlefield basin, to facilitate the movement of goods between the barges and warehouses. The various wharves are named after the principal commodities they handled, such as Potato Wharf, Timber Wharf, Coal Wharf and Slate Wharf, the oldest of which was constructed in 1765.

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). 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. They also gave a great stimulus to industry by reducing the freight costs of heavy materials such as coal as well as reducing costs of transporting finished goods around the country. Inevitably, the railways replaced the former canal network.

The earliest railway station in the vicinity of the Site was the Store Street Station, which was opened on the 8th May 1842 by the Manchester and Birmingham Railway (HER 1391.1.0). The railway station was built on the site of the current station complex at Piccadilly and was the terminus for the Manchester and Birmingham Railway line. Shortly after the station opened, it became a joint terminus, which also served the Sheffield, Ashton-under-Lyne and Manchester Railway.

Soon after the station was built, it was 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 today's 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 southeast 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 northwest side of the River Irwell, and the southern branch terminating at the east side of Dawson Street.

Manchester Central Station (formerly G-Mex) lies immediately to the north of the Site (HER 129.1.0) AND IS A Grade II* Listed Building. The station was built between 1876–79 by Andrew Handyside of Derby and was designed by Sir John Fowler. The station opened in 1880 by the Cheshire Lines Committee to replace a temporary 1877 station. The station functioned as the joint terminus for Midland & Cheshire lines, before it closed in 1969 and was used for car parking. The building was then converted into an exhibition centre (The G-Mex Centre). The roof is the second largest in the country, spanning 210 feet with a rise of 90 feet. The roof is supported by 16 arched truss ribs formed of curved Warren girders 15 inches deep and 584 feet long. There were awnings over the outer ends of the platforms. The roof was re-clad in 1951 and the 1980s.

A Grade II Listed railway viaduct (Castlefield railway viaduct from G-Mex to Dawson Street List Entry: 1292315) lies within the Site. The viaduct was built in. c.1880 and is of cast iron

and wrought iron construction with red brick to east of Duke Street. The viaduct runs south-west from former Central Station, then westwards, dividing into two over Castlefield and re-joining west of River Medlock.

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. Prior to the development of the Castlefield area, there was limited settlement beyond the medieval core of hanging ditch. 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 vacant plots of land, separated by four proposed roads laid in a grid-like pattern. Great Bridgewater Street and Trafford Street bounded the Site to the north and south. An unnamed lane, later known as Trumpet Street, ran parallel to Great Bridgewater Street and Trumpet, through the centre of the Site. A second unnamed lane ran broadly through the centre of the Site, which was later known as Opening Street. The fields to the east and south-east of the Site l were purportedly owned by 'Messrs McNiven & Co' and 'Messrs Cheethams'. A field boundary aligned east to west ran through the south-east Site boundary. The field boundary had likely been converted into Gaythorn Street to the west. The only development that had taken place within the Site consisted of a row of narrow buildings within the north-east of the Site.

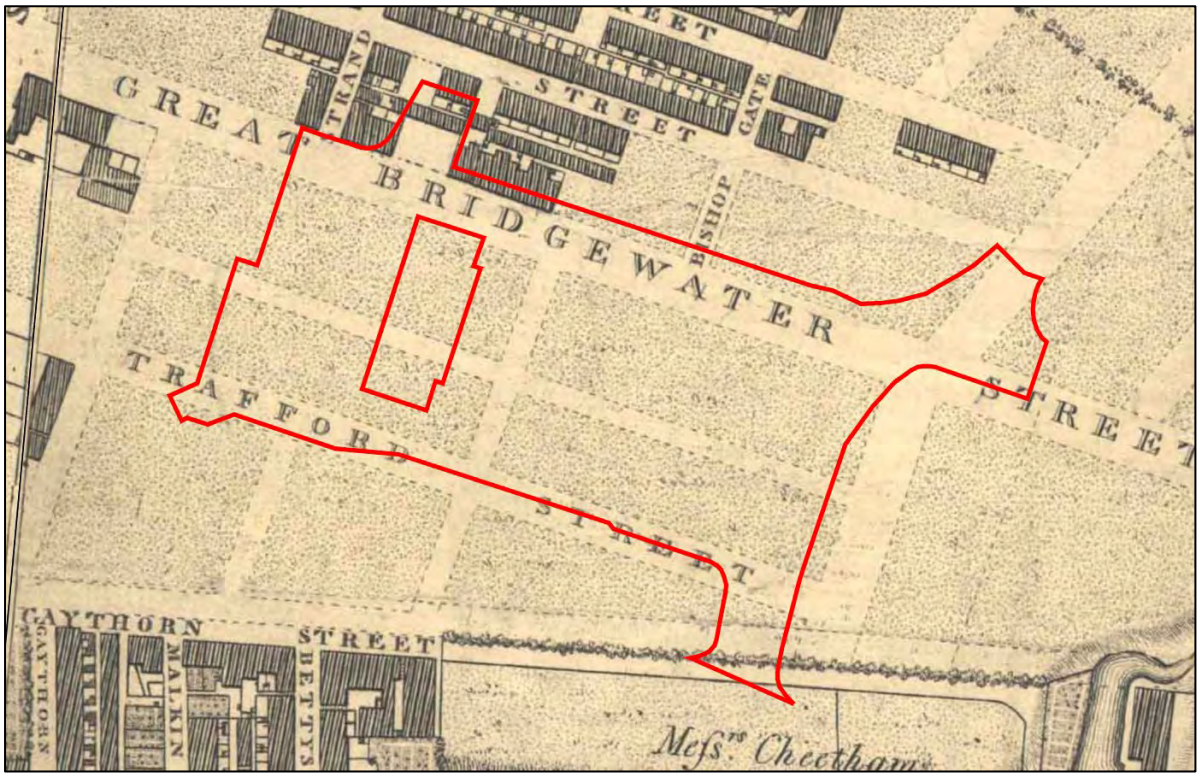


Plate 3 Extract from Green's map of 1787-94, showing the Site boundary

Laurent's map of 1793 captures further development within the Site (Plate 4). A rectangular building, that does not respect the line of the street lay within the Site. A square field with narrow path and surrounded on three sides by a hedgerow occupied the land immediately

south of the property. A dashed line demarcates two fields that are located on either side of the street. In addition, two structures are captured in the west of the Site. The function of the building is unclear but there is evidence to suggest the establishment of market gardens in Castlefield at the time. The most obvious cartographic depiction being on Priestner Street to the west of the Site. These gardens are depicted in a similar style to the two plots of land adjacent to the building, the linear patterns representing arable use. Based on this evidence, the interpretation for the building would be a small farmstead with arable land.

A hedgerow, set back from Great Bridgewater Street functioned as the northern property boundary to this building. It extended eastwards, over an unnamed street (later Opening Street). A second hedgerow ran broadly north to south through the east of the Site. A rectangular building with several extensions, including a potential glasshouse or annexe was situated to the east of the hedgerow, set-back slightly from the Great Bridgewater Street. A smaller house is shown fronting Trafford Street, to the west of the aforementioned boundary. The hedgerows and boundaries do not follow the newly devised street pattern, and likely relate to earlier field divisions.

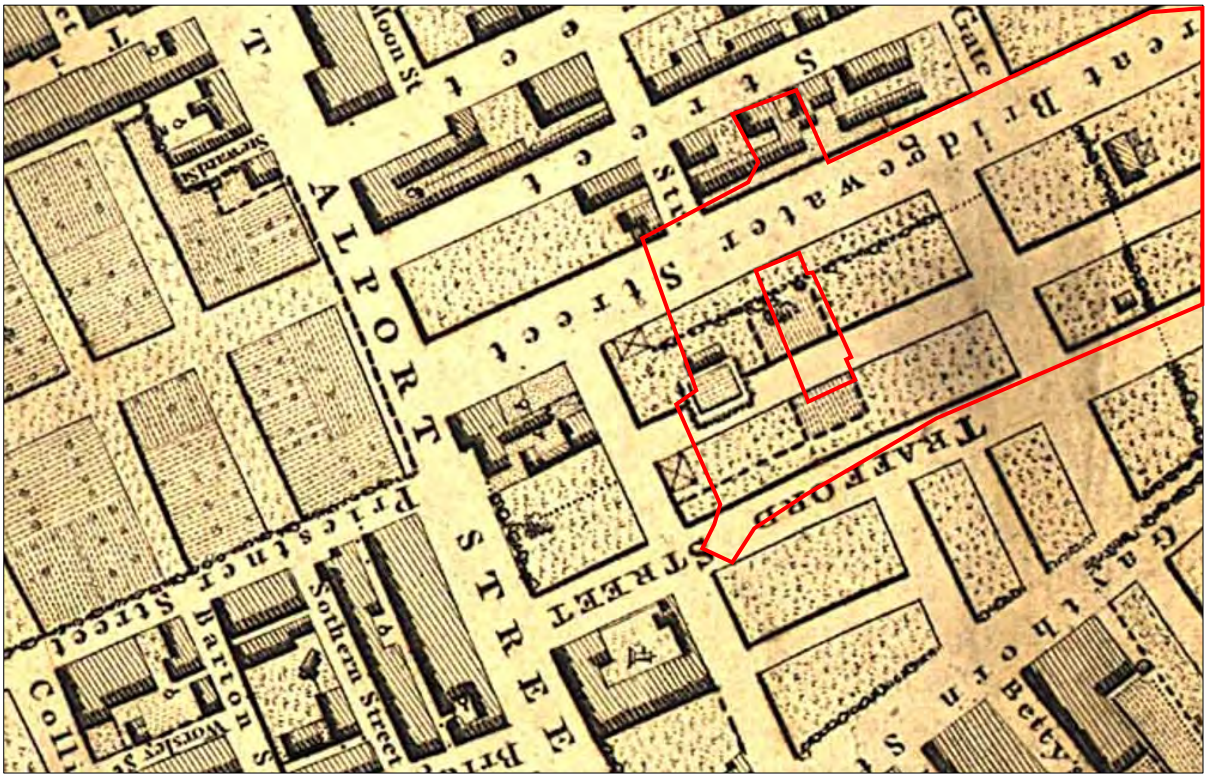


Plate 4 Extract from Laurent's map of 1793, showing the approximate Site boundary (not orientated north)

The first decade of the 19th century saw increased development, which is captured on Dean and Pigot's map of 1809 (Plate 5). Although most cartography from this period was produced at a scale that precludes detailed analysis, several buildings had been established within the Site and 'Trumpet Street' is marked on the survey. Dean and Pigot's plan of 1809 is the first available map that captures Great Bridgewater Street Methodist Chapel, which opened in 1801. The chapel lay immediately west of the Site and was flanked by two narrow strips of land on either side, probably used for burial plots. A square building that lay immediately west

of the chapel, within the Site, likely represented a rectory or building associated with the chapel. In addition, two other buildings had been erected within the Site. The building on the north side of Trumpet Street is shown on later maps as a Sunday School linked to the adjacent Methodist Chapel. The building may have functioned as a Sunday School as early as 1809. The block of buildings erected between Trumpet Street and Trafford Street most likely represented domestic dwellings. A square building occupied the south side of Trumpet Street, with square boundary to the south, presumably marking a rear garden or property boundary.

Dean and Pigot's map of 1809 captures a rectangular building, running between Great Bridgewater Street and Trumpet Street. Later maps suggest that this building may have represented domestic dwellings. An L-shaped block lay a short distance to the east, which corresponds to the western wing of a foundry shown on later maps. Later trade directories reveal that the foundry was owned by the Galloway brothers, sons of a millwright from Scotland, who moved to Manchester and established the Galloway & Bowman Caledonian Foundry on Great Bridgewater Street in *c.*1806.

In addition, the 1809 map captured two adjoined buildings, fronting Trafford Street. A large rectangular building occupied the full depth of land between Trafford Street and Trumpet Street, with a much smaller square building adjoining the western side. Later maps indicate that the large, industrial-sized building functioned as a cotton mill.

Dean and Pigot's map is also the first that captures the Rochdale Canal (HER 1368.2.0), which crosses through the south-east tip of the Site. The canal was completed in 1804.

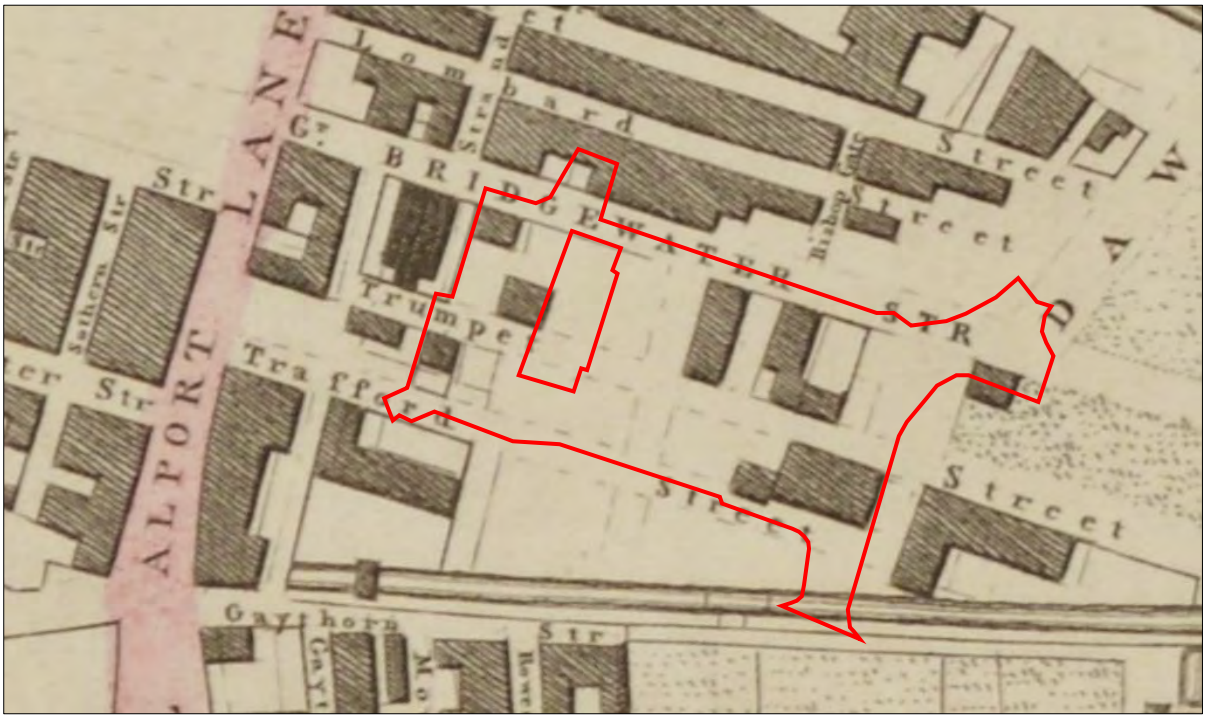


Plate 5 Extract from Dean & Pigot's map of Manchester, 1809, showing the approximate Site boundary

The next available map is that produced by Swire in 1824, although the plan does not seem to capture details of the individual buildings within the Site (Plate 6). The Site and its environs have witnessed further development. This development encompassed warehouses, industrial complexes, public and residential properties. The chapel grounds, which lie within the west of

the Site appear to have been extended eastwards around this time, later the location of a burial ground. The square building that lay between Trafford Street and Trumpet Street had been incorporated into a complex of structures with an internal courtyard, which is likely an early representation of the Union Foundry. In addition, double-depth houses seem to have erected within the south-west part of the Site, on the southern side of Trumpet Street.

A long block of housing had been erected on Great Bridgewater Street to the east of the chapel. In total, three open yards, possibly in use at this time as open-air wharfs associated with the Rochdale Canal, lay between the foundry and mill on the southern side of Trumpet Street. The first yard contains a small, square building fronting Trafford Street but is otherwise open, the middle yard had a rectangular building at its south-west corner, and the easternmost yard a slightly larger square building, fronting Trumpet Street.

It is possible to equate two adjacent buildings between Trafford Street and Trumpet Street shown as a mill on later maps. The mill building is likely the same as that shown on Dean and Pigot's earlier plan. The mill is first annotated as such in *Plans of All the Cotton Spinning Mills in Manchester in c. 1822* (Plate 7). The 1822 plan shows a similar arrabngement of buildings as those captured on Swire's map of 1824. The plan annotates the building as being owned by Thomas Marsden. Block 'a' was a five-storey factory with a loft, whilst block 'b' operated as a single-storey shop. The plans usually show the mill's steam power plant, however, the absence of a steam engine or boiler house from the plan of Marsden's Mill could imply that it housed hand-powered mules / jennies in its early years.

Several buildings are depicted between Opening Street and Albion Street, the easternmost being a square complex with entrance onto Great Bridgewater Street. The buildings at the east end of the block likely represents the Galloway & Bowman Caledonian Foundry that opened in 1806. A number of houses fronting Trumpet Street and Great Bridgewater Street are shown as a single block on the map.



Plate 6 Extract from Swire's map of 1824, showing the Site Boundary

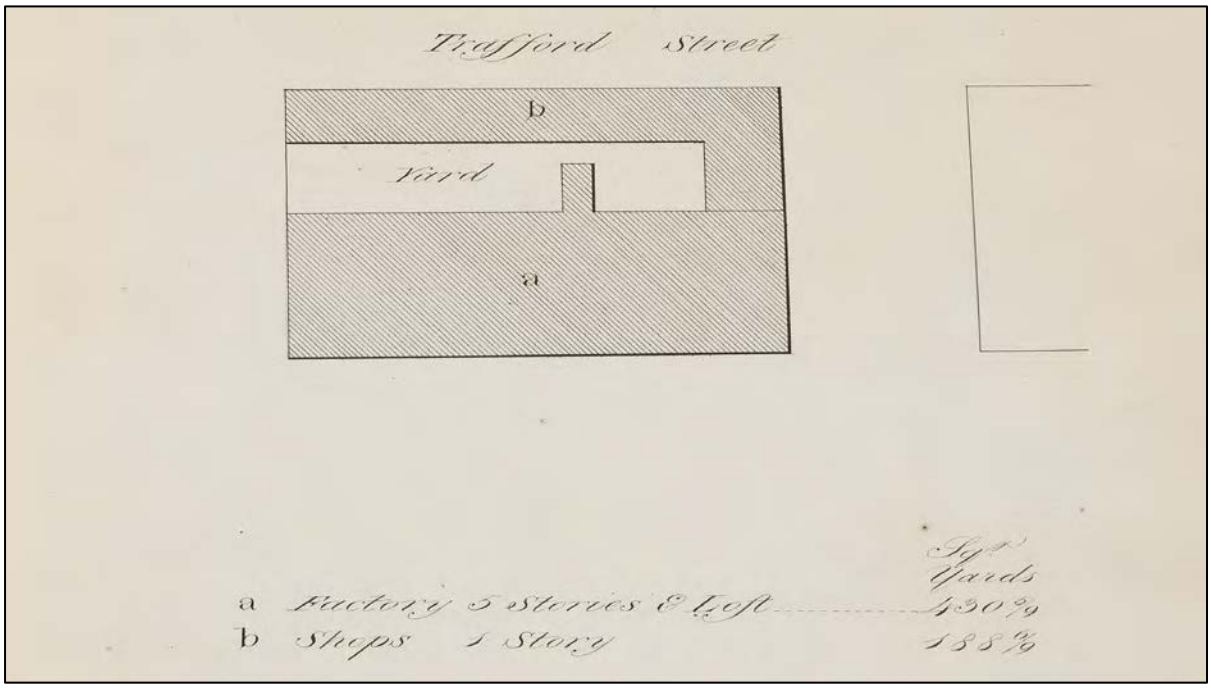


Plate 7 Extract from Plans of All the Cotton Spinning Mills in Manchester in *c.* 1822, showing Thomas Marsden's mill on Trafford Street

Bancks and Co's map of 1831 (Fig 4; Plate 8) 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 Swire's previous map, albeit in more detail. The plan clearly labels the building on the north side of Trumpet Street as a Sunday School. A building identified as a rectory on the 1809 plan also remains extant, and is shown as a self-contained structure, with a small yard and outbuilding to the rear. Both buildings lay within the chapel grounds. Union Foundry occupied a similar footprint. Bancks's map clearly shows that two double-depth properties, captured on Swire's slightly earlier map, lay within the south-west of the Site. The property to the west of the double-depths occupied a larger footprint, appearing as a rectangular structure on the plan. The size of this building implies that it may have functioned as a commercial premises.

The plan shows that a row of terraced houses fronted Great Bridgewater Street, which appear grander than those to the west of Opening Street, with larger footprints, rear extensions and private yard space. Slightly smaller terraced houses lined the north side of Trumpet Street. Either side of a courtyard (later 'Bostock Court') were two rows of blind-back houses. Situated adjacent to the houses and the foundry in the north, were three long rectangular buildings, separated from the properties on Great Bridgewater Street by a narrow alleyway. The alleyway ran between the first and second property and along the backs of the buildings. The first and second properties are depicted with small rear yards. The northside of Trumpet Street was occupied by a block of 18 back-to-back dwellings.In addition, the plan implies that the 18th-century properties in the north tip of the Site were single-depth dwellings, that occupied a street known as Strands Court on later mapping (Fig. 5).

Bancks's plan of 1831 is the first plan that captures the full footprint of the foundry that occupied the junction of Great Bridgewater Street and Albion Street. The building had a

rectangular plan, with a large central courtyard and was accessed via Great Bridgewater Street. As mentioned above, contemporary trade directories reveal the site was owned by the Galloway brothers, son of a millwright from Scotland, who moved to Manchester and established Galloway & Bowman Caledonian Foundry on Great Bridgewater Street in *c.*1806. In 1820, William Glasgow joined the concern, and it became 'Galloway, Bowman and Glasgow'. By 1835, the ownership had passed to Glasgow.

Bancks's map annotated the mill building between Trumpet Street and Trafford Street as 'Commercial Mill' (first shown on Dean and Pigot's map of 1809, Plate 5). By 1831, it had been remodelled into one complex, with an internal courtyard. Pigot's directory of 1818 reveals that 'Commercial Mill' was owned by Thomas Marsden (Pigot, 1818, p. 309). The open yards first captured on Swire's map were still extant, but further outbuildings or sheds had been erected, such as the long, narrow range of buildings fronting Trafford Street.



Plate 8 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 9) and the Ordnance Survey map also published in 1851 (Fig 5) are the next available maps that accurately show the Site. Both of the 1851 plans (Plate 9) shows that the Site remained largely unchanged, though they provided greater detail than the previous maps. Minor changes include the extension of the Sunday School. Pavement lights are depicted alongside the Sunday School, implying that it may have been cellared. The plans also highlights that the chapel yard functioned as a burial ground, that occupied roughly 0.05ha between the chapel and Sunday School. Adshead's plan implies that the buildings along the south side of Trumpet Street were commercial buildings. In addition, both 1851 plans annotate the foundry in the south-west corner of the Site as 'Union Foundry'.

Adshead's map (Plate 9) annotates the foundry as 'Robinson's Machine Works' whilst the Ordnance Survey map of 1851 labels the site as 'Trumpet Street Mill (cotton)', suggesting that the premises had been converted from an iron foundry into a cotton spinning mill. According to the key on Adshead's map, the larger houses fronting Great Bridgewater Street and Opening Street functioned as places of business in this period, whilst the slightly smaller buildings on the west side of the street were a mixture of residential and commercial buildings. The properties surrounding Bostock's Court remained private dwellings. The buildings along Great Bridgewater Street appear to have paving lights or external stairs which is an indication that they were cellared. The back-to-back dwellings between Trumpet Street and Thompson's Court remained unchanged and did not appear to contain cellars.

The mill that lay along Trafford Street is named on Adshead's map and the Ordnance Survey map of 1851 as 'Marden's Mill' and 'Commercial Mill', respectively. The Ordnance Survey map specifies that it was a cotton mill. Its function as a cotton mill may explain the construction of four rectangular structures to the west of the main complex as subsidiary sheds for storage or textile refinement.

