Sparkle Street

Environmental Statement

Volume 2 (Technical Appendices)

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Deloitte.



Sparkle Street

EIA Scoping Report

July 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 potential redevelopment on land bounded by Store Street to the north, vacant land to the east, residential buildings to the south and Sparkle Street to the west ("the Site"). The Site falls within the boundary of the HS2 Piccadilly Station Strategic Regeneration Framework ("SRF") (2014) and Manchester Piccadilly SRF (2018) which identifies the Site as an opportunity for development within a wider regeneration initiative involving the areas surrounding Piccadilly Station.

1.2. Foras (Sparkle Street) Limited (the "Applicant") will be applying for Full Planning Permission to deliver a residential development of up to 359 apartments with supporting residential amenity spaces, private terraces and private garden to the rear. The term "Proposed Development" used within this Report refers to all stages of construction and operation of the development.

1.3. A description of the Proposed Development is outlined below:

"Full Planning Permission for demolition of existing low rise commercial units and erection of ground + 27 storey residential development with supporting residential amenity, private terraces and private shared garden."

1.4. 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

1.5. 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.

1.6. 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.

1.7. 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)).

1.8. 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.

1.9. 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".

1.10. The Site covers an area of approximately 0.39 hectares and the Proposed Development will comprise 359 apartments. Therefore, the nature and scale of the Proposed Development is significantly larger than the existing scenario, exceeding the threshold of 150 dwellings. For these reasons, an EIA is considered appropriate to test the likely significant effects of the Proposed Development on the surrounding environment. The Applicant therefore proposes to submit an Environmental Statement (in relation to certain topic areas where there is likely to be a significant effect of the environment) in support of the planning application.

Purpose of the EIA Scoping Report

1.11. The process of identifying likely significant effects on the environment that should be addressed by the EIA is termed 'scoping' and the results are presented as a Scoping Report. Regulation 15 of the EIA Regulations sets out the process for obtaining a Scoping Opinion from the relevant planning authority.

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

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

Structure of this Report

1.14. The full structure of this report is outlined below:

- Section 2 – Provides a site description and outlines 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

The Site

2.1. The Site is located immediately east of the junction between Sparkle Street and Store Street, approximately 100 metres north of Piccadilly Railway Station in Manchester City Centre and is approximately 0.3 ha in size. Please refer to **Figure 2.1** and **Appendix 1** for full details of the Site location.

2.2. The Site is vacant, with its former use being a telephone exchange along with surface car parking and two buildings that were partly used for storage and distribution. The buildings are screened from the road on two sides by existing vegetation and an access route for vehicles is provided from Store Street.

2.3. The Site is a negative contributor to the local environment and street scene in terms of its visual appearance and does not contribute to the City in any meaningful way from a social or economic perspective. It is located within a key corridor connecting Piccadilly Station to key regeneration areas such as New Islington and the Piccadilly Basin and as such fails to create a distinct, legible and attractive pedestrian route.

Figure 2.1 – Site Location Plan



2.4. The Site is in close proximity to Piccadilly Village and adjoins existing residential properties to the south, east and north of the site. Existing residential buildings at the Site's boundaries are generally circa 5 Storeys in height.

Figure 2.2 – Images of the Site and its immediate Surroundings



PICCADILLY VILLAGE - EXISTING BUILDINGS TO SOUTH OF THE SITE



PICCADILLY VILLAGE - EXISTING BUILDINGS TO SOUTH OF THE SITE



VIEW ALONG SPARKLE STREET



VIEW ALONG SPARKLE STREET

2.5. Today, the surrounding area is identified as a priority for regeneration, insofar as it falls outside of the area safeguarded in relation to the delivery of HS2 and this area is rapidly changing, with significant levels of investment and development having accelerated again in the last 5 years.

2.6. Completed in late 2021, Oxygen Tower is located 250m to the northeast of the Site and was originally approved on 04 March 2016 (110276/FO/2015/C2 as amended under LPA Ref.: 122258/JO/2018). The proposals approved the construction of 12 townhouses, 345 apartments and several ground floor commercial units within a part 31, part 15, part 9 storey building, rising in scale toward Great Ancoats Street.

2.7. Directly adjacent to the Site to the east, planning permission (LPA Reference: 132626/FO/2022) was granted (subject to S.106) on a small site for a 15-storey building comprising 54 apartments (Use Class C3) with associated residential facilities (residents lounge and terrace and office space), 2 car parking spaces and 57 cycle parking spaces, landscaping, access and associated development.

2.8. Other recent permanent development proposals, as highlighted on **Figure 2.3**, located within 200m include:

1. Crusader Works (113363/FO/2016 as amended) – 126 new homes in converted mill and new build extension containing 107 apartments in a 10-storey building, now complete as of October 2022.
2. Leonardo Hotel (129248/JO/2021) – 275 no. bedroom hotel in 15-storey building, recently completed development.
3. The Castings (127317/FO/2020) – 352 apartments in a building ranging from 7 to 25 storeys, with ground floor commercial units currently under construction and due for completion by the end of 2023. This development is being delivered by JRL Construction, who will also construct this Sparkle Street development and replicate the level of quality within the scheme.
4. Piccadilly Central Public Realm (121467/FO/2018) – demolition of existing buildings and delivery of public realm, including hard and soft landscaping, tree planting, street furniture, highways improvements and associated works.
5. Portugal Street East (121099/FO/2018) – 488 apartments in a part 29, part 23 storey building that has recently commenced construction and is due for completion by mid-2025.
6. Mayfield (various) – large scale regeneration project including the delivery of the new park, Freight Island, and the Mayfield Depot. Three buildings are due to come forward by commencing construction by the end of 2023 and are likely to be completed by the end of 2025.

7. London Road Fire Station – conversion of the Grade II* listed building, which is currently nearing completion located at the end of Store Street, adjacent to London Road and Whitworth Street. This is proposed to be a mixed-use hotel, office, and leisure destination.

8. Presbar Diecast Works – an operational flexible entertainment, food, and beverage venue, which is located between Laystall Street and Store Street to the north east of the Site.

2.9. In summary, much of the surrounding area has either been redeveloped or is in the process of coming forward with site specific proposals. The remaining sites within this area are safeguarded by the HS2 development zone. This Site therefore comprises one of the few remaining sites along Store Street to come forward with redevelopment proposals. It represents a major gap in the important linkage between Piccadilly and the Etihad Campus.

Figure 2.3 – Plan of developments nearby



Site Accessibility

2.10. The Site is situated within a strategic location within the City Centre and is therefore well served by a number of key services, amenities and economic opportunities within the regional centre.

2.11. It is adjacent to Manchester Piccadilly (providing local, regional and national train services and access to Metrolink). The current proposals for HS2 envision the Site to be locate directly adjacent to the proposed new station as a result of its expansion.

2.12. The Site is also near several bus stops on Great Ancoats Street and London Road, providing services across Greater Manchester, including the free shuttle bus services located adjacent to the Railway Station. As such the Site is well serviced by the main forms of public transport.

2.13. Existing cycling infrastructure runs along Store Street providing connections to other key City Centre cycling routes including Great Ancoats Street, London Road and Piccadilly.

Strategic Context

2.14. In 2018, the Manchester Piccadilly SRF was endorsed by the City Council as an update to an earlier version of the SRF published in 2014. The document sets out a high-level masterplan and framework for the new HS2 station and surrounding area which articulates the council's ambitions to capitalise on the opportunities created by this once in a generation investment. The document provides high-level guidance on the design parameters for new developments within the area.

2.15. The SRF identifies several neighbourhoods to the east of the proposed HS2 station, each with an individual character, grain, and typology. The Site is located within 'Piccadilly Central', which envisages a dense, mixed-use district focused on high quality public space, with supporting social infrastructure. Each district aims to grow into an attractive place for people to work and live, with a focus on identity, inspiration, and connectivity. Store Street is identified as a key pedestrian and cycle route.

2.16. It is identified that designs should also actively contribute to the street scene through active frontages and consider the wellbeing of residents and the public through the design process.

Site Specific Environmental Designations

Heritage

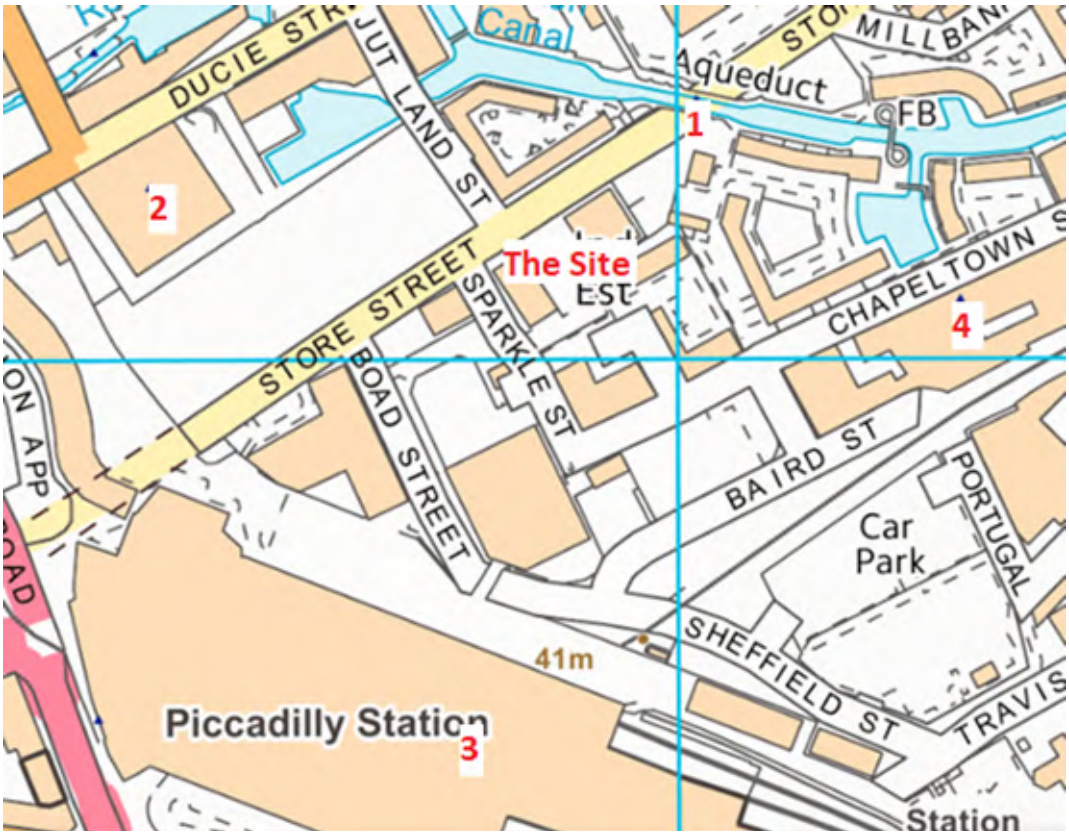
2.17. The Site is not located within or adjacent to any designated Conservation Areas ("CA"). The closest CAs are the Whitworth Street CA that is 280m to the south west and Stevenson Square CA located 250m to the north west.

2.18. There are no nationally listed heritage assets on the Site; however, there are a number of nearby listed assets:

1. Approximately 50m northeast of the Site is the Grade II* listed Ashton Canal Aqueduct.
2. The London Warehouse is located 125m to the west of the Site and is Grade II Listed.
3. Piccadilly Station is Grade II Listed, located 100m to the south of the Site.
4. Crusader Works, recently refurbished and located 100m to the east, is Grade II Listed.
5. London Road Fire Station is Grade II* Listed and is located 120m to the southwest of the Site.

2.19. Given their proximity to the Site, the Proposed Development may have some effect on these nearby buildings and structures.

Figure 2.4 - Plan of the Subject Site and Listed Assets



Flood Risk and Drainage

2.20. The UK Government's long term flood risk map in the context of the Site shows it located within Flood Zone 1 and is therefore at low risk of flooding, which has been assessed as part of the Flood Risk and Drainage Strategy prepared by Curtins and submitted with this Application. In summary:

- The full area of the Site is identified as being at 'low' and 'medium' risk of flooding from surface water. The adjoining Store Street highway is identified to be at 'medium' and 'high' risk of flooding from surface water. The flood identified to both areas is affiliated to surface water runoff from adjacent areas flowing along the highways and reaching a low topographical area immediately north of the Site in Store Street.
- The Site is located in an area that is considered to be very low risk from fluvial sources (e.g. either rivers or the sea), which is less than 0.1%.
- The Site is located partially within a Canal Breach Zone and therefore the risk of the canal flooding is low-medium and requires further assessment.
- The Site is at low risk of groundwater sources of flooding as site investigations have indicated the ground is dry up to 10m deep at least.
- The Site is at low risk of being affected by sources of flooding associated with public sewers or highway drainage 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).

2.21. Considering the above information, the risk of surface water flooding to the Site is generally considered to be low to medium and requires further assessment, as well as the risk of flooding from canal sources.

2.22. Developers are responsible for ensuring that new development does not increase the flood risk elsewhere. As part of the development, a positive drainage network has been designed and will be installed to mitigate the risk from surface water flooding to the building and the surrounding area.

Air Quality

2.23. The Site is located within the Greater Manchester Air Quality Management Area (AQMA). Pollutant concentrations in the vicinity of the Site were below the relevant air quality objectives (AQOs) in the two most recent monitoring years, 2020 and 2021, although it should be noted that results from these years are likely to be atypical due to COVID-19 travel restrictions. Exceedances of the AQO were recorded at both locations throughout 2017-2019, though both locations are adjacent to busy arterial routes through the city.

2.24. No monitoring of PM_{10} or $PM_{2.5}$ is undertaken in the vicinity of the Site, though DEFRA predicted background concentrations for 2019 and 2026 are below the relevant AQOs for these pollutants, and NO_2.

Ecology

2.25. The Ashton Canal SBI is located 37m to the north of the Site, located above the ground within the Store Street Viaduct. There are no other statutory ecological designations on or within a reasonable distance to the Site.

2.26. The Site contains or is adjacent to 17 shrubs and trees that could be affected by the proposals, which are classed as follows:

- 2 category U groupings of trees and scrub vegetation;
- 10 category C trees and 2 category C hedges; and
- 3 category B trees.

2.27. 7 of these trees recorded are located outside the Site boundary and will be unaffected by the development and retained, including 2 of the category B trees.

Planning History

2.28. The approved planning permissions of most relevance on Site are set out in **Table 2.1** below.

Table 2.1 Planning History

PP Reference	Description	Status
F13257	Change of use of 5 industrial units to 5 Warehouse units with associated circulation and car parking.	Approved May 1980
046556/DF/CMDC/94	Erection of steel palisade fencing around perimeter of estate and change of use of Unit 2A to telecommunications purposes	Approved December 1994
049693/FO/CITY3/96	Extension to existing premises to form a telecommunications superswitch site	Approved September 1996

Proposed Development

2.29. The Proposed Development would involve the construction of a residential development comprised of 395 residential units and up to 28 storeys in height with on-street accessible car parking spaces and 100% provision cycle parking spaces (1 parking space per apartment), external terraces and private rear garden, landscaping, access and other associated works. It should be noted that the proposed figures are not fixed and are part of an evolving design taking into consideration the maximum quantum of development which is being considered for this Site.

2.30. The proposed overall quantum of development is set out within **Table 2.2** below.

Table 2.2 Development Parameters

	Proposed Parameters
Site area	0.39 ha
Residential Use (Use Class C3)	359 residential apartments
Building Height	28 storeys (Ground + 27 storeys) (c. +124.250 AOD)
Parking	On-street accessible bays 100% cycle parking provision (up to 400)

3. Scope, Structure and Consultation

Scope and Structure

3.1. This EIA Scoping Request has been carried out to determine the likely significant effects on the environment that may arise as a result of the Proposed Development. This process has enabled the team to determine which technical disciplines are pertinent to the Proposed Development and the scope of assessment required for any likely significant effects on the environment to be addressed as part of a future EIA process, which it to be agreed with the Local Planning Authority.

3.2. This process has taken account of the proposed construction activities, relevant planning policy, knowledge of the Site, and the professional opinion of the project team.

3.3. 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.

3.4. 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.

3.5. 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 (Volume 3) will also be produced and form a standalone document.

3.6. 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.

3.7. The EIA would assess both the construction and operational phases of the Proposed Development.

3.8. 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.

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

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

Introduction

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

Legislative and Policy Context

3.12. 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

3.13. 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.

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

Baseline Conditions

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

Identification and Evaluation of Likely Significant Effects

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

3.17. 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.

3.18. The assessments are to be based on the following scenarios:

- Existing baseline i.e. site with developments under construction;
- Existing Site (baseline) with Proposed Development;
- Existing Site (baseline) with Proposed Development and mitigation;
- Existing Site (baseline) with Proposed Development, mitigation and cumulative development (i.e. those with planning permission).

Prediction of Impact Magnitude

3.19. The methodology for determining the scale or magnitude of change caused by the impact is set out in **Table 3.3.**

Table 3.3: Methodology for Assessing Magnitude of Change

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

Prediction of Receptor Sensitivity

3.20. The sensitivity of a receptor is based on the relative importance of the receptor using the scale set out in Table 3.4.

Table 3.4: Methodology for Determining Sensitivity

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

Assessment of Effect Significance

3.21. Effect significance will be calculated using the matrix in Table 3.5. This illustrates the interaction between impact magnitude and receptor sensitivity.

Table 3.5: Effect Significance Matrix

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

Mitigation Measures

3.22. Adverse effects will be considered for mitigation and specific mitigation measures 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.

3.23. 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.

3.24. 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.

3.25. 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.

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

Cumulative Effects

3.27. 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 actions together with the construction and development works.

3.28. 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.

3.29. 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.

3.30. Where the construction of schemes is well progressed these will be treated as part of the baseline and not as committed developments.

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

3.32. The Applicant seeks the agreement from the Local Authority to the scope of committed developments and invites guidance on any additional schemes not listed.

Residual Effects

3.33. 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.

The Project Team

3.34. 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.

3.35. 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	Discipline
Deloitte	Planning, Human Health and Socio-Economics
Simpson Haugh	Architectural Design
Reform	Landscaping Design and Townscape and Visual Impact
JRL Construction	Construction Management
Salford Archaeology	Heritage and Archaeology
JRL Sustainability	Climate Change and Sustainability
Energy Strategy	JRL Sustainability
ERAP	Ecology
GMP: Secure by Design	Crime and Security
Curtins	Traffic and Transport, Ground Conditions and Water Resources
G-Tech	TV Reception
WECE	Broadband Connectivity and Ventilation
Pager Power	Aviation Safety Assessment
Bowlands	Arboricultural
Cass Allen	Air Quality and Acoustics

Consultant	Discipline
GIA	Daylight, Sunlight and Overshadowing and Wind Microclimate
Environmental Impact Assessment	
EIA Coordinator	Deloitte
Climate Change	Deloitte
Daylight, Sunlight and Overshadowing	GIA
Townscape and Visual Impact	Reform
Wind Microclimate	GIA

Consultation

3.36. 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);
- Greater Manchester Police Secure by Design;
- Historic England;
- Greater Manchester Archaeological Advisory Service;
- Natural England;
- Manchester Airport Safeguarding and NATS;
- Greater Manchester Ecological Unit; and,
- United Utilities.

3.37. We would be grateful for confirmation of which stakeholders have been consulted as part of the Scoping Opinion.

4. Disciplines 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.

Acoustics

4.2. A Noise Assessment has been prepared by Cass Allen (**Appendix 3**) in accordance with the standards set out in Manchester City Council's Technical Guidance 'Planning and Noise' dated December 2015 as well as local and national planning guidance.

4.3. A noise and vibration survey was carried out at the Site. This survey concludes that the noise levels at the Site are dictated by road traffic noise emissions from Store Street and, to a lesser extent, Sparkle Street. A 3D noise model of the development was constructed based on the results of a site noise survey. The noise model was used to calculate noise levels at all facades of the development.

4.4. Noise affecting the development has been assessed in accordance with the ProPG guidance. The design of the development is considered to be acceptable subject to the adoption of acoustically upgraded glazing and ventilation. This can be investigated further at the detailed design stage. Throughout the design, Manchester City Council Policy will be referred to as appropriate for guidance.

4.5. Ground-borne noise and vibration levels at the Site have been measured and are considered to be acceptable for the development.

4.6. The development proposals are expected to include for the installation of some mechanical plant items, these plant items will include suitable attenuation measures to avoid adverse impacts on nearby sensitive receptors. Appropriate limits for noise from mechanical plant have been calculated based on measured noise levels at the Site and guidance given in BS4142. This will be investigated further at the detailed design stage.

4.7. The noise impact from construction vehicles during the construction phase is expected to be insignificant, while noise and vibration during the construction phase will be controlled in accordance with best practice. Further to this, any other measures required by MCC, including specified working hours, will also be adhered to. With appropriate mitigation measures in place, it is expected that the residual effects from the construction phase activities would not be significant.

4.8. On the basis of the above, it is considered unlikely that significant adverse effects should occur due to either construction or operational noise associated with the development and therefore should be **scoped out** of the ES. Any impacts can be successfully managed through following Manchester City Council local guidance and by containing relevant information in a CEMP.

Agricultural Circumstances

4.9. 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.

Air Quality

4.10. Cass Allen are the air quality technical consultants and have undertaken an initial Air Quality Assessment. The works being undertaken during the construction phase include demolition, earthworks, construction and trackout. It is anticipated that dust and particulate matter emissions produced during construction phase activities would be inherently controlled through the implementation of a Construction Environmental Management Plan (CEMP). Therefore, the effects of dust and particulate matter emissions released during the construction phase of the Proposed Development from on-site activities are unlikely to be considered significant.

4.11. Road traffic generated by the Proposed Development during its construction phase is currently unknown. However, based on professional experience, it is considered unlikely that the change in traffic flow as a result of the construction of the Proposed Development will exceeds the criteria in the EPUK and IAQM guidance, i.e. will be greater than 100 Light Duty Vehicles and/or 25 Heavy Duty Vehicles as an annual average daily traffic (AADT), therefore the impact of this traffic on existing receptors is unlikely to be significant. The implementation of a CEMP including a strategy for traffic management to define local routes to be used by HGVs generated by construction activities can also be implemented to reduce possibly impacts as required.

4.12. During the operational phase based on initial information to date it is envisaged that the Proposed Development will result in broadly similar range in trip generation and thus road traffic compared to the existing Site use; therefore, negligible air quality impact from operational road traffic are anticipated. Furthermore, a sustainable travel plan will be included further reducing the air quality impacts of the Proposed Development.

4.13. The proposed energy strategy is expected to be zero emission technology such as Air Source Heat Pumps which result in no combustion emission and therefore result in no significant impact to local air quality.

4.14. However, an Air Quality Assessment (AQA) will be submitted as a stand-alone report to fully assess the above and accompany the Environmental Impact Assessment. Additionally, within this, a baseline assessment will be undertaken to identify any existing air quality issues and a modelling exercises will be completed to allow for a site suitability assessment. Appropriate mitigation will be included within the design following the Site Suitability assessment to ensure Air Quality Objectives are met for the proposed end use.

4.15. This discipline is therefore **scoped out** of the EIA.

Archaeology

4.16. A desk-based archaeological assessment has been prepared by Salford Archaeology in 2023 (**Appendix 4**). This involved synthesis of existing data (such as data extracted from the Greater Manchester Historic Environment Record for a 250m radius around the Site and the National Heritage List for England), archival resources and previous studies undertaken within the search area, including previous archaeological assessments.

4.17. The Assessment concludes the following:

- Remains associated with Roman activity have some potential to survive within the Site and could be affected by the proposed scheme, though remains have likely been damaged by the 19th-century development within the Site. Any such remains that do exist within the Site are likely to be of low significance or potentially medium significance and, without a programme of mitigation, the scheme could damage or destroy these remains.
- Remains associated with post-medieval activity, in particular a ford and remains associated with agriculture, have low potential to survive within the Site and could be affected by the proposed scheme, though remains have likely been damaged by the 19th-century development within the Site. Any such remains that do exist within the Site are likely to be of low significance and, without a programme of mitigation, the scheme could damage or destroy these remains.
- Remains associated with 18th-century buildings, may survive within the Site and could be affected by the proposed scheme, though remains have likely been damaged by the 19th-century development within the Site. Any such remains that do exist within the Site are likely to be of low significance and, without a programme of mitigation, the scheme could damage or destroy these remains.

- Remains associated with a culverted section of the Shooter's Brook have high potential to survive within the Site and could be affected by the proposed scheme. Any such remains that do exist within the Site are likely to be of low significance and, without a programme of mitigation, the scheme could damage or destroy these remains.
- Remains associated with a former timber yard and stables have low potential to survive within the Site and could be affected by the proposed scheme. Any such remains that do exist within the Site are likely to be of low or negligible significance and, without a programme of mitigation, the scheme could damage or destroy these remains.

4.18. Intrusive archaeological investigation of the Site will be carried out in advance of development; the presence or absence of archaeological remains require verification through a programme of 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.

4.19. The proposed mitigation measures will ensure that the potential effects are controlled and render residual effects insignificant. This discipline is therefore **scoped out** of the EIA.

Aviation

4.20. At a maximum of 28 storeys (Ground + 27), the Proposed Development, at 124.250 AOD exceeds the 90m AOD aviation safeguarding threshold. Manchester Airport Group (MAG), Barton Aerodrome and NATS will be contacted for consultation advice.

4.21. It is considered from professional experience of similar scale developments within this area of MCC that the Proposed Development will not give rise to aviation conflicts which cannot be resolved via appropriate mitigation to avoid any residual impacts arising. Therefore, it is considered that the aviation discipline will not give rise to likely significant effects on the environment and would therefore not require inclusion in the Environmental Statement.

4.22. This discipline is therefore **scoped out** of the EIA.

Ecology

4.23. The proposal is located within a predominantly urban environment and is located on brownfield land. An Ecology Assessment has been undertaken by ERAP (**Appendix 5**). This report presents the results of a desktop study, data search, extended Phase 1 Habitat Survey and a licensed bat survey carried out in June 2023.

4.24. The Site comprises buildings and hard standing, ornamental trees and shrubs at the northern and eastern site boundaries, and an area of unmanaged scrub and grassland at the rear (southern end) of the Site.

4.25. The proposals will have no adverse direct or indirect effect on statutory or non-statutory designated sites for nature conservation.

4.26. Only common and widespread plant species were found. None of the habitats present are representative of semi-natural habitat. In terms of each habitat's importance in a geographical context, the trees, ornamental shrubs and scrub are considered to be of 'site' importance. The buildings and hard standing are not considered to hold any importance on a geographical scale. Recommendations for suitable species to include in any landscape design of the proposed development at the Site are presented at Section 5.5.

4.27. The presence of Japanese Rose and Hollyberry Cotoneaster, both invasive plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), have been detected within the Site. It is considered that the proposals present an opportunity for the eradication of these species as part of the proposed development. Further guidance is presented at Section 5.3 of this report.

4.28. The Site supports habitats of low suitability for use by foraging bats, nesting birds and foraging and sheltering hedgehog, a Priority Species. Measures for the protection of these species during the construction phase of the proposed development are presented at Section 5.2. Enhancements to include within the Site design for roosting bats and nesting birds are presented at Section 5.4. No other protected species have been detected.

4.29. As such it is proposed that Ecology is to be **scoped out** of the ES.

Flood Risk and Drainage

4.30. The Site has been identified as within Flood Zone 1 and is considered to be at low risk of fluvial/tidal flooding and is less than 0.5 hectares in size. However, the site is located within a Critical Drainage Area and within the extents of a Canal Breach Zone.

4.31. A Flood Risk Assessment will be prepared for the Site and the Flood Risk Assessment will assess all sources of potential flooding and provide mitigation where necessary.

4.32. Generally, the risk of flooding is considered low, although the Site is located on the edge of a Canal Breach Zone. However, the likelihood of a canal breach is low and the majority of the Site lies outside of the Canal Breach Zone indicating that a breach would be of limiting depths in comparison to existing site levels. Proposed levels within the breach area are similar to existing ground levels as the breach area aligns with the corner of Store Street/Sparkle Street and therefore proposed levels will need to tie into existing ground levels. There is likely to be a negligible change to Canal risk.

4.33. A Drainage Strategy will also be prepared given the Site is considered as 'major' development and is located within the Conurbation Core CDA. The Drainage Strategy will demonstrate that the development will not increase surface water flooding. It will include proposals for a robust foul and surface water drainage system including assessment against the Sustainable Drainage hierarchy and necessary capacity to accommodate volumes generated including anticipated increases in rainfall due to climate change for the lifetime of the development. The strategy will also include any necessary mitigation for surface water flood risk to the Site, such as maintaining perimeter ground levels and ensuring the ground levels fall away from buildings to not encourage overland flows to be directed towards the buildings.

4.34. It is therefore considered that this discipline can therefore be **scoped out** of the EIA.

Ground Conditions

4.35. The Site is currently occupied by two brick and metal buildings with several large brick/concrete plinths. A sub-station is present in the southwest corner of the western warehouse. The external areas are occupied by hardstanding tarmac. A large retaining wall is present in the southwest, rising to the residential apartments and carpark immediately adjacent to the Site.

4.36. A Phase 1 Preliminary Risk Assessment has been prepared by Curtins (**Appendix 6**). The report made the following observations:

- Made Ground deposits are anticipated accounting for the historical development on Site. British Geological Society (BGS) records indicate the Site is underlain by Glacial Till and the Chester Formation (Sandstone).
- Environment Agency data indicates the Glacial till superficial strata is associated with a Secondary – Undifferentiated Aquifer. The Chester Formation is recorded as a Principal Aquifer. The site is not situated within an Environmental Agency groundwater Protection Zone (SPZ) and there are no potable groundwater abstractions within 250m of the Site nor any commercial groundwater abstractions within 1000m of the site. The nearest surface water feature is located 37m north, recorded to be the Ashton Canal.
- Risk mapping for UXO's has placed the Site in a Moderate risk area. 1st Line Defence assessed the risk of encountering UXO during Curtins ground investigation works as Low in a Detailed UXO risk assessment report.

4.37. A Phase 2 Ground Investigation has since been prepared by Curtins (**Appendix 6**). Site investigation works were undertaken by Curtins between 24th April and 12th May 2023. A summary of the findings is outlined below:

- A Moderate risk rating is identified to site end-users and construction workers and adjacent residents, from soils and dust from inhalation and ingestion, accounting for the presence of asbestos in two locations and several exceedances of volatile contaminants of concern within shallow Made Ground. Further assessment and remediation was recommended.

- A Moderate/Low risk is identified to construction and maintenance workers and adjacent residentials and the general public from contamination within shallow Made Ground soils. The risk to construction workers, adjacent residents and the general public can be managed by suitable health and safety precautions, an asbestos management plan and environmental controls.
- The risk to the underlying Principal Aquifer is Moderate/Low, accounting for evidence of gross contamination within Made Ground soils in BH01. Groundwater samples are scheduled to be obtained as part of this investigation, with the results and assessment included in the final report.
- The Nearest surface water receptor is the Ashton Canal located 37m North, albeit at a significantly higher elevation than the subject Site. With consideration of this, it is unlikely that a source-pathway-receptor linkage exists to present a risk to surface water. A Very Low risk rating is identified to surface water features.
- A Moderate-risk rating is identified to site end users from ground gases arising from Made Ground. This should be updated following completion of the gas monitoring period.

4.38. Based on the findings of the ground investigation, the following recommendations are made:

1. Undertake Post-demolition trial pitting to obtain soil samples for chemical analysis.
2. Undertake soil PCB Testing in the immediate vicinity of the sub-station in the southwest of the Site.
3. Obtain groundwater samples and undertake chemical analysis with GQRA.
4. Conduct further ground gas monitoring to further assess the Moderate risk rating. This report will be updated following completion of the gas monitoring period.
5. It is recommended that construction workers are provided with appropriate PPE and sanitary facilities, with reference to the environmental testing results.
6. Allowance should be made for the excavation and removal of hydrocarbon contaminated soils, to be detailed in a Remediation Strategy.
7. Infill materials used to raise site levels in the south of the Site must be clean and inert. Requirements are to be detailed in a Remediation Strategy.
8. A Verification report will be required to confirm the remedial measures have been implemented.

4.39. This report should be updated following receipt and interpretation of geotechnical testing results to provide engineering assessment and recommendations.

4.40. Based on the information above it is considered that this discipline can therefore be scoped out of the EIA.

Heritage

4.41. The Site is not located within or adjacent to any designated Conservation Areas (CA). The closest Conservation Areas are the Whitworth Street CA that is 280m to the south west and Stevenson Square CA located 250m to the north west.

4.42. There are no nationally listed heritage assets on the Site however, there are a number of nearby listed assets:

- Approximately 50m northeast of the Site is the Grade II* listed Ashton Canal Aqueduct.
- The London Warehouse is located 125m to the west of the Site and is Grade II Listed.
- Piccadilly Station is Grade II Listed, located 100m to the south of the Site.
- Crusader Works, recently refurbished and located 100m to the east, is Grade II Listed.

4.43. A Heritage Statement that fully considers the impact of the Proposed Development on the identified heritage assets will be prepared by Salford Archaeology and submitted as a standalone technical report with the application for Full Planning Permission. Utilising the mapping of heritage assets, numerous viewpoint locations have been identified to fully assess the visual impact on the identified heritage assets. The visual impact of the Proposed Development will also be assessed as part of a Townscape and Visual Impact assessment, which is proposed to form part of the EIA.

4.44. The potential magnitude of change and therefore potential level of effect is reduced due to the baseline, as in its current form, it is assessed to make a neutral to slight contribution to the setting of surrounding heritage assets. The setting of most of the heritage assets identified within the 250m study area is mixed, comprising 20th-century residential development, the Metrolink tracks, vacant plots of land, commercial units, car parks and pockets of overgrown vegetation. The surrounding townscape is scattered with heritage assets, though there is a lack of intervisibility between these and much of the areas historic domestic and industrial use has been lost. The townscape, therefore, has no distinct character and the overall setting of the area does not contribute to the significance of most of the heritage assets (either neutral or low). The Proposed Development will likely have a neutral to slight contribution to the setting of the designated heritage assets.

4.45. The setting of three listed buildings (Junction Lead Mills and the associated Stables, and Former London Warehouse) makes a medium contribution to the significance of the assets; however, the Proposed Development is unlikely to be visible within the setting of these assets due to the density of existing development. These factors, along with the urban location of the Site, renders any potential impact as unlikely to be significant. The Proposed Development will likely have a neutral to slight contribution to the setting of the designated heritage assets.

4.46. Due to the proposed height and scale of the proposals, three nearby CAs were included within the assessment for robustness. The Proposed Development is unlikely to alter the setting of the CAs as it is highly unlikely to be visible from within the Stevenson Square and Whitworth Street and Princess Street CAs due to the enclosed nature and density of development within both Conservation Areas. The Proposed Development will likely have a neutral to contribution to the setting of the designated heritage assets. This will be tested as part of a Heritage Visual Impact Assessment within the Heritage Assessment submitted with the application.

4.47. In terms of Ancoats CA (410m to the north-east of the Site), the main point from which the Proposed Development could be visible is along the canal towpath when looking south-west. However, several mid- and high-rise buildings are already visible from this viewpoint. If the Proposed Development were visible, it will most likely blend in with views of Manchester's skyline. The Proposed Development will not be visible within any of the key views within the Conservation Area due to the enclosed nature and density of buildings within the Conservation Area. The Proposed Development will likely have a slight, non-significant, contribution to the setting of the designated heritage assets.

4.48. It is therefore considered that this discipline can therefore be **scoped out** of the EIA.

Human Health

4.49. The proposal is located in a city centre urban environment. Currently the Site contains two low-rise commercial warehouses. There are residential dwellings to the north, east and south of the Site in the form of Wharf Close, Chapel Wharf and Piccadilly Village. In addition, residential dwellings are proposed at M1 Piccadilly located directly adjacent to the Site to the east, which has received permission but has not yet started on site. Directly to the north of the Site is a large surface car park.

4.50. The EIA Regulations (May 2017) amendments included making explicit the requirement to consider population and human health. 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 distinct from Health Impact Assessment (HIA). 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)[1] - it is important that health in EIA is proportionate, balanced, and relevant.

4.51. There are multiple determinants of health and wellbeing, with a need for cross-sectoral understanding and collaboration[2]. There are linkages between the global ecosystem, the natural and built environments, the local economy with communities, people, and their lifestyles, and likely interactions between different sectors.

[1] https://www.iema.net/assets/newbuild/documents/IEMA%20Primer%20on%20Health%20in%20UK%20EIA%20Doc%20V11.pdf
[2] Barton H, Grant M & Guise R (2nd edition 2010) Shaping Neighbourhoods: for local health and global sustainability Taylor & Francis Ltd, England

4.52. It is considered that most of the factors scoped into the EIA can have impacts to some extent on health and quality of life/wellbeing, both positive and negative. The implications for human health will be considered in each relevant technical topic chapter, such as wind, daylight and sunlight, as well as other non-EIA chapters such as noise, air quality and ecology. These implications will be assessed in accordance with the standards and methods of environmental assessment applied to each of those relevant topic areas, and in a proportionate and balanced way that is appropriate to the proposals and their location.

4.53. Health is closely linked to the conditions in which people are born, grow, live, work and age and inequities in power, money, and resources. These are referred to as the social determinants of health, as set out in within the Marmot Report (February 2020)[3] . The importance of creating and developing healthy and sustainable places and communities is further identified in the Covid 19 update Build Back Fairer (December 2020)[4] . This recent report also highlights issues for the North-West, including overcrowding in Greater Manchester and exacerbation of certain health inequalities.

4.54. During the construction phase, there is the potential for temporary impacts to human health and wellbeing with the potential for accidental spillages, dust, noise and vibration, and disturbance or emissions to air from traffic movements. However, the area is generally one of low traffic movements currently, as demonstrated by the transport, air quality, and noise reports prepared in support of the application. The Site is brownfield land and the potential for risks to human health through contaminated land/soil has been addressed within this Scoping Report. A Construction Management Plan and Construction Chapter of the Environmental Statement will be prepared to set out how the development proposals will mitigate any construction phase effects to a non-significant level that will be secured by way of planning condition.

4.55. During the operational phase, the proposals could potentially have adverse impacts on health, as a result of daylight, sunlight, and wind microclimate impacts. These will be fully considered and assessed according to the relevant standards and methods for each technical. Mitigation will be proposed, and residual impacts reported for any human health implications that are identified as part of each ES chapter. It is not expected that these will generate significant impacts that couldn't otherwise be mitigated through embedded or tertiary mitigation. Operationally, the development will remove, replace and relocate a number of on street parking spaces, with provision of DDA compliant spaces and EV charging spaces. This lack of vehicle movements associated with the application will allow the predicted improvement in air quality indicators to improve over time as they have been modelled.

4.56. The Transport Statement will address road safety and the implications for drivers, pedestrians, and cyclists. The Site is well placed for excellent connectivity to sustainable transport – locally and beyond. The implications for air quality through vehicle emissions will be addressed through the Air Quality Assessment. The implications from building nuisance noise and traffic noise will be addressed by the Noise Assessment. The risk of direct or indirect flooding will be detailed in the Flood Risk and Drainage Strategy. The risks from climate change associated with wind, and daylight effects will be considered through these chapters and mitigation embedded through the design process such that any adverse residual effects will be minimised.

4.57. The Site is located within the HS2 Manchester Piccadilly SRF area with major mixed-use schemes being brought forward, offering strong synergies and linkages with other sites as part of overall regeneration unlocking the economic potential of the introduction of high-speed rail to Manchester. Opportunities for enhancing health benefits and the opportunity for people to consider healthy lifestyles have been considered throughout the design development of the proposals in line with Manchester City Council's Residential Quality Guidance (2017) and would continue to be during the latter stages of design.

4.58. This approach will be detailed in the description of the proposals and the implications for housing, economy and employment will be addressed within the Planning and Tall Building Statement. The design process will also consider designing for security to reduce the risk of adverse effects on health and wellbeing through crime, or fear of crime, and this will be detailed in the Crime Impact Statement and the Design and Access Statement prepared and to be submitted with the Application.

[3] https://www.health.org.uk/publications/reports/the-marmot-review-10-years-on

4.59. Provision of and access to green infrastructure, open space, and community/cultural facilities and services has clear implications for human health and wellbeing with positive effects. The development proposals will vastly improve the quality of the Site compared to its existing situation with new street trees and landscaping areas for residents to give direct access to open greenspace. Similarly, the new Mayfield Park has been constructed approximately 400m from the Site, with a new open space envisioned and under construction in Portugal Street East. A park also exists around the New Islington Marina and further improvements are planned as part of the redevelopment of Central Retail Park. These nearby developments provide a significant amount of new public open greenspace for new residents and existing residents in the area.

4.60. The change from the existing low-rise commercial use to a residential-led neighbourhood that is integrated through design with the wider regeneration of the HS2 SRF areas is likely to have positive effects for human health and wellbeing that may be synergistic and cumulative in the longer-term. A detailed summary of the local social infrastructure for the Site and Proposed Development will be provided within the Planning and Tall Building Statement to summarise the identified need for additional spaces. There is a pharmacy, General Medical Practice (GP), and primary school in the local vicinity, all within 300m of the site boundary, suggesting there is ample social and health facilities in the area. Typically, developments in the surrounding area have the potential to house further medical healthcare facilities should there be an identified need through discussions with Local Healthcare Providers.

4.61. Thus, where relevant, the implications for human health will be considered in the individual technical chapters, in a proportionate way and including cumulative effects where applicable. As such, residual adverse impacts on Human Health are not expected to be significant and a standalone ES Chapter is proposed to be scoped out. Overall, it is predicted that the proposals will have beneficial effects for human health associated with good quality housing, an increase in the quantum of high-quality, safe, accessible, and biodiverse public realm, and the accessibility of public open spaces in the local area.

Socio-economic

4.62. The Proposed Development will deliver a fully residential development with no commercial elements. Any socio-economic effects during the construction and operational phase will be considered in detail as part of the supporting Planning Statement for the proposal.

4.63. Based on an initial review in regard to socio-economics, the Proposed Development is not anticipated to have any significant impacts during the construction or operational phase given the scale of development and the location of the Site. The level of development proposed on site will continue the level of employment within the construction sector in the city centre, which has been growing over the past decade.

4.64. The Proposed Development will therefore support temporary employment during the construction phase; however, the effect is not considered to be significant and will be managed by a Local Labour Agreement. The exact figures setting out the benefits of the construction phase will be set out in the Planning Statement submitted with the Planning Application.