The area of land to the west of Commercial Mill remains relatively undeveloped during this period and likely continued to function as open-air wharfs. Adshead's map provides an additional insight, annotating two rectangular buildings and an adjacent yard as a 'timber yard'.

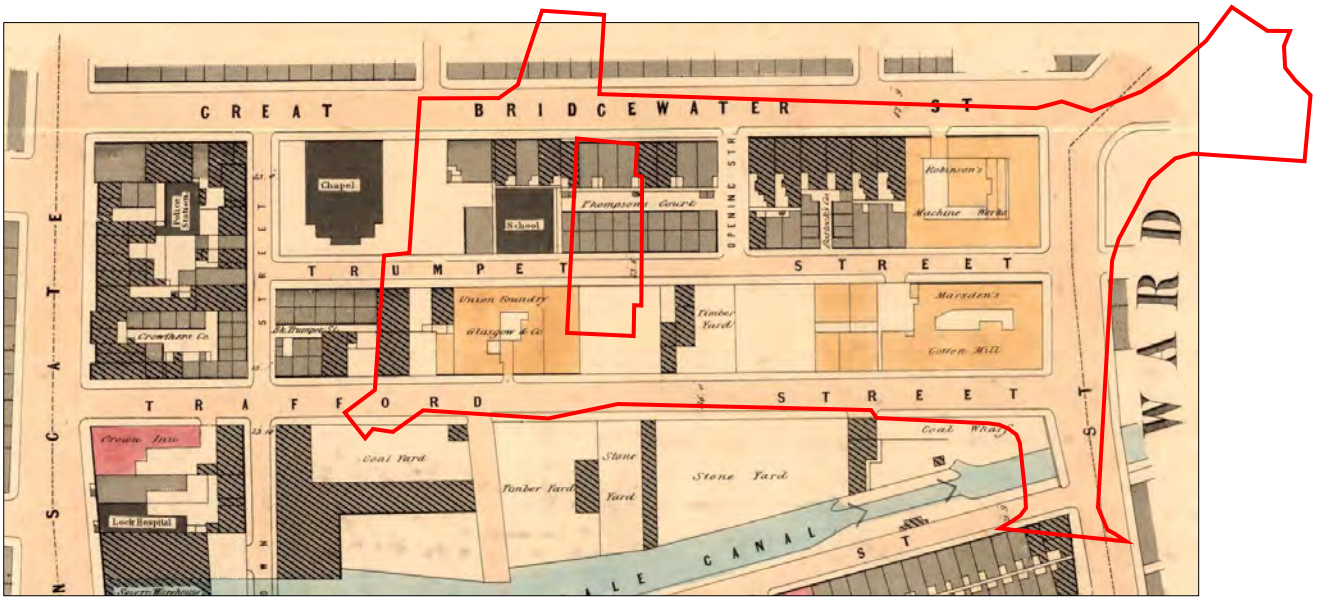


Plate 9 Extract from Joseph Adshead's map of 1851, showing the approximate Site boundary

The next available map to capture the Site is the Ordnance Survey map of 1891 (Fig 6; Plate 10). The map shows that the Site underwent a substantial transformation. The centre of the Site was cleared to make way for a new railway viaduct, linking Central Station (built between 1876-9) to the existing network (List Entry: 1292315; currently known as the Castlefield viaduct, between the G-Mex to Dawson Street). Demolition activity included the clearance of the houses, open yards and Union Foundry. The viaduct includes three structures: a brick-arched undercroft; the Great Bridgewater Street Bridge of brick and cast-iron construction; and the cast-iron viaduct running north-east to south-west.

By the time of the 1891 map, the rectory and Sunday School buildings had been remodelled and an extension had been built between the building and Sunday School to the south. Slater's commercial directory for 1879 indicates Henry Douthwaite occupied the residence associated with the Wesleyan Chapel – Chapel House (Slater, 1879, p. 435). The burial ground is marked on the plan as disused. A report from 1898 suggests that the burial ground was 'swept away' prior to the construction of the Great Northern Railway Company's viaduct (to the west of the Site) in 1899 (Salford Archaeology, 2016). However, the 1891 map suggests that the burial ground lay beyond the extent of the railway viaduct and may have still been present after its construction.

The two mills within the east of the Site remained extant, although the western wing of the Trumpet Street Mill was demolished. Following the completion of the viaduct, a toilet block was established to the west of Commercial Mill. A tramline had been laid along Albion Street, continuing to the north along Lower Mosley Street.

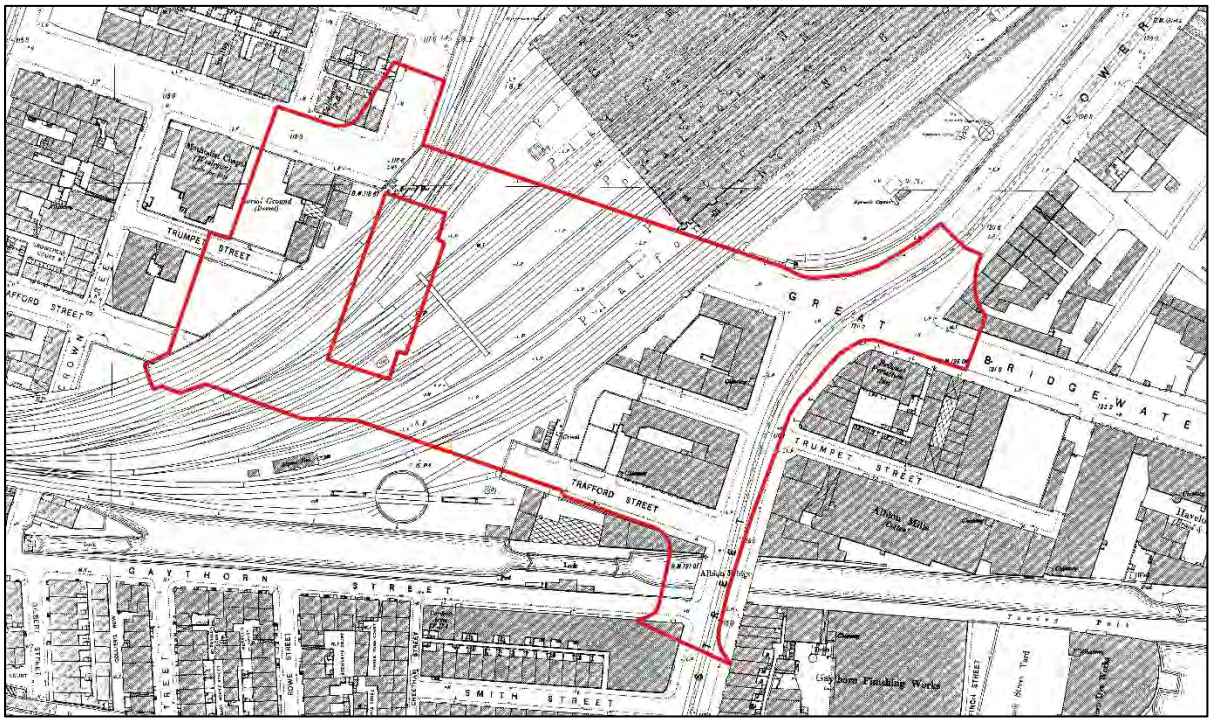


Plate 10 Extract from the Ordnance Survey Town Plan map of 1891, showing the Site boundary

A plan of the viaduct arches and nearby buildings was produced as part of Goad's Fire Insurance Plans for Manchester in 1889 (Plate 11). This demonstrates the spaces beneath the arches were utilised for the storage of beer by T. Salts & Co in the north of the Site. Most of the brick arches functioned as stables, with an engine and retort house for the production of coal gas occupied the arches in the south of the Site. The remaining buildings that had been associated with the foundry and mill, in the east of the Site, were in use as carpenter's workshops, a warehouse and an office.

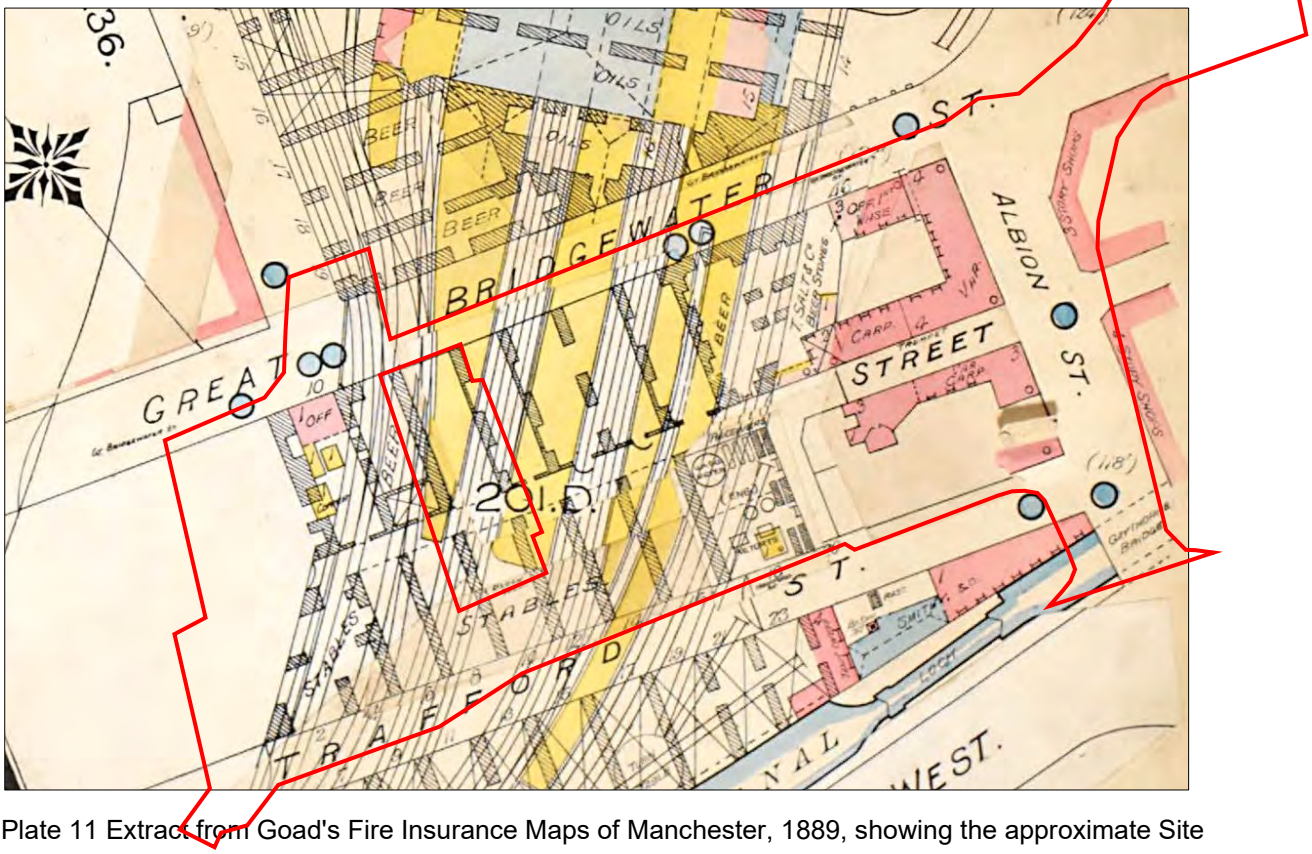


Plate 11 Extract from Goad's Fire Insurance Maps of Manchester, 1889, showing the approximate Site boundary

The Ordnance Survey map published in 1908 (Fig 7) shows the same arrangement of buildings within the Site, with no significant changes, aside from the demolition of the remaining buildings that were associated with the former chapel and the clearance of the former mill building on Trafford Street. The next edition of Ordnance Survey mapping published in 1922 (Fig 8) shows little change, although the north-west part of the Site had been redeveloped into a large industrial building. According to the Ordnance Survey mapping from the 1948 (Fig 9), the former foundry on the eastern side of the Site was utilised as an engineering works, whilst the north-west section of the Site had been entirely redeveloped into an Automobile Engineering Works.

The land to the west of the railway viaduct was developed in 2006 with the construction of the Beetham Tower, although a small area of hardstanding concrete is located between the tower and viaduct. The Site was developed in the last few decades as a car multi-level car park. To the east of the Site boundary, on the site of industrial buildings, is the elevated line of the Metrolink tramway supported by pillared arches.

5.8 Previous archaeological work

In total, 56 archaeological events have been recorded within 250m radius of the Site. Non-intrusive events include 21 desk-based assessments, five heritage statements, a heritage impact assessment and two building recordings. Intrusive archaeological investigations include nine watching briefs, six evaluations and nine excavations.

5.8.1 Previous archaeological work within the Site boundary

Several archaeological events have taken place within the Site and its immediate surroundings. A desk-based assessment undertaken by Salford Archaeology in 2016 for a parcel of land, which encompassed the current Site. The archaeological assessment concluded that the proposed development area had considerable potential to contain buried remains of archaeological interest. It lay within the area of the Roman settlement and in the vicinity of several important archaeological sites and finds. Despite development during the 19th century, much of the central part of the site was not subjected to intrusive earth-moving works. Given the results obtained from excavations around the railway viaducts to the west of the site, there was potential for buried remains to survive *in-situ*. The foundations of early 19th-century workers' houses and several industrial buildings are considered to be of high local archaeological interest. The presence or absence of these remains required verification through archaeological evaluation (Salford Archaeology, 2016).

An additional desk-based assessment undertaken in 2019 by Salford Archaeology, included the land within the Site and the Central Station 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 the Station Approach in the north of the site. There was also evidence of canal infrastructure beneath the footprint of the main station hall. A watching brief was suggested. 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).

In 2020, a Written Scheme of Investigation outlined a programme of archaeological investigation across Phase 1 and part of the current Site (partially covering Plot 2a) (Salford Archaeology, 2020). Following on from the WSI, an excavation took place, which included land within the Site (partially within Plot 2a). The excavation revealed 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 (see Figs 13-4). The remains of an 18th-century metalled surface were also observed along with the remains of 19th-century workers' housing and the remains of part of an industrial building. Finally, 20th-century remains were also observed in some of the bays. These archaeological remains recorded were deemed to be of high local importance (Salford Archaeology, 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 excavation consisted of three trial trenches that were excavated within the north-west of the Site (corresponding to Plot 2b) in October 2020. The results revealed that the former graveyard had been cleared of burials sometime in the past and that the north-western part of the Site had been cleared of all archaeologically significant remains, probably during groundworks associated with the Beetham Tower development. The eastmost trench, Trench 3, 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 square 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).

5.8.2 Previous archaeological work beyond the Site boundary

Beetham Tower was constructed in 2006, immediately west of the Site (west of Plot 2b). An excavation was undertaken in preparation for the tower in 2005 (EGM3733) by Pre-Construct Archaeology. 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).

5.9 Summary of archaeological potential

Possible prehistoric activity has been uncovered within the area of the Site, however, the likelihood of finding prehistoric remains is considered to be very low.

The Site lies within the Area of Castlefield Roman Vicus (HER 415.2.0) and therefore there is high potential for further Roman remains to lie within the Site. Previous investigations revealed Roman remains within the north-west part of the Site, comprising a Romano-British pit or linear feature (see Fig 13). Further remains were discovered within broadly the centre of the Site, including revealed 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 (see Fig 13-4). In addition, previous Roman findspots lie within the Site (HER 415.4.28), together with a section of Roman road associated with either the Manchester to Oldham, or the Manchester to Buxton road (HER 415.6.0) and the Roman road from Manchester to Buxton (HER 28.1.3).

No medieval activity is known within the Site and it lies beyond Manchester's medieval core, though several medieval findspots are within the vicinity of the Site. The Site was most likely arable land associated with farming in the post-medieval period and there have been field boundaries identified on Laurent's map of 1793 (Plate 4). In addition, two cottages had been established within the Site by the late 18th century, together with a row of single-depth dwellings on the south side of Strand Court (Plate 3).

By 1801 the Great Bridgewater Street Wesleyan Chapel had been erected, and by 1809 a rectory, Sunday School, and the chapel's burial ground had been established. In addition, two double-depth properties had been established on the south side of Trumpet Street, and a narrow rectangular commercial building. An iron foundry had been established in *c.*1806, at the junction of Great Bridgewater Street and Albion Street, and Commercial Mill (Marsden's Mill), had been erected by 1809, between Trumpet Street and Trafford Street.

By 1824/1831, the remainder of the Site had been developed including Union Iron Foundry, and various types of workers' housing, including double-depths, blind-backs and back-to-backs. Open yards occupied the south side of Trumpet Street.

The Site was subject to significant reorganisation in the late 1880s, when a new railway viaduct was built linking Central Station to the existing network (Castlefield Viaduct; List Entry 1292315), which is currently extant and is designated as a Grade II Listed Building. The construction of the viaduct led to the clearance of all of the houses, Union Iron Foundry, the open yards and some of the buildings associated with the chapel. The burial ground was reported to have been 'swept away' prior to the construction of the Great Northern Railway Company's viaduct, however, the burial ground is still marked on maps following the construction of the railway viaduct. Several businesses occupied the brick arches beneath the viaduct.

An automobile engineering works had replaced the buildings formerly associated with the Great Bridgewater Street Methodist Chapel in the west of the Site by 1922. The former foundry in the east of the Site was utilised as an engineering works.

Much of the central part of the Site (partly corresponding to Plot 2a) was excavated in 2020 as part of Phase 1. A small portion of the north-west part of the Site (the north-east edge of Plot 2b) has also been excavated.

6. Site inspection

A Site visit was carried out as part of the archaeological assessment on 17th October 2023. 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 levels, comprising a hard-standing former car park on Grade II Listed viaduct and the brick undercroft structure that lies at the present street level (Plate 12). The brick undercut is currently in use as a storage compound for the Phase 1. The floor throughout consists of hard-standing concrete. A modern grey stone wall seals off the north-western boundary of the Site, which marks an area of uninhabitable grounds / the boundary of the Phase 1 scheme (Plate 13).

The east part of the Site currently consists of a slightly raised triangular pavement used as a pedestrian crossing between Albion Way and Trafford Street (Plate 14 & Plate 15). The floor consists of hard-standing tarmac. The east edge of the Site lies beyond the Grade II Listed viaduct, and encompasses Albion Street, Albion Bridge and Great Bridge Water Street. The brick viaduct arches are bounded by hoarding in the east of the Site.

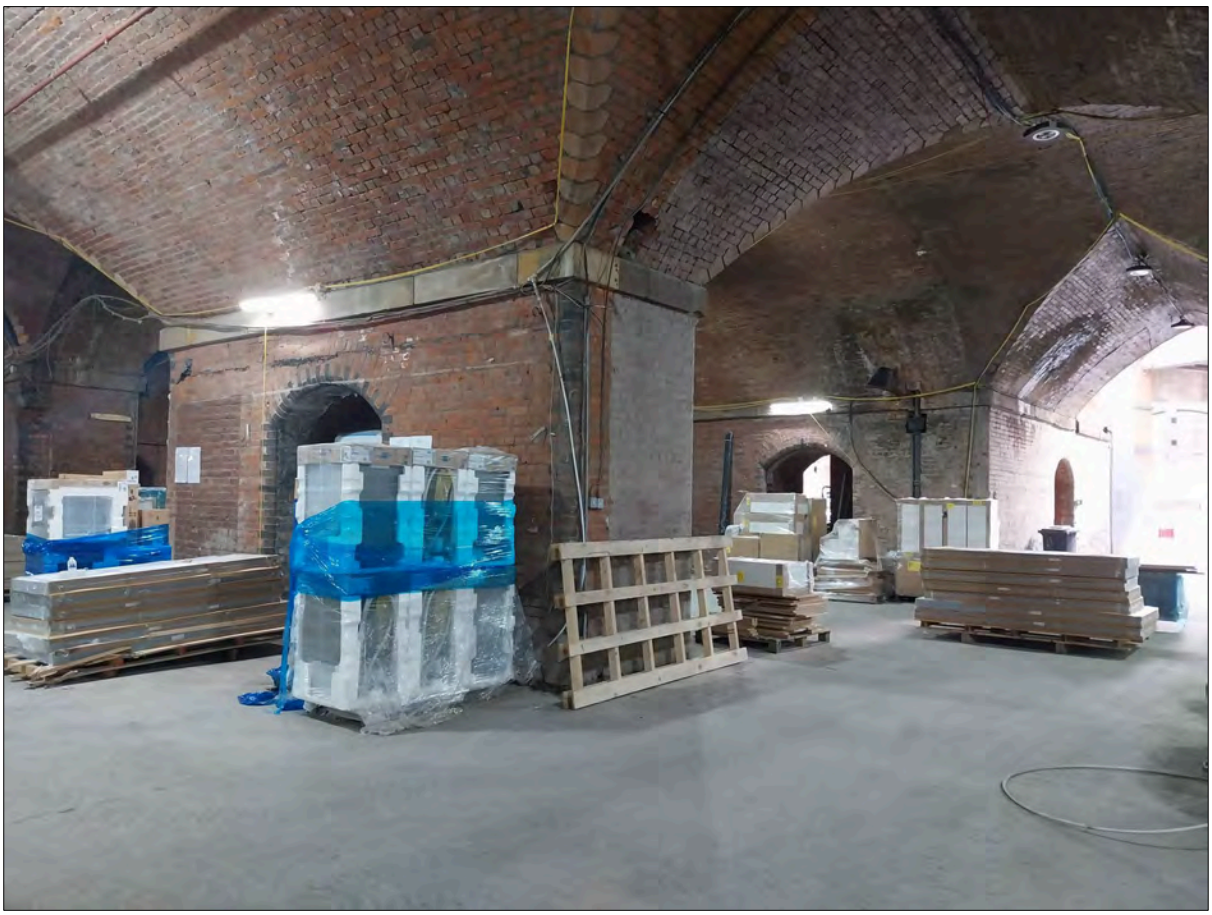


Plate 12 Photograph of the Plot 2a Site, showing the brick undercroft and entrance towards Phase 2c, facing south-east



Plate 13 Photograph of Plot 2a showing the sealed off brick undercroft, facing north