4.65. Once operational, the Proposed Development will support a negligible uplift in direct employment through the on-site management team, although this is not expected to have any significant impact of the socioeconomics of the study area (the city centre) as a whole. The Proposed Development will introduce new residents into Manchester City Centre who will be legible to pay Council Tax, however, this is expected of a development of this scale and nature in the city centre.

4.66. Whilst these new residents are expected to support local businesses by increasing footfall, this will be beneficial but not significant in the context of city centre regeneration. The growth in housing is in direct accordance with the housing delivery targets set at a local and regional level.

4.67. The Proposed Development will 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 in addition to Operational Management and security. The introduction of new residents into the area may create an additional demand for local facilities and services, however, given the city centre location, high levels of accessibility to public transport, availability and proximity of open space, health clinics and educational facilities that this will not be significant. The Proposed Development will deliver new high quality external areas.

4.68. Therefore, likely significant effects on the environment with respect to socio-economic issues are not anticipated, as the delivery of housing in this location is in line with the local, regional and national policies in relation to the delivery of new housing and it is considered that this should be **scoped out** of the ES. A full summary of the economic benefits of the proposals will be set out in the Planning and Tall Building Statement prepared and submitted with the Application.

Television, FM Radio and DAB Radio Reception

4.69. A Television and Radio Reception Impact Assessment has been undertaken by G-Tech (**Appendix 7**) in support of the application. Overall, the Proposed Development without mitigation is likely to cause disruption to the reception of DTT and digital satellite television services in areas to the immediate northwest and southeast of the Site.

4.70. With respect to digital satellite television reception, in the identified areas, the required clear views of the south eastern skies could be obscured by the structure, resulting in interference. If interference does occur, the repositioning of the satellite dish to a new location without an obscured line-of-sight view to the serving satellites should restore all services. If satellite dish relocations are not possible, the use of DTT receiving equipment is likely to offer any affected viewer an alternative source of digital television broadcasts.

4.71. With respect to DTT reception, the massing and built form of the proposed development could reduce signal propagation for areas to the southeast of the Site, resulting in interference. Antenna betterment should restore reception if interference occurs.

4.72. Therefore, any likely significant effects on the environment with respect to Television and Radio Reception Impact are expected to be mitigated and it is therefore considered that this should be **scoped out** of the ES.

Traffic and Transport

4.73. A Transport Statement has been prepared by Curtins in support of the application (**Appendix 8**). A summary of the findings is outlined below.

4.74. The Site is highly accessible by a wide range of sustainable modes of transport. The surrounding area exhibits excellent levels of pedestrian and cycling infrastructure, notably the Beeway cycle routes into Manchester City Centre. Further to this, the Site located within a short walk of Piccadilly Station and Metrolink. This provides excellent local and regional public transport accessibility, as its GMAL rating of 8 demonstrates.

4.75. On this basis, the development is proposed as car-free, with 100% cycle parking provision including additional Sheffield stands for non-standard cycles. Two new disabled parking spaces are proposed along Store Street, in close proximity to the proposed entrance to the building. This is complemented by a Car Club space along Sparkle Street and a new loading bay along Store Street.

4.76. Trip generation forecasts using TRICS data have demonstrated that the proposed development could result in an increase of 12 and 16 two-way vehicular trips in the AM and PM peaks respectively. As such, any vehicular impact would be negligible on the surrounding area from a highways, traffic, and transportation perspective. Additionally, measures are proposed in the accompanying Interim Travel Plan to encourage active and sustainable travel.

4.77. A review of baseline conditions and highway safety in the vicinity of the Site has been undertaken. It is not considered that there is an existing highway safety issue that is likely to be exacerbated by the Proposed Development.

4.78. A Transport Statement and Interim Travel Plan will be submitted as a standalone report with the planning application. As highlighted above it is not envisaged that the Site will produce significant transport effects such that they would need to be assessed within the EIA. This discipline is therefore **scoped out** of the EIA.

5. Environmental Statement Chapters

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

- Climate Change
- Daylight, Sunlight and Overshadowing
- Townscape and Visual Impact
- Wind Microclimate

5.2. Under each section topic, a summary of the content of the section, the methodology and scope of assessment is given. Where relevant, the assumptions of the assessment are described. Current relevant legislation or recognised guidance for individual assessments will be adhered to, where necessary.

Climate Change

Introduction

5.3. This Chapter of the ES will be prepared by JRL Sustainability and assess the Proposed Development's impacts on and vulnerability to climate change. This chapter of the ES will assess the operational and embodied carbon impacts of the proposed development.

Legislative and Policy Context

Legislation

5.4. The applicable legislative context for the GHG assessment of the Proposed Development comprises:

- Climate Change Act 2008 (2050 Target Amendment) Order 2019[4];
- Planning and Energy Act 2008[5];
- Carbon Budgets, 2016[6]; and
- UK Climate Change Risk Assessment (2017)[7].

5.5. In addition, the Building Regulations (2016)[8] and The Carbon Plan (2011)[9] are also applicable to the GHG assessment for the Proposed Development.

National Planning Policy

5.6. The National Planning Policy Framework (2021) sets out the Government's core policies and principles with respect to land use planning, including climate change. Chapter 14 meeting the challenge of climate change, flooding and coastal change establishes that Local Planning Authorities *"should take a proactive approach to mitigating and adapting to climate change"*[10] has been considered in defining the scope and focus of the assessment presented this chapter.

4 HM Government, Climate Change Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/27/introduction (Accessed: 04/05/2021).

5 HM Government, Planning and Energy Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/21/introduction (Accessed: 04/05/2021).

6 HM Government, 2016. The Carbon Budgets Order 2016

7 HM Government (2017). UK Climate Change Risk Assessment 2017. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/uk-climate-change-risk-assess-2017.pdf (Accessed: 04/05/2021).

8 HM Government (2016). The Building Regulations 2010, Approved Document L1A: conservation of fuel and power in new dwellings, 2013 edition with 2016 amendments. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540326/BR_PDF_AD__L1A__2013_with_2016_amendments.pdf (Accessed: 04/05/2021)

9 DECC (2011). The Carbon Plan: Delivering our Low Carbon Future. Available at: https://www.ukgbc.org/sites/default/files/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf (Accessed: 04/05/2021).

10 Ministry of Housing, Communities & Local Government (2019). National Planning Policy Framework

5.7. The main relevant paragraphs which all support the reduction of greenhouse gas emissions are:

- Paragraph 8: Achieving Sustainable development means that the planning system has three overarching objectives; a) economic objective b) social objective and c) environmental objective focused on mitigating and adapting to climate change, including moving to a low carbon economy
- Paragraph 20: Strategic policies should set out an overall strategy for the pattern, scale and design quality of places, and make sufficient provision for conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation.
- Paragraph 152: The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.
- Paragraph 154: New development should be planned for in ways that avoid increased vulnerability to the impacts arising from climate change and can help to reduce greenhouse carbon emissions.
- Paragraph 158: When determining planning applications for renewable and low carbon development, local planning authorities should recognize that even small- scale projects provide a valuable contribution to cutting greenhouse gas emissions and approve the application if its impacts are or can be made acceptable.

Local Planning Policy

5.8. Manchester Core Strategy Development Plan 2012 is the key document in the Manchester Local Plan. It describes Manchester today and outlines the Council's vision for Manchester in 2027.

5.9. Policies EN 4 – EN 7 provide information on reducing carbon emissions by enabling:

- low and zero carbon development
- low and zero carbon decentralised energy infrastructure
- low or zero carbon energy supplies
- Energy infrastructure opportunities

5.10. The Manchester Strategy 2015 is a result of the city-wide consultations in 2015 where the residents, volunteers, non-resident public and business and civic leaders express their opinion on the future vision of Manchester in 2025.

5.11. In summary, the following themes of the strategy were identified:

- Our vision
- A progressive and equitable city
- A thriving and sustainable city
- A liveable and low carbon city
- A highly skilled city
- A connected city

5.12. Draft Manchester Zero Carbon Framework 2019 was issued to set out how the city will meet its carbon reduction targets. The aim is to make Manchester a zero-carbon city by 2038 or before – at least 12 years earlier than the national 2050 target. To achieve this target, emissions will need to reduce by 13% every year until 2038.

5.13. In July 2019 Manchester City Council declared a climate emergency acknowledging that the council needs to act on the causes and impacts of climate change. The applicable local policy for the GHG assessment of the Proposed Development comprises:

- Greater Manchester Spatial Framework Revised Draft11;
- Manchester's Local Development Framework, Core Strategy Development Plan Document12; and
- Manchester Climate Change Framework 2020-2513.

Baseline Conditions

5.14. In the baseline scenario, GHG emissions occur constantly and widely as a result of human and natural activity including energy consumption (fuel, power), industrial processes, land use and land use change. The GHG assessment will only consider instances in which the Proposed Development results in additional or avoided emissions in comparison to the existing baseline scenario and its assumed evolution (future baseline). The baseline scenario is assumed to be the same for all EIA scenarios.

5.15. There has been no previous assessment undertaken to date in relation to GHG emissions and the Proposed Development to inform the baseline conditions.

Existing Baseline

5.16. The current land use of the Site is two buildings that are partially used for storage and distribution. Therefore, the current use of the Site is unlikely to generate a lot of traffic flow or associated carbon emissions.

5.17. The operation and management of the Site will likely require some components and materials for minor maintenance works and repairs. These materials will have a small amount of embodied emissions associated with them, and some transport emission to and on from the Site. The associated energy and embodied baseline emissions are anticipated to be very small, and as such will not be quantified.

Future Baseline

5.18. The future baseline scenario for traffic emissions will be determined by identifying the growth in baseline traffic data. Regarding operational emissions for embodied carbon and building emissions, the amount of coal in the UK electricity mix has substantially decreased in recent years and low and zero carbon technologies (including solar, wind and nuclear energy) have been increasingly used to generate a larger portion of the UK's electricity. This has resulted in a reduction of carbon emissions generated from grid-supplied electricity. As the grid decarbonises, the lower amounts of emissions created through using onsite electricity will result in a lower carbon impact.

5.19. Also, as the UK has committed to becoming net-zero carbon by 2050, that means GHG emissions would be dramatically reduced and any remaining emissions offset, neutralising environmental impact from GHG emissions and slowing climate change. In addition, in January 2021 the Government announced the Future Homes standard that proposes no new gas boilers should be installed in new homes by 2025, meaning that new homes will be heated solely by electric systems (such as heat pumps) or other alternatives, which will be low in GHG emissions following grid decarbonisation.

Potential Significant Effects

11 Greater Manchester Combined Authority (2019). Greater Manchester Spatial Framework Revised Draft. Greater Manchester's Plan for Homes, Jobs and the Environment.

12 Manchester City Council (2012). Manchester's Local Development Framework. Core Strategy Development Plan Document

13 Manchester Climate Change Agency (2020) Manchester Climate Change Framework 2020-25

5.20. The GHG emissions from the Proposed Development are anticipated to be significant however the impact will be contextualised comparing to national carbon budgets to provide a sense of scale. The scope of the GHG assessment will include emissions associated with embodied and transport carbon during construction stage scoping out emissions associated with land use, land use change and forestry. Regarding operation stage, the assessment will include the embodied carbon emissions from replacements, the building and transport emissions, while scoping out in-use emissions, maintenance, repair and land use, land use change and forestry. The assessment scopes in embodied carbon emissions during the end of life stage of the Proposed Development.

Assessment Methodology

Technical Scope

5.21. The assessment follows the emerging best practice. Current best practice is reflected in IEMA (2017) *Environmental Impact Assessment Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance*. This guidance advocates a *'good practice'* approach where GHG emissions are always considered and reported but at varying degrees of detail depending on the EIA and the project in question.

5.22. In line with the guidance, this report sets out the methodological approach that has been taken to address GHG emissions associated with the Proposed Development. This means providing the assessment approach, calculating the baseline, determining the significance of each GHG emission source scoped into the assessment and setting out strategies for mitigation.

5.23. Existing sources of GHG emissions prior to construction and operation of the Proposed Development (i.e. without development) are identified to assess the current baseline. Sources of GHG emissions following the construction and during operation of the Proposed Development are then assessed, from which the significance, mitigation measures and residual effects are determined. The GHG assessment will not be restricted by geographical area but instead will include any increase or decrease in emissions as a result of the Proposed Development, wherever this may be.

5.24. The lifecycle stages for the Proposed Development have been identified with reference to the Royal Institution of Chartered Surveyors (RICS) guidance[14], provided in Figure 5.1 below. The life cycle stages to be included in the scope are:

- Construction stage A1-5– embodied carbon emissions associated with manufacturing, transport, replacement and disposal of the existing and proposed building elements;
- Operational stage B4, B6 – embodied carbon emissions associated with replacement/refurbishment of building parts, building emissions associated with buildings' energy use, as well as transport emissions such a vehicle numbers and distances by building users; and
- End of life stage C1-C4 – embodied carbon emissions associated with decommissioning, stripping out, disassembly, deconstruction and demolition operations as well as from transport, processing and disposal of materials.

14 RICS (2017). Whole life carbon assessment for the built environment. Available at: https://www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the--built-environment-november-2017.pdf (Accessed: 13/05/2021)

Figure 5.1: RIBA Project Lifecycle

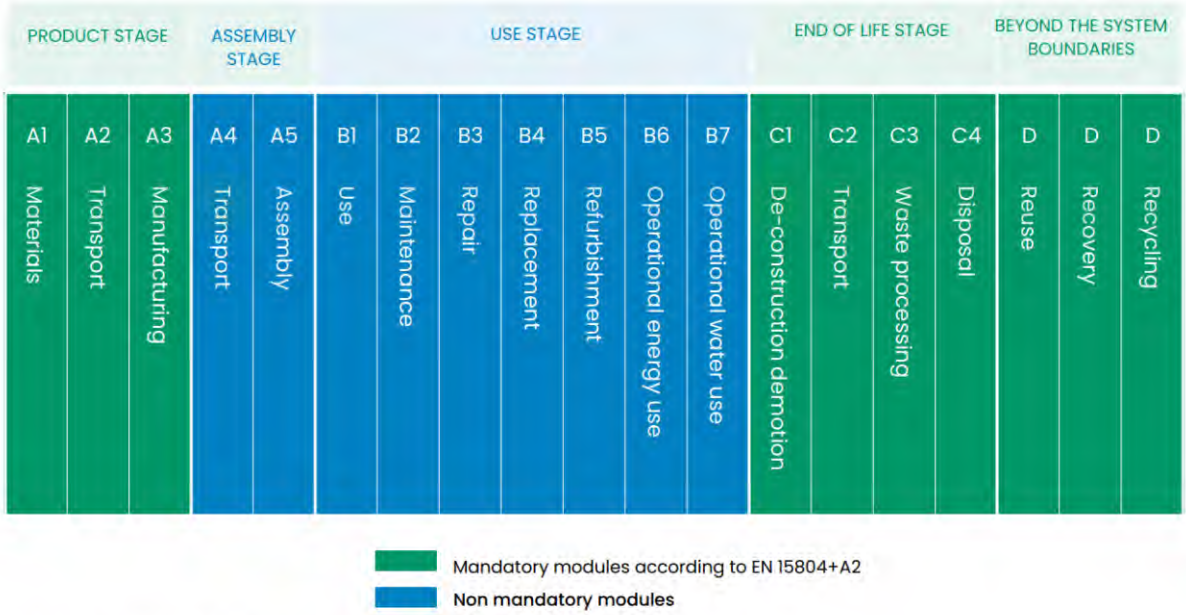


Table: Product life-stages

5.25. For all lifecycle stages of the Proposed Development, the assessment will include the following:

- Collection of available data/information on the scale of GHG emitting activities (e.g. number of vehicle trips, kWh electricity, construction emissions) for future baseline. In each case this will cover the Proposed Development's lifespan (60 years); and
- Calculation of the GHG emissions by applying a suitable emissions factor (tCO2e per unit of emissions generating activity).

Baseline Assessment

5.26. The baseline data for the GHG assessment will be sourced from the following locations:

- One Click Software - Embodied Carbon Calculation;
- Energy Statement submitted as a supporting planning document;
- Transport Assessment submitted as a supporting planning document;
- Department for Business, Energy & Industrial Strategy, 2020 Government GHG Conversion Factors for Company Reporting;
- Department for Business, Energy & Industrial Strategy, 2005 to 2018 UK local and regional CO2 emissions – data tables, 2018; and
- Royal Institute of British Architects (RIBA) 2030 Climate Challenge.

Construction Assessment

Embodied Carbon Emissions

5.27. To inform the assessment during the Proposed Development lifecycle stages, an assessment of embodied carbon emissions has been undertaken. Carbon Designer, which is a calculation tool on One Click Life-Cycle Assessment software, has been used to calculate the embodied carbon emissions for one of the two proposed buildings. Then the results of carbon per m2 were multiplied for both residential towers. This procedure is suitable for early stage projects where building shape and areas are available.

5.28. Inputs used to inform the software were based on floor area provided, number of floors, each building use and material assumptions that were coordinated with the design of the Proposed Development. The result includes data related to manufacturing, transport, replacement and disposal of the existing and proposed building elements.

Transport Emissions

5.29. The carbon emissions (CO2e) associated with transportation used during the construction stage where calculated as part of the embodied carbon emissions described above.

Operational Assessment

Embodied Carbon Emissions

5.30. The same procedure has been followed as described above. The results refer to the replacement/refurbishment of building parts during use stage. The RICS assumptions on material and building component lifespans have been used for this assessment.

Building Emissions

5.31. For the regulated carbon emissions from the new buildings during the operational stage, an Energy statement was prepared by Element Sustainability. The building energy use has been assumed to be compliant with Part L (Conservation of Fuel and Power) of the Building Regulations 2010 (2021 edition with 2023 amendments). Also, the effect of energy efficiency improvements and the low carbon technologies have been considered. An average predicted decarbonisation factor for the grid electricity has been taken into account. As electricity generation becomes less carbon intensive, GHG emissions from electricity use will reduce while GHG emissions from gas would remain on-the-whole stagnant.

Transport Emissions

5.32. In order to calculate the operational traffic associated with the Proposed Development, the vehicle numbers and distances will be multiplied by emission factors for each key vehicle type. The vehicle trips will align with the Transport Assessment. The 2023 DEFRA emission factors will be selected for each vehicle type and a summary for the average trip length, date from the Department of Transport statistical data set will be used.

Table 5.1 – Transport Emissions Calculation Methodology

Metric	Unit	Car	Light Goods Vehicle (LGV)	Heavy Goods Vehicle (HGV)	Taxi	Bus
Total Distance (A)	km / year	A=CxD	A=CxD	A=CxD	A=BxD	A=BxD
Total Person Trips (B)	people trips / year	-	-	-	B	B
Total Vehicle Trips (C)	vehicle trips / year	C	C	C	-	-
Average Trip Length (D)	km / trip	D	D	D	D	D
Emissions Factor Description	n/a	Average car, unknown fuel, per km	Average van (<3.5 tonnes), unknown fuel)	Diesel HGV, Rigid (3.5-7.5 tonnes), per km	Regular taxi (non-black cab), per passenger km	Local Bus (not London), per passenger km

Metric	Unit	Car	Light Goods Vehicle (LGV)	Heavy Goods Vehicle (HGV)	Taxi	Bus
Emissions Factor Value	kg CO2e/km	0.1715	0.24017	0.45835	0.1488	0.1023
Total	kgCO2e	-	-	-	-	-

5.33. For the operational phase, the assessment considers the GHG emissions from the Proposed Development once fully completed and using current emissions factors.

5.34. The use of electric vehicles (Battery Electric Vehicles-BEV, Plug-in Hybrid Electric Vehicles-PHEV and Hybrid vehicles) have been taken into account as a percentage of the total number of trips, following data from the Vehicle Licencing Statistics 2022. No further analysis has been undertaken as to the long term increases in vehicle efficiency, further switching to electric vehicles and possible increase in autonomous vehicle use. These would likely reduce the total GHG emissions associated with the Proposed Development.

End-of-life Assessment

Embodied Carbon Emissions

5.35. The same procedure has been followed as described above. The results refer to the end of life of materials.

Significance Criteria

5.36. There are currently no agreed thresholds for what level of GHG emissions is considered significant in the context of the EIA Regulations. With regards to assigning significance, the IEMA guidance provides guidance on how to assess GHG emissions in EIA:

"When evaluating significance, all new GHG emissions contribute to a significant negative environmental effect; however, some projects will replace existing development that have higher GHG profiles. The significance of a project's emissions should therefore be based on its net impact, which may be positive or negative……

…. Whilst there is no single preferred method to evaluate significance, extensive research is being undertaken to explore significance, thresholds for GHG emission assessments, and science-based targets. "

5.37. In the absence of being able to assign a significance level, IEMA further provides some guidance on contextualising a project's GHG emissions:

"Under the principle that all GHG emissions might be considered significant, and the ongoing research of how to actually measure significance, it is down to the practitioner's professional judgement on how best to contextualise a project's GHG impact.

Generating a project's carbon contribution, will enable the impact of your project, to be contextualised against sectoral, local or national carbon budgets. This will provide the practitioner and the Local Planning Authority with a sense of scale."

5.38. Therefore, to contextualise the carbon emissions of the Proposed Development, these have been compared to:

- National and Regional (Great Manchester) Carbon Budgets; and
- Royal Institute of British Architects (RIBA) 2030 Climate Challenge targets.