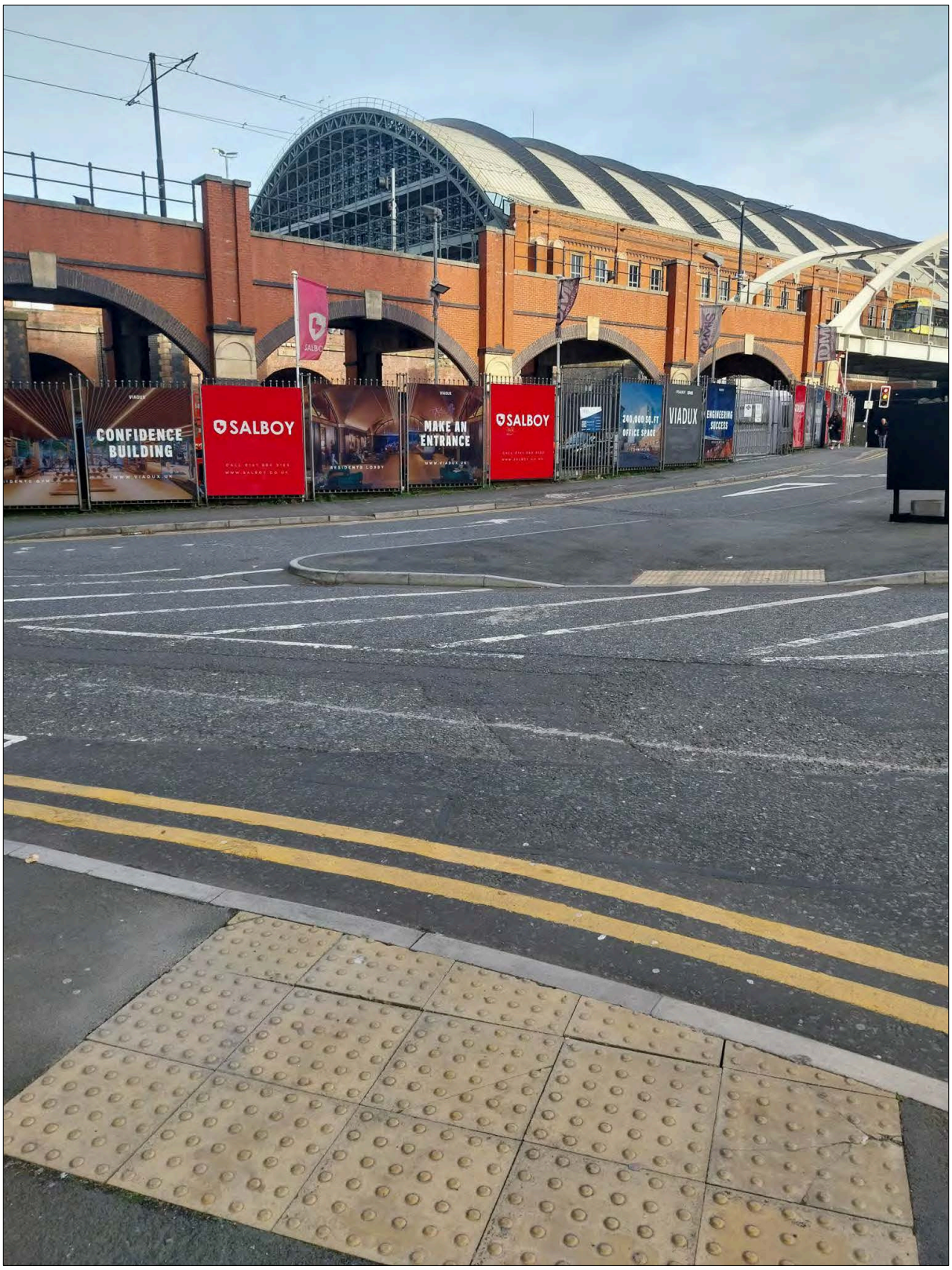


Plate 14 Photograph of Plot 2c, facing north-east

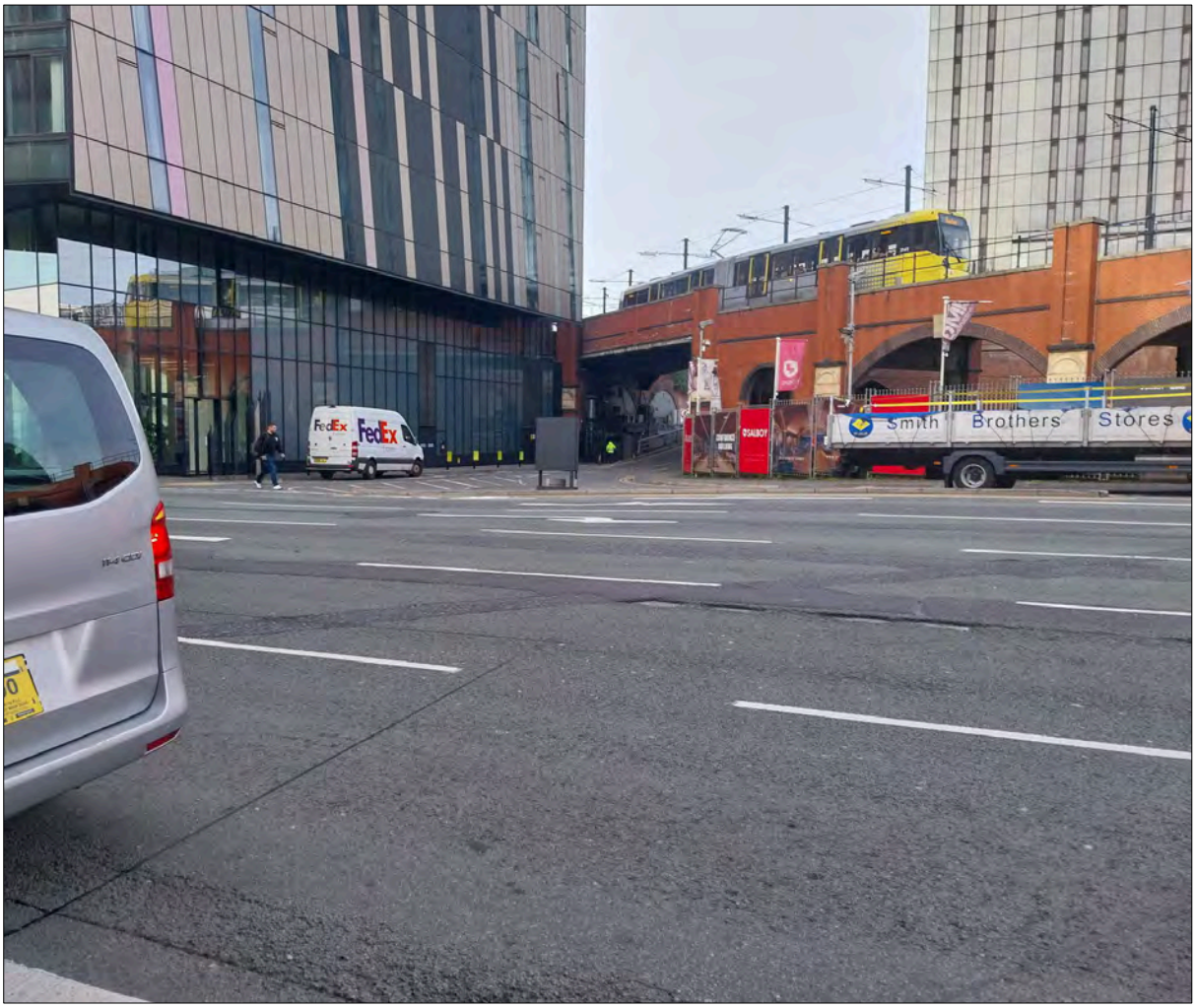


Plate 15 Photograph of Plot 2c from Albion Street, facing north-west

The west part of the Site is currently accessed from Great Bridgewater Street. The Site lies between Beetham Tower and the Grade II Listed viaduct and Viadux hotel development (Plate 16 & Plate 17). The Site currently consists of a roughly poured concrete surface, likely laid to facilitate the Phase 1 scheme. The former car park that lies on top of the viaduct, south of the former Central Station is currently partly occupied by Phase 1, welfare facilities and site offices.

No further archaeological sites were identified during the Site visit.

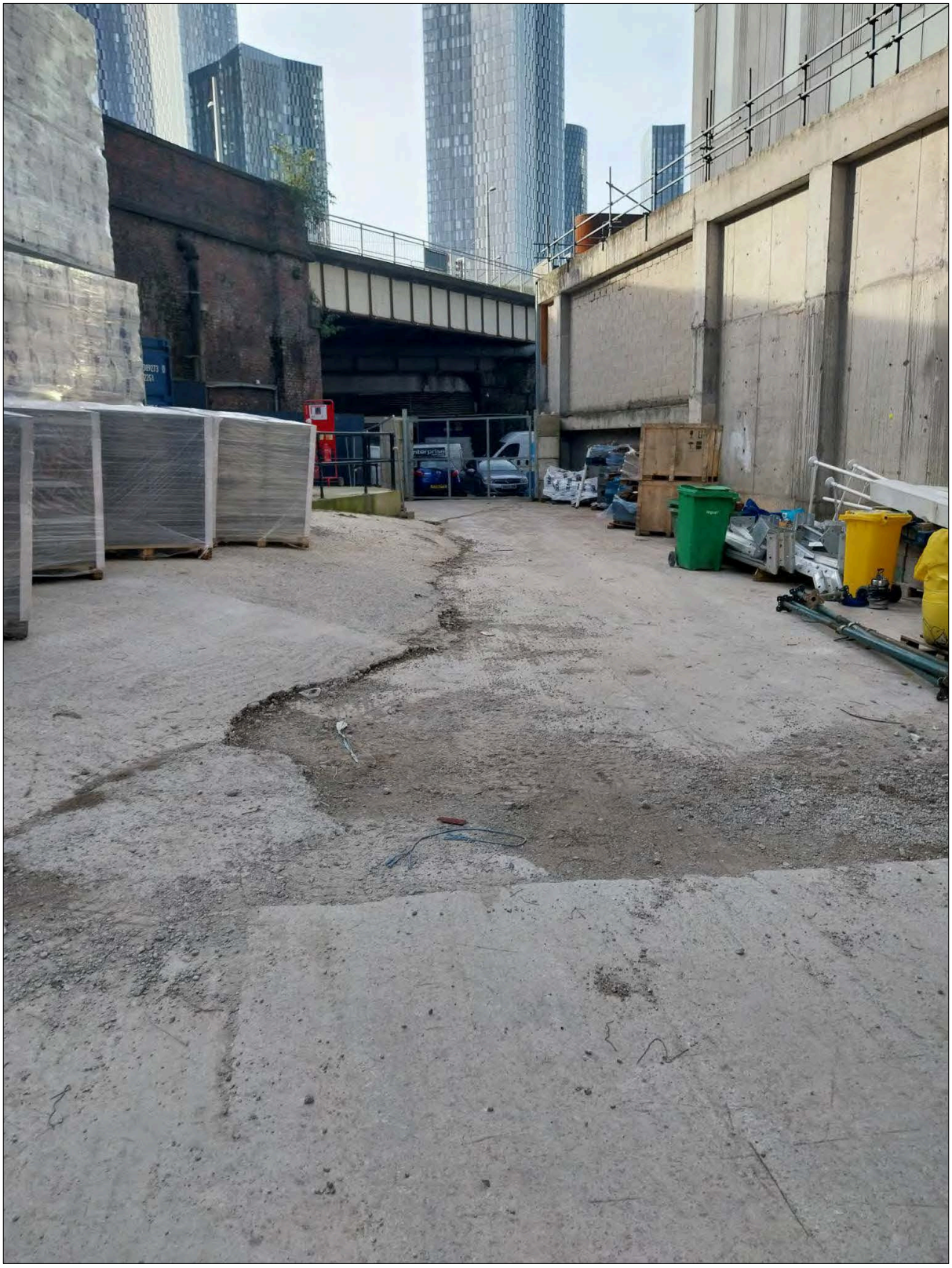


Plate 16 Photograph of Plot 2b, facing south



Plate 17 Photograph of Plot 2b, facing north-east

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 10-12 within Appendix 1: Figures.

Gazetteer Entry 01

Site Name	Roman roads
Designation	Non-designated heritage asset
HER Number	415.6.0
Site Type	A section of the Manchester to Oldham and (site of)
Period	Roman
NGR	centred SJ 8359 9759 (point)
Source	HER
Description	The HER (415.6.0) states: The Roman road was seen in section to the south of Central Railway Station, consisting of "*3in of stiff clay on the Pre-Roman surface, covered by 5in of burnt brick, small stones, charcoal, fragments of pottery and nails, on which boulders were bedded, about 8in in thickness, and 8in of gravel with 2in of stone and clay over it, making a total of 26in. The road passed within 100yds of the Roman fort, which is entered by a short branch road, leading to the Eastgate. Considering that the road was seen to the south of Central Station, it has to mean that it was travelling eastwards from Castlefield fort. This means the road can be one of: - Manchester to Oldham, or the Manchester to Buxton. I personally think it is the Buxton Road*." Manchester Central Station is currently Manchester Central Convention Complex.
Assessment	The proposed route of the Roman road may run through the Site and could be affected by the proposed development scheme.

Gazetteer Entry 02

Site Name	Cottages
Designation	Non-designated heritage asset
HER Number	-
Site Type	Housing (site of)
Period	Late 18th century
NGR	SJ 83625 97623; SJ 83599 97586; 383503 397651
Source	Laurent's map of 1793
Description	Three buildings shown on Laurent's map of 1793. One building with adjoining structures is shown on land between Great Bridgewater Street and Trumpet Street. A third building lies in the west edge of the Site. An additional smaller single rectangular building is shown along Trafford Street. Neither of these cottages are shown on the contemporary map produced by Green in 1797-94.

Assessment	The cottages lay within the Site, however the foundations have most likely been damaged or destroy by later activity.

Gazetteer Entry 03

Site Name	Field boundaries / relict soils
Designation	Non-designated heritage asset
HER Number	-
Site Type	Hedgerows (site of)
Period	Medieval – Post-medieval
NGR	SJ 83518 97644; SJ 83618 97613; 383503 397640; 383625 397538
Source	Laurent's map of 1793
Description	Several field boundaries are shown on Laurent's map of 1793. and seemed to mark a property boundary of a former cottage (GE02). A field boundary ran east to west just south of Great Bridgewater Street. A second hedgerow marks a property boundary to the south of a rectangular building. A third ran broadly north to south, and a fourth ran along the line of Gaythorn Street in the south-east tip of the Site. A previous excavation within the north-west of the Site revealed that post-medieval buried soils survived within the Site.
Assessment	Remains of former field boundaries or post-medieval soils 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	Great Bridgewater Street Methodists Chapel burial ground
Designation	Non-designated heritage asset
HER Number	-
Site Type	Burial ground (site of)
Period	19th century
NGR	SJ 83485 97663
Source	Dean and Pigot 1809; Swire 1824; Bancks & Co 1831; Adshead 1851; Ordnance Survey Mapping
Description	The Great Bridgewater Street Wesleyan Chapel, built in 1801, first appears on the historic map sequence in 1809. It was located on the corner of Great Bridgwater Street and Crown Street. The footprint of the building extended between Great Bridgewater Street and Trumpet Street, the chancel located at its southern end. It is flanked by two narrow strips of land either side, probably used for burial plots. By 1831 the chapel grounds were extended eastwards into Phase 3, which also contained a rectory and school. The site is last shown on the 1891 Ordnance Survey map, by which the grounds are marked as disused; this is supported by archival evidence indicating the burial ground went out of use in 1854. The Great Bridgewater Street Chapel Trust Minute Book reported that a plan of the graveyard alongside a record of the grave inscriptions was prepared by George Priestley in 1895. A later meeting in 1897 reported that the Great Northern Railway Company were 'determined to remove all of the human remains at their own expense'. An

	additional report from 1898 reveals that it was 'swept away' prior to the construction of the Great Northern Company's viaduct (to the west of the site) in 1899. The 1891 map (Fig. 6) shows that the burial ground remained intact after the construction of the viaduct and could suggest that human remains could survive *in-situ* within the Site.
Assessment	The footprint of the building lies to the west of the Site boundary and will not be impacted upon by the proposed development however, the burial lies within the Site. Human remains may survive within the Site (Plot 2b) and could be affected by the proposed scheme.

Gazetteer Entry 05

Site Name	'Chapel House'/ Great Bridgewater Street/ Rectory
Designation	Non-designated heritage asset
HER Number	-
Site Type	Chapel House Rectory (site of)
Period	Early 19th century
NGR	SJ 83523 97675
Source	Dean and Pigot 1809; Swire 1824; Bancks & Co, 1831; Adshead, 1851; Ordnance Survey mapping.
Description	A square building is shown to the east of the Methodist chapel grounds. This detached property first appears on Dean and Pigot's map of 1809. It is shown abutting the eastern wall of the chapel grounds. Swire's 1824 map does not differentiate between this detached property and the adjacent row of terraced houses. Bancks and Co's map of 1831 clearly shows the property within the confines of the chapel grounds, the eastern wall of the grounds had been moved westwards. The building was self-contained with a small yard and outbuilding to the rear. The 1851 OS map indicates the building was cellared. By the time of the 1891 OS map, the building had been remodelled and an extension built between the building and Sunday School to the south. Slater's commercial directory for 1879 indicates that Henry Douthwaite occupied the residence associated with the Wesleyan Chapel – Chapel House. A trial trench evaluation and small open area trench were excavated within the footprint of the building, however, there was no below-ground evidence of the 19th-century structure.
Assessment	The footprint of the building lies within the Site, in an area that has already been investigated. There was no surviving evidence of the 19th-century rectory and therefore it has likely been damaged or destroyed by 20th- or 21st-century developments.

Gazetteer Entry 06

Site Name	Commercial building on Trumpet Street
Designation	No designation
HER Number	-
Site Type	Unknown commercial building (Site of)
Period	Mid-19th century

NGR	SJ 83491 97633
Source	Bancks & Co's 1831; Ordnance Survey Mapping
Description	A long, narrow rectangular building that first appears on Bancks & Co's map of 1831. The building lay in the south-west of the Site (Plot 2b), adjoining two houses fronting onto Trumpet Street and spanned the width of the land between Trumpet Street and Trafford Street. Marked as a commercial building on Adshead's map of 1851. The building was demolished by the construction of the viaduct.
Assessment	The footprint of the building lies within the Site and therefore could be affected by the proposed development scheme.

Gazetteer Entry 07

Site Name	School building (Trumpet Street)
Designation	Non-designated heritage asset
HER Number	-
Site Type	School building (site of)
Period	Early 19th century
NGR	SJ 83518 97640
Source	Dean and Pigot 1809; Swire 1824; Bancks & Co 1831; Adshead, 1851; Ordnance Survey mapping
Description	A rectangular building can be located on historic maps to the east of the chapel grounds, opposite the Union Foundry on Trumpet Street. It is simply represented on the sequence of maps until Bancks & Co's survey of 1831, which reveals a rectangular plan, orientated lengthways along Trumpet Street. Behind the building is a narrow yard and outbuildings. The building is first identified as a school on the Ordnance Survey map, surveyed 1848-50 and Adshead's map of 1851; the former map shows the adjacent building as part of the Great Bridgewater Street Chapel School (Sunday). The internal floorplan is shown on the OS map as divided into four separate rooms. The façade of the building faced west towards the Methodist Chapel. The Ordnance Survey map of 1851 (Fig 6) shows that the building was cellared and included the building to the east, beyond the east Site boundary. The building is last shown on the OS map of 1891. This part of the site was cleared *c.*1898-99 ahead of the construction of the railway viaduct.
Assessment	The footprint of the building lies within the Site (Plot 2b), has the potential to survive within the Site as buried remains and could be affected by the proposed development scheme.

Gazetteer Entry 08

Site Name	Opening Street
Designation	No designation
HER Number	-
Site Type	Domestic properties (site of)
Period	Early 19th century

NGR	SJ 83577 97627
Source	Dean and Pigot 1809
Description	A block of buildings was built on the eastern side of a road, which later was named Opening Street. The block ran between Great Bridgewater Street and Trumpet Street. The size of the block conforms to the dimensions of other rows of houses shown on the map, yet the scale of the map precludes any meaningful analysis. The site was later partially occupied by two separate rows of properties on the aforementioned streets, implying this block was demolished. The location of the properties was targeted in an excavation that took place prior to the development of Phase 1 in 2020. Remnants of workers' houses were revealed during the excavation (see Fig. 13-4).
Assessment	The footprint of the buildings has been excavated in 2020 and are unlikely to require further mitigation.

Gazetteer Entry 09

Site Name	Great Bridgewater Street Foundry
Designation	No designation
HER Number	-
Site Type	Foundry (site of)
Period	Early 19th century
NGR	SJ 83610 97613
Source	Dean and Pigot 1809; Bancks and Co's 1831; Goad's Insurance Plan 1889; Ordnance Survey Mapping
Description	The development of the site commences with two adjoining buildings that form an L-shaped block, at the eastern end of Great Bridgewater Street and Trumpet Street, roughly opposite from the road: 'Bishop's Gate'. The location and plan of the building is consistent with the footprint of the foundry, including the entrance to the site from the south-west corner, as shown on OS mapping. The site was fully developed by 1824, the occupying the eastern corner of the Site up to Albion Street. The footprint of the foundry is rectangular with a central courtyard, accessed from Great Bridgewater Street. The site had been surveyed more accurately by 1831 but was only modified significantly in the 1850s with two extensions built in the central yard, perhaps to house an engine. Use of the building points to two firms; Galloway, Bowman & Glasgow; and, later, Robinson's Machine Works. The configuration of buildings presented in mapping from the 1850s remains largely unaltered until the construction of the railway viaduct in 1880. The earlier, western wing was demolished and possibly built over. Goad's insurance map from 1889 indicates that the buildings were later used for other purposes, showing them as carpenters' workshops. 20th century mapping indicates the buildings were standing until the 1980s. The construction of a raised tramline supported by a series of pillared arches in the 1990s impacted significantly on the site and no above-ground remains are standing.

Assessment	The footprint of the foundry lies within the east of the Site and is likely to be affected by the proposed development scheme.

Gazetteer Entry 10

Site Name	Marsden's Mill (Trafford Street)
Designation	No designation
HER Number	-
Site Type	Cotton Mill (site of)
Period	Early 19th century
NGR	SJ 83613 97582
Source	Dean and Pigot 1809; Swire's map 1824; Bancks and Co's 1831; Adshead 1851; Goad's Insurance Plan 1889; Ordnance Survey Mapping
Description	The mill buildings first appear as two units on Dean & Pigots map of 1809 (Plate 5). The main block is situated at the junction of Trumpet Street and Albion Street, occupying the depth of the plot between Trumpet Street and Trafford Street. The mill lies within the south-eastern part of the Site. Swire's map of 1824 (Plate 6) usefully differentiates between the southern and northern buildings. The 'Plans of All the Cotton Spinning Mills in Manchester in c. 1822' annotates the building as being owned by Thomas Marsden. Block 'a' was a five-storey factory with a loft, whilst block 'b' operated as a single-storey shop. The plans usually show the mill's steam power plant, however, the absence of a steam engine or boiler house from the plan of Marsden's Mill could imply that it housed hand-powered mules / jennies in its early years. By the time of Bancks & Co's survey (Fig 4) the mill is shown more clearly. Pigot's commercial directory, for 1818, reveals the owner of 'commercial mill' was Thomas Marsden. An annotation on Adshead's map of 1851, reads 'Marden's Cotton Mill', implying it was still under his ownership. A further four ajoined rectangular buildings are also shown on Adshead's plan of the mill to the west of the existing buildings; these may have functioned as warehouses for the storage of cotton. Goad's fire insurance map of 1889 (Plate 11) indicates the three-storey building was being used as a carpenter's workshop. The southern wing of the building, potential engine house and sheds are no longer shown. These buildings were evidently demolished around this time and do not appear on the 1908 edition of the OS maps. In the 1990s an elevated tramline was constructed to the east of the Site. The structure is supported by pillared arches, which may have impacted certain areas of the mill site.
Assessment	Remains of the mill may be present within the Site and could be affected by the proposed scheme.

Gazetteer Entry 11

Site Name	Union Foundry (Trumpet Street)
Designation	No designation
HER Number	-
Site Type	Foundry (site of)

Period	Early 19th century
NGR	SJ 83508 97648
Source	Dean and Pigot 1809; Swire 1824; Bancks & Co 1831; Adshead 1851; Ordnance Survey mapping
Description	During the first quarter of the 19th century, a foundry was developed on Trumpet Street (west) around an established building. This earlier configuration of the site consists of a single rectangular building with the adjacent plots of land laid out. At the time of Swire's map the footprint of the complex occupies a rectangular plot of land and has an inverted 'T-shaped' courtyard on the eastern side. The foundry is last shown on Adshead's map of 1851 and was cleared prior to the construction of the railway arches and viaduct in 1880.
Assessment	The foundry lies within the north-west of the Site. Buried remains of the foundry may survive *in-situ* and therefore could be affected by the proposed development scheme.

Gazetteer Entry 12

Site Name	Great Bridgewater Street Houses
Designation	No designation
HER Number	-
Site Type	Double-depth housing (site of)
Period	Early 19th century
NGR	SJ 83599 97630
Source	Bancks and Co's 1831; Adshead's 1851; Ordnance Survey Mapping
Description	During the first half of the 19th century, a row of terraced houses was constructed in the northern part of the Site. These properties were located between the junction of Great Bridgewater Street and Opening Street and the Foundry, at the eastern extent of the Site. The properties are first shown on Bancks & Co's map of 1831. The properties are double-depth, with rear extensions, cellars and private yards. Adshead's map, also published in 1851 shows that the properties comprised a mixture of domestic and commercial premises. The properties were last shown on Adshead's map and were demolished to make way for the railway infrastructure in the 1880s. The majority of the houses were targeted in the 2020 excavation, whereby the fragmentary remains of houses were uncovered (see Fig. 13-4).
Assessment	The footprints of the buildings were excavated in 2020 and are unlikely to require further mitigation.