5.39. Carbon budgets place restrictions on the amount of GHG emissions the UK can emit over a five-year period - expressed in millions of tonnes of carbon dioxide equivalents (MtCO2e). The UK is the first country to set legally binding carbon budgets. Every tonne of GHG emitted between now and 2050 will be counted towards the budget. If emissions rise in one sector, the UK will have to reduce emissions in another sector to balance the budget. Then the UK carbon budget is apportioned locally, including Great Manchester.

Table 5.2 - National carbon budgets set by the Government (MtCO2e)

Carbon Budget Period	UK Carbon Budget (MtCO2e)	Great Manchester Carbon Budget (MtCO2e)
Third: 2018-2022	2,544	36
Fourth: 2023-2027	1,950	17
Fifth: 2028-2032	1,725	8
Sixth: 2033-2037	965	4

5.40. The RIBA has developed targets for embodied carbon and operational energy use. These consider the latest recommendations from the Green Construction Board and have been developed by the RIBA in consultation with other UK professional bodies. The targets are progressive yet realistic, and a vital first step to ensure the construction industry has delivered the significant reductions necessary by 2030 in order to have a realistic prospect of achieving net zero carbon for the whole UK building stock by 2050. The operational energy targets have been converted to operational carbon targets based on the government-published predicted electricity carbon factors for 2021 (Grid Average-Domestic, as per Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal), expressed in thousands of tonnes of carbon dioxide equivalents (ktCO2e) and kilowatt-hours per square metre (kWh/m2).

Table 5.3 – RIBA 2030 Climate Challenge target metrics for domestic buildings

RIBA Sustainable Outcome Metrics	Business As Usual	2025 Targets	2030 Targets
Embodied Carbon (kgCO2e/m2) (Lifecycle stages A-C)	1200	< 800	< 625
Operational Energy (kWh/m2 /y)	120	< 60	< 35
Operational Carbon (kgCO2e/m2/y)	18	< 9	< 5

Effect Significance

5.41. As explained above, the overall carbon emissions (operational, embodied and transport) of the Proposed Development have been contextualised by comparing these to the UK Carbon Budgets (combined embodied, operational and transport carbon emissions over a period of 5 years). In addition, separate comparisons have been conducted for the embodied and operational carbon emissions over 1 year with the RIBA Climate Challenge Targets. Finally, regarding the transport carbon, in the absence of specific targets, the transport carbon emissions from the Proposed Development have been compared with the regional transport carbon emissions and with the existing baseline of the Site, in an effort to contextualise them.

5.42. Based on the above classification and contextualisation, our professional judgement has been used to define the overall significance of effect (adverse or beneficial) of the Proposed Development as follows:

- Major effect: where the Proposed Development could be expected to have a considerable effect on the achievement of national, regional or local carbon budgets; and where the Proposed Development exceeds the “Business as Usual” for embodied carbon and operational energy performance as defined by the RIBA guidance;
- Moderate effect: where the Proposed Development could be expected to have a noticeable effect on the achievement of national, regional or local carbon budgets; and where the Proposed Development meets the “Business as Usual” for embodied carbon and operational energy performance as defined by the RIBA guidance;
- Minor effect: where the Proposed Development could be expected to result in a very slight noticeable effect on the achievement of national, regional or local carbon budgets; and where the Proposed Development meets the “2025 Targets” for the embodied carbon and operational energy targets defined by the RIBA guidance; and

- **Negligible**: where the Proposed Development could be expected to have no discernible effect on the achievement of national, regional or local carbon budgets; and where the Proposed Development meets the "2030 Targets" for embodied carbon and operational energy targets defined by the RIBA guidance.

5.43. As per IEMA guidance, all new GHG emissions contribute to a significant negative environmental effect, so regardless of the level of significance, any negative GHG effect should be treated as significant.

Scenarios to be assessed

5.44. The scenarios to be assessed are:

- Existing baseline.
- Future baseline without the Proposed Development.
- Operational phase with the Proposed Development.

Summary of Assessment of Scope

5.45. The receptor of the assessment will be the climate.

5.46. The emissions sources which have the potential to impact on the receptor, described as elements with their associated lifecycle stage during the Proposed Development lifespan, have been identified using guidance from IEMA. Professional judgement has been used to consider which elements have the potential to give rise to likely significant effects during construction, operation and end of life of the Proposed Development. The proposed scope of the assessment is consistent with the framework for the quantification of GHG emissions presented in British Standard (BS) EN 15978:2011 'Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method.

5.47. The following elements in below table are proposed to be scoped in or out of further consideration in the EIA.

Table 5.4 - Summary of Assessment of Scope

Receptor	Impact	Potential Effect	Scoped In / Out
Product stage (manufacture and transport of raw materials to suppliers) A1-3	GHG emissions during the construction phase of the Proposed Development.	Raw materials required for the Proposed Development will result in embodied emissions and have the potential to be large.	Scoped In
Transport of materials to site A4	GHG emissions during the construction phase of the Proposed Development.	Construction stage emissions from fuel / energy consumption due to the delivery of material to Site have the potential to be large.	Scoped In
Plant and equipment use during construction A5	GHG emissions during the construction phase of the Proposed Development.	Fuel / energy consumption of plant and equipment used during construction would generate GHG emissions.	Scoped In
Land use, land use change and forestry A5	GHG emissions during the construction phase of the Proposed Development.	Emissions from the disposal of biomass are not expected to be large.	Scoped Out
Disposal of waste A5	GHG emissions during the construction phase of the Proposed Development.	Emissions from the disposal of waste are unlikely to be large, due to a large proportion of construction waste being inert.	Scoped Out
Replacement and refurbishment B2-5	GHG emissions during the operation phase of the Proposed Development.	The replacement and refurbishment of the Proposed Development would release a potentially large magnitude of emissions.	Scoped In

Receptor	Impact	Potential Effect	Scoped In / Out
Operational Energy Use B6	GHG emissions during the operation phase of the Proposed Development.	In-use electricity emissions will be released on an annual basis due to the building use.	Scoped In
End-user emissions (regional traffic flows) – traffic B9/D	GHG emissions during the operation phase of the Proposed Development.	Changes to regional traffic flows are not expected.	Scoped Out
In-use Emissions B1	GHG emissions during the operation phase of the Proposed Development.	This is not considered to be a large emission source.	Scoped Out
Maintenance B2-5	GHG emissions during the operation phase of the Proposed Development.	Maintenance associated with the Proposed Development is not considered to be a large emissions source as only a small amount will be additional to the maintenance that already takes place within the region.	Scoped Out
Repair B2-5	GHG emissions during the operation phase of the Proposed Development.	The Proposed Development is designed to be maintained rather than repaired, therefore subsequent repair emissions sources are not considered to be large.	Scoped Out
Land use, land use change and forestry B8	GHG emissions during the operation phase of the Proposed Development.	The reduction in carbon sequestration due to the Proposed Development is not considered to be large.	Scoped Out
Decommissioning process C1-C4	GHG emissions during the end of life phase of the Proposed Development.	Any emissions arising from decommissioning, stripping out, disassembly, deconstruction and demolition operations as well as from transport, processing and disposal of materials at the end of life of the project.	Scoped In

5.48. The assessment will not consider any specific Committed Developments relevant to the Proposed Development because GHG are not spatially contained. Therefore, the assessment will consider the cumulative effect of all GHG that cause climate change (i.e. the worst case scenario) and the assessment of the GHG due to the Proposed Development contextualises GHG comparing these to the UK Carbon Budgets and RIBA 2030 Climate Change targets. For this reason, the ES Chapter will not consider a standalone cumulative scenario

Daylight, Sunlight and Overshadowing

Executive Summary

5.49. Based on completed background studies or available baseline information, GIA suggests that there are potentially significant effects in relation to this discipline. The methodology of gathering baseline data, undertaking the assessment and recommending mitigation measure is set out below, which will be adhered to in the preparation of the ES chapter relating to Daylight, Sunlight and Overshadowing.

Baseline

5.50. The BRE Guidelines 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."

5.51. There is no specific guidance relating to the extent of a study area. The scope of residential properties that have been assessed has been determined through professional judgement, considering their orientation and proximity to the Site.

5.52. The Site is currently occupied by low-rise industrial buildings. As such, the Site is underdeveloped given the dense, urban location, and the surrounding receptors are therefore receiving higher levels of daylight and sunlight than would typically be expected in a city centre location.

5.53. Baseline studies are currently being undertaken by GIA. The baseline assessment will review the daylight and sunlight conditions within each of the surrounding residential properties in the Site area's present form, in accordance with BRE guidance. A further assessment of the daylight and sunlight conditions in each surrounding property will then be undertaken with the Proposed Development in place. This will allow an understanding of any reductions in daylight and sunlight.

5.54. Were the Site to remain in its current form and the Proposed Development did not come forward, daylight and sunlight to the surrounding sensitive receptors would be unchanged.

Scope of Assessment

Identification of Effect/s that are Not Significant

Effect	Reductions in daylight and sunlight amenity during construction	**Applicable Development Phase (C / O)**	C	**Receptor**	Surrounding residential properties
Discussion of Effect					
Since the potential daylight and sunlight effects relating to demolition and construction works will vary throughout the construction programme and gradually increase to the potential effects identified for the completed development, the interim construction effects will not cause an impact on the surrounding sensitive receptors. The completed Proposed Scheme therefore represents the worst-case assessment in terms of likely daylight and sunlight.					
Mitigation Committed to in order to Avoid or Reduce Effect					
No mitigation is required.					
Concluding Statement					
Owing to the evolving and changing nature of demolition and construction activities, the assessment of potential effects during demolition and construction of the Proposed Scheme on daylight and sunlight to surrounding properties will not be modelled.					

Identification of Effect/s that are Not Significant

Effect	**Receptor**	**Applicable Development Phase (C / O)**
Reductions in daylight and sunlight amenity	Wharf Close	O
Reductions in daylight and sunlight amenity	Thomas Telford Basin	O

Reductions in daylight and sunlight amenity	35 Chapeltown Street	O
Reductions in daylight and sunlight amenity	37 Chapeltown Street	O
Reductions in daylight and sunlight amenity	39 Chapeltown Street	O

Assessment Methodology

5.55. The following approaches are undertaken to assess the effect on the sensitive receptors of surrounding properties when the Proposed Development is completed and operational:

- Daylight
    - Vertical Sky Component (VSC); and
    - No Sky Line (NSL) Method.
- Sunlight
    - Annual Probable Sunlight Hours (APSH).
- Overshadowing
    - Sun Hours on Ground (SHOG).

Outline Approach for Daylight and Sunlight Assessments

5.56. The technical analyses carried out to inform the daylight and sunlight assessment have been undertaken by creating a digital three-dimensional (3D) model of the existing Site and Proposed Development, based on measured survey data.

5.57. The 3D model uses Waldram Diagrams to establish the VSC and 3D geometric calculations for daylight distribution. This model (which is orientated to north by the use of Ordnance Survey (OS) information) enables the path of the sun to be tracked throughout the year to establish the shadow cast by the existing and proposed buildings and thus calculate the sun hours on ground in each scenario.

5.58. In accordance with the BRE Guidance, only those surrounding properties which have windows facing towards the Site were included in the assessment. If a nearby property has no windows facing the Site, these properties would not be affected by the Proposed Development in terms of light.

Daylight

Vertical Sky Component (VSC) Method

5.59. The VSC method of assessment is defined in the BRE Guidelines as the:

"ratio of that part of illuminance at a point on a given vertical plane that is received directly from a CIE standard overcast sky, to illuminate on a horizontal plane due to an unobstructed hemisphere of this sky".

5.60. This ratio is the percentage of the total unobstructed view that is available, once obstructions (e.g. the Proposed Development), are placed in front of the point of view.

5.61. The assessment is calculated from the centre of a window on the outward face and measures the amount of light available on a vertical wall or window following the introduction of visible barriers, such as buildings. The VSC has been calculated using a 'Waldram Diagram'.

5.62. The Waldram Diagram is effectively a snapshot taken from that point of the sky in front of the window, together with all relevant obstructions to it, i.e. the buildings. For calculation purposes, trees may be ignored unless they form dense continuous belts.

5.63. Due to the limitations of peripheral vision, the maximum VSC value is almost 40% for a completely unobstructed vertical wall or window. In terms of assessment criteria, the BRE Guidelines state that:

"if the VSC, with the development in place, is both less than 27% and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of skylight. The area lit by the window may appear more gloomy and electric lighting will be needed more of the time".

No Sky Line (NSL) Method

5.64. The BRE Guidelines provide that where room layouts are known, the effect on the daylight distribution can be calculated by plotting the NSL. In terms of the surrounding receptors, it has not been possible to obtain room layouts for all of the properties and therefore layouts have been assumed where information is not available.

5.65. The NSL method is a measure of the distribution of daylight at the 'working plane' within a room. The 'working plane' means a horizontal 'desktop' plane 0.85m in height for residential properties. The NSL divides those areas of the working plane which can receive direct sky light from those which cannot. If a significant area of the working plane lies beyond the NSL (i.e. it receives no direct sky light), then the distribution of daylight in the room will be poor and supplementary electric lighting may be required.

5.66. The potential effects of daylighting distribution in an existing building can be found by plotting the NSL in each of the main rooms. For houses, this will include living rooms, dining rooms and kitchens. Bedrooms should also be analysed, although the BRE state that they are less important. The BRE Guidelines identify that if the area of a room that does receive direct sky light is reduced to less than 0.8 times its baseline value, then this would be noticeable to its occupants.

5.67. Therefore, it is implied that an NSL of at least 80% would be considered satisfactory.

5.68. In regard to deep rooms which are lit by windows on one side, the BRE Guidelines state (para. 2.2.10):

"If an existing building contains rooms lit from one side only and greater than 5m deep, then a greater movement of the no sky line may be unavoidable."

Sunlight

Annual Probable Sunlight Hours

5.69. Sunlight is measured using a sun indicator which contains 100 spots, each representing 1% of APSH. Therefore, where no obstruction exists the total annual probable sunlight hours would amount to 1486, and each spot equates to 14.86 hours of the total annual sunlight hours.

5.70. The number of spots is calculated for the Baseline and Proposed Development scenarios during the year and also during the winter period, and a comparison made between the two. This provides a percentage of APSH for each of the time periods for each window assessed.

5.71. The BRE Guidelines note that:

"In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day, but especially in the afternoon."

"all main living rooms of dwellings…should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun".

"If the main living room to a dwelling has a main window facing within 90° of due north, but a secondary window facing within 90° of due south, sunlight to the secondary window should be checked."

"…a south facing window will, in general, receive most sunlight, while a north facing one will receive it only on a handful of occasions. East and west facing windows will receive sunlight only at certain times of day".

5.72. In regards to existing surrounding receptors, the BRE Guidelines provide that a window may be adversely affected if a point at the centre of the window receives less than 25% of the APSH, including at least 5% of the APSH during the winter months (21 September to 21 March), or less than 0.8 times its baseline sunlight hours during either period, or if there is a reduction in total APSH which is greater than 4%.

5.73. As is often the case, it is not possible to determine the room uses within each of the neighbouring properties, nor is it clear which window should be considered as the 'main windows'. Therefore, unless the rooms use is known through plans, all the rooms with windows facing the Site and within 90 degrees of due south have been considered in the assessment. Windows that do not face within 90 degrees of due south do not have a realistic expectation of direct sunlight, due to their orientation and the sunlight path in the northern hemisphere.

Summary of Criteria for Daylight and Sunlight

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

Table 5.5 Summary of Daylight and Sunlight Assessment Criteria

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%.

Significant Criteria Effects

5.75. For daylight and sunlight, the BRE Guidelines outline the approach within the accompanying appendix, in terms of assigning criteria to assess the effects:

5.76. *"Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required…The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied."*

5.77. *"Where the loss of skylight or sunlight fully meets the guidelines, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines and a larger number of windows or open space are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space."*

5.78. *"Where the loss of skylight or sunlight does not meet the guidelines in this book, the impact is assessed as minor, moderate or major adverse. Factors tending towards a minor adverse impact include:*

- *Only a small number of windows are affected;*
- *The loss of light is only marginally outside the guidelines;*
- *An affected room has other sources of skylight or sunlight; and*

- *The affected building only has a low level of requirement for skylight or sunlight."*

5.79. The classification of major adverse is documented within Paragraph 7 of the BRE Guidelines:

"Factors tending towards a major adverse impact include:

- *a large number of windows are affected;*
- *the loss of light is substantially outside the guidelines;*
- *all the windows in a particular property are affected; and*
- *the affected indoor spaces have a particular strong requirement for skylight or sunlight, e.g. a living room in a dwelling".*

5.80. Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building. Beneficial impacts should be worked out on the same principals as adverse impacts."

5.81. The BRE Guidelines do not provide any guidance on what constitutes a moderate adverse impact.

5.82. Therefore, best practice guidance and professional judgment will be used to determine any impacts based on the guidance set out in Appendix H of the BRE Guidelines.

5.83. The initial numerical criteria for determining the magnitude of effect is based on percentage alterations, as follows:

Magnitude of Effect	Percentage Alteration from Baseline
Negligible	0-20%
Minor	20-29.9%
Moderate	30-39.9%
Major	40%+

Sensitivity of Identified Receptor

5.84. It is important that the location and nature of the Site and surrounding are considered when determining the significance of any impacts identified. The BRE Guide is very clear that the targets provided are not mandatory. The location of the development could be deemed to be special circumstances in which the planning authority may wish to use different target values. This scope and view should also be followed through to the sensitivity of the surrounding receptors. There should be an expectation that a higher degree of obstruction is inevitable in an area with modern high-rise buildings. This point is also made in the NPPF and PPG.

5.85. For these reasons, the surrounding receptors may have a lower sensitivity to change in an urban location than those located in sub-urban, less dense areas. Sensitivity classification is assigned on how the proposed receptor is able to accommodate or adapt to the effect of the development. The existing residential receptors surrounding the Site reside in a city centre location where there is an expectation for a higher density of development. The Site is currently occupied by low-rise buildings, meaning it is underdeveloped and unusually open aspect given the city centre location. These receptors are therefore deemed to have a medium sensitivity.

Significance of Effects

5.86. 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.

5.87. The table below illustrates how the sensitivity of the receptors and the magnitude of any effect combine to confirm significance.

Magnitude	High	Sensitivity Moderate	Low
Major	Major Adverse/Beneficial	Major Adverse/Beneficial*	Minor Adverse/Beneficial
Moderate	Major Adverse/Beneficial*	Moderate Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate Adverse/Beneficial	Minor Adverse/Beneficial	Negligible
Negligible	Negligible	Negligible	Negligible
Key	*Significant in terms of EIA regulations		

5.88. When assigning significance criteria for daylight and sunlight effects, professional judgement has been used. Consideration has been 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.

Limitations and Assumptions

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

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

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

5.92. Where actual room layouts are available on the planning portal, these will be considered in regard to the modelling of the internal layouts within the existing surrounding properties. Where layout information is not available, assumptions will be made as to the use and internal configuration of the rooms (from external observations during a site inspection) behind the fenestration observed.

5.93. Floor levels will be assumed for adjoining properties assessed, where access has not been obtained. This dictates the level of the working plane which is relevant for the NSL assessments.

Townscape and Visual Impact

Executive Summary

5.94. Based on completed background studies or available baseline information, the consultant (say who this is) suggests that there are potentially significant effects in relation to this discipline. The methodology of gathering baseline data, undertaking the assessment and recommending mitigation measure is set out below, which will be adhered to in the preparation of the ES chapter relating to Townscape and Visual Impact.

Baseline

5.95. The Site is located on the junction of Sparkle Street and Store Street within the Piccadilly* area of Manchester City Centre, approximately 170m north east of Manchester Piccadilly Station.

5.96. Piccadilly is currently undergoing significant urban regeneration and comprises several modern apartment and office buildings and construction sites. There are no CAs within Piccadilly; however, there are Grade II and Grade II* listed buildings interspersed through the area, mostly associated with historic uses of the canal and Manchester Piccadilly station. The visual impact on these heritage assets will be assessed as part of the Heritage Assessment prepared by Salford Archaeology.

5.97. The station is a large and significant element of Piccadilly and has influence on the urban grain in its immediate context. Extensive areas of surface car parking situated on undeveloped plots of land are also commonplace. As a result, the urban grain is currently fragmented and inconsistent. Recently implemented public realm improvements and peripheral treatments to new buildings introduce isolated, pockets of greenery and trees. There are some notable areas of public realm and greenspace associated with the Rochdale and Ashton Canals which run through Piccadilly

**Piccadilly is a local level Townscape Character Areas identified within the Manchester City Council, City Centre Strategic Plan 2015-2018*

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Effects on local townscape	**Applicable Development Phase (C / O)**	C and O	**Receptor**	Local Townscape
Discussion of Effect					
Change of character and use from existing single storey light industrial units and surface car parking, with new residential tower building and public realm. Potential effects on local townscape include change of scale, urban grain, quality and appearance.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Building design and public realm enhancements					
Concluding Statement					
It is considered that the Proposed Development will introduce change to the local townscape character. It is anticipated that the new built form will primarily introduce minor to moderate townscape effects that will be contained to a relatively local area. This is due to the relatively low sensitivity of the receiving townscape and the site, as a result of the existing varied urban grain, appearance and quality of the local area, which also includes a number of existing large scale tower buildings and blocks.					