Gazetteer Entry 13

Site Name	Trumpet Street
Designation	No designation
HER Number	-
Site Type	Small double-depth housing (site of)
Period	Early 19th century

NGR	SJ 83602 97610
Source	Bancks and Co's 1831; Adshead's 1851; Ordnance Survey mapping
Description	Slightly smaller double-depth dwellings than those on Great Brdige water Street. The houses occupied Trumpet Street. The dwellings do not seem to have included cellars. They first appear on Bancks & Co's map of 1831 (Fig 4). Demolished in *c.*1880. Some of the houses were targeted during the 2020 excavation and are unlikely to require mitigation (see Fig. 13-4).
Assessment	The footprint of the buildings lies within the Site and may survive as buried remains and could be affected by the proposed scheme.

Gazetteer Entry 14

Site Name	Bostock's Court
Designation	No designation
HER Number	-
Site Type	Blind-back domestic properties (site of)
Period	Early 19th century
NGR	SJ 83590 97615
Source	Bancks and Co's 1831; Adshead's 1851; Ordnance Survey mapping
Description	The site was developed as housing by the time of Bancks & Co's map of 1831 (Fig 4). Two rows of blind-back properties are shown on either side of Bostock's Court, six houses in total. The square properties back onto the houses that fronted Trumpet Street. The buildings were demolished in *c.*1880. The houses were targeted during the 2020 excavation and are unlikely to require mitigation (see Fig. 13-4).
Assessment	The footprints of the buildings were excavated in 2020 and are unlikely to require further mitigation.

Gazetteer Entry 15

Site Name	Thompson's Court
Designation	No designation
HER Number	-
Site Type	Back-to-back properties (site of)
Period	Early 19th century
NGR	383559 397625
Source	Bancks and Co's 1831; Adshead's 1851; Ordnance Survey mapping
Description	A row of 18 back-to-back dwellings lay between Thompson's Court and Trumpet Street. The dwellings were first captured on Bancks's and Co's plan of 1831. The dwellings were destroyed ahead of the construction of the Castlefield viaduct in the 1880s. The buildings were subjected to excavation in 2020 (see Fig. 13-4).
Assessment	The footprints of the buildings were targeted during the 2020 excavation and are unlikely to require mitigation.

Gazetteer Entry 16

Site Name	Castlefield railway viaduct from G-MEX to Dawson Street
Designation	Listed Building
List Entry	1292315
Site Type	Railway Infrastructure
Period	Late 19th century
NGR	SJ 83569 97628
Source	Goad's Insurance Plan 1889; Ordnance Survey mapping
Description	List Entry: 1292315 states **"***Railway viaduct. c.1880. Cast iron and wrought iron (?); red brick to east of Duke Street. Runs south-west from former Central Station, then westwards, dividing into two over Castlefield and rejoining west of River Medlock. Cast iron drum piers rising to square castellated towers supporting metal lattice parapet. Castellated brick piers with stone dressings to Gothic style skew bridges over River Medlock and roadways. To east of Duke Street viaduct is of brick with segmental arches and castellated brick piers. At western end a blue brick bridge over Dawson Street*". The Site contain the portion of the viaduct that "*is east of Duke Street viaduct is of brick with segmental arches and castellated brick piers*".
Assessment	The brick undercroft will be retained as part of the proposed scheme. There is potential for earlier archaeological remains to survive between the piers.

Gazetteer Entry 17

Site Name	Rochdale Canal
Designation	Non-designated Heritage Asset
HER Number	1368.2.0
Site Type	Canal
Period	Early 19th century
NGR	Linear SJ 8486 9834 to SJ 834 976.
Source	HER; Historic Mapping
Description	HER 1368.2.0 states: "*Urban canal section c.1.25 miles long, connected with the Ashton-under-Lyne Canal at Dale Street. Nine broad locks down to the Bridgewater Canal at Castlefield which gave it the name 'Rochdale Nines'. A third junction is formed with the Manchester & Salford Canal in Great Bridgewater Street area. Infilled canal arms. Part of the Cheshire Ring of canal navigations. Parliamentary approval of 1799, and 1800. Completed 1804. Now mainly used for pleasure craft. Originally proposed in 1766, but not built until 30 years later, the 33-mile canal linked the Bridgewater Canal to the Calder and Hebble Navigation in Yorkshire. The Manchester section, over 8 miles long with 8 locks, opened in 1804*". The canal runs through the south-east tip of the Site.
Assessment	The canal will be retained as part of the proposed scheme.

Gazetteer Entry 18

Site Name	Roman findspot
Designation	Non-designated heritage asset
HER Number	415.4.28

Site Type	Findspot (site of)
Period	Roman
NGR	SJ 8359 9758 (findspot)
Source	HER
Description	The neck of large amphora was found at Trafford Street, Manchester in 1903 (HER.415.4.28).
Assessment	The presence of Roman remains within the Site indicates that the remainder of the Site has high potential to contain Roman remains that could be affected by the proposed development scheme.

Gazetteer Entry 19

Site Name	Toilet Block
Designation	No designation
HER Number	-
Site Type	Toilet Block (Site of)
Period	Late 19th century
NGR	SJ 83594 97593
Source	Ordnance Survey mapping
Description	Urinal and toilet block probably serving workers on the railway.
Assessment	The footprint of the building lies within the Site but it is likely to have been affected by later activity. These buildings are of limited research potential.

Gazetteer Entry 20

Site Name	Engine and Gas Retort House
Designation	No designation
HER Number	-
Site Type	Railway Infrastructure
Period	Late 19th century
NGR	SJ 83572 97599
Source	Ordnance Survey mapping
Description	Railway engine and retort house is shown under the south-east corner of the brick undercroft on Goad's Insurance map, adjacent to the toilet block (north of Trafford Street). Recently converted into commercial premises, it is likely much of the gas and engine installations were removed during conversion of these spaces.
Assessment	The footprint of the building lies within the brick undercroft and could be affected by the development proposals.

Gazetteer Entry 21

Site Name	Prehistoric remains
Designation	No designation
HER Number	-
Site Type	Prehistoric pits (site of)
Period	Prehistoric

NGR	383600 397619
Source	Salford Archaeology 2020-3
Description	During 2020, ahead of Phase 1, an open area excavation took place beneath the viaduct, in the brick undercroft. The excavation trench partly encompasses the present Plot 2a Site (Fig. 13). A preliminary report suggests that two potential prehistoric pits were excavated within Bay 9 (Salford Archaeology Archive, internal ref: SECL 2006), which lies within the immediate vicinity of the Site (Salford Archaeology, 2023).
Assessment	The presence of potential prehistoric remains suggests that additional prehistoric remains may survive within the Site, which could be affected by the proposed development scheme.

Gazetteer Entry 22

Site Name	Roman remains
Designation	No designation
HER Number	-
Site Type	Archaeological features (site of)
Period	Roman
NGR	383600 397619; 383522 397663
Source	Salford Archaeology 2020-3
Description	A Romano-British pit or linear feature, overlain by post-Roman plough soils, was excavation in 2020 within an area that corresponds to the north-west corner of the Site. 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. The evaluation trench was extended into a small open area excavation. Further archaeological features were excavated and have been interpreted as Roman based on their stratigraphic positions, although none of the features were securely dated (See Fig. 13). In addition, the archaeological excavation that took place before the construction of Phase 1 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 settlement. The majority of Roman remains were excavated within bays 5, 7 ,8 and 9.
Assessment	The presence of Roman remains within the north-west corner of the Site, indicates that the remainder of the Site has high potential to contain Roman remains that could be affected by the proposed development scheme.

Gazetteer Entry 23

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 half of the Site (Plot 2b) 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 24

Site Name	Roman road
Designation	Non-designated heritage asset
HER Number	28.1.3
Site Type	Manchester to Buxton (site of)
Period	Roman
NGR	Centred SJ 8536 9615 (3924m by 2859m)
Source	HER
Description	The HER (28.1.3) states: Part of the Roman road from Buxton to Manchester. "*There seems no doubt that the very direct road through Stockport to Manchester does indeed mark the course*."
Assessment	The proposed route of the Roman road seems to lie with the south-east of the Site and could be affected by the development proposals.

Gazetteer Entry 25

Site Name	Strand Court
Designation	No designation
HER Number	-
Site Type	Single- and double-depth dwellings (site of)
Period	18th century
NGR	383546 397682
Source	Green's 1787-94; Bancks's and Co 1831; OS mapping
Description	Green's map captures a row of single-depth buildings off Strand Court in the late 18th century. Bancks's map shows that a row of double-depth buildings had been erected to the south of the court. Partially demolished in the 1880s to allow for the construction of the railway viaduct. All remaining buildings had been cleared by 1908. The properties with the

	slightly larger footprint had external staircases indicative of cellars.
Assessment	The former houses have some potential to survive within the Site and could be affected by the development proposals.

Gazetteer Entry 26

Site Name	Open yards, including timber yard
Designation	No designation
HER Number	-
Site Type	Potential wharfs (site of)
Period	19th century
NGR	Centred
Source	Dean and Pigot 1809; Bancks' and Co 1831; Adshead 1851
Description	Open yards on the south side of Trumpet Street are first captured on Swire's map of 1824. Small buildings occupied some of the plots. The open yards may have been associated with wharfage facilities associated with cargo transported via the Rochdale Canal. A timber yard occupied one of the plots in 1851. The railway viaduct and brick undercroft were built over the Site in the 1880s. Structures associated with the yard are likely to have consisted of sheds and buildings with shallow foundations.
Assessment	Yard surfaces and shallow foundations may survive within the Site and could be affected by the development proposals.

Significance

7.1 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.

7.2 Designated heritage assets

The Site contains one designated heritage asset, comprising a 19th-century railway viaduct that is afford statutory protection as a Grade II Listed Building (HER 1716.1.0).

The Site is situated within 250m of 25 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 Section 2.3).

7.3 Significance of the archaeological resource

7.3.1 Historical and archaeological interest

Historical and archaeological interest

The Site sits within the Area of Roman Manchester (GE01; GE18; 22-4) associated with the vicus and fort and therefore archaeological remains found from this period adds to the archaeological interest of the Site.

The Site lay within an area of Manchester known as Alport during the late medieval to post-medieval period. This area was likely pannage and later used as arable land (GE03). Other archaeological remains of the Site would most likely relate to the industrial period, such as industrial complexes (GE06 & GE09-11), workers' housing (GE08 & GE12-15) and a burial ground and associated buildings (GE04; GE05; GE07). The Roman, medieval and industrial period is a significant part of Manchester's history and therefore remains relating to these periods would be of historical and archaeological interest.

7.3.2 Baseline significance conditions

Period

Prehistoric pits (GE21) have been excavated during Phase 1. These were excavated within the immediate vicinity of the Site and would be considered significant to period.

The Site lies within the Area of Castlefield Vicus and contains evidence of Roman activity (GE01; GE18; GE22-4). There is potential for recovery of settlement and / or roadside activity from this period, which would be considered significant due to period.

Late 18th-century mapping implies that the Site mostly consisted of open fields with hedgerows (GE03), with a row of single-depth dwellings along Strand Court (GE25) and three cottages (GE02), however 18th-century activity is likely to have removed by later remains.

The development of the Site during the late 18th and early 19th century of Manchester resulted in the Site being occupied by various workers' dwellings and commercial units (GE06; GE08; GE12-15), as well as two foundries (GE09 and GE11) and cotton mill (GE10). A burial ground associated with Great Bridgewater Street Chapel (GE04), along with a rectory (GE05) and Sunday school (GE07). Site's reflecting Manchester's industrial heritage may be considered significant due to period.

The Rochdale Canal (GE17) and Grade II Listed Castlefield Viaduct (GE16) currently occupy the Site and will be retained within the scheme.

Rarity

Potential prehistoric pits were excavated during Phase 1. Prehistoric remains are very rare within Manchester and would be considered significant due to rarity.

Previous archaeological work and research has shown the Site to be located on the eastern edge of the Roman civilian settlement, alongside a road, or roads, leading east from the fort. Whilst excavations within the Site and elsewhere in Castlefield have produced evidence for settlement activity, the Site represents one of the largest remaining plots in which physical evidence may still survive, especially within the Site. Any further remains could be considered significant due to rarity.

The Site consisted of a mixture of cottages and fields divided by hedgerows or field boundaries during the 18th century. Buried remains associated with pre-18th-century Manchester may be considered significant due to rarity, as few remains survive within the area due to extensive development during the industrial period.

Archaeological remains associated with the 19th-century domestic houses and 19th-century cotton mills may not be considered rare as several examples have been excavated in the past 30 years. In contrast, foundries are poorly understood and may have some rarity value.

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 the Castlefield fort and settlement. The foundries, mill, school and range of housing encapsulate the urban development of the 19th century and therefore may have group value.

Survival / condition

The survival, extent and condition of below-ground archaeological remains within the Site is presently unknown. Previous excavations within the Site and the area now occupied by the Beetham Tower, have revealed evidence of Roman, post-medieval and 19th-century activity, therefore the remainder of the Site has high potential for remains to survive *in-situ*. The burials within the burial ground are said to have been removed in the 19th century, and the trial trenches did not reveal any evidence of human remains. However, this cannot be completely ruled out and they could be present within the west of the Site (Plot 2b; see Figs 13 and 14).

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 the immediate vicinity of two potential prehistoric pits. The survival of remains associated with Prehistoric 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/prehistory) Table 3:

Prehistoric	
PH10	How can we broaden our view of the Neolithic and the Bronze Age to a wider regional context?
PH23	How can we identify previously unknown prehistoric sites?
PH25	How can we better understand the distribution of prehistoric archaeology across the landscape?
PH26	What was the changing nature of the relationships between people and their environment during the prehistoric period?
PH29	What activities were undertaken during the Palaeolithic in the North West of England?

Table 4 Prehistoric Research Agendas

Previous excavations during Phase 1 revealed evidence of Prehistoric activity, which could imply further prehistoric remains lie within the Site, however, the likelihood is considered to be very low. Any further remains that were found could have the potential to address the research agendas listed above (Table 3).

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 5 Roman research agendas

Evaluation trenching in the north-west corner of the Site (in the north-east edge of Plot 2b) and an excavation that corresponds to roughly the centre of the Site (partially within Plot 2a) revealed evidence of Roman remains, therefore, there is high potential for Roman activity to survive within the remainder of the Site to address the research agendas listed above (Table 4).

The Site was within an area of arable land during the post-medieval period. The survival of field boundaries, features and soils may have some potential to address the research agendas outlined in the current *Archaeological Research Framework for North West England (*https://researchframeworks.org/nwrf/ post-medieval; Table 5):

Post-medieval	
PM11	How can palaeoenvironmental indicators of consumption enhance our understanding of the wider patterning and social context?
PM15	How well recorded and understood are farming landscapes, field patterns, distributions of buildings and building types?
Ind09	How does the nature of rural settlement change during this period?
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 6 Post-medieval research agendas

Buried remains of field boundaries and relict soils have been excavated during the 2020 excavations and imply that further remains could survive within the Site, therefore, the Site has the potential to address the research aims listed above (Table 5).

Various workers' houses that been erected across the Site in 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):

Post-medieval:	
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 7 Industrial Period research agendas

Almost all of the workers' houses were targeted during Phase 1and have no further potential to address the research agendas listed in Table 5. There is limited potential for the Site to address the research agendas listed above (Table 6).

In total, two foundries and a cotton mill partly fell within the Site in the early 19th-century. Remains of these industrial complexes have the potential to address the research agendas outlined in the current Archaeological Research Framework for North West England (https://researchframeworks.org/nwrf/sample-page/industrial): Table 7:

Industrial period	
Ind53	What can archaeology tell us about the production and use of consumer products and their typologies from the late 18th to early 20th centuries?
Ind58	How have industrial buildings adapted to new technology and processes?
Ind60	How can we make sense of the relative significance of historic industrial processes and building types perceived as poorly understood and recorded?
Ind100	How do we capture the process of industrialisation

Table 8 Industrial Period Research Agendas

Buried remains of the foundries and cotton mill lie within the east of the Site and have high potential to address the research aims listed in Table 7.

The Great Bridgewater Street Chapel rectory, Sunday School and burial ground were located within the north-west of the Site. The remains of the burial ground and religious buildings may have the potential to address the research agendas outlined in the current Archaeological Research Framework for North West England (https://researchframeworks.org/nwrf/sample-page/industrial):Table 8):

Industrial period	
Ind44	What do burial practices, including monuments and skeletal assemblages, say about the social context and impact of industrialisation?
Ind45	What may be deduced from cemetery studies about changing attitudes to burial and remembrance and evolving funerary architecture?

Table 9 Industrial Period Research Agendas

There appeared to be no evidence of the rectory walls or 19th-century burials during the 2020 evaluation in the north-west part of the Site (Table 8). However, this does not rule out the possibility for human remains to survive within the south of the Site, therefore the Site has the potential to address the research aims listed in Table 8.

7.4 Human Remains

The *Archaeology and Burial Vaults: a guidance note for churches* (APABE, 2010) states that:

"Understanding the significance and value of our places of worship enables us to better conserve and protect them. A strong research base must underpin this, and archaeological projects, where needed as a result of necessary modifications and development, will enhance our knowledge. However, carefully considered research themes, linked to regional and national research agendas are needed to direct endeavour and ensure that archaeological projects are tightly focussed and proportionate."

Human remains are by their very nature, sensitive and significant, and require respectful treatment. Burials within vaults have heightened sensitivities, as they are placed in a deliberately protective enclosure within walls and generally within churches or chapels rather than "open" burial in a churchyard. The opening of coffins is often considered unnecessary and disrespectful and can lead to help and safety concerns, particularly with sealed lead coffins (Church of England and English Heritage 2005, Annexe S3, Para 231, 232). It is therefore important that these remains are treated accordingly, and that the removal or exposure of burials follows a staged programme of work backed by a justifiable research strategy, whether this is for *in-situ* recording or where it is necessary to remove the remains from the site (APABE, 2010). Further advice and guidance on the treatment of excavated human remains is support by Historic England and provided by APABE (APABE, 2015).

7.4 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.

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 and post-Roman relict soils (dating up to the 18th century) and Marsden's Cotton Mill that could be considered to be of medium (regional) significance. The Site has some potential to contain prehistoric remains that could potentially be of medium (regional) significance.

The Site has high potential to contain remains associated with two foundries, an early 19th-century burial ground and associated Sunday School, which are considered to be of low (local) significance.

The Site also has limited potential to contain remains of 18th- and 19th-century workers' houses, a small commercial building, a rectory, late 19th-century toilets and late 19th-century gas plant.

The Grade II Listed Castlefield Viaduct and Rochdale Canal will be retained within the scheme.

8. Impact assessment

8.1 Development Proposals

Salboy Central Ltd have prepared a full planning application. The Proposed Development will be delivered across three plots:

Plot 2a is located at the centre of the Site, immediately east of the nearly completed Phase 1 building, on land currently comprising the grade II listed Castlefield Viaduct. This plot will deliver a 76-storey residential tower comprising 782 1- and 2-bed apartments (Use Class C3). Residents' amenity spaces and commercial units (Use Class E) are provided within the arches at ground floor opening onto Great Bridgewater Street. 910 secure cycle spaces, serving this and the Phase 1 building, are provided within the basement. At viaduct level, a redesigned service yard for the conference centre is enclosed by a new podium structure with residents' external amenity space above. A section of the Great Bridgewater Street bridge is removed to bring light into the street below.

Plot 2b, located at the western-most section of the Site between the viaduct and Beetham Tower, consists of a 23-storey residential building accommodating 133 affordable 1-, 2- and 3-bed apartments (Use Class C3), 133 secure cycle parking spaces, circa 200 sq m flexible commercial units (Use Class E) opening onto the viaduct, and public realm enhancements on Great Bridgewater Street.

Plot 2c, located at the eastern-most part of the site between the Metrolink line and Albion Street, comprises 459 sq m flexible commercial space (Use Class E) across two storeys, and public realm enhancements and associated changes to the highway layout on Albion Street.

8.2 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.

This assessment has demonstrated that the Site has the potential to retain buried remains of prehistoric remains, Roman activity, late medieval to post-medieval relict soils and field boundaries, a burial ground and associated religious buildings, an early 19th-century cotton mill and early 19th-century foundries. Any remains that do exist within the Site are likely to be of low (local) to medium (regional) significance and, without a programmed of mitigation, the scheme could damage or destroy these remains.

9. Recommendations

9.1 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.

9.2 Further Investigation

The exact scope and extent of any such further investigation of the Site will be determined by the Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as archaeological advisor to Manchester City Council. However, following consultation with GMAAS, it is anticipated that, in the first instance, a programme of archaeological evaluation (either consisting of a strip, map and record or trial trenches) should take place within the Site to establish the presence or absence of buried archaeological remains, and if present, their extent and significance. In addition, archaeological monitoring in the form of a watching brief should take place during any ground-breaking works beneath the main roads and the road junction in the north-eastern corner of the site.