Effect	Effects on views	**Applicable Development Phase (C / O)**	C and O	**Receptor**	Pedestrians, vehicle users, people in place of work and local residents
Discussion of Effect					
Change of character and use from existing single storey light industrial units and surface car parking, with new residential tower building and public realm. Potential effects on local views include change of scale, quality and appearance and extent / distance of visibility within views.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Building design and public realm enhancements					
Concluding Statement					

It is considered that the Proposed Development will introduce change to local views. It is anticipated that the new built form will primarily introduce minor to moderate visual effects. Some very near distance views may experience a high magnitude of change, however the anticipated effects will be low to moderate, due to the low sensitivity of local views and vistas. Due to the built up urbanised nature of the local townscape, perceivable visibility of the Proposed Development is anticipated as being contained to a local area.

Identification of Effect/s which are Significant

Effect	Receptor	Applicable Development Phase (C / O)
Moderate or above townscape effects	Townscape	C / O
Moderate or above visual effect	Residents and pedestrians	C / O

Assessment Methodology for Likely Significant Effects

5.98. The Townscape and Visual Impact Assessment will be carried out with reference to the Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013 (referred to hereafter as "the Guidelines")[15] by Reform, a registered practice of the Landscape Institute with considerable experience in landscape and visual assessment.

Limitations and Assumptions

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

- The assessment will rely on available data, and best endeavours will be made to ensure that the data are accurate and up to date. It is assumed that OS mapping information, topographic and 3D data and Historic England heritage mapping information are all up to date.
- The GLVIA methodology provides a robust and transparent process for assessment of townscape and visual effects and is used alongside visually verified photomontages which provide a high level of detail and technical accuracy. Significant effects will be determined through professional judgment, carried out by a team of assessors to provide scrutiny where this is relied upon.

Wind Microclimate

Executive Summary

5.100. Based on completed background studies or available baseline information, the consultant (say who this is) suggests that there are potentially significant effects in relation to this discipline. The methodology of gathering baseline data, undertaking the assessment and recommending mitigation measure is set out below, which will be adhered to in the preparation of the ES chapter relating to Wind Microclimate.

Baseline

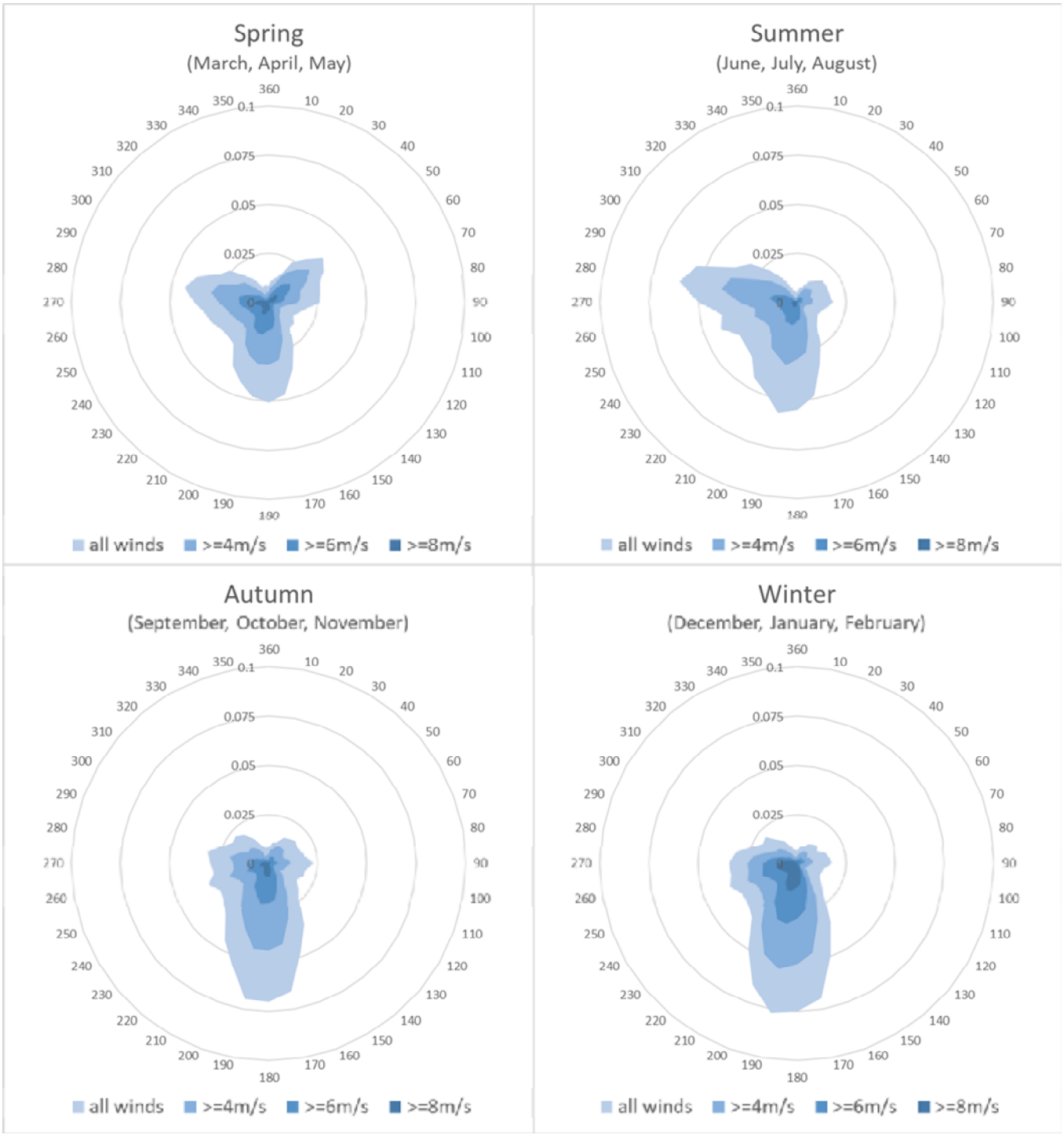
5.101. Winds for the Manchester area are predominantly from the south, with a secondary peak from the north-west west during spring and summer. Winds are typically stronger in the winter season, and lighter throughout the summer. Wind roses per season for the Manchester area are shown in Figure 5.1, from data attained from Manchester airports over a period of 30 years. These wind roses provide the frequency of occurrence and magnitude of winds from all directions within the 30-year period.

[15] Landscape Institute and IEMA, (2013). Guidelines for Landscape & Visual Impact Assessment, 3rd Edition. Routledge.

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

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

Figure 5.2 Seasonal Wind Roses for Manchester International Airport (1990-2021)



Scope of Assessment

Identification of Effects

5.104. The assessment of the wind microclimate will be based on the results from a series of tests on full-scale digital models using CFD to provide a detailed assessment. The wind microclimate will be benchmarked against the Lawson Comfort Criteria, in order to assess the pedestrian comfort for users of the Proposed Development.

5.105. During design development, CFD testing of the developing massing will be carried out for selected wind angles of concern to examine the anticipated flows and to assist in refining the design.

5.106. Given the size and geometry of the Proposed Development, in addition to the Site's location in relation to surrounding buildings, it is important to avoid undesirable wind speeds being generated at ground and accessible elevated levels.

5.107. The wind microclimate assessment will therefore quantify the potential changes to the local wind environment (both on-site and within the surrounding area) in terms of pedestrian amenity and public open space and quantify these in relation to their 'usability' for a range of pedestrian and amenity activities (i.e., thoroughfares, entrances, sitting, etc), as defined by the well-known and established Lawson Comfort Criteria.

5.108. The scope of the wind microclimate assessment will include:

- A summary of all relevant national, regional, and local policy guidance on wind microclimate. Any specific local policies (e.g., Supplementary Planning Guidance (SPG)) that may be applicable to wind microclimate will also be included;
- CFD testing of the baseline conditions in and around the Site as well as CFD testing of the Proposed Development in the context of both the existing and cumulative surrounds;
- Assessment of the measured wind conditions against the Lawson Comfort and Safety Criteria; and
- Where required, development and testing of measures to mitigate against strong winds and to achieve desired wind conditions.

Assessment Methodology

5.109. 3D models of the Proposed Development, existing surroundings and nearby cumulative schemes, as appropriate, will be created and tested in high resolution CFD, to allow the future wind microclimate conditions to be quantified. The model will cover a minimum radius of 400m. Mean wind speeds and turbulence levels (to allow the calculation of gust speeds) will be measured at 1.5m above ground level and any raised areas which are accessible to pedestrians, for all wind directions.

5.110. Three configurations will be tested in CFD as set out below:

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

5.111. Based on the results of the CFD testing assessed against the Lawson Comfort Thresholds, shown in Table 5.1, the suitability of the conditions and the likely effect at particular locations, both within and off-site, will be determined. If the measured wind conditions exceed the threshold wind speed for more than 5% of the time (whether that is seasonally or annually), then they are unacceptable for the stated pedestrian activity and the expectation is that there may be complaints of nuisance or people will not use the area for its intended purpose.

Table 5.6 Lawson Comfort Criteria (LDDC variant)

Key	Comfort Category	Mean Wind Speed (5% exceedance)	Description
	Sitting	4 m/s	Acceptable for outdoor sitting use (e.g. cafes, benches, balconies)
	Standing	6 m/s	Acceptable for main building entrances, pick-up / drop-off points and bus stops
	Walking (leisure)	8 m/s	Acceptable for strolling
	Walking (business)	10 m/s	Acceptable for external pavements, walking purposefully without lingering
	Uncomfortable	>10 m/s	Not comfortable for regular pedestrian access

Table 5.7: Lawson Safety Criteria

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

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

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

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

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

Table 5.8 Methodology for Determining Impact Magnitude

Magnitude of Impact	Criteria for assessing impact
Major	Wind conditions which are three categories windier/calmer than the target conditions
Moderate	Wind conditions which are two categories windier/calmer than the target conditions
Minor	Wind conditions which are one categories windier/calmer than the target conditions

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

Table 5.9 Methodology for Determining Sensitivity

Sensitivity	Examples of receptor
High	Any amenity spaces, public realm, footpaths or entrances to buildings
Moderate	Any general thoroughfares through or around the Proposed Development Site.
Low	Locations which are not accessible to pedestrians

5.117. 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.

Table 5.10 Impact Signifiance Matrix

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

Limitations and Assumptions

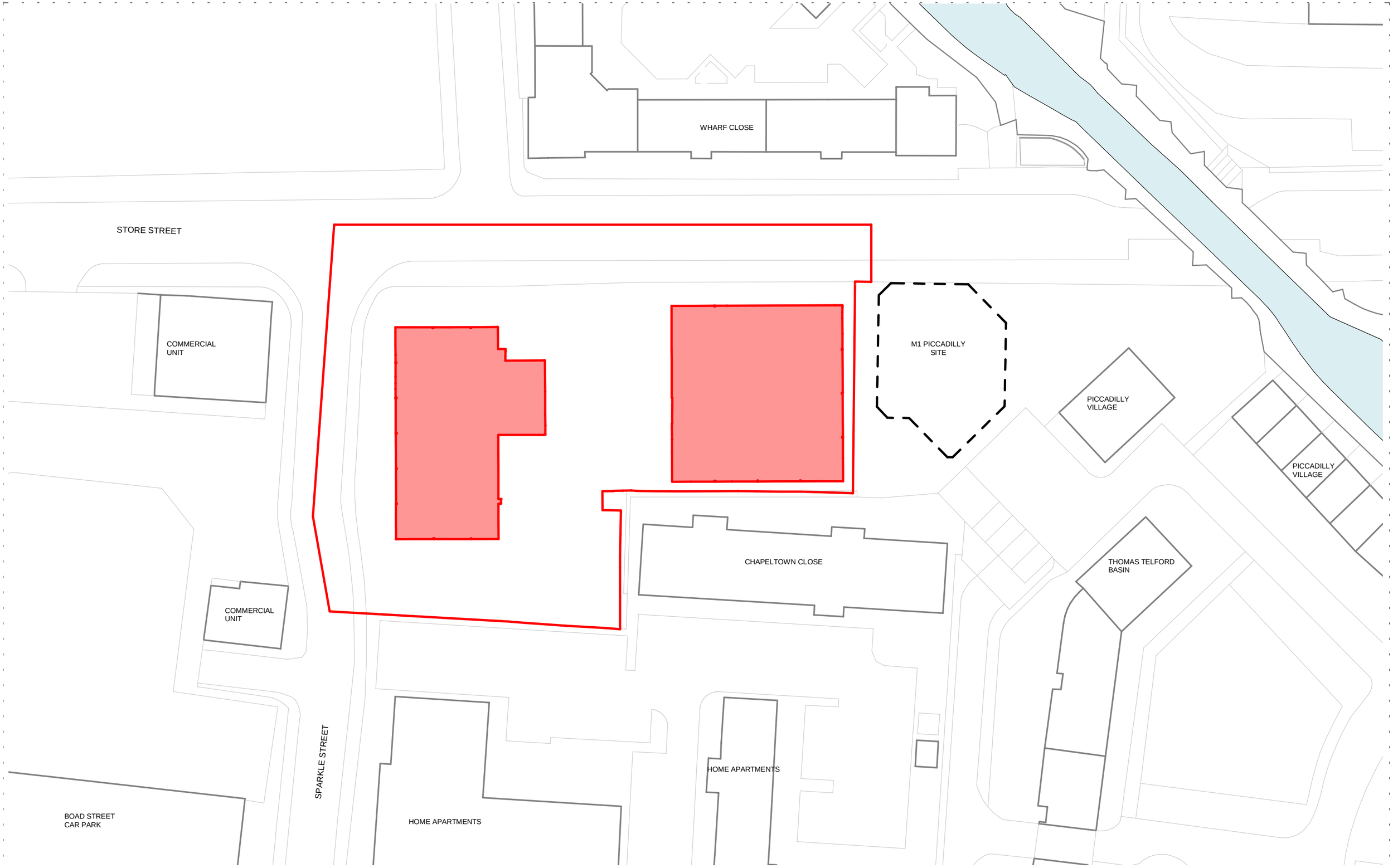
5.118. The accuracy of the results is dependent upon the accuracy of the architectural CAD used to construct the model.

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

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

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

Appendix 1 – Site Location Plan



DO NOT SCALE OFF DRAWING, REFER TO INDICATED DIMENSIONS ONLY.

DRAWING TO BE READ IN CONJUNCTION WITH SHP SPECIFICATION.

INDICATIVE DETAILS TO ILLUSTRATE VISUAL INTENT ONLY. ALL TO CONTRACTORS DESIGN.

ALL DETAILS TO BE COORDINATED WITH ADJACENT TRADES AND SE M+E ENGINEER DETAILS.

THE CONTRACTOR IS RESPONSIBLE FOR MEETING THE SPECIFIED PERFORMANCE CRITERIA.

Planning boundary

Buildings to be Demolished

Sparkle Street	10413-SHP-Z0-A-B5D8-JC20-PL-XX-001	
PLANNING ISSUE	August 2023	DRAFT
Site Wide - Demolition Plan	10413	1 : 500 @A3

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Appendix 2 – Cumulative Schemes

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Sparkle Street, Manchester

Committed Developments - DRAFT

June 2023

Application Reference	Description of Development Proposals	Date Approved	Map No	Distance from Site	Status
Baseline					
The Foundry / Presbar / Dyecast 133523/FO/2022	Change of use (for a temporary period of three years only) from an industrial foundry (Class B2) to a mixed-use development with retail, leisure and office uses (Use Class E and Sui Generis (drinking establishment)), external alterations including creation of new entrances and over-cladding of the roof, temporary installation of new structures within the forecourt and associated works including cycle parking and new electric vehicle charge points, the erection of external pergolas	31 May 2022	1	60m	Under construction.
32-34 Laystall Street 128911/FO/2020	Erection of 9 storey residential building (Use Class C3) comprising 89 residential units (28 x 1 bed and 61 x 2 bed) and conversion of and 3 storey extension to 32-34 Laystall Street for use as offices (Class E) with associated external works following demolition of outrigger and associated structures along with other associated works including access, servicing, landscaping and secure cycle parking	2 February 2022	2	160m	Under construction.
Lomax 120149/FO/2018	Erection of 7 to 8 storey residential building (Class C3) to provide 41 apartments (7 x 1-bedroom 1-person apartments, 6 x 1-bedroom 2-person apartments, 6 x 2-bedroom 3-person apartments, 22 x 2-bedroom 4-person apartments) with associated landscaping and other works.	19 March 2019	3	170m	Under construction.
The Castings 127317/FO/2020	Erection of a part 25 part 21, part 14, part 7 storey building for 352 apartments comprising 39 Studios, 77x 1 bed, 227 x 2 bed and 9 x 3 bed (Use Class C3) with ground floor commercial space within 4 units (494m2) for Class A1 (Shop), A2 (Financial and Professional Services) A3 (Café and Restaurant), A4 (Drinking Establishment), A5 (Hot Food Take Away), B1 (Office) and D1-D2 uses, ancillary indoor and outdoor amenity space (including 1st and 21st floor external areas) car parking for 20 vehicles, cycle parking and associated hard and soft landscaping works, following demolition of existing buildings	9 February 2021	4	250m	Under construction.
London Road Fire Station 125712/FO/2019	Refurbishment, restoration, reconfiguration and extension of former London Road Fire Station site to create a mixed use development comprising of hotel (Use Class C1), workspace/office (Use Class B1, D1), commercial floorspace for shop and food and drink uses (Use Classes A1, A3 and A4), residential apartments (Use Class C3) and leisure (Use Class D2), together with access and highways works, servicing, rooftop plant and associated works	17 April 2020	5	280m	Under construction
Victoria House 122000/FO/2018	Erection of a part 25 part 3 storey residential tower (Use Class C3) for 177 apartments comprising 59 x 1 bed (34 x 1 bed 1 person and 25 1 bed 2 person), 113 x 2 bed (44 x 2 bed 3 person and 69 x 2 bed 4 person) and 5 x 3 bed (3 bed 5 person) with ground floor commercial space (Use Class A1, A2, A3, A4 and D1) above partial basement level associated shared amenity spaces at 3rd floor level, realm enhancements following demolition of existing buildings	26 August 2020	6	300m	Under construction
New Islington Wharf (Phase 4) 126669/FO/2020	Erection of a Part 16/ Part 11 storey building to form 106 no. apartments (C3 Use Class) together with ground floor commercial uses (Use Class A1, A2 A3 and/or B1), with associated ancillary space, surface car parking, landscaping and associated works	5 August 2020	7	300m	Under construction.
One Port Street 132489/FO/2021	Erection of a part-33, part-11, part 9 part 7 storey residential building above semi-basement level, with associated residents' amenity space including gym (Use Class C3) (comprising 481 dwellings), commercial	7 October 2022	8	329m	Under construction.

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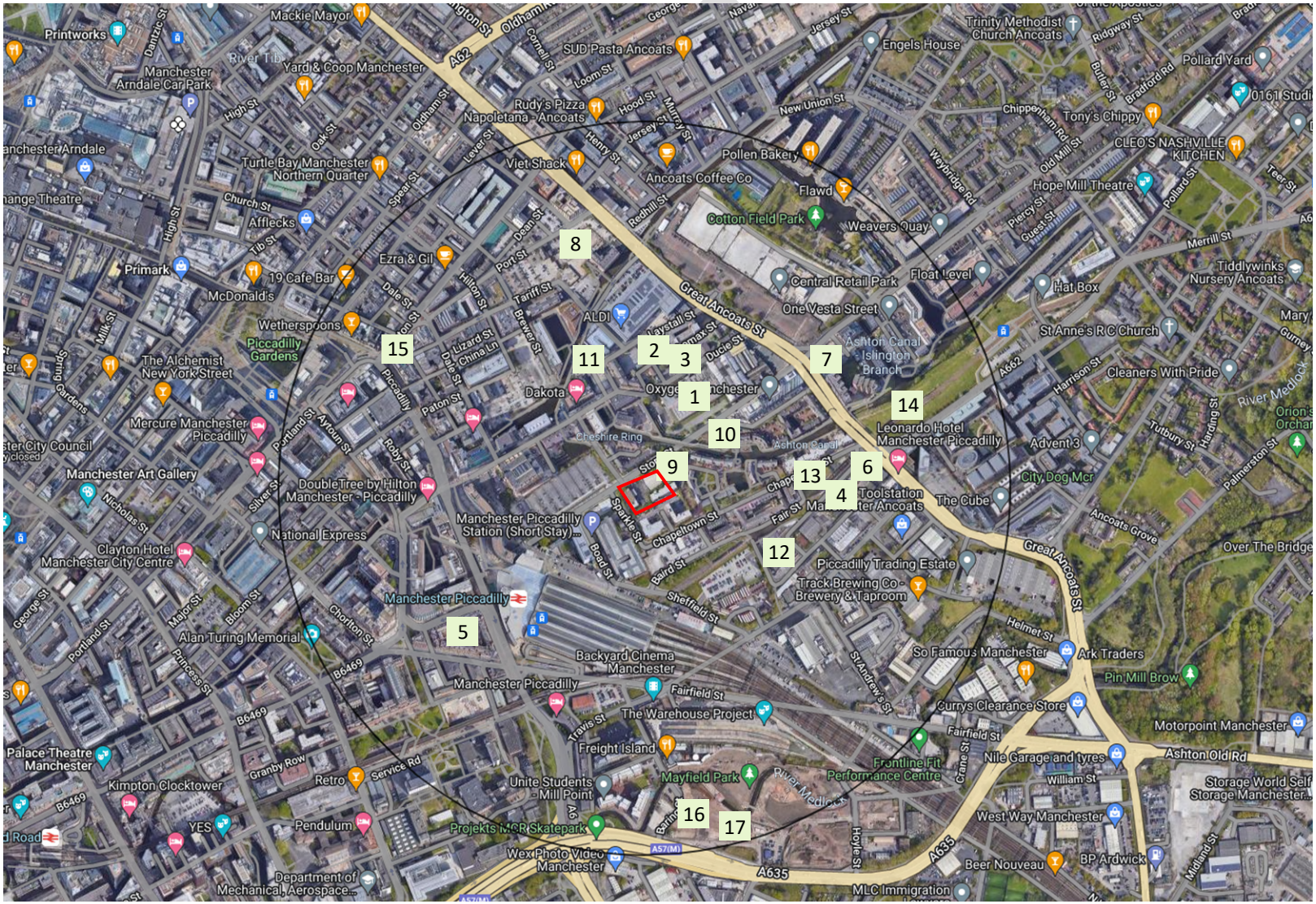
Application Reference	Description of Development Proposals	Date Approved	Map No	Distance from Site	Status
	space (Use Class E), basement car parking (47 spaces), cycle parking (481 spaces) landscaping, and other associated works				
Cumulative					
M1 Piccadilly, Store Street 132626/FO/2022	Erection of 15 storey building comprising 54 apartments (Use Class C3) with associated residential facilities (residents lounge and terrace and office space), 2 car parking spaces and 57 cycle parking spaces, landscaping, access and associated development.	21 December 2022	9	0m	No start on site.
Store Street 126608/FO/2020	Erection of part 4, part 11 storey residential (Class C3) development (with roof top plant room) comprising 66 (Class C3) residential units (3 x 2 bed town houses, 46 x two bed apartments and 17 x one bed apartments) together with associated car parking (10 spaces including 5 EVC spaces), cycle parking (66 spaces) communal roof terrace (level 6), landscaping and ancillary infrastructure including rooftop PV panels, alterations to access onto Store Street	13 November 2020	10	85m	No start on site.
Eider House 115178/FO/2017	Erection of 2 linked buildings ranging in height from 8 to 10 storeys (plus roof top plant room) to provide residential accommodation (Use Class C3) comprising 18 x 1 bed, 84 x 2 bed, 15 x 3 bed, 2 x duplex (4 bed) and 9 townhouses (7 x 3 bed, 1 x 2 bed and 1 x 4 bed) (128 units in total) works to create provision for access and servicing, hard and soft landscaping (to include a secure external area and public realm linking Ducie Street to the Rochdale Canal) and associated works following the demolition of existing buildings. Development to include 128 cycle parking spaces.	16 January 2018	11	150m	Was due to start on site in July 2022.
The Fairfax 121099/FO/2018	Construction of two residential buildings (Use Class C3) comprising Block 1 (29 storeys) (224 apartments (4 x 1 bed 1 person, 52 x 1 bed 2 person, 64 x 2 bed 3 person and 104 x 2 bed 4 person) 25% 1 bed and 75 % 2 bed) Block 2 (23 storeys) (264 apartments 44 x1 bed 1 person, 44 x 1 bed 2 person, 92 x 2 bed 3 person and 84 x 2 bed 4 person) (33% 1 bed and 67%% 2 bed) with a linked central podium, to deliver 488 units, shared amenity space, 27 car parking spaces, 492 cycle spaces, landscaping (including new public park) , lighting, highways and associated works following demolition of existing buildings and structures	16 March 2021	12	200m	Due to start on site imminently.
Ferrous 132214/FO/2021	Erection of a 15 storey building to form 107 apartments (Use Class C3) at floors 1 to 15, residential amenity facilities including a roof terrace (level 14), associated ground floor cycle storage (68 spaces), two ground floor commercial units (Use Class E/ Sui Generis (Drinking Establishment), multipurpose events Pavilion (Use Class E/ Sui Generis (Drinking Establishment), associated landscaping to site perimeter and rooftop PV panels.	1 December 2022	13	200m	No start on site.
Electric Park 128191/FO/2020	Erection of five office buildings and new public realm comprising: 3 no. 8 storey mixed use buildings (Buildings A, D and E) comprising workspaces (Use Class E) together with flexible uses at ground floor (Use Class E) and/or theatre/bar (Sui Generis) together with a multi use rooftop amenity area to Building A; and 2 no. 5 storey mixed use buildings (Buildings B and C) comprising workspaces (Use Class E) together with flexible uses at ground floor (Use Class E) and/or theatre/bar (Sui Generis); together with cycle parking, creation of pedestrian and cycle routes, external amenity spaces, new public realm and other associated engineering and infrastructure works	18 December 2020	14	320m	No start on site.

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Application Reference	Description of Development Proposals	Date Approved	Map No	Distance from Site	Status
67 Piccadilly 127538/FO/2020	Erection of 11 storey building on site of 67 Piccadilly, as a Hotel (Use Class C1) with associated ground floor retail and leisure uses (Use Class A3 (Restaurant and Café), A4 (Drinking Establishment)and D2 (hotel leisure gym/ fitness area); provision of flexible amenity space at roof level; installation of external plant at roof level; provision of new public realm and associated works following demolition of 67 Piccadilly/4 - 6 Newton Street ('67 Piccadilly')including internal and external alterations to 69-75 Piccadilly (Halls Building) (comprising refurbishment and infilling of an existing rear void of to provide a 9-storey infill) relating to the reuse, refurbishment of the building for use along with the new 11 storey building.	16 December 2020	15	380m	No start on site.
Mayfield Phase 1 (Plot O, N and Park), Office Development, Baring Street 132255/JO/2021	Phased creation of circa 2.4 ha (6 acres) of public park, including hard and soft landscaping and new bridges across the River Medlock; erection of 9 storey office development above basement with mezzanine and plant level (Class B1) with ground floor Class A1 (Shop), A2 (Financial and Professional Services), A3 (Café and Restaurant), A4 (Drinking Establishment) B1 (Office) uses, rooftop amenity spaces and terrace levels, associated public realm and riverside walkway; erection of 11 storey Multi-Storey Car Park to provide 581 car parking spaces with associated landscaping; highways and infrastructure works including the creation of new junction from London Road to provide access to the multi-storey car park (MSCP) (Use Class Sui Generis); works to Baring Street, stopping up of Bond Street and Nether Street (alongside associated Traffic Regulation Orders to manage unrestricted parking to Buxton Street, Berry Street and Travis Street (to be delivered and implemented prior to the MSCP becoming operational)) alongside enabling works comprising phased demolition and site clearance, earthworks including re-profiling and construction of retaining walls for the land bounded by the Mancunian Way to the south, Mayfield Depot to the north, Baring Street to the west and Hoyle Street to the east	29 July 2022	16	430m	Park is now completed. Plot O and N due to commence development in 2023.
The Republic 125248/FO/2019	Erection of 13 storey building (including ground and mezzanine) comprising office space (Use Class B1) above flexible uses at ground and mezzanine levels (Class A1 (Shop), A2 (Financial and Professional Services), A3 (Café and Restaurant), A4 (Drinking Establishment) /D1 (Art Gallery, Museum and Conference & Training Centre)/D2 (Cinema)/ Theatre (Sui Generis)) with rooftop amenity spaces and external terrace levels, internal ancillary storage spaces for waste, cycles, rooftop plant, back of house functions and associated landscaping works	14 February 2020	17	470m	Sire remediation and piling works have been commenced. Above ground due to commence in 2023.

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Committed Development Diagram



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Appendix 3 – Noise Assessment



cass allen

Architectural & Environmental Consultants

Noise | Vibration | Air Quality

Noise Impact Assessment

Sparkle Street, Manchester

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Noise Impact Assessment

Project: SPARKLE STREET, MANCHESTER

Report reference: RP02-23244-R2

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1. EXECUTIVE SUMMARY

1.1 Cass Allen has been instructed by Foras (Sparkle Street) Ltd to assess the noise and vibration impact of a proposed new development at Sparkle Street in Manchester.

1.2 The assessment was carried out in accordance with relevant local and national planning guidance.

1.3 A noise and vibration survey was carried out at the site. Noise levels at the site are dictated by road traffic noise emissions from Store Street and, to a lesser extent, Sparkle Street.

1.4 A 3D noise model of the development was constructed based on the results of a site noise survey. The noise model was used to calculate noise levels at all facades of the development.

1.5 Noise affecting the development has been assessed in accordance with the ProPG guidance. The design of the development is considered to be acceptable subject to the adoption of acoustically upgraded glazing and ventilation. This can be investigated further at the detailed design stage.

1.6 Ground-borne noise and vibration levels at the site have been measured and are considered to be acceptable for the development.

1.7 Appropriate limits for noise from mechanical plant have been calculated based on measured noise levels at the site and guidance given in BS4142. This will be investigated further at the detailed design stage.

1.8 In summary of the above it is our view that the site is suitable for the development in terms of noise and vibration levels and that planning permission should be granted subject to the imposition of suitable planning conditions.

2. INTRODUCTION

2.1 The assessment has been carried out in accordance with relevant local and national planning guidance.

2.2 The aims of the assessment were:

- To establish the suitability of existing noise and vibration levels at the site for the proposed development;
- Where required, identify appropriate measures to optimise the acoustic design of the development and achieve acceptable noise and vibration levels in habitable areas;
- To establish appropriate noise limits for noise emissions from mechanical plant associated with the development at the positions of existing sensitive receptors in the area.

2.3 This report contains technical terminology; a glossary of terms can be found at www.cassallen.co.uk/glossary.

3. PROJECT DESCRIPTION

3.1 The site is located in a mixed-use area bounded by Store Street to the north and Sparkle Street to the west. Approximately 100 metres south is Manchester Piccadilly Railway Station and 100 metres southeast is a tram line.

3.2 The site is largely unoccupied, with its former use being a telephone exchange along with surface car parking and two buildings that are partly used for storage and distribution. The buildings are screened from the road on two sides by existing vegetation, vacant land to the east and residential apartments to the south. Several ground floor level car parks and a multi-storey car park are located within close proximity of the site. An access route for vehicles is provided from Store Street.

3.3 The site location is shown in Figure 1 below.

Figure 1 Site Location and Surrounding Area



3.4 The proposal is for the demolition of the existing low rise commercial units and erection of a ground plus 27 storey residential development with supporting residential amenity, private terraces and private shared garden. A current drawing of the proposed development layout is shown in Appendix 1.

4. PLANNING POLICY

National Policy

4.1 Outline guidance for the assessment of noise affecting new developments is given in the National Planning Policy Framework (NPPF). Relevant sections in this case are highlighted below:

> *174. Planning policies and decisions should contribute to and enhance the natural and local environment by … preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of …noise pollution.*
>
> *185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

Local Policy

4.2 Manchester City Council's (MCC) Core Strategy Development Plan Document 2012-2027 (adopted July 2012) provides outline guidance on the assessment of noise and vibration affecting new development in the borough.

4.3 Policy DM1 Development Management states:

> *All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:- ….*
>
> - *Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.*

4.4 In addition, policies DC26.1 – DC26.6 of the MCC's Unitary Development Plan (UDP) are relevant to noise and vibration. These are as follows:

> *DC26.1 The Council intends to use the development control process to reduce the impact of noise on people living and working in, or visiting, the City…*

DC26.2 New noise-sensitive developments (including large-scale changes of use of existing land or buildings), such as housing, schools, hospitals or similar activities, will be permitted subject to their not being in locations which would expose them to high noise levels from existing uses or operations, unless the effects of the noise can realistically be reduced. In giving effect to this policy, the Council will take account both of noise exposure at the time of receiving a planning application and of any increase that may reasonably be expected in the foreseeable future.

DC26.3 Developments likely to result in unacceptably high levels of noises will not be permitted:

a. in residential areas;

b. near schools, hospitals, nursing homes and similar institutions;

c. near open land used frequently for recreational purposes.

DC26.4 Where the Council believes that an existing noise source might result in an adverse impact upon a proposed new development, or where a new proposal might generate potentially unacceptable levels of noise, it will in either case require the applicant to provide an assessment of the likely impact and of the measures he proposes to deal satisfactorily with it.…

DC26.5 The Council will control noise levels by requiring, where necessary, high levels of noise insulation in new development as well as noise barriers where this is appropriate.

DC26.6 Exceptions to the general policy will be considered on their merits. The Council accept, as an example, that the occasional use of outdoor facilities such as sports stadia for concerts can be acceptable in certain circumstances. Any such proposal will be considered in the light of consultation with local residents and others, and the practicability of appropriate conditions on any approval.

4.5 In addition, Manchester City Council's Planning and Noise, Technical Guidance issued in October 2022 restates policy DM1 and policies DC26.1 – DC26.6.

4.6 To address the requirements of the national and local policies, the following key acoustic matters have been assessed:

- Noise affecting the habitable areas of the proposed development;
- Ground-borne vibration affecting the habitable areas of the proposed development;
- Noise emissions from mechanical plant associated with the development at the position of existing sensitive receptors in the area.

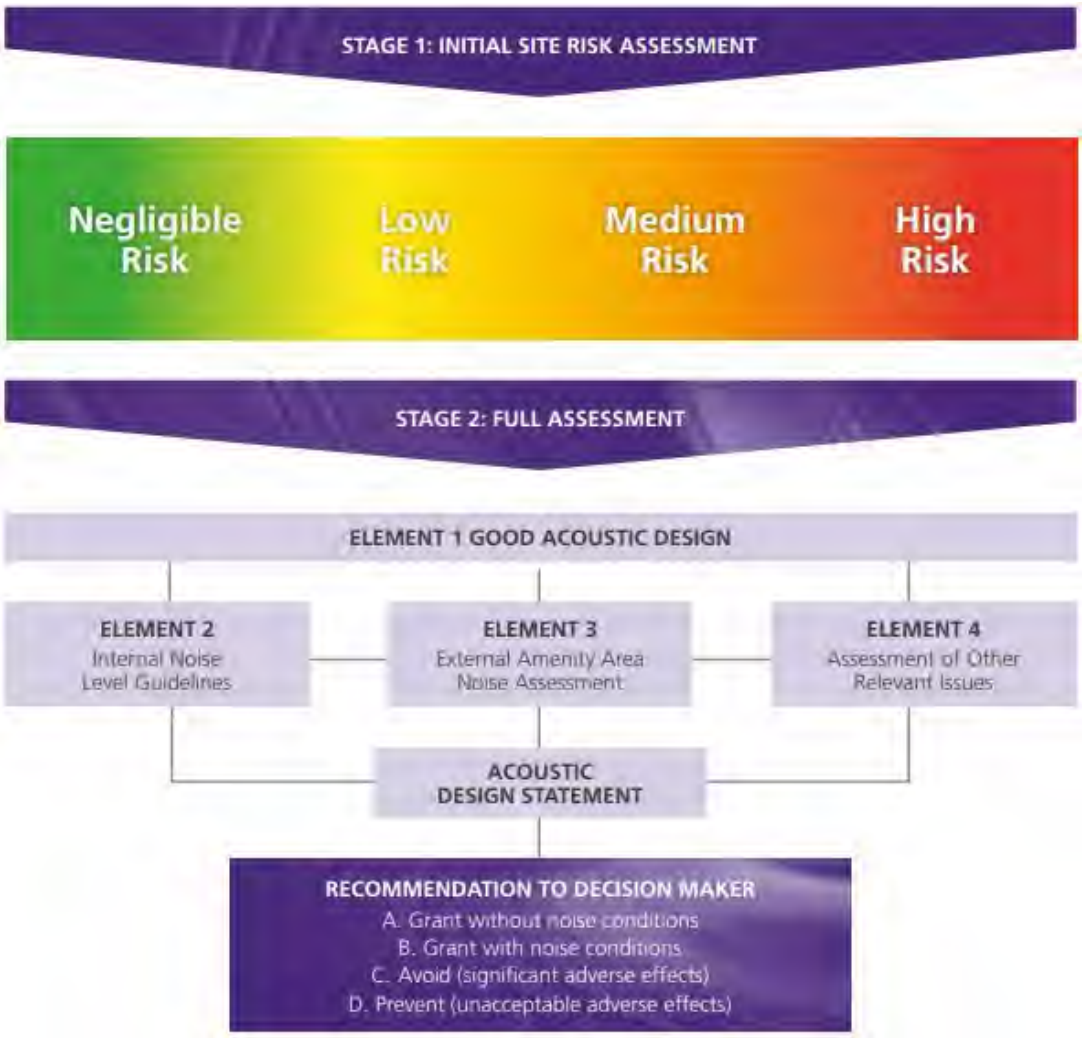
5. NOISE AFFECTING THE DEVELOPMENT

5.1 Specific guidance on the assessment of noise affecting new residential development is given in ProPG: Planning and Noise for New Residential Development, May 2017 (ProPG). The process within the ProPG guidance for the appraisal of noise levels affecting new residential development is considered to be current 'best practice' and has, therefore, been followed for the assessment. The assessment process can be summarised as follows:

- Stage 1 – measure noise levels at the site and carry out an initial noise risk assessment of the proposed development site based on the measured levels.
- Stage 2 – where a higher noise risk is identified, carry out a detailed assessment including the following four considerations:
    - Element 1 – the overall acoustic design and layout of the site
    - Element 2 – internal noise levels in habitable areas
    - Element 3 – noise levels in external amenity areas
    - Element 4 – consideration of other relevant issues
- Based on the results of the Stage 2 assessment, provide a recommendation to the decision maker on whether planning permission can and should be granted.

5.2 The process is shown visually in Figure 2 below

Figure 2 ProPG Assessment Process



5.3 It should be noted that the guidance in ProPG relates primarily to noise from transportation sources, i.e. road traffic, aircraft, rail etc. Any significant noise from other sources (e.g. industrial, commercial or entertainment sources) is outside the scope of the ProPG guidance and, therefore, requires separate consideration.

Stage 1 – Noise survey and initial assessment

5.4 A noise survey was carried out at the site from 2nd May to 10th May 2023 to assess existing noise levels in the area. The full methodology and results of the noise survey are provided in Appendix 2.

5.5 Average (LAeq) and maximum (LAmax) noise levels across the site were generally dictated by road traffic on Store Street and, to a lesser extent, Sparkle Street.

5.6 Background noise levels (LA90) across the site were dictated by constant road traffic noise from surrounding roads.

5.7 Areas of the development at the northern edge of the site will be subject to the highest noise levels due to road traffic on Store Street. The noise survey results show that noise levels at this position are as follows:

- Average noise levels during the daytime - 65 dB LAeq,0700-2300hrs;
- Average noise levels during the night-time - 62 dB LAeq,2300-0700hrs;
- Typical maximum noise levels during the night-time - 78 dB LAmax.

5.8 Based on the results of the site noise survey, a 3D computer noise model was developed to predict and assess the noise levels that will exist across the entire development.

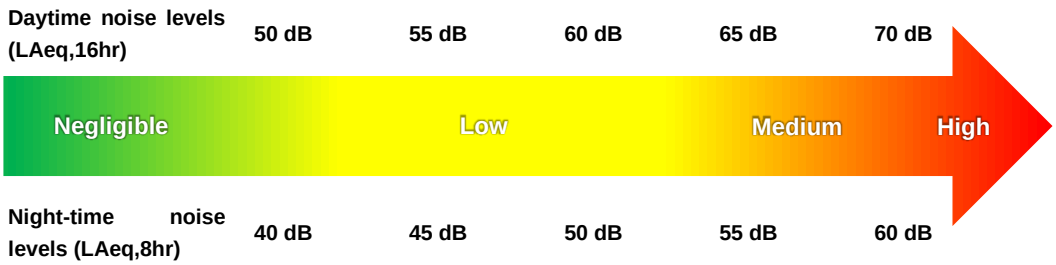
5.9 The 3D noise model was developed using Cadna/A v2023 environmental noise modelling software. Cadna/A incorporates the calculation methodology outlined in the Department of Transport Welsh Office - *Calculation of Road Traffic Noise* (CRTN) for the assessment of road traffic noise propagation and CRN for rail noise.

5.10 The layout of the development and surrounding area was input into the model. To calculate the spread of noise levels around the site, day-time average noise levels were input for the surrounding sources (e.g. Store Street, Sparkle Street, tram and railway) and calibrated to the results of the on-site noise measurements.

5.11 The methodology and results of the noise modelling are provided in Appendix 3. It can be seen from the modelling results that noise levels will be highest on facades of the development facing Store Street and lowest on south eastern facing facades overlooking existing residential.

5.12 The measured noise levels can be compared with Figure 3 below to assess the 'noise risk' of the site. Where the noise risk is high, significant acoustic design measures may be required to achieve acceptable noise levels in the development. Where the noise risk is low, acceptable noise levels may be achievable with no specific acoustic design measures.

Figure 3 Noise Risk Assessment (Adaption of Figure 1 from ProPG)



5.13 It can be seen from a comparison of the measured noise levels in paragraph 5.7 above with Figure 3 that the site is 'Medium' risk in relation to daytime noise levels and 'High' risk in relation to night-time noise levels. Therefore, ProPG requires that a more detailed 'Stage 2' assessment is carried out.

Stage 2 – Element 1 – Overall acoustic design of the site

5.14 The overall design of the development has been reviewed in relation to the measured noise levels at the site. In this case, improving the sound insulation of the facades would offer potential improvements to the acoustic design of the development.

5.15 The treatment of the facades with noise mitigation is an acceptable approach. It is in line with current planning guidance, where the efficient use of land and the need for housing is a priority. The detailed design of the facades is discussed further below.