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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Appendix 1: Figures

Figure 1: Site location map

Figure 2: Site boundary superimposed on modern mapping

Figure 3: Site boundary superimposed onto Green's Map of Manchester, 1787-94

Figure 4: Site boundary superimposed onto Bancks & Co's Map of Manchester and Salford, 1831

Figure 5: Site boundary superimposed on the Ordnance Survey 1:10560 Town Plan Map of 1851

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

Figure 7: Site boundary superimposed on the Ordnance Survey 1:2500 County Series Map of 1908

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

Figure 9: Site boundary superimposed on the Ordnance Survey 1:1250 National Grid Series 1948

Figure 10: Gazetteer sites superimposed onto modern mapping

Figure 11: Gazetteer sites superimposed onto modern mapping

Figure 12: Gazetteer sites superimposed onto modern mapping

Figure 13: Area of previously excavated trenches

Figure 14: Approximate development plots, areas of archaeological potential and previous excavation trenches superimposed onto modern mapping



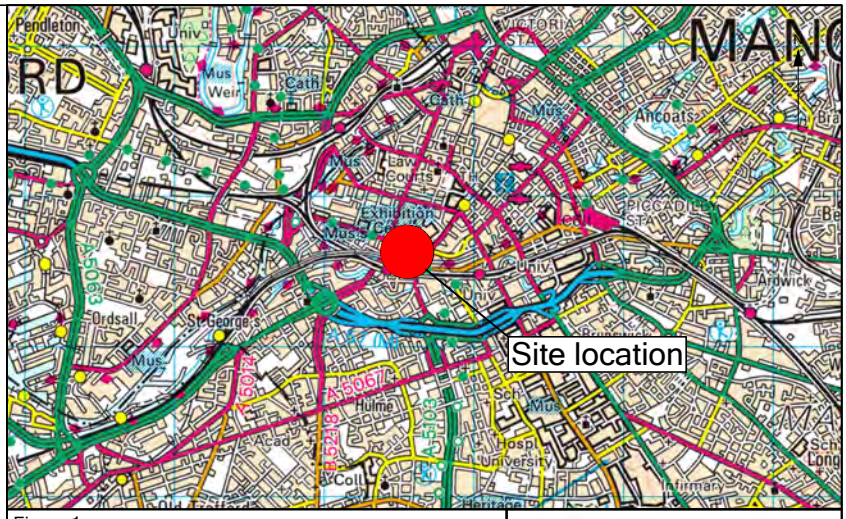
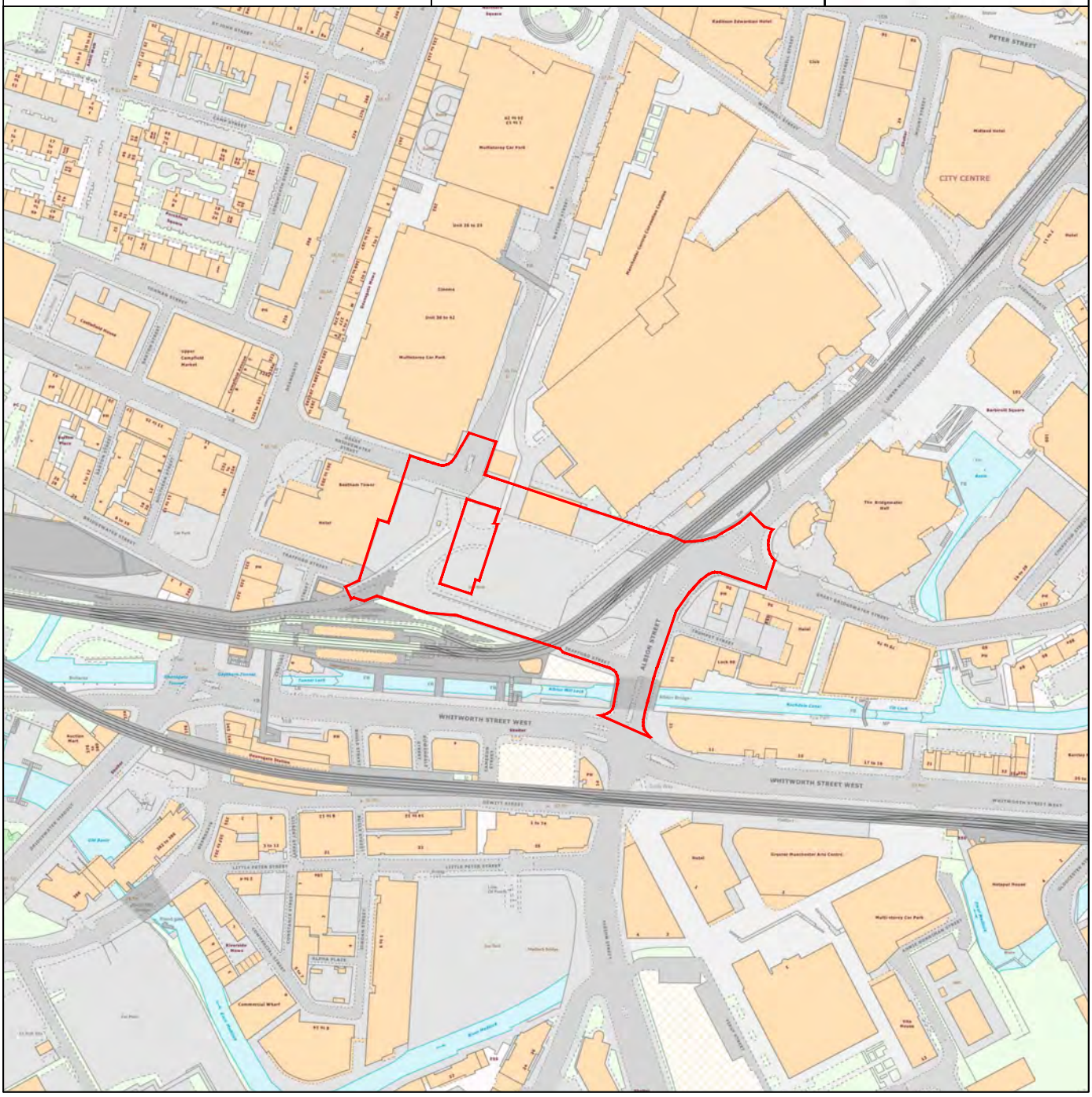


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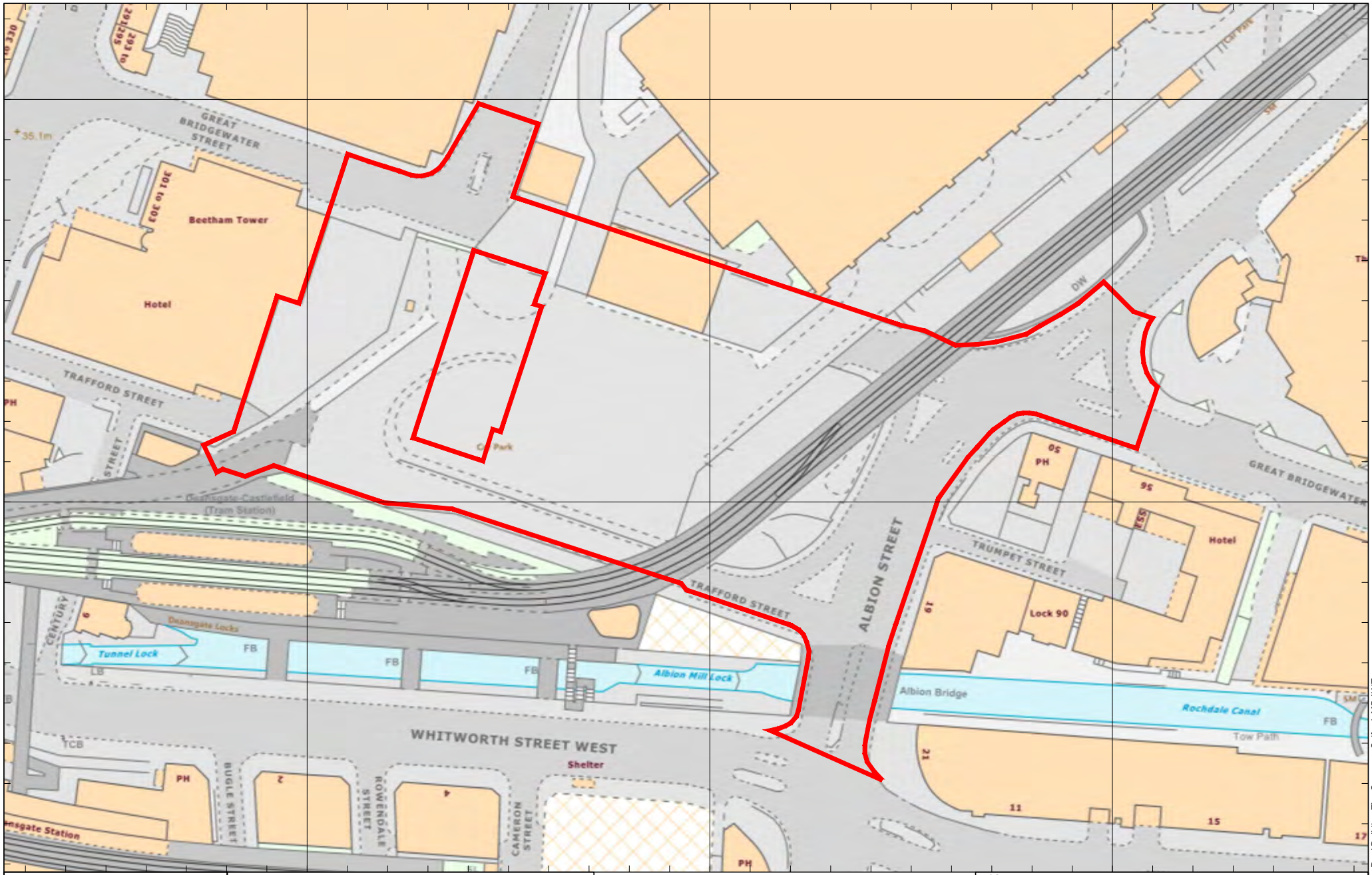
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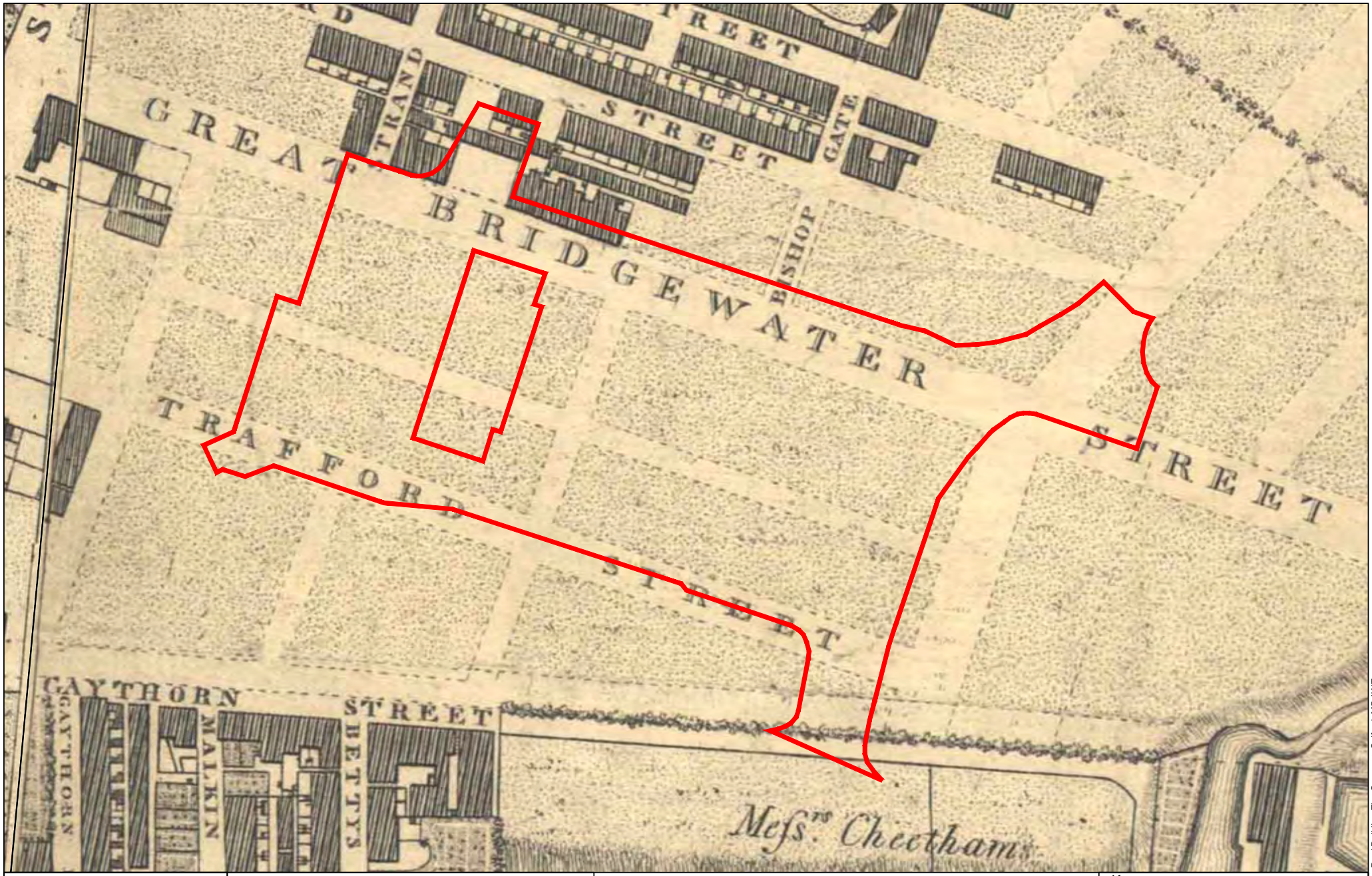
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SALFORD ARCHAEOLOGY



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383500
383600
383700
397700
397600
GREAT BRIDGEWATER STREET
Beetham Tower
Hotel
TRAFFORD STREET
Deansgate-Castlefield (Tram Station)
Deansgate Locks
Tunnel Lock
Albion Mill Lock
ALBION STREET
TRUMPET STREET
Lock 90
Albion Bridge
Rochdale Canal
Tow Path
WHITWORTH STREET WEST
Shelter
BUDGE STREET
ROWENDALE STREET
CAMERON STREET
CENTURY
Hotel
GREAT BRIDGEWATER
Salford Archaeology, Peel Building, The Crescent, Salford, M5 4WT
SALFORD ARCHAEOLOGY
0
50 m
Scale at A4 1:1250
Figure 2:
Site Boundary Superimposed onto Modern Mapping
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N
Key:
Site Boundary



SALFORD ARCHAEOLOGY

0 50 m

Scale at A4 1:1250

Figure 3:

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

N

Key:

Site Boundary

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SALFORD ARCHAEOLOGY

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Scale at A4 1:1250

Figure 4:

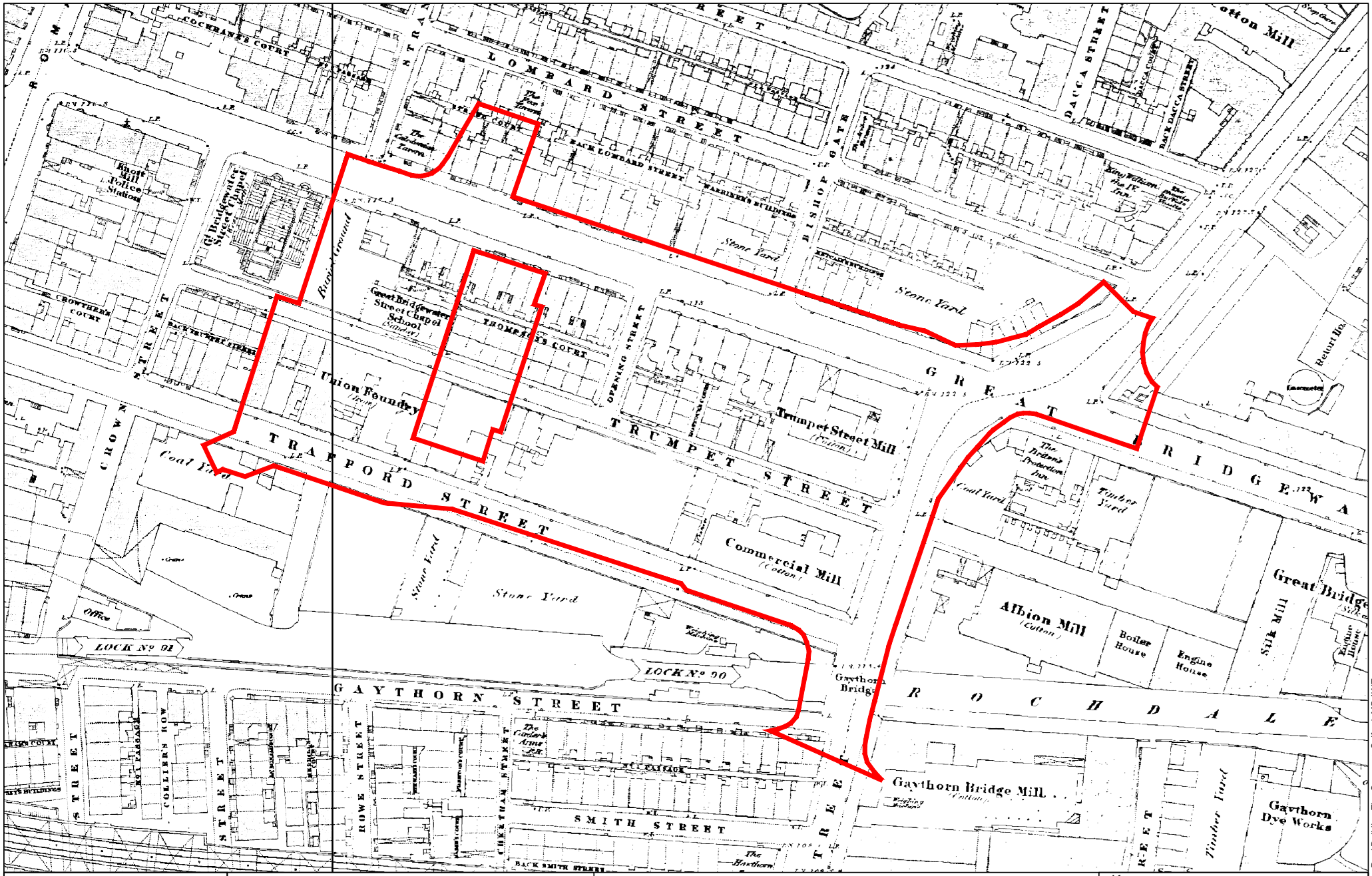
Site Boundary Superimposed onto Bancks & Co's Map of Manchester & Salford 1831

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Key:

Site Boundary

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



SALFORD ARCHAEOLOGY

0 50 m

Scale at A4 1:1250

Figure 5:

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

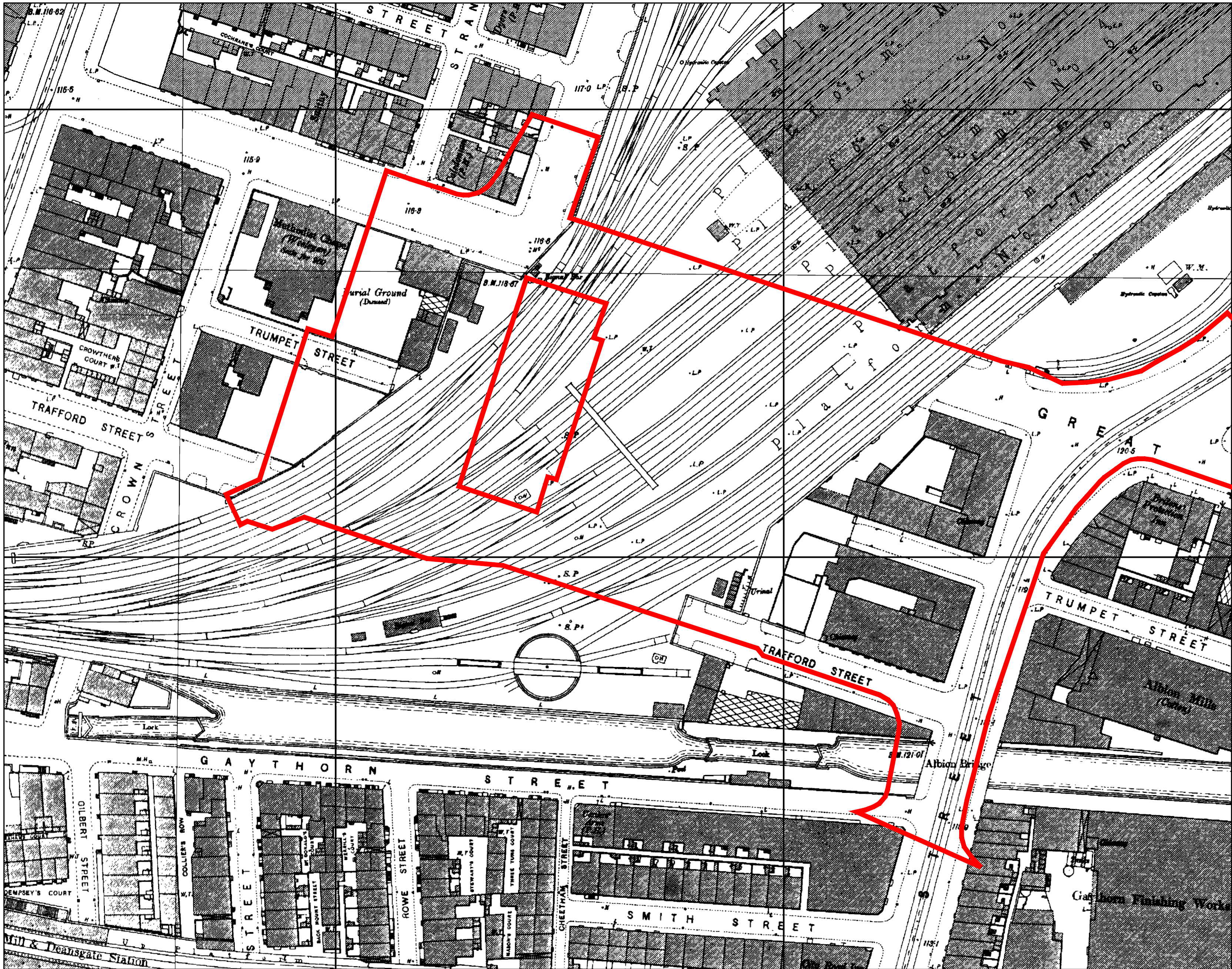
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0 50 m

Scale at A4 1:1250

Figure 6:

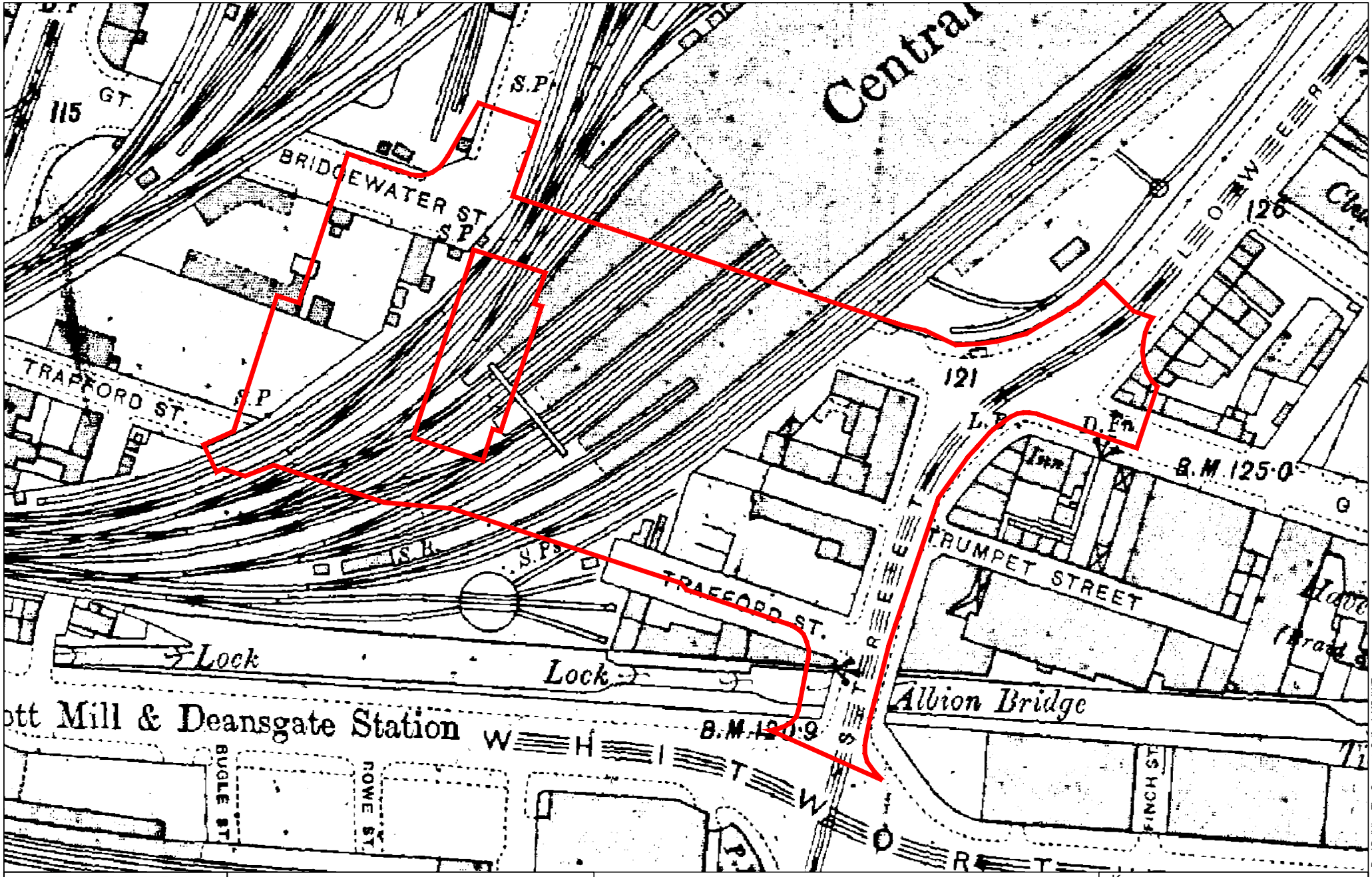
Site Boundary Superimposed onto the 1:500 Town Plan of 1891

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N

Key:

Site Boundary



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0 50 m

Scale at A4 1:1250

Figure 7:

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

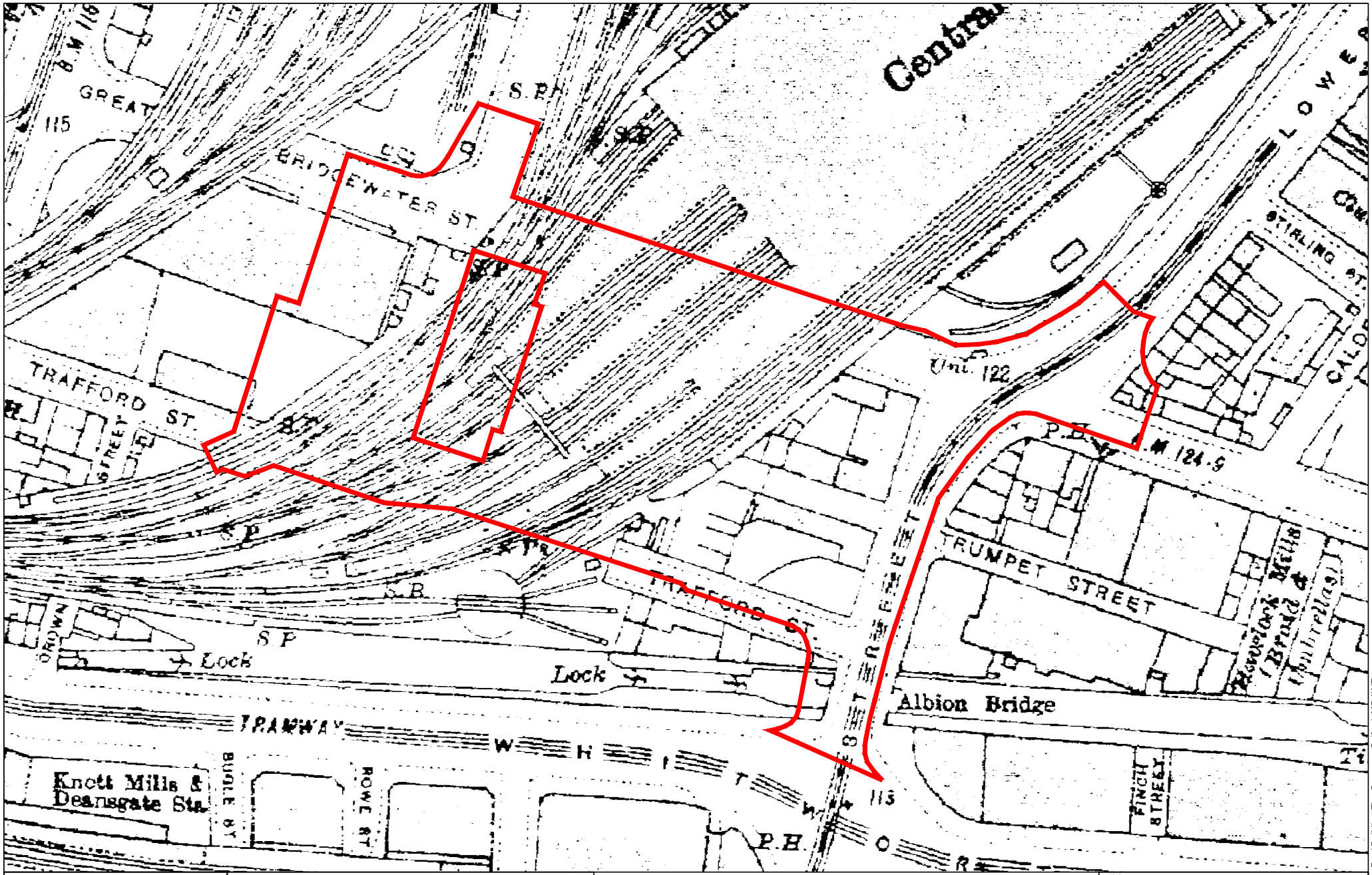
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Key:

Site Boundary

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0 50 m

Scale at A4 1:1250

Figure 8:

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

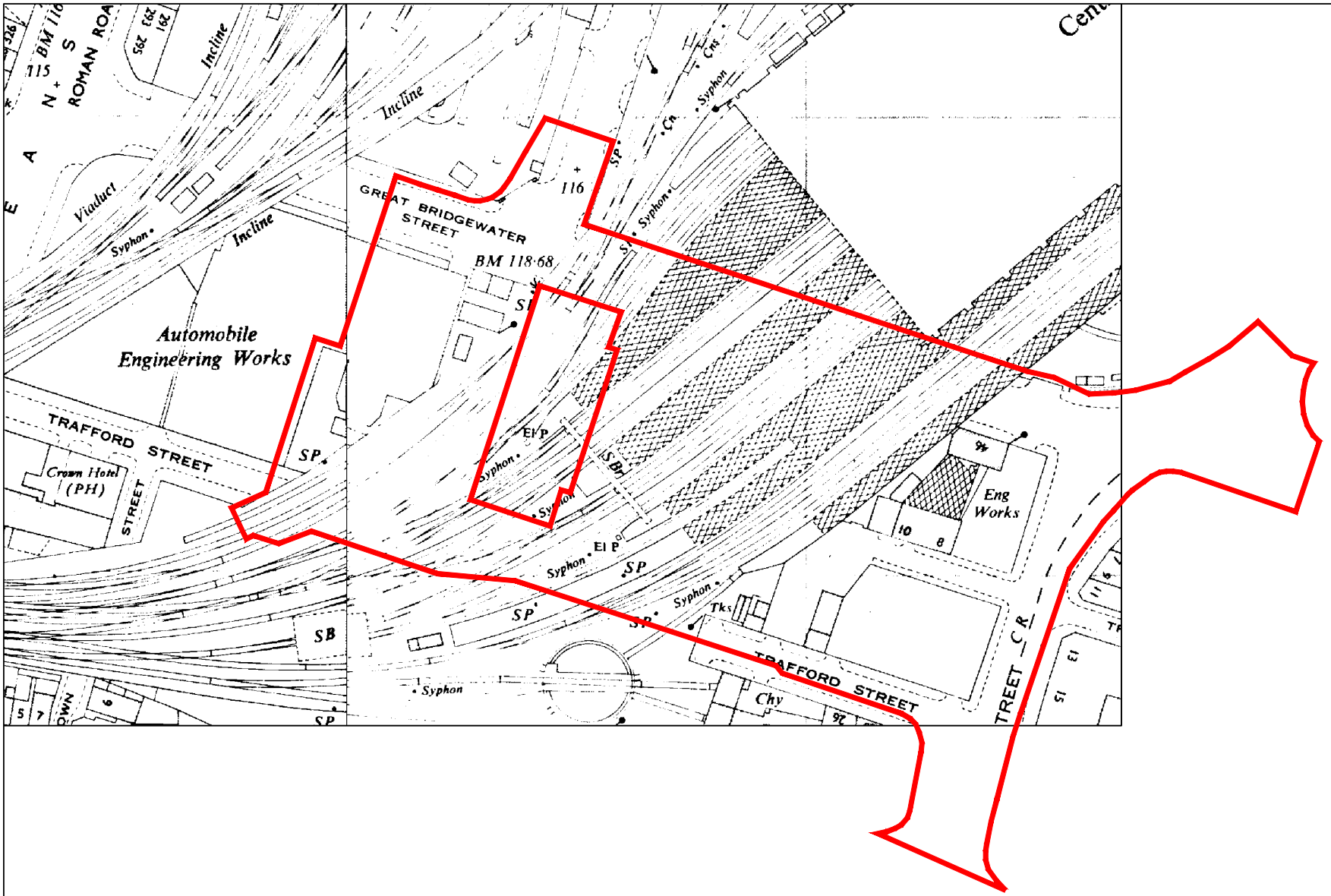
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Key:

Site Boundary

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SALFORD ARCHAEOLOGY

0 50 m

Scale at A4 1:1250

Figure 9:

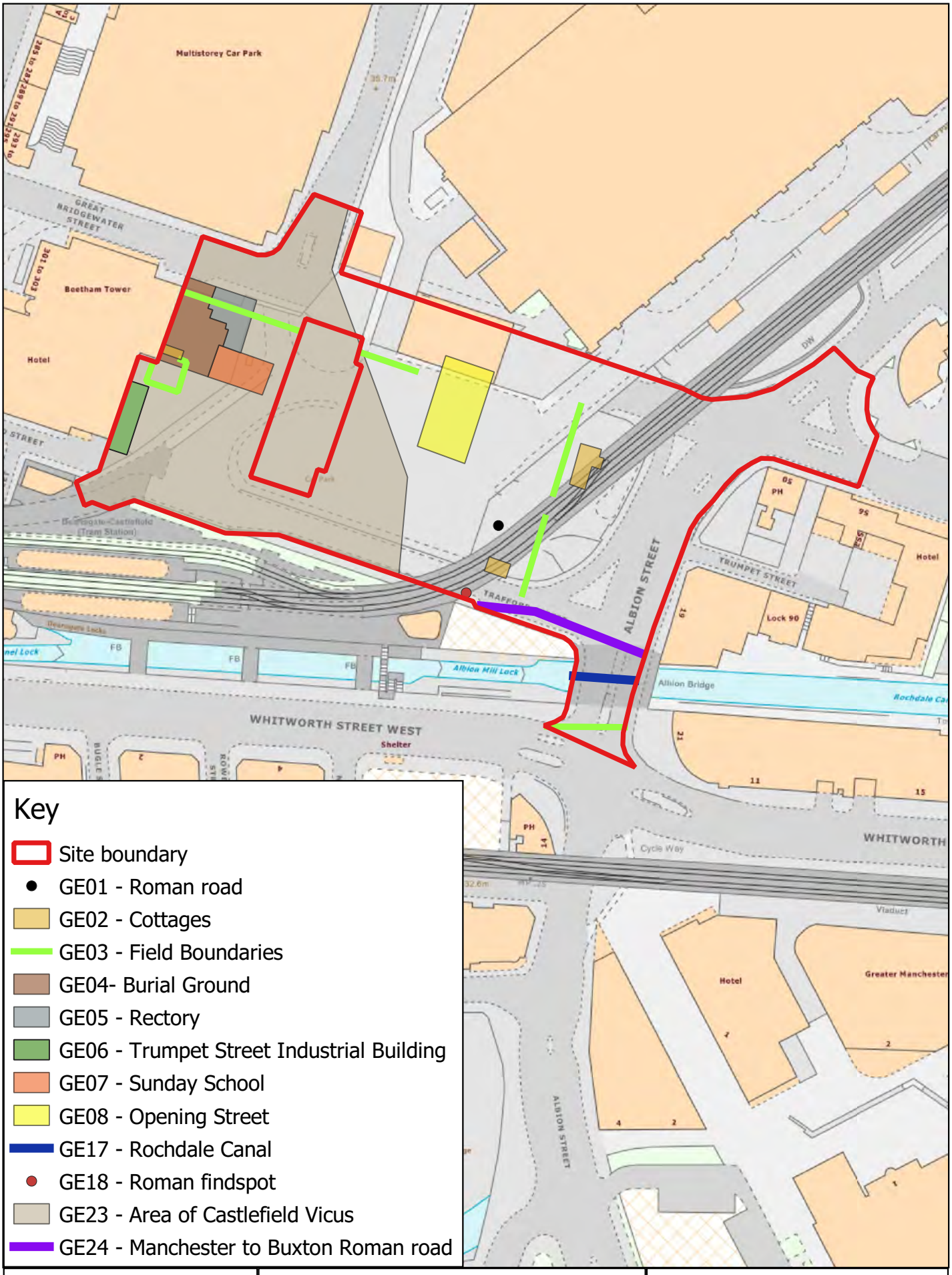
Site Boundary Superimposed onto the 1:1250 National Grid Map of 1948

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Key: Site Boundary

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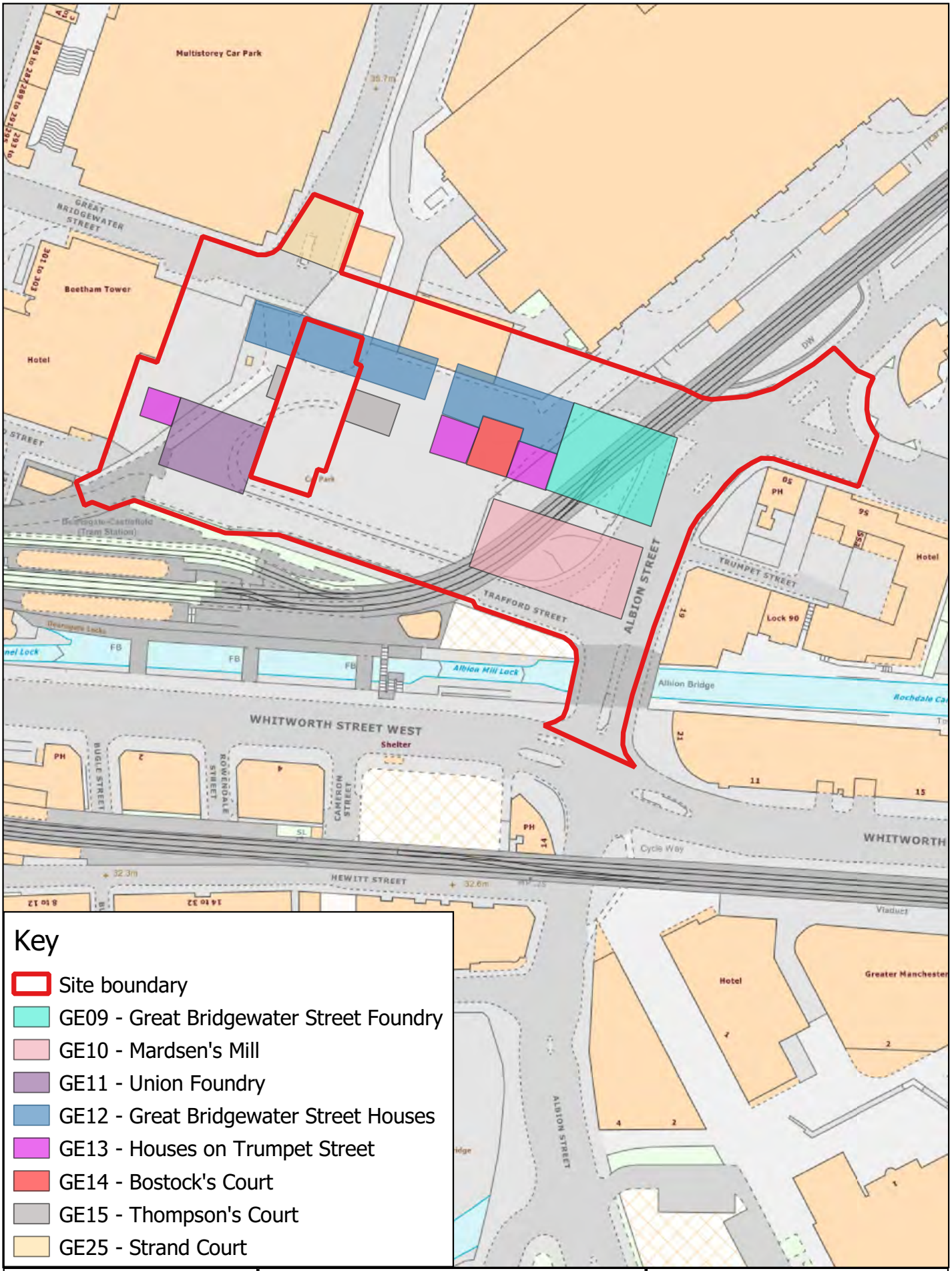
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SA SALFORD ARCHAEOLOGY

Figure 10: Locations of Gazetteer Entries

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0 25 50 m



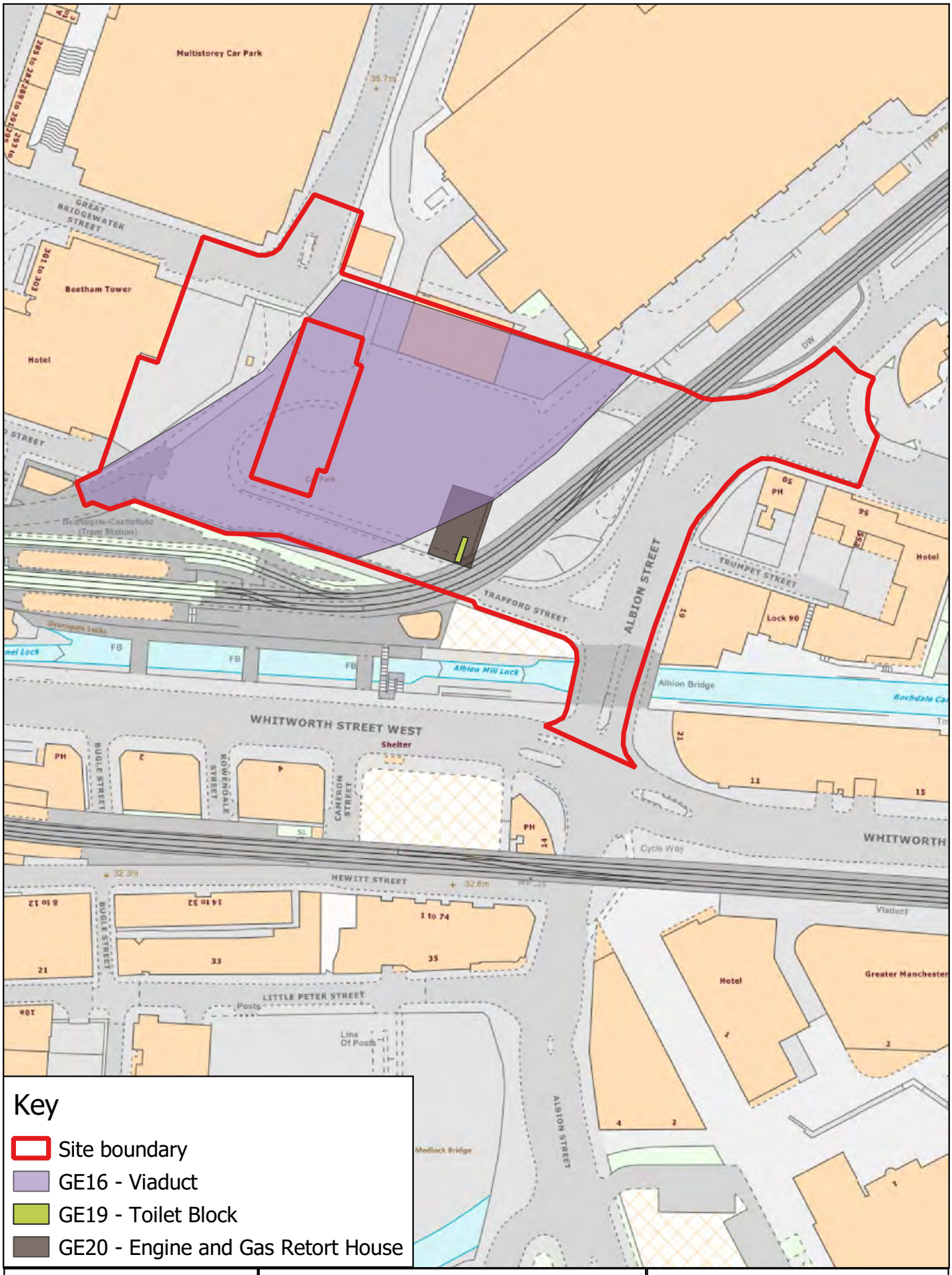
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Figure 11: Locations of Gazetteer Entries

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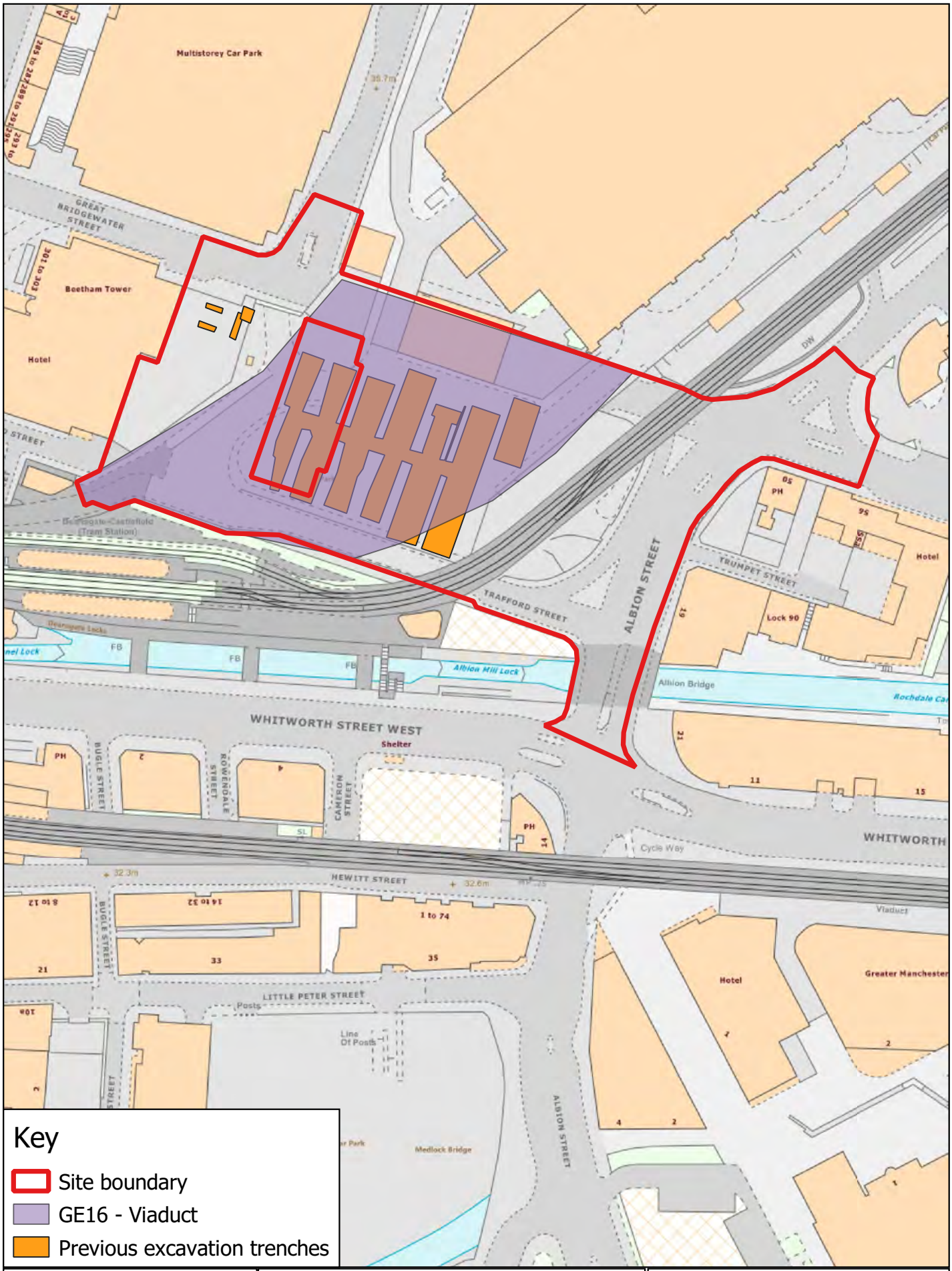
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Figure 12: Locations of Gazetteer Entries

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0 25 50 m



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Figure 13: Previous excavation trenches and Railway Viaduct