Stage 2 – Element 2 - Internal noise levels

5.16 Appropriate design criteria for acceptable noise levels in acoustically sensitive areas of new developments are given in BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*'.

5.17 Relevant BS8233 design criteria are summarised in Table 1 below.

Table 1 BS8233:2014 Internal Noise Criteria

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB LAeq,16hour	-
Dining	Dining room/area	40 dB LAeq,16hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16hour	30 dB LAeq,8hour

5.18 It is also considered appropriate in this case to assess the potential impact of noise emissions from individual noise events on the bedrooms of the development during the night-time. This is in line with guidance given in BS8233:2014 and ProPG, which both point out that regular individual noise events during the night have the potential to cause sleep disturbance.

5.19 Appropriate design criteria for acceptable maximum noise levels in habitable rooms of new residential developments are given in the ProPG guidance, which states that "*In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB LAmax,F more than 10 times a night.*"

5.20 Therefore, the following acoustic design criteria have been adopted for the development:

- Average noise levels in living rooms and dining rooms during the day should not exceed 35 dB LAeq,0700-2300hrs and 40 dB LAeq,0700-2300hrs respectively;
- Average noise levels in bedrooms should not exceed 35 dB LAeq,0700-2300hrs during the day and 30 dB LAeq,2300-0700hrs during the night;
- Maximum noise levels should not regularly exceed 45 dB LAmax in bedrooms during the night.

5.21 Full construction details for the development have not been finalised as the project is at an early design stage. It has therefore been assumed that the external walls of the development will be

constructed using a standard masonry construction (e.g. 102mm brick, 100mm insulated cavity, 100mm concrete block) or a light-weight construction designed to achieve a similar level of sound insulation (this is technically achievable subject to detailed design). Consequently, internal noise levels would be dictated by external noise ingress via glazing and ventilators.

5.22 Background ventilation for the development will be provided by mechanical ventilation with heat recovery (MVHR) systems with no direct penetrations in the facade for ventilation into habitable rooms.

5.23 Calculations were carried out using facade modelling software in accordance with the methodology given in BS8233:2014 to calculate the sound insulation performance required of the glazing and ventilation to achieve the nominated internal noise criteria in the 'worst-case' habitable rooms of the development (i.e. the habitable rooms that will be subject to the highest external noise levels).

5.24 If acceptable internal noise levels can be achieved in 'worst case' habitable rooms then it follows that acceptable internal noise levels can be achieved in all other habitable rooms of the development using similar glazing and ventilator types.

5.25 The calculations were carried out based on the dimensions/details for facade elements taken from project drawings.

5.26 The results of the calculations are shown in Appendix 4 and are summarised in Table 2 below.

Table 2 Acoustic Requirements for 'Worst Case' Habitable Rooms

	Bedrooms		Living rooms/Dining rooms	
Reference	**Glazing Performance Requirements (inc. Frames)**	**Ventilator Performance Requirements (in Open Position)**	**Glazing Performance Requirements (inc. Frames)**	**Ventilator Performance Requirements (in Open Position)**
FS01	36 dB Rw+Ctr	MVHR	30 dB Rw+Ctr	MVHR
FS02	30 dB Rw+Ctr		27 dB Rw+Ctr	
FS03	27 dB Rw+Ctr		27 dB Rw+Ctr	

Note The requirements given are approximate only and should be confirmed at the detailed design stage when full design details are available.

5.27 The required sound insulation performance values in Table 2 could typically be achieved by the glazing types shown in Table 3.

Table 3 Typical Glazing Acoustic Performances

Glazing (in Good Quality Sealed Frames)	Typical Weighted Sound Reduction (Rw + Ctr)
4/16/4mm standard thermal double glazing	27

6/16/6.4mm thermal double glazing	30
10mm/16/8.8mm acoustically upgraded thermal double glazing	36

Note The acoustic performance of the glazing systems (including frames) should always be confirmed with the manufacturer before selection for installation on site

5.28 Based on the results of the calculations summarised in Table 2 and the measured noise levels at the site (considering both the day and night-time average and maximum noise levels), an outline specification has been developed showing the sound insulation performance requirements for all facades of the development. The outline facade specification is shown in Appendix 5

5.29 It can be seen from the above that acceptable internal noise levels will be achievable in the development subject to the specification of suitable glazing and ventilation systems at the detailed design stage (which could be secured with a suitable planning condition). It is our view therefore that the proposed development is, in principle, acceptable with regards to the noise levels that will exist within the habitable rooms.

5.30 The above ProPG assessment for planning purposes is based on internal noise levels with windows closed (assumed to be "normal" circumstances). The ventilation strategy for the development is to allow for boosted mechanical ventilation to offset overheating, therefore windows would not need to be opened to offset overheating within the apartments.

Stage 2 – Element 3 – Noise levels in external amenity areas

5.31 BS8233 states that it is desirable that noise levels in external amenity areas of residential developments do not exceed 50 dB LAeq and that 55 dB LAeq,T should be regarded as an upper guideline value. However, BS8233 recognises that these guideline values will not always be achievable in city centres or urban areas adjoining main roads or other transport sources. In these cases, BS8233 states that the development should be designed to achieve the lowest practicable noise levels in the amenity spaces.

5.32 The noise survey results indicate that noise levels in external amenity areas (terraces on the first floor and shared gardens on the 10th floor) are predicted to achieve the BS8233 recommended levels. The proposed development is therefore also considered to be acceptable based on noise levels in external amenity areas.

Stage 2 – Element 4 – Other relevant issues

5.33 In our view the design and acoustic approach outlined above is in line with both local and national noise policy. It is common for residential properties to be situated near to busy roads and railway lines and this is an acceptable scenario provided that the properties are acoustically upgraded where necessary to achieve acceptable noise levels in habitable areas.

Recommendation to decision maker

5.34 It is our view that planning permission should be granted in relation to noise affecting habitable areas of the development subject to the imposition of suitable planning conditions to ensure that acceptable noise levels are achieved in the finished development.

6. GROUND-BORNE VIBRATION AFFECTING THE DEVELOPMENT

6.1 The vibration levels that will exist within the habitable areas of the finished development have been assessed based on the existing ground-borne vibration levels at the site.

Design criteria – Ground-borne vibration and noise

6.2 Appropriate criteria for ground-borne vibration affecting residential dwellings are given in BS 6472-1:2008 *'Guide to evaluation of human exposure to vibration in buildings - Part 1: Vibration sources other than blasting'*. The criteria in BS6472-1 are provided as Vibration Dose Values, as summarised in Table 4.

Table 4 BS6472-1:2008 Vibration Criteria

Place	Low Probability of Adverse Comment (VDV) $m \cdot s^{-1.75}$ 1)	Adverse Comment Possible (VDV) $m \cdot s^{-1.75}$	Adverse Comment Probable (VDV) $m \cdot s^{-1.75}$ 2)
Residential buildings 16 h day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Residential buildings 8 h night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

6.3 It is also important to assess reradiated noise levels within the habitable rooms of the finished resulting from ground-borne vibration (referred to as 'ground-borne noise' for the remainder of this report). There is currently no official Government or national guidance for assessing ground-borne noise levels affecting residential developments. As a result, criteria based on guidelines published by the American Public Transit Association (APTA) are widely used in the UK. These criteria are reproduced in Table 5.

Table 5 APTA Guidelines for Ground-Borne Noise Inside Residential Dwellings

Community Area	Maximum A-weighted sound pressure level, dB LASmax	
	Single Family Dwelling	Multi-Family Dwelling
Low Density Residential	30	35
Average Density Residential	35	40
High Density Residential	35	40
Commercial	40	45
Industrial / Highway	40	45

6.4 Measured ground-borne vibration and noise levels at the site have been assessed against the criteria shown in Table 4 and Table 5.

Existing ground-borne vibration levels

6.5 Ground-borne vibration and noise measurements were carried out as part of the site survey. The methodology and results of the measurements are outlined in Appendix 2.

6.6 It is important to note that the nearby train line is elevated and positioned approximately 100m south of the site. The measurements shown in Appendix 2 are therefore more likely to be a result of heavy vehicle passes on the adjacent roads than train passes.

6.7 Tri-axial Vibration Dose Value (VDV) measurements were taken across the low-frequency range (1-80Hz) and logged at 10 second intervals for 30 minutes, to ensure an adequate quantity of train movements were recorded. Timetables indicate that up 47 trains arrived/departed the station during the survey period.

6.8 Using the measured VDV levels during the survey, the total day and night-time VDV levels have been calculated based on the total number of train passes that occur on the railway during the daytime and night-time. The extrapolated VDV levels are summarised below in Table 6:

Table 6 Vibration Data Summary (Vibration Dose Values)

Period	X Axis ($m \cdot s^{-1.75}$) Wd	Y Axis ($m \cdot s^{-1.75}$) Wd	Z Axis ($m \cdot s^{-1.75}$) Wb
Daytime (0700-2300)	0.005	0.004	0.013
Night-time (2300-0700)	0.004	0.004	0.011

6.9 Vibration levels were highest in the vertical z-axis (compared to the X and Y axes).

6.10 It can be seen from a comparison of Table 4 and Table 6 that vibration levels at the site fall well below the *"Low probability of adverse comment"* rating for both day- and night-time periods according to BS6472:1992.

6.11 The results of the BS6472 assessment are in line with subjective opinion formed during the survey that there are insignificant ground-borne vibration levels at the site.

6.12 It is subsequently reasonable to conclude that levels of vibration at the site are acceptable for the proposed development.

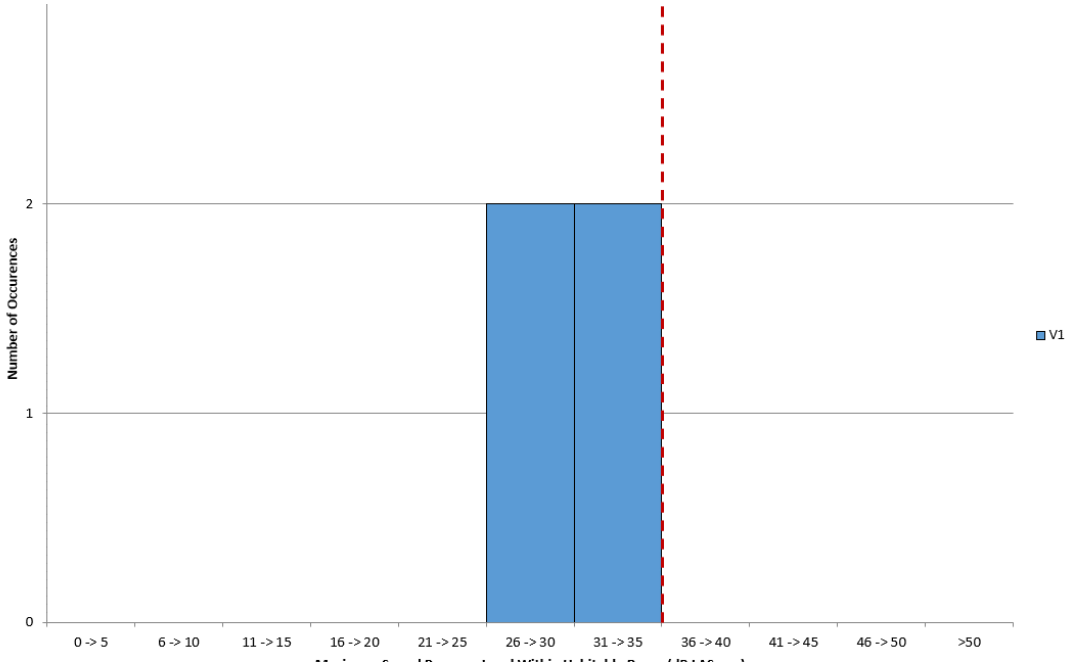
Existing ground-borne noise levels

6.13 Vibration measurements were also taken in the x, y and z-axis in 1/3 octave frequency bands in the audible range (20Hz-16Khz) in order to inform an assessment of ground-borne noise.

6.14 In the absence of any official local or national Governmental assessment guidance, the measured ground-borne noise levels were used to calculate the resultant LASmax noise levels in the 'worst case' habitable rooms of the development in accordance with the Association of Noise Consultants (ANC) Guidelines – *"Measurement & Assessment of Groundborne Noise & Vibration"*.

6.15 The ANC Guideline document gives correction values for factors affecting the propagation of structure-borne vibration within buildings such as attenuation with storey height. We have assessed at ground floor level therefore no corrections have been applied to the results which are summarised in Figure 4 below.

Figure 4 Predicted Ground-borne Noise Levels (LASmax)



6.16 It can be seen from Figure 4 above that the predicted levels are 25-35 dB LASmax and therefore compliant with APTA Guidelines for all categories under multi-family dwelling. As discussed in paragraph 6.6, these results are likely due to heavy vehicle passes rather than train passes and, in our view, the predicted levels are acceptable.

6.17 In summary, it can be seen from the above that the criterion for reradiated noise is predicted to be achieved in the 'worst-case' dwellings with no additional mitigation measures.

7. PLANT NOISE IMPACT ASSESSMENT

Design criteria – Mechanical plant noise

7.1 BS4142:2014+A1:2019 – *Methods for rating and assessing industrial and commercial sound* (hereafter BS4142) can be used to assess the impact of noise from external industrial and/or commercial noise sources on nearby sensitive receptors.

7.2 The BS4142 assessment methodology can be summarised as follows:

1. Measure the existing background noise levels (LA90,T dB) at the locations of nearby noise sensitive receptors during the quietest periods when the noise source(s) under investigation will operate;
2. Predict or measure the noise emissions (LAeq,T dB) from the noise source(s) under investigation at the location(s) of the nearby sensitive receptors, and add corrections for any distinguishable acoustic features (e.g. tones, whines, screeches, hisses etc);
3. Subtract the measured background noise levels (item 1 above) with the measured or predicted rating noise levels (item 2 above) at each sensitive receptor. BS4142 states that:

a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

NOTE Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

7.3 It is understood that Manchester City Council consider “background -5 dB” to be an appropriate criterion for noise emissions from new developments within their borough. These criteria have been adopted for the assessment of noise emissions from the development.

7.4 Background noise levels (LA90) at the site were measured as part of the site noise survey outlined in Appendix 2. The measured background noise levels have been used to develop limits for plant noise emissions from the new development at the positions of the surrounding residential properties in accordance with the BS4142 assessment methodology. The limits are shown in Table 7 below.

Table 7 BS4142 Noise Limits - Free-field Levels

Location	Period	
	Day-time/Evening (0700-2300hrs)	Night-time (2300-0700hrs)
Nearest noise sensitive receptor	49 dB LAr,Tr	37 dB LAr,Tr

Note 1 The above limits are 'rated' noise levels. Any mechanical plant noise emissions should have appropriate corrections for the character of the noise applied and still meet these limits.

Proposed mechanical plant design

7.5 Detailed design information is not yet available for external mechanical plant for the development, and therefore noise emissions from external mechanical plant cannot be accurately predicted at the positions of nearby residential properties at this stage.

7.6 The selection and design of external mechanical plant will be reviewed as project information becomes available to ensure that the project BS4142:2014 noise limits given in Table 7 are achieved.

7.7 Compliance with the limits could be secured through the imposition of a suitable planning condition if deemed necessary by the Local Planning Authority.

8. CONCLUSIONS

8.1 Cass Allen has been instructed by Foras (Sparkle Street) Ltd to assess the noise and vibration impact of a proposed new development at Sparkle Street in Manchester.

8.2 Noise affecting the development has been assessed in accordance with the ProPG guidance. The design of the development is considered to be acceptable subject to the adoption of acoustically upgraded glazing and ventilation. This can be investigated further at the detailed design stage.

8.3 Ground-borne noise and vibration levels at the site have been measured and are considered to be acceptable for the development.

8.4 Appropriate limits for noise from mechanical plant have been calculated based on measured noise levels at the site and guidance given in BS4142. This will be investigated further at the detailed design stage.

8.5 It is our view that the site is suitable for the development in terms of noise and vibration levels and that planning permission should be granted subject to the imposition of suitable planning conditions.

Appendix 1 Development Layout



Appendix 2 Survey Results

Survey Summary:

The survey comprised short-term operator attended noise and vibration measurements and longer-term unattended noise monitoring at the site. Noise levels at the site were generally dictated by road traffic on surrounding roads. Vibration levels at the site were very low.

Survey Period:

02/05/2023 to 10/05/2023

Survey Objectives:

- To identify noise and vibration sources that contribute to ambient noise levels at the site;
- To measure noise and vibration levels around the site over a typical day and night-time period.

Equipment Used:

Type	Manufacturer	Model	Serial Number
Sound level meter[1] (noise logger)	Rion	NL-32	01182950
Sound level meter[1] (noise logger)	Rion	NL-32	00903342
Calibrator	Rion	NC-74	34551703
Sound level meter[1]	Rion	NL-52	00965090
Accelerometer	Rion	PV-57A	50472
4 Channel Data Logger	Rion	DA-21	00360369
Accelerometer (attached to DA-20)	Rion	PV-57I	53045 (X axis)
Accelerometer (attached to DA-20)	Rion	PV-57I	53046 (Y axis)
Accelerometer (attached to DA-20)	Rion	PV-57I	53105 (Z axis)
Tri-Axial Vibration Meter	Rion	XV-2P	00380055
Tri-axial accelerometer	Rion	PV-83C	73649

Note 1: All sound level meters were calibrated before and after measurement periods and no significant drift in calibration was found to have occurred. The results of the measurements are therefore considered to be representative.

Weather Conditions:

The observed weather conditions were acceptable for acoustic measurement throughout the attended survey periods (low-medium wind speeds and no rain). Weather records for the area confirmed that weather conditions were also generally acceptable for acoustic measurement during the unattended monitoring.

Measurement Positions:

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1.5m above roof level, approx. 12m above ground. Free-field. Direct line of sight to railway station and tracks.
N2	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Store Street.
L1	Unattended noise logging position. 2m above ground level. Free-field. Direct line of sight to Store Street.
L2	Unattended noise logging position. 3m above ground level of Sparkle Street (site sits 2m below ground level of Sparkle Street). Free-field. Direct line of sight to Sparkle Street.
V1	Unattended ground-borne vibration monitoring position. The vibration measurements were taken on top of the existing concrete foundations.
V2	

Site Plan showing Measurement Positions:



Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmax, dB	LA90, dB	Observations
02/05/2023	N1	16:59	25 secs	58	61	57	Noise dictated by distant train arriving and announcements.
		17:00	5 mins	55	62	51	Noise dictated by distant trains arriving, leaving, idle engines in the station, announcements, tonal
		17:05		53	60	52	

Attended Noise Monitoring Results:

Date	Position	Time	Meas. Length	LAeq, dB	LAmax, dB	LA90, dB	Observations
		17:10		56	61	53	plant, breaks squeaking when train approaches the station. Female announcement quieter than male.
	N2	17:20		66	80	57	Noise dictated by road traffic on Store Street.
		17:25	9 secs	71	75	62	
		17:25	7 secs	71	74	68	
		17:25	12 secs	63	73	55	

Unattended Noise Monitoring Results:

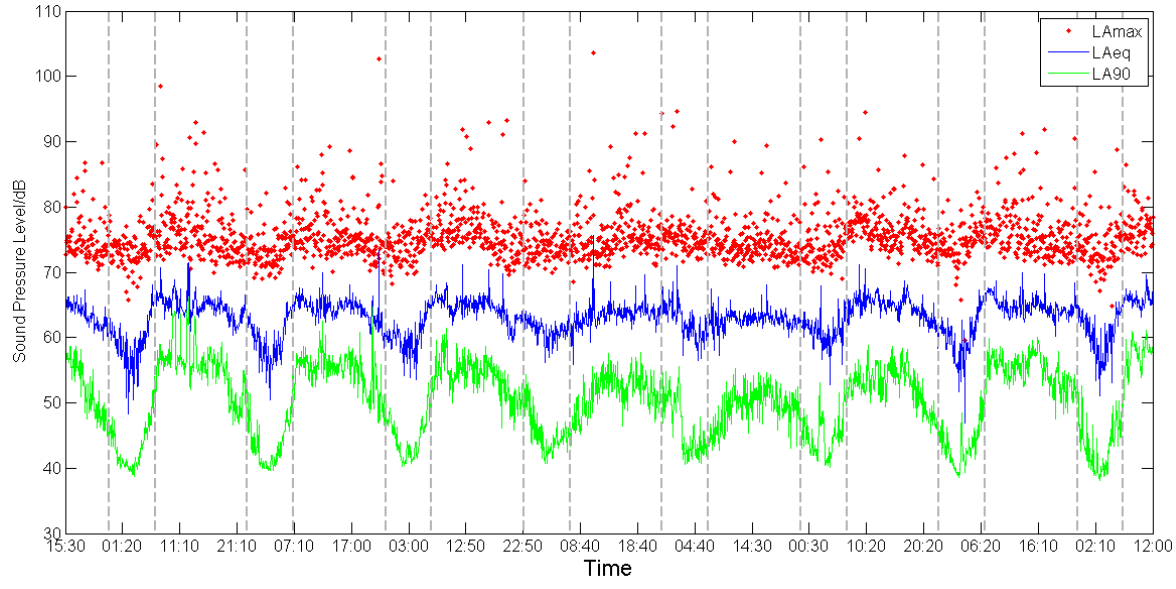
Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB[1]	LAeq,8hr, dB	LA90,5mins, dB[1]	LAmax, dB[2]
02/05/2023 to 10/05/2023	L1	65	54	62	42	78
02/05/2023 to 03/05/2023	L2	57	51	52	42	72

Note 1: Typical lowest measured during the period shown.