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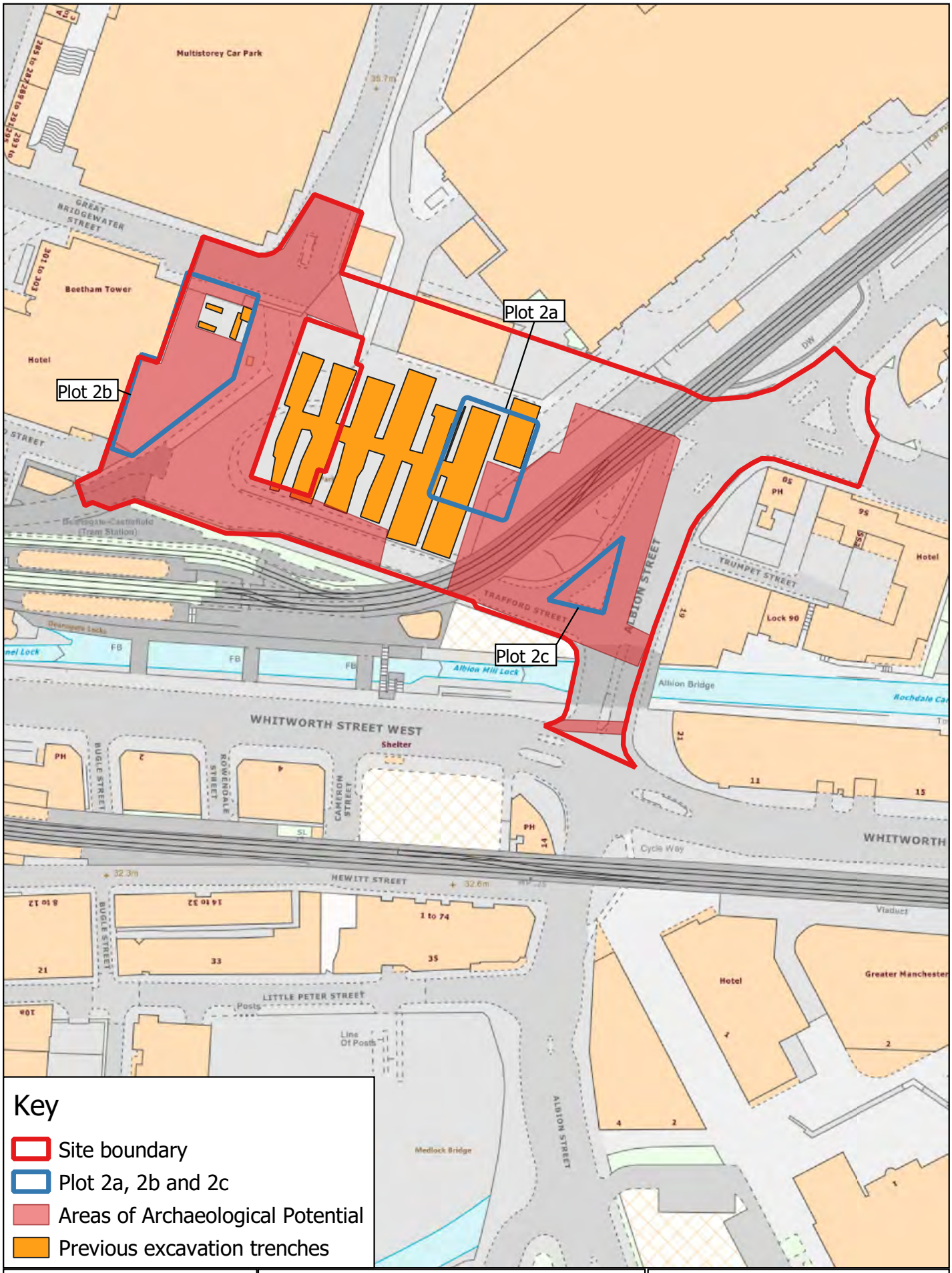


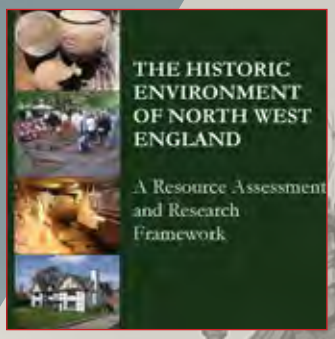
Figure 14: Approximate development plots, areas of archaeological potential and previous excavation trenches superimposed onto modern mapping

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0 25 50 m

SALFORD ARCHAEOLOGY

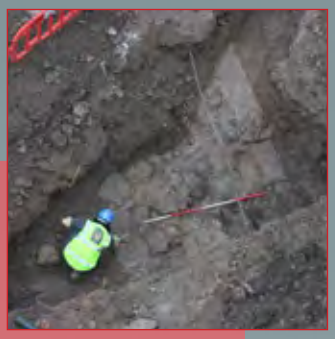
CONSULTANCY



DESK-BASED ASSESSMENTS



WATCHING BRIEF & EVALUATION



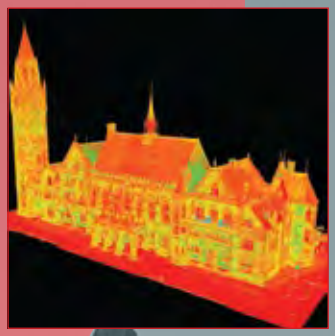
EXCAVATION



BUILDING SURVEY



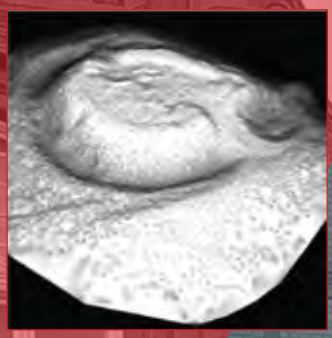
3D LASER SCANNING



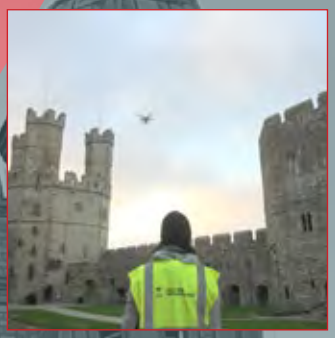
COMMUNITY INVOLVEMENT



LANDSCAPE SURVEYS



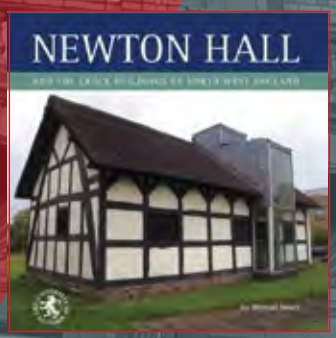
DRONE SURVEYS



WORKSHOPS & VOCATIONAL TRAINING



RESEARCH PUBLICATIONS



SEMINARS, DAYSCHOOLS CPD EVENTS



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The Centre for Applied Archaeology
CIfA REGISTERED ORGANISATION

Salford Archaeology, Peel Building, School of Science, Engineering & Environment,
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Appendix 5 Ecology Report

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

SALBOY

VIADUX PHASES 2 AND 3

PRELIMINARY ECOLOGICAL APPRAISAL



SALBOY

VIADUX PHASES 2 AND 3

PRELIMINARY ECOLOGICAL APPRAISAL

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October 2023

This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed: 

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

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1. INTRODUCTION

1.1 Penny Anderson Associates Ltd (PAA) was commissioned by Salboy in October 2023 to carry out a Preliminary Ecological Appraisal (PEA) of land at Viadux, Manchester (hereafter referred to as the 'site). The site is centred on approximate grid reference SJ83569761.

1.2 The PEA comprised a desk study for a 2km search zone around the site and a field survey comprising an extended Phase 1 habitat survey. This report details the results of the desk study and survey, and evaluates the results in the context of the proposals for the site, making recommendations for any further survey work and outline mitigation recommendations.

Site Description

1.3 Viadux is an urban city centre site comprising hardstanding with small patches of ephemeral/short perennial vegetation. The wider surrounding land use is primarily urban development consisting of roads and a number of large buildings with a mixture of uses.

1.4 The Phase 2 site extends over two levels, both previously used for car parking. The ground level is a series of enclosed vaulted brick arches beneath the upper level of open hardstanding. A Grade II listed viaduct that supports the Metrolink line traverses the Phase 2 site.

1.5 The Phase 3 site is limited to the ground level, with an open area of hardstanding currently in use for storage of building materials.

1.6 Greenspace in the area is limited but the Rochdale Canal is approximately 25m to the south of the site, and this links to other watercourses such as the River Medlock and Bridgewater Canal that flow through central Manchester.

Legislative Context

1.7 A range of international and national legislation has been established in the UK to protect important nature conservation sites and priority species. At the international level, European Union (EU) Directives require individual member states to implement their conservation provisions nationally for the benefit of Europe as a whole. These Directives have been transposed into UK law by the Conservation of Habitats and Species Regulations 2017 (amended).

1.8 Other international conventions include: the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979), which requires the maintenance of populations of wild flora and fauna, giving particular protection to endangered and vulnerable species; and the Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979), which requires the protection of migratory species throughout their entire range. The above conventions are implemented in England and Wales via the Wildlife and Countryside Act (WCA), 1981 (as amended) and Countryside and Rights of Way (CRoW) Act 2000. This legislation also protects important habitats and sites such as Sites of Special Scientific Interest (SSSI).

1.9 At the national level, Biodiversity 2020 (Defra 2011) forms England's national biodiversity strategy. Building on the Natural Environment White Paper[1] published in 2011, this provides a means of delivering the UK's commitments to maintaining and protecting biodiversity. Under Biodiversity 2020, the Priority Species and Habitats referred to are those of 'Principal Importance'

[1] https://www.gov.uk/government/publications/the-natural-choice-securing-the-value-of-nature

for the conservation of biodiversity in England as listed on Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006 (amended).

1.10 More recently, the Environment Act 2021 further supports this commitment to, and strengthens the legislation in respect of, maintaining and also enhancing biodiversity in England, and Part 6 Nature and Biodiversity includes the following key areas:

- Strengthened biodiversity duty for public authorities in England;
- Biodiversity net gain to ensure developments deliver at least 10% increase in biodiversity;
- Local Nature Recovery Strategies to support a Nature Recovery Network;
- Duty upon Local Authorities to consult on street tree felling;
- Strengthen woodland protection enforcement measures; and
- Protected Site Strategies and Species Conservation Strategies to support the design and delivery of strategic approaches to deliver better outcomes for nature.

1.11 Finally, the National Planning Policy Framework (NPPF 2023) provides guidance for local authorities on the content of the Local Plans and is a material consideration in determining planning applications. Briefly, with an overall focus on sustainable development, the NPPF states that developments should aim to engender positive outcomes for habitats and biodiversity, with a particular focus on the maintenance and creation of ecological networks.

1.12 The NPPF identifies the following principals that should be applied by local planning authorities when determining planning applications:

a) 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;

b) 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 SSSI;

c) 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

d) 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.

1.13 The NPPF states that the planning system should contribute to and enhance the natural environment through a range of actions, including:

- Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- 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;
- Maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

- Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

1.14 To protect and enhance biodiversity and geodiversity, plans should:

- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

Invasive Species

1.15 Certain non-native species that have been introduced into the UK are regarded as being a threat to native biodiversity. Legislative measures have, therefore, been put in place to prevent the spread of these invasive species in the wild.

1.16 Under section 14 of the WCA, 1981 (as amended), it is illegal to introduce plants listed under Part II of Schedule 9 of the WCA into the wild or sell these species. Offences include causing the spread of viable plant material or neglecting to contain or appropriately manage non-native species.

1.17 Commonly introduced Schedule 9 species include non-native cotoneaster species, specifically, small-leaved cotoneaster[2] (*Cotoneaster microphylla*) and wall cotoneaster (*C. horizontalis*), Himalayan balsam (*Impatiens glandulifera*) and Japanese knotweed (*Reynoutria japonica*).

1.18 Relevant protected species legislation summaries can be found in Appendix 1.

[2] *Plant names follow Stace 2019*

2. METHODS

Desk Study

2.1 A request for details of protected and notable species and locally designated sites within 2km of the centre of the site was made to Greater Manchester Ecology Unit (GMEU), with data returned in October 2023. Additionally, the Multi-Agency Geographic Information for the Countryside (MAGIC[3]) website was consulted for details of statutory designated sites, and Priority Habitats within a 2km search area from the centre of the site, and European Protected Species (EPS) Licences within 1km of the site.

2.2 It is important to note that the desk study results provide an indication of the species present in and around the site, and do not confirm current presence or absence of any species. Protected species are often under-recorded in county wildlife databases.

Extended Phase 1 Habitat Survey

2.3 An extended Phase 1 habitat survey was undertaken by Ecologist Stephen Griffith on 17th October 2023.

2.4 The survey was carried out in accordance with the methodology in the Handbook for Phase 1 Habitat Survey by the Joint Nature Conservation Committee (JNCC 2010). This entailed mapping, describing and collating plant species lists for habitats within the site boundary. The broad habitat types were mapped, with each habitat type coded according to the standard JNCC Phase 1 habitat survey procedure.

2.5 Each plant species was assigned abundance codes within each habitat. This was done using the 'DAFOR' scale (where: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare), which provides an indication of the relative abundance of each plant species present within a particular habitat. Common names and scientific names according to Stace (2019) are provided in the species list (Appendix 2) but common names only are referred to in the text.

2.6 The survey was 'extended' (Institute of Environmental Assessment 1995) to include notes on fauna and habitats which could potentially support protected or notable species. The presence of, or potential for, protected or notable species was noted on the field map and in the written target notes (TN) during the survey. The assessment followed the PEA guidance by the Chartered Institute of Ecology and Environmental Management (CIEEM 2017).

Limitations

2.7 The survey was undertaken at an appropriate time of year for this type of survey and all parts of the site were accessible on the day of survey, with no significant constraints.

[3] *https://magic.defra.gov.uk/MagicMap.aspx (last accessed 23/10/23)*

3. RESULTS

Desk Study

3.1 The desk study data returned by GMEU in October 2023, and the results of the MAGIC data searches are summarised below.

Statutory Protected Sites

European Sites

3.2 European protected sites include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar wetland sites, possible SAC, potential SPA and proposed Ramsar sites.

3.3 No SAC, SPA, Ramsar, possible SAC, potential SPA or proposed Ramsar sites were identified within a 2km search area from the site.

Sites of Special Scientific Interest

3.4 SSSI represent a selection of this country's best wildlife and geological sites and cover approximately 7% of the terrestrial area of the country (with over 4,000 separate sites in England).

3.5 No SSSI fall within the 2km search area.

3.6 The site falls within 2km of Impact Risks Zones (IRZ[4]) of two SSSI:

- Hollinwood Branch Canal SSSI IRZ; and
- Rochdale Canal SSSI IRZ.

National and Local Nature Reserves

3.7 No National or Local Nature Reserves were returned within the 2km data search.

Non-Statutory Protected Sites

3.8 Three Local Wildlife Sites (LWS) were returned within the 2km data search. These are:

- River Irwell;
- Rochdale Canal: Stott's Lane to Ducie Street Basin; and
- Ashton Canal (West).

Priority Habitats

3.9 Thirty-four areas of deciduous woodland are present within 2km of the site boundary. The closest record is located 1435m north-west of the site, along the river Irwell.

[4] *The Impact Risk Zones are a GIS tool developed by Natural England to make a 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.*

3.10 Thirty-one records of open mosaic habitat are present within 2km of the site boundary. The closest record is located 290m south east of the site, with a significantly larger area of open mosaic located 795m north-west of the site boundary.

Protected and Notable Species

Granted European Protected Species Application

3.11 Three EPS licenses all relating to bat roosts were returned within the 2km search area. These roosts affected by these licences are summarised in Table 1, below.

Table 1 Bat European Protected Species Licenses

Species	License to Allow	Date Licence Granted	Date Licence Expires	Distance from Site Boundary
Brown long-eared bat (*Plecotus auritus*)	Impact and destruction of a breeding site Destruction of a resting place	10/12/2012	31/08/2015	330m N
Common pipistrelle (*Pipistrellus pipistrellus*) Soprano pipistrelle (*Pipistrellus pygmaeus*)	Destruction of a resting place	23/04/2014	30/06/2017	925m NE
Common pipistrelle	Destruction of a resting place	28/01/2016	27/01/2021	815m NW
Common pipistrelle	Destruction of a resting place	28/08/2012	30/09/2013	330m N
Common pipistrelle	Damage and destruction of a resting place	12/03/2018	30/04/2040	720m NE
Common pipistrelle	Destruction of a resting place	05/03/2020	01/01/2025	410M N
Common pipistrelle	Unknown	23/05/2013	30/09/2016	195m S

Badger

3.12 Three records of badger (*Meles meles*) were returned from the 2km data search, dating from 2011 to 2013. The closest of these records lies 575m east of the site.

3.13 One record of a badger sett was also returned from the 2km data search, this record is located 1.7km north-east of the site.

Otter

3.14 Five records of otter (*Lutra lutra*) were returned from the 2km data search. The closest record is approximately 415m west of the site, located on the Bridgewater Canal at Merchant's Bridge. The other four records are all associated with the River Irwell.

Water Vole

3.15 No records of water vole (*Arvicola amphibius*) were returned from the data search.

Bats

3.16 Seventy-one bat roost records and one-hundred-and-eighty-two non-roost ('other signs') records were returned from the 2km search area dating from 1994 to 2022. These are summarised in Table 2.

Table 2 Summary of Bat Records

Common Name	Scientific Name	Type of record	No. of Records	Closest Record (approximate distance and direction from site boundary)
Brown long-eared bat	*Plecotus auritus*	Other signs	1	830m NW
Common pipistrelle	*Pipistrellus pipistrellus*	Roost	50	165m SE
Common pipistrelle	*Pipistrellus pipistrellus*	Other signs	121	One record falls within the boundary of phase 2B. This is a record of presence using a bat detector, dating from 2010. The next closest record is located 145m south of the site.
Daubenton's bat	*Myotis daubentonii*	Roost	1	670m NW
Daubenton's bat	*Myotis daubentonii*	Other signs	2	1.1km N
Myotis species	*Myotis* sp.	Roost	1	1.35km E
Myotis species	*Myotis* sp.	Other signs	1	1.8km NW
Noctule	*Nyctalus noctula*	Other signs	3	1.5km NE
Pipistrelle species	*Pipistrelle* sp.	Roost	16	165m SE
Pipistrelle species	*Pipistrelle* sp.	Other signs	40	270m S
Soprano pipistrelle	*Pipistrellus pygmaeus*	Roost	2	705m NW
Soprano pipistrelle	*Pipistrellus pygmaeus*	Other signs	9	380m NW
Unidentified bat sp.	*Chiroptera spp.*	Roost	1	715m NW
Unidentified bat sp.	*Chiroptera spp.*	Other signs	5	500m N

Other Mammals

3.17 Thirty records of hedgehog (*Erinaceus europaeus*) were returned from the 2km data search, dating from 2013 to 2022. The closest record is located 515m south of the site. The majority of

these hedgehog records are isolated from the site as they are located south of Mancunian Way, where this large road acts as a physical barrier to dispersal.

Birds

3.18 All nesting birds, their nests and eggs are protected from harm under the WCA, 1981 (as amended). In addition, species listed under Schedule 1 of the WCA are further protected against disturbance when breeding.

3.19 A number of bird species are listed under Section 41 in the NERC Act (2006, amended) as species 'of principal importance for the purpose of conserving biodiversity'. These species are often known as the 'S41 species'. There is a legal requirement for a public body to 'have regard to' these species in relation to maintaining biodiversity. The S41 list overlaps somewhat with the UK Biodiversity Action Plan species, with national or local targets to maintain and enhance populations.

3.20 Furthermore, the Birds of Conservation Concern (BoCC) report lists those bird species that are classed as being of High (Red listed) and Medium (Amber Listed) conservation concern based on population monitoring (Stanbury *et al*. 2021). This Red and Amber classification helps guide the assessment of bird species of conservation interest on or near to a site, alongside legislative and policy requirements.

3.21 Many records of Schedule 1 species were returned in within the 2km search area, including records of black redstart (*Phoenicurus ochruros*), hobby (*Falco Subbuteo*), kingfisher (*Alcedo atthis*), little ringer plover (*Charadrius dubius*) and peregrine (*Falco peregrinus*). These records are classed as confidential. All other protected and notable bird species records within the 2km search area are listed in Table 3 along with their conservation status.

Table 3 Bird Species of Principal Importance

Common Name	Scientific Name	Amber[5] Listed	Red Listed	Section 41 Priority Species[6]
Arctic skua	*Stercorarius parasiticus*	x		
Bullfinch	*Pyrrhula pyrrhula*	x		x
Cuckoo	*Cuculus canorus*		x	x
Curlew	*Numenius arquata*		x	x
Dunnock	*Prunella modularis*	x		x
Herring gull	*Larus argentatus*		x	x
House sparrow	*Passer domesticus*		x	x
Lapwing	*Vanellus vanellus*		x	x
Lesser redpoll	*Acanthis caberet*			x
Linnet	*Linaria cannabina*		x	x
Reed bunting	*Emberiza schoeniclus*	x		x
Skylark	*Alauda arvensis*		x	x

[5] *The UK's birds can be split in to three categories of conservation importance - red, amber and green. Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group, followed by green.*

[6] *Species of Principal Importance under Section 41 of the NERC Act 2006.*

Common Name	Scientific Name	Amber[5] Listed	Red Listed	Section 41 Priority Species[6]
Song thrush	*Turdus philomelos*	x		x
Spotted flycatcher	*Muscicapa striata*		x	x
Starling	*Sturnus vulgaris*		x	x
Yellow wagtail	*Motacilla flava*		x	x

Amphibians

3.22 Two records of great crested newt (*Triturus cristatus*, GCN) were returned from the 2km search area, dating from 2017 and 2019. Both these records are approximately 1.6km to the north-west of the site boundary; located in crescent meadow, their dispersal ability is largely inhibited by the presence of the River Irwell.

3.23 Three records of common toad (*Bufo bufo*) dating from 2014 to 2021 were returned from the 2km data search. As with the GCN records, these records of toad are approximately 1.6km north-west of the site boundary in the crescent meadow ponds.

3.24 An Ordnance Survey map search revealed no ponds or other waterbodies within 500m of the site suitable for hosting GCN.

Reptiles

3.25 No records of reptile were returned from the 2km data search.

Invertebrates

3.26 A small number of priority invertebrate species were returned from the 2km data search and are presented in Table 4.

Table 4 Priority Invertebrate Species Records

Common Name	Scientific Name
Cinnabar	*Tyria jacobaeae*
White-letter hairstreak	*Satyrium w-album*

White-clawed Crayfish and Notable Fish

3.27 No records of white-clawed crayfish (*Austropotamobius pallipes*) or other notable fish were returned from the data search.

Notable Plant Species

3.28 One notable plant species, the bee orchid (*Ophrys apifera*), was returned from the 2km data search.

3.29 No invasive non-native plant species records were returned from the 2km data search.

Phase 1 Habitat Survey

3.30 Figure 1 presents the habitat map of the site. Botanical species lists for the habitats on-site are presented in Appendix 2, with illustrative photographs in Appendix 3.

Main Habitats Present

3.31 The site is dominated by built structures and hardstanding with small patches of ephemeral/short perennial vegetation scattered across the site (Figure 1). Phase 2a of the scheme extends across two levels.

Hardstanding

3.32 At ground level for Phase 2 the structure comprised an enclosed complex of vaulted arches supported by brick piers, previously used as a car park and now as storage of construction materials (Photograph 1). This area could only be accessed via the entrance off Albion Street, where a small concrete loading area is present beneath the viaduct.

3.33 Phase 3 comprised a small, exposed section of concrete hardstanding (Photograph 2), again in use for the storage of construction materials.

3.34 The upper level (Phase 2a), accessed via a ramp at the southern side of the site (Trafford Street), comprised an open area of hardstanding previously used as a car park.

Ephemeral/Short Perennial Vegetation

3.35 Small patches of ephemeral/short perennial vegetation are present to the east of the site within Phase 2, whilst there was also some occasional vegetation growth from gaps in the external facades. All species present were common, widespread and typical of urban city centre sites. Species included occasional perennial rye-grass, butterfly-bush, common chickweed, springy turf-moss, and ivy-leaved toadflax (locally frequent). Rare occurrence of creeping buttercup, dandelion, groundsel, common ragwort, and willowherb species were also recorded.

Invasive Non-Native Species

3.36 No invasive non-native plant species were observed during the survey.

Protected Species

3.37 The site is isolated from any larger areas of natural or semi-natural habitat. Due to the lack of suitable habitat or shelter for protected species in this urban environment, it was concluded that the only species relevant to the assessment are roosting bats and nesting birds.

Bats

3.38 Although generally in sound condition and in regular use, the buildings and structures (Photograph 3), could offer some limited opportunities for small numbers of crevice-roosting bats. In addition, bat roosts are known in the immediate local area and bat activity is relatively well-recorded in this wider area. It is, therefore, recommended that a detailed building inspection for potential bat roost features is undertaken.

3.39 The site contains no potential tree roost sites for bats as there are no mature or larger trees on or adjacent to the site.

3.40 The hardstanding provides no significant foraging habitat for bats. Street lighting, together with the lack of vegetation and connectivity to other semi-natural habitats, significantly diminishes its potential for bat foraging.

Nesting Birds

3.41 The suitability of the site for black redstart or peregrine is considered to be very limited due to the dominance of intact hardstanding and lack of suitable features for foraging and/or nesting. These

species are known to be present within Manchester city centre but are not considered to be likely present or reliant on this site.

3.42 On the edge of the site boundary for Phase 2 was a bridge that traverses Great Bridgewater Street. The underside of this bridge offers suitable nesting habitat for feral pigeon (*Columba livia*) (TN1, Figure 1), with large collections of droppings present for the duration.

3.43 In addition, the underside of the viaduct may have offered suitable nesting habitat for feral pigeon, but bird spikes had been installed to prevent access (Photograph 4).

4. DISCUSSION AND RECOMMENDATIONS

Designated Sites

4.1 The site contains no statutory nature conservation sites, and none are within 2km of the site, with those situated further afield considered unlikely to be impacted by the proposed development.

4.2 Non-statutory sites are of a sufficient distance to site that they are unlikely to be impacted by the proposed development.

Habitats

4.3 The habitats and plant species recorded within the site are widespread and common throughout Greater Manchester and the UK. None of the plant species recorded within the site are either Nationally Scarce or Nationally Rare (Hill *et al.* 2004) or of any other conservation significance (Cheffings and Farrell 2005, as amended; Stroh *et al*. 2014). Priority Habitats within 2km of the site were limited, with the closest a small area of open mosaic habitat 290m from site.

4.4 No evidence of invasive non-native plant species was discovered on site.

Protected and Notable Species

Bats

4.5 It is recommended that a detailed inspection of the structures/buildings across the site for potential bat roost features is undertaken by a suitably licensed Ecologist. These surveys can be completed at any time of year and would enable suitable recommendations in relation to bats and their roosts to be made.

Nesting Birds

4.6 The site is considered to provide a relatively limited foraging resource for local populations of birds. The site is unlikely, therefore, to form a key part of the foraging habitat for any local populations of notable bird species such as black redstart.

4.7 Nesting birds, their nests, eggs and dependant young are protected under the WCA 1981 (as amended). Work during the nesting season has the potential to disturb or destroy active bird nests during the period March to September, which would be an offence under this legislation. The underside of the bridge on Great Bridgewater Street offers suitable nesting habitat for feral pigeon. It is assumed that the underside of the bridge will be left undisturbed as part of the site works. If this changes then prior to commencement of works a check for nesting birds will be required and any active nests will need to remain *in situ* undisturbed until the young have fledged.

Biodiversity Enhancement Opportunities

4.8 The site is currently of limited ecological value and development presents an opportunity to increase biodiversity. Potential enhancement measures comprise:

- Use of British native or pollinator-friendly tree, shrub and herbaceous species in any landscape planting, for example, inclusion of species that provide nectar for invertebrates or berries to provide a food source for birds;
- Inclusion of integrated bat roost features such as bat bricks or bat tubes to increase opportunities for roosting bats, preferably on the southern side of site to allow access to Rochdale Canal, coupled with a suitable lighting strategy to avoid unnecessary lighting of roost features; and
- Including a green/brown roof design would enhance/expand forage opportunities for any local populations of foraging birds, if the design allows.

5. REFERENCES

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6. ABBREVIATIONS

BoCC	Birds of Conservation Concern
CIEEM	Chartered Institute of Ecology and Environmental Management
CRoW	Countryside and Rights of Way
EPS	European Protected Species
EU	European Union
GCN	Great Crested Newt(s)
GMEU	Greater Manchester Ecology Unit
IRZ	Impact Risk Zone(s)
JNCC	Joint Nature Conservation Committee
LWS	Local Wildlife Site(s)
MAGIC	Multi Agency Geographic Information for the Countryside
NERC	National Environment and Rural Communities
NPPF	National Planning Policy Framework
PAA	Penny Anderson Associates Ltd
PEA	Preliminary Ecological Appraisal
SAC	Special Area(s) of Conservation
SPA	Special Protection Area(s)
SSSI	Site(s) of Special Scientific Interest
TN	Target Note(s)
WCA	Wildlife and Countryside Act

FIGURE

383500 383550 383600 383650

397650

397600

397550

STREET LEVEL

Phase 3

Phase 2A

Phase 2B

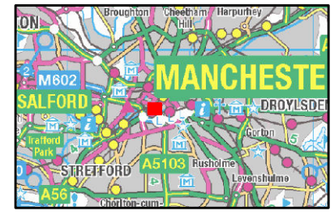
1

Trafford Street

UPPER LEVEL

Phase 2A

Phase 2B



Legend

- Survey areas
- Phase 1 Habitats
- Ephemeral/short perennial
- Hardstanding
- Target notes

TARGET NOTES
1. Nesting bird potential - underside of bridge

British National Grid
Projection: Transverse Mercator
False Easting: 400000.000000
False Northing: -100000.000000
Central Meridian: -2.000000
Scale Factor: 0.999601
Latitude Of Origin: 49.000000

N

ISO A3

Metres

0 5 10 15 20

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Project Name: Viadux Manchester

Discipline: Ecology

Title:

Extended Phase 1 Habitat Survey Map

Scale	Drawing No.
1:600	Figure 1

Drawn By	Originator	Date
CC	SG	27/10/2023

PAA Ref.	Revision
	1.0

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Figure 1 - Phase 1 Habitats Map - Viadux Manchester - SALB04-1 CC 231027.mxd

APPENDICES

APPENDIX 1

Relevant Protected Species Legislation

SUMMARY OF THE LEGISLATION RELATING TO BATS

All wild species of bat are protected under the Wildlife and Countryside Act (WCA) 1981, which has also been amended by later legislation, including the Countryside and Rights of Way (CRoW) Act 2000. Bats are listed on Schedule 5 of the WCA and are therefore subject to some the provisions of Section 9 which, with the amendments, make it an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection (S9:4b).
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat (S9:4c).

There are additional offences in relation to buying and selling (S9:5) any live or dead animal of this species or anything derived from them.

Bat species are also listed under Annexes IIa and IVa of the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, also known as the 'Habitats Directive'. Inclusion on Annex IVa means they are consequently identified as European Protected Species (EPS) and protected under the Conservation of Habitats and Species Regulations 2017 (amended).

The Conservation of Habitats and Species Regulations 2017 (amended) state that a person commits an offence if they:

(a) deliberately capture, injure or kill any wild animal of a European protected species,

(b) deliberately disturb wild animals of any such species, in such a way as –

  (i) to impair their ability to survive, to breed or reproduce, or to rear their young, or

  (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate, or

  (iii) to affect significantly the local distribution or abundance of the species to which they belong;

(c) deliberately take or destroy the eggs of such an animal, or

(d) damage or destroy a breeding site or resting place of such an animal.

Under these Regulations it is an offence to damage or destroy a breeding site or resting place whether the animal is in occupation or not, and protection extends to all life stages of the animal in question. There are additional offences relating to possession, control and sale of a live or dead bat or part of such an animal.

In addition, seven native British bat species, including the soprano pipistrelle (*Pipistrellus pygmaeus*) and the brown long-eared bat (*Plecotus auritus*), are listed as 'species of principal importance' for the conservation of biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (amended). In Wales, Section 7 of the Environment (Wales) Act 2016 provide a list of organisms of 'principal importance for maintaining and enhancing biodiversity' and lists several species of bat including the common pipistrelle (*Pipistrellus pipistrellus*) which is absent from England's S41 list.

Please note: the above text provides a brief summary of the legislation in relation to bats and their roosts and the original Acts, Regulations and any amendments should be referred to for the precise wording.

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SUMMARY OF THE LEGISLATION RELATING TO BREEDING BIRDS

All wild species of breeding birds and their nests and eggs are protected under Part 1 of the Wildlife and Countryside Act (WCA) 1981, as amended by later legislation including the Countryside and Rights of Way (CRoW) Act 2000. This legislation applies in England and Wales.

Part 1 (Section 1:1) of the WCA states that:

> 'If any person intentionally,
>
> (a) kills, injures or takes any wild bird;
>
> (b) takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or
>
> (c) takes or destroys an egg of any wild bird,
>
> he shall be guilty of an offence.'

Part 1 (Section 1:5) of the WCA (amended by the CRoW Act 2000) refers to specific birds listed on Schedule 1 of the WCA, and states that:

> 'If any person intentionally or recklessly,
>
> (a) disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or
>
> (b) disturbs dependent young of such a bird,
>
> he shall be guilty of an offence and liable to a special penalty.'

Schedule 1 includes birds such as Western barn owl (*Tyto alba*), black redstart (*Phoenicurus ochruros*), woodlark (*Lullula arborea*) and Cetti's warbler (*Cettia cetti*). Please refer to the WCA for a complete list of Schedule 1 species[1].

Some provisions are made to allow the killing and taking of certain species under certain circumstances, as follows:

- Birds listed on Schedule 2 (Part 1) of the Act may be taken or killed outside of the 'close season' for each individual species (the 'close season' is defined by the Act). This includes various wild duck and geese species.
- Birds listed on Schedule 2 (Part 2) of the Act may be killed or taken by authorised persons at all times. This includes species such as carrion crow (*Corvus corone*), Eurasian magpie (*Pica pica*), feral pigeon[2] (*Columba livia*) and greater Canada goose (*Branta canadensis*). An 'authorised person' is defined as a person who has written authorisation to undertake the act from the relevant statutory authority. The written authority is in the form of a licence, either a general licence which covers a number of the more typical 'pest' species, or an individual licence for other individual species. In England these licences are issued by Natural England and in Wales by the Welsh Assembly Government.

Please note: the above text provides a brief summary of the legislation in relation to breeding birds in England and Wales and the original Act and any amendments should be referred to for the precise wording.

[1] *https://www.legislation.gov.uk/ukpga/1981/69/schedule/1*

[2] *Also known as rock dove*

APPENDIX 2

Botanical Species List

Appendix 2 Botanical Species List

Common Name	Scientific Name	DAFOR
Woody Species		
Butterfly-bush	*Buddleja davidii*	O
Herbs, Grasses and Ferns		
Common chickweed	*Stellaria media*	O
Common ragwort	*Jacobaea vulgaris*	R
Creeping buttercup	*Ranunculus repens*	R
Dandelion	*Taraxacum officinale* agg.	R
Groundsel	*Senecio vulgaris*	R
Ivy-leaved toadflax	*Cymbalaria muralis*	LF-O
Perennial rye-grass	*Lolium perenne*	O
Willowherb species	*Epilobium* sp.(annual)	R
Moss		
Springy turf-moss	*Rhytidiadelphus squarrosus*	O

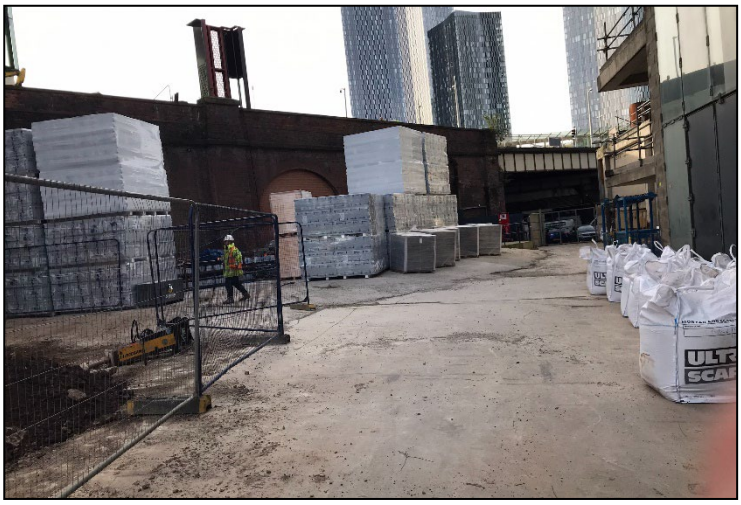
KEY
D-Dominant, A-Abundant, F-Frequent, O-Occasional, R-Rare, L-Locally

APPENDIX 3

Photographs



Photograph 1
Phase 2 vaulted arch complex



Photograph 2
Phase 3 storage area



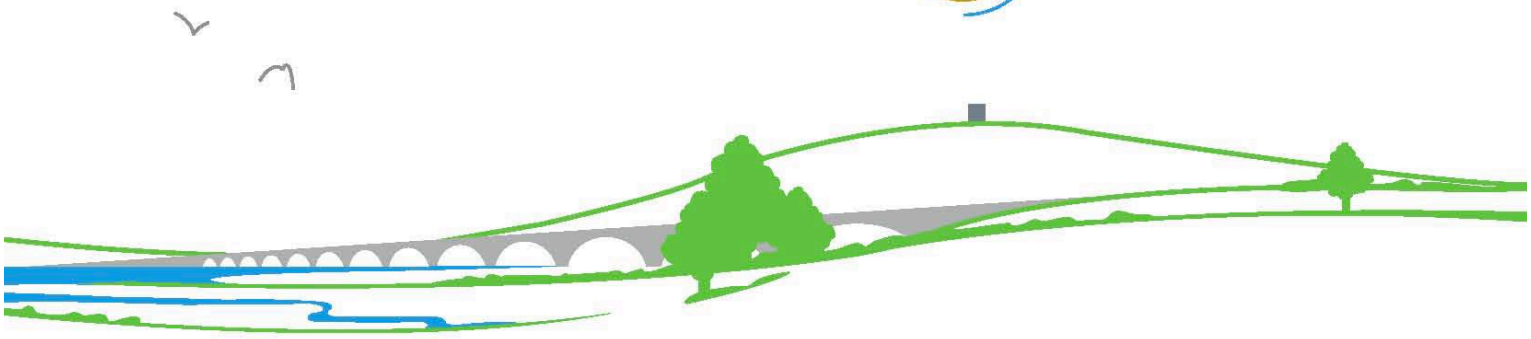
Photograph 3
Lighting within vaulted arch complex



Photograph 4
Underside of viaduct with bird spikes

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Appendix 6 Key Viewpoint Plan

12/12/23

ISSUED

VIADUX PHASE 2

TOWNSCAPE AND VISUAL IMPACT ASSESSMENT - SCOPING REPORT KEY VIEWS

Document Control

File Name	Prepared by	Checked by
3243-ID-001-08 Viadux Phase 2_Viewpoints	GW	JW

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FIGURE 1



Viewpoint Locations

APPLICATION BOUNDARY

VIEWPOINTS

'High' or 'Medium/high' visual sensitivity

'Medium' visual sensitivity

'Low' or 'Low/medium' visual sensitivity

Proposed location for kinetic view

Short-range views

1 | View from Deansgate/Castlefield Metrolink

2 | View from Albion St/Whitworth St

3 | View from Great Bridgewater Street

4 | View from Lower Moseley Street

5 | View from Watson Street

6 | View from Deansgate/Quay Street

7 | View from Castlefield Viaduct

8 | View from First Street, James Grigor Square

Mid-range views

9 | View from Castle Street

10 | View from Medlock Street/A5103

11 | View from Oxford Road/Portland Street

12 | View from Liverpool Road

13 | View from Princess St/Mosley St

14 | View from Albert Square

15 | St. John's Gardens

Long-range views

16 | View from A56/Chester Road

17 | View from Manchester Road

18 | View from Regent Road

19 | View from canal at Middlewood Locks

20 | View from St Anns Square/St Mary's Gate

21 | View from Corporation St Metrolink

22 | View from Piccadilly Gardens/Market Street

23 | View from Piccadilly Station/Fairfield Street

24 | View from Mayfield Park

25 | View from Hulme Park

26 | View from Epping Walk Bridge/Hulme Arch

27 | View from St Peter's Square -Town Hall Extension

28 | View from Albert Square - Friends Meeting House



Viewpoint Locations - Google Viewshed

APPLICATION BOUNDARY

VIEWPOINTS

Short-range views

1 | View from Deansgate/Castlefield Metrolink

2 | View from Albion St/Whitworth St

3 | View from Great Bridgewater Street

4 | View from Lower Moseley Street

5 | View from Watson Street

6 | View from Deansgate/Quay Street

7 | View from Castlefield Viaduct

8 | View from First Street, James Grigor Square

Mid-range views

9 | View from Castle Street

10 | View from Medlock Street/A5103

11 | View from Oxford Road/Portland Street

12 | View from Liverpool Road

13 | View from Princess St/Mosley St

14 | View from Albert Square

15 | St. John's Gardens

Long-range views

16 | View from A56/Chester Road

17 | View from Manchester Road

18 | View from Regent Road

19 | View from canal at Middlewood Locks

20 | View from St Anns Square/St Mary's Gate

21 | View from Corporation St Metrolink

22 | View from Piccadilly Gardens/Market Street

23 | View from Piccadilly Station/Fairfield Street

24 | View from Mayfield Park

25 | View from Hulme Park

26 | View from Epping Walk Bridge/Hulme Arch

27 | View from St Peter's Square -Town Hall Extension

28 | View from Albert Square - Friends Meeting House

Initial Viewpoint Assessment

Viewpoints with 'high' or 'medium/high' sensitivity

SAMPLE VIEWPOINT PHOTOGRAPHY



Viewpoint 13



Viewpoint 14



Viewpoint 20

Key Viewpoints	**Views Commentary**	Value range	Susceptibility to change	**Likely Overall Sensitivity**
7. View from Castlefield Viaduct 13. View from Princess Street/Mosley Street. 14. View from Albert Square 15. St. John's Gardens 20. View from St Ann's Square/St Mary's Gate. 22. View from Piccadilly Gardens/Market Street. 24. View from Mayfield Park. 25. View from Hulme Park 27 | View from St Peter's Square -Town Hall Extension 28 | View from Albert Square - Friends Meeting House	• The most sensitive views are likely to be those within public open spaces with heritage value, including spaces within Conservation Areas and those focussed around listed landmark buildings. In these locations, visual receptors (people) are likely to be focussed on the townscape and sensitive to change. • Due to the scale of the proposed development, the magnitude of change in the view is likely to result in significant effects, which have the potential to be adverse due to the effect on historic spaces and key buildings that define townscape character. • Mtigation measures to minimise potentially adverse effect could include a considered approach to materials and form in order to ensure that the proposed development appears distinct from the more solid red brick material and stone typical of key buildings. • The most sensitive views form the focus for the kinetic viewpoints, which would benefit from the most robust approach to assessing impacts. • No kinetic views are possible through Albert Square due to the ongoing repair and refurbishment of the Towns Hall.	**Medium-High** Views from townscapes/viewpoints of regional/district importance or moderately popular visitor attractions where the view forms part of the experience, or with local cultural associations (medium), or Views from townscapes/viewpoints of national importance, or highly popular visitor attractions where the view forms an important part of the experience, or with important cultural associations (high).	**High** Users of public space, including users of public rights of way, whose attention is likely to be focussed on the townscape and on particular views; Visitors to heritage assets or other attractions where views of the surroundings are an important part of the experience; Communities where views contribute to the townscape setting enjoyed by residents; and, Travellers on scenic routes.	**Viewpoint 7 -Medium/high** **Viewpoint 13 - Medium/high** **Viewpoint 14 - High** **Viewpoint 15 - High** **Viewpoint 20 - High** **Viewpoint 22 -Medium/high** **Viewpoint 24 - Medium/high** **Viewpoint 25 - Medium/high**

Initial Viewpoint Assessment

Viewpoints with 'medium' sensitivity

SAMPLE VIEWPOINT PHOTOGRAPHY



Viewpoint 1



Viewpoint 4



Viewpoint 6

Key Viewpoints	**Views Commentary**	Value	Susceptibility to change range	**Likely Overall Sensitivity**
1. View from Deansgate/Castlefield Metrolink 2. View from Albion St/Whitworth St 4. View from Lower Moseley Street 5. View from Watson Street 6. View from Deansgate/Quay Street 8. View from First Street, James Grigor Square 9. View from Castle Street 12. View from Liverpool Road 19. View from canal at Middlewood Locks 23. View from Piccadilly Station/Fairfield Street 26. Epping Walk Pedestrian Bridge/Hulme Arch.	• These viewpoints have been initially assessed as 'medium' sensitivity overall. • The magnitude of change in the view is likely to still be high, due to the height of the proposed development, however the slightly lower sensitivity of these views has the potential to reduce the overall significance of effect. • Lower Mosley Street (viewpoint 4) forms a strategic vehicular route out of the city, and the proposed development is 'revealed' as the view opens up around Manchester Central. The view presents an appropriate location for a kinetic view, to show the proposed development with Manchester Central, but also within context of tall buildings.	**Medium** Views from townscapes/viewpoints of regional/district importance or moderately popular visitor attractions where the view forms part of the experience, or with local cultural associations (medium).	**Medium-Medium/High** Travellers on road, rail or other transport routes, where the view is moderately important to the quality of the journey; and, Users of public space, where the view is a part of the wider experience of the place.	**Viewpoint 1 - Medium** **Viewpoint 2 - Medium** **Viewpoint 4 - Medium** **Viewpoint 5 - Medium** **Viewpoint 6 - Medium** **Viewpoint 8 - Medium** **Viewpoint 9 - Medium** **Viewpoint 12 - Medium** **Viewpoint 19 - Medium** **Viewpoint 23 - Medium** **Viewpoint 26 - Medium**

Initial Viewpoint Assessment

Viewpoints with 'low' or 'low/medium' sensitivity

SAMPLE VIEWPOINT PHOTOGRAPHY



Viewpoint 3



Viewpoint 17



Viewpoint 18

Key Viewpoints	Views Commentary	Value range	Susceptibility to change range	**Likely Overall Sensitivity**
3. View from Great Bridgewater Street 10. View from Medlock Street/A5103 11. View from Oxford Road/Portland Street 16. View from A56/Chester Road 17. View from Manchester Road 18. View from Regent Road 21. View from Corporation St Metrolink	• These viewpoints form have been initially assessed as 'low' sensitivity overall. • The magnitude of change in the view has the potential to be high due to the height of the proposed development, however the lower sensitivity of these views has the potential to reduce the overall significance of effect.	**Low** Views from townscapes/viewpoints with limited designations, not particularly popular as a viewpoint and with minimal or no cultural associations.	**Low-medium** People at their place of work, where the setting is not important to the quality of working life, travellers on road, rail or other transport routes, where the view is fleeting and incidental to the journey, or people engaged in outdoor sport or recreation, or users of a public space, which does not involve appreciation of views (low). Travellers on road, rail or other transport routes, where the view is moderately important to the quality of the journey, or users of public space, where the view is a part of the wider experience of the place (medium).	**Viewpoint 3 - Low** **Viewpoint 10 - Low** **Viewpoint 11 - Low/medium** **Viewpoint 16 - Low** **Viewpoint 17 - Low** **Viewpoint 18 - Low** **Viewpoint 21 - Low**

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[i] Landscape Institute, Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment, Third Edition.
[ii] Landscape Institute Technical Guidance Note 06/09 (2019). Visual Representation of Development Proposals. Available at: https://www.landscapeinstitute.org/visualisation/. [Accessed: 27/09/2022].

[iii] Landscape Institute Technical Guidance Note 06/09 (2019). Visual Representation of Development Proposals. Available at: https://www.landscapeinstitute.org/visualisation/. [Accessed: 27/09/2022].