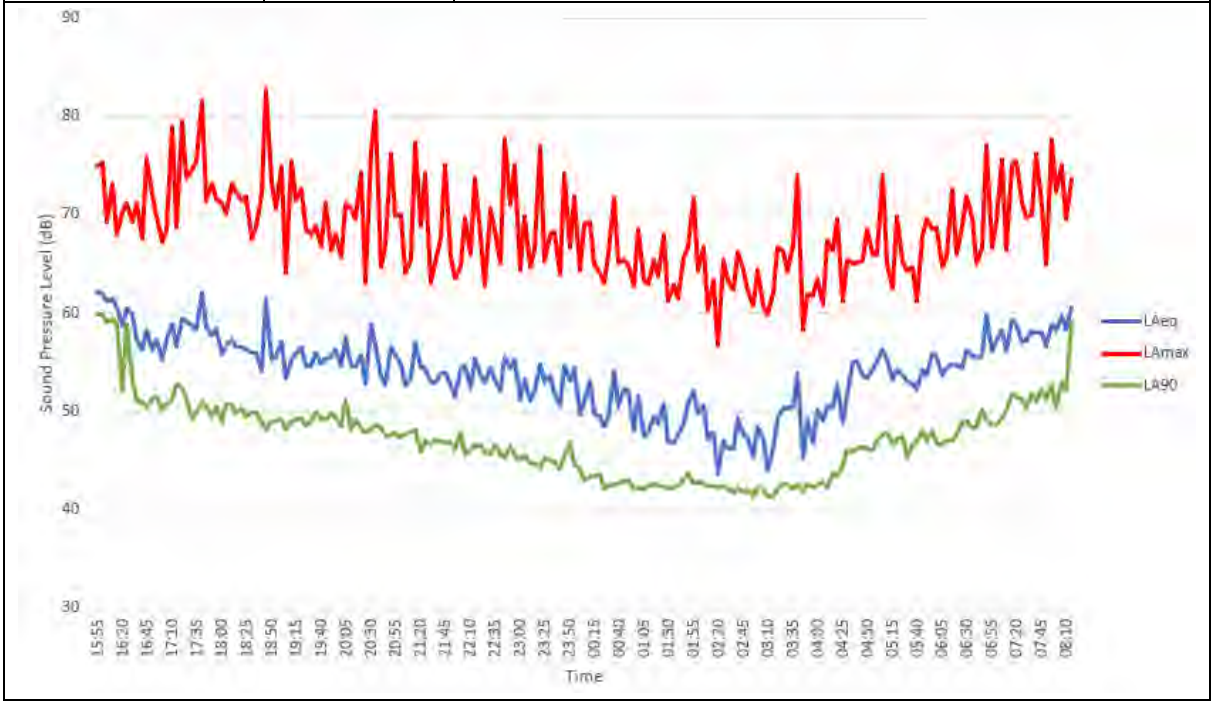
Note 2: Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).

Unattended Noise Monitoring Results:

Meas. Period	Position	Store Street
02/05/2023 to 10/05/2023	L1	



Meas. Period	Position	Sparkle Street
02/05/2023 to 03/05/2023	L2	



Unattended Ground-borne Vibration Monitoring Results:

Date	Position	Time	Meas. Length	X VDV	Y VDV	Z VDV
02/05/2023	V1	16:50:02	10 secs	0.00014	0.00017	0.00079
		16:50:12		0.00020	0.00023	0.00068
		16:50:22		0.00020	0.00022	0.00082
		16:50:32		0.00019	0.00024	0.00070
		16:50:42		0.00019	0.00020	0.00098
		16:50:52		0.00016	0.00016	0.00084
		16:51:02		0.00061	0.00068	0.00065
		16:51:12		0.00017	0.00015	0.00068
		16:51:22		0.00022	0.00020	0.00067
		16:51:32		0.00019	0.00018	0.00081
		16:51:42		0.00018	0.00021	0.00068
		16:51:52		0.00011	0.00012	0.00091
		16:52:02		0.00014	0.00016	0.00078
		16:52:12		0.00013	0.00012	0.00073
		16:52:22		0.00020	0.00017	0.00067
		16:52:32		0.00015	0.00018	0.00066
		16:52:42		0.00016	0.00015	0.00061
		16:52:52		0.00028	0.00028	0.00145

Date	Position	Time	Meas. Length	X VDV	Y VDV	Z VDV
		16:53:02		0.00023	0.00022	0.00109
		16:53:12		0.00015	0.00013	0.00073
		16:53:22		0.00018	0.00022	0.00056
		16:53:32		0.00012	0.00016	0.00073
		16:53:42		0.00015	0.00014	0.00077
		16:53:52		0.00036	0.00037	0.00068
		16:54:02		0.00047	0.00048	0.00087
		16:54:12		0.00018	0.00019	0.00082
		16:54:22		0.00019	0.00021	0.00070
		16:54:32		0.00024	0.00025	0.00074
		16:54:42		0.00028	0.00032	0.00074
		16:54:52		0.00020	0.00020	0.00065
		16:55:02		0.00019	0.00020	0.00074
		16:55:12		0.00015	0.00012	0.00050
		16:55:22		0.00015	0.00015	0.00068
		16:55:32		0.00020	0.00024	0.00068
		16:55:42		0.00020	0.00020	0.00077
		16:55:52		0.00019	0.00021	0.00076
		16:56:02		0.00023	0.00024	0.00094
		16:56:12		0.00020	0.00021	0.00068
		16:56:22		0.00020	0.00019	0.00054
		16:56:32		0.00017	0.00017	0.00063
		16:56:42		0.00018	0.00019	0.00058
		16:56:52		0.00019	0.00019	0.00048
		16:57:02		0.00037	0.00032	0.00058
		16:57:12		0.00018	0.00018	0.00063
		16:57:22		0.00017	0.00016	0.00044
		16:57:32		0.00016	0.00013	0.00073
		16:57:42		0.00015	0.00014	0.00056
		16:57:52		0.00017	0.00015	0.00063
		16:58:02		0.00014	0.00014	0.00067
		16:58:12		0.00015	0.00015	0.00086
		16:58:22		0.00017	0.00022	0.00079
		16:58:32		0.00021	0.00022	0.00101
		16:58:42		0.00020	0.00021	0.00086
		16:58:52		0.00047	0.00041	0.00075

Date	Position	Time	Meas. Length	X VDV	Y VDV	Z VDV
		16:59:02		0.00033	0.00032	0.00114
		16:59:12		0.00024	0.00023	0.00150
		16:59:22		0.00027	0.00027	0.00102
		16:59:32		0.00014	0.00021	0.00129
		16:59:42		0.00024	0.00025	0.00066
		16:59:52		0.00023	0.00023	0.00067
		17:00:02		0.00026	0.00026	0.00058
		17:00:12		0.00010	0.00011	0.00058
		17:00:22		0.00019	0.00018	0.00082
		17:00:32		0.00011	0.00010	0.00066
		17:00:42		0.00017	0.00014	0.00057
		17:00:52		0.00016	0.00015	0.00049
		17:01:02		0.00026	0.00026	0.00062
		17:01:12		0.00019	0.00016	0.00126
		17:01:22		0.00022	0.00019	0.00083
		17:01:32		0.00019	0.00020	0.00094
		17:01:42		0.00017	0.00017	0.00082
		17:01:52		0.00022	0.00021	0.00084
		17:02:02		0.00028	0.00027	0.00126
		17:02:12		0.00016	0.00018	0.00172
		17:02:22		0.00020	0.00019	0.00066
		17:02:32		0.00016	0.00022	0.00042
		17:02:42		0.00011	0.00012	0.00040
		17:02:52		0.00020	0.00018	0.00055
		17:03:02		0.00012	0.00015	0.00087
		17:03:12		0.00027	0.00026	0.00081
		17:03:22		0.00019	0.00022	0.00097
		17:03:32		0.00017	0.00020	0.00093
		17:03:42		0.00065	0.00062	0.00078
		17:03:52		0.00020	0.00019	0.00057
		17:04:02		0.00022	0.00017	0.00081
		17:04:12		0.00021	0.00022	0.00088
		17:04:22		0.00019	0.00021	0.00079
		17:04:32		0.00021	0.00023	0.00066
		17:04:42		0.00022	0.00018	0.00072
		17:04:52		0.00014	0.00011	0.00043

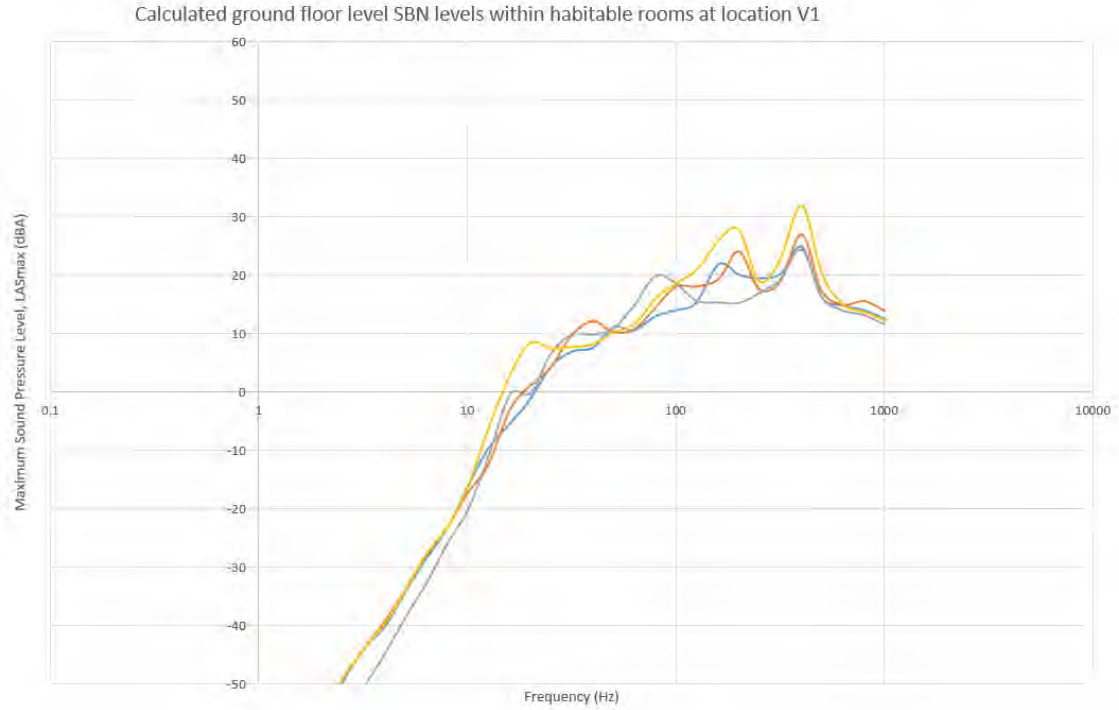
Date	Position	Time	Meas. Length	X VDV	Y VDV	Z VDV
		17:05:02		0.00016	0.00017	0.00066
		17:05:12		0.00019	0.00022	0.00072
		17:05:22		0.00027	0.00027	0.00069
		17:05:32		0.00022	0.00021	0.00056
		17:05:42		0.00019	0.00017	0.00057
		17:05:52		0.00021	0.00023	0.00068
		17:06:02		0.00018	0.00020	0.00065
		17:06:12		0.00030	0.00029	0.00063
		17:06:22		0.00042	0.00045	0.00080
		17:06:32		0.00021	0.00020	0.00115
		17:06:42		0.00020	0.00024	0.00085
		17:06:52		0.00021	0.00025	0.00057
		17:07:02		0.00021	0.00024	0.00095
		17:07:12		0.00018	0.00024	0.00087
		17:07:22		0.00086	0.00085	0.00083
		17:07:32		0.00018	0.00021	0.00111
		17:07:42		0.00020	0.00018	0.00149
		17:07:52		0.00016	0.00018	0.00122
		17:08:02		0.00019	0.00018	0.00116
		17:08:12		0.00017	0.00018	0.00118
		17:08:22		0.00021	0.00024	0.00122
		17:08:32		0.00059	0.00054	0.00077
		17:08:42		0.00054	0.00057	0.00054
		17:08:52		0.00013	0.00010	0.00066
		17:09:02		0.00010	0.00010	0.00074
		17:09:12		0.00020	0.00021	0.00136
		17:09:22		0.00022	0.00020	0.00083
		17:09:32		0.00020	0.00020	0.00076
		17:09:42		0.00015	0.00013	0.00092
		17:09:52		0.00021	0.00021	0.00102
		17:10:02		0.00018	0.00021	0.00069
		17:10:12		0.00031	0.00031	0.00068
		17:10:22		0.00066	0.00063	0.00101
		17:10:32		0.00020	0.00021	0.00080
		17:10:42		0.00021	0.00019	0.00089
		17:10:52		0.00016	0.00019	0.00069

Date	Position	Time	Meas. Length	X VDV	Y VDV	Z VDV
		17:11:02		0.00011	0.00013	0.00080
		17:11:12		0.00014	0.00018	0.00080
		17:11:22		0.00018	0.00018	0.00070
		17:11:32		0.00028	0.00028	0.00091
		17:11:42		0.00020	0.00018	0.00088
		17:11:52		0.00017	0.00021	0.00074
		17:12:02		0.00015	0.00017	0.00073
		17:12:12		0.00021	0.00018	0.00069
		17:12:22		0.00019	0.00017	0.00070
		17:12:32		0.00018	0.00020	0.00248
		17:12:42		0.00015	0.00016	0.00059
		17:12:52		0.00025	0.00023	0.00076
		17:13:02		0.00020	0.00020	0.00060
		17:13:12		0.00011	0.00012	0.00082
		17:13:22		0.00019	0.00023	0.00221
		17:13:32		0.00016	0.00016	0.00088
		17:13:42		0.00010	0.00012	0.00067
		17:13:52		0.00013	0.00015	0.00066
		17:14:02		0.00012	0.00013	0.00072
		17:14:12		0.00018	0.00021	0.00066
		17:14:22		0.00019	0.00016	0.00056
		17:14:32		0.00018	0.00018	0.00049
		17:14:42		0.00053	0.00054	0.00054
		17:14:52		0.00020	0.00021	0.00112
		17:15:02		0.00018	0.00016	0.00068
		17:15:12		0.00020	0.00018	0.00073
		17:15:22		0.00018	0.00018	0.00065
		17:15:32		0.00018	0.00016	0.00060
		17:15:42		0.00023	0.00022	0.00068
		17:15:52		0.00022	0.00022	0.00069
		17:16:02		0.00012	0.00012	0.00074
		17:16:12		0.00017	0.00017	0.00118
		17:16:22		0.00024	0.00023	0.00092
		17:16:32		0.00021	0.00018	0.00088
		17:16:42		0.00020	0.00021	0.00059
		17:16:52		0.00022	0.00021	0.00100

Date	Position	Time	Meas. Length	X VDV	Y VDV	Z VDV
		17:17:02		0.00021	0.00023	0.00105
		17:17:12		0.00025	0.00024	0.00141
		17:17:22		0.00023	0.00023	0.00059
		17:17:32		0.00018	0.00021	0.00044
		17:17:42		0.00021	0.00022	0.00051
		17:17:52		0.00023	0.00024	0.00077
		17:18:02		0.00021	0.00025	0.00094
		17:18:12		0.00022	0.00021	0.00066
		17:18:22		0.00022	0.00023	0.00087
		17:18:32		0.00045	0.00045	0.00092
		17:18:42		0.00067	0.00070	0.00100
		17:18:52		0.00030	0.00032	0.00074
		17:19:02		0.00018	0.00020	0.00082
		17:19:12		0.00027	0.00025	0.00109
		17:19:22		0.00022	0.00020	0.00092
		17:19:32		0.00053	0.00051	0.00082
		17:19:42		0.00045	0.00042	0.00087
		17:19:52		0.00055	0.00059	0.00072

Note 1: Vibration measurements were taken across the low-frequency range (1-80Hz)

Attended Ground-borne Noise Calculation Results:



Appendix 3 Modelling Results

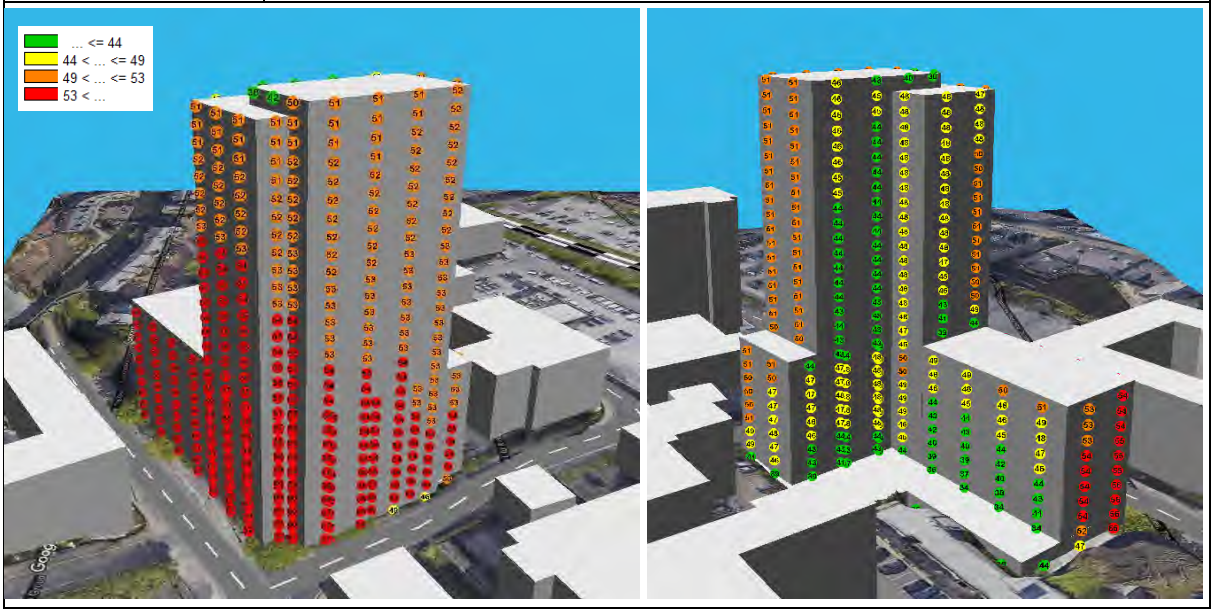
Modelling Software:	CADNA/A Version 2023
Modelled Scenarios:	• Day and night-time average noise levels across the site • Night-time maximum noise levels across the site
Data inputs:	• Noise survey results • Topographical data for the site • Development layout
Calculation Algorithms Used:	• Calculation of Road Traffic Noise 1988 – Department of Transport • ISO 9613-1:1993 Acoustics-Attenuation of sound during propagation outdoors – Part 1: Calculation of the absorption of sound by the atmosphere • ISO 9613-2:1996 Acoustics-Attenuation of sound during propagation outdoors – Part 2: General method of calculation

Modelling Printout:

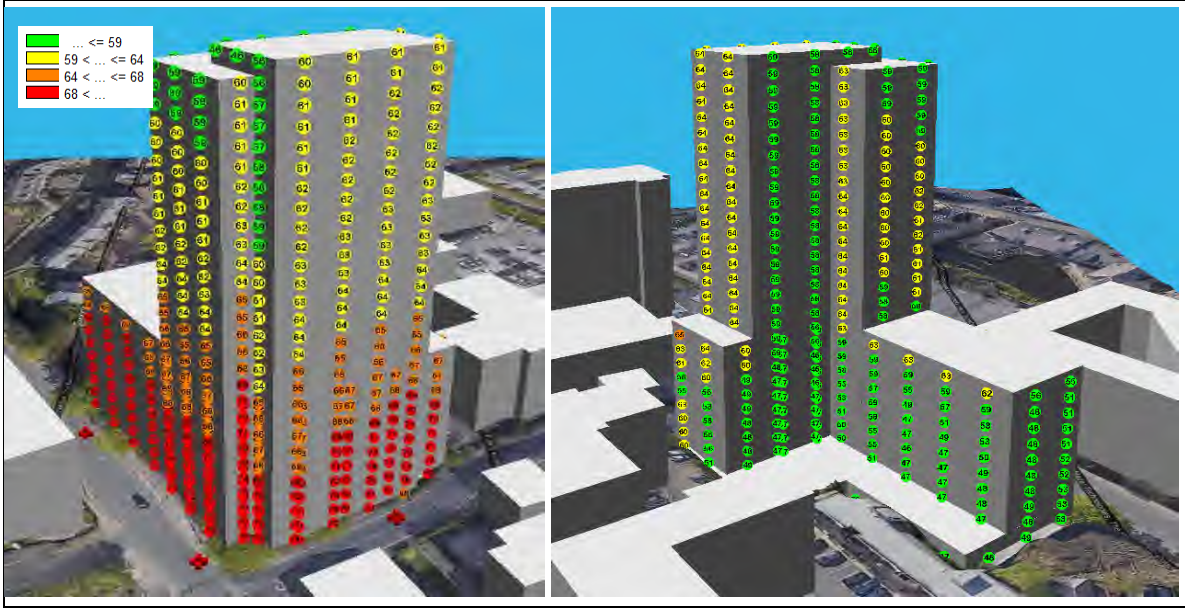
Scenario	Daytime average noise levels (LAeq,16hr) at 1.5m above ground level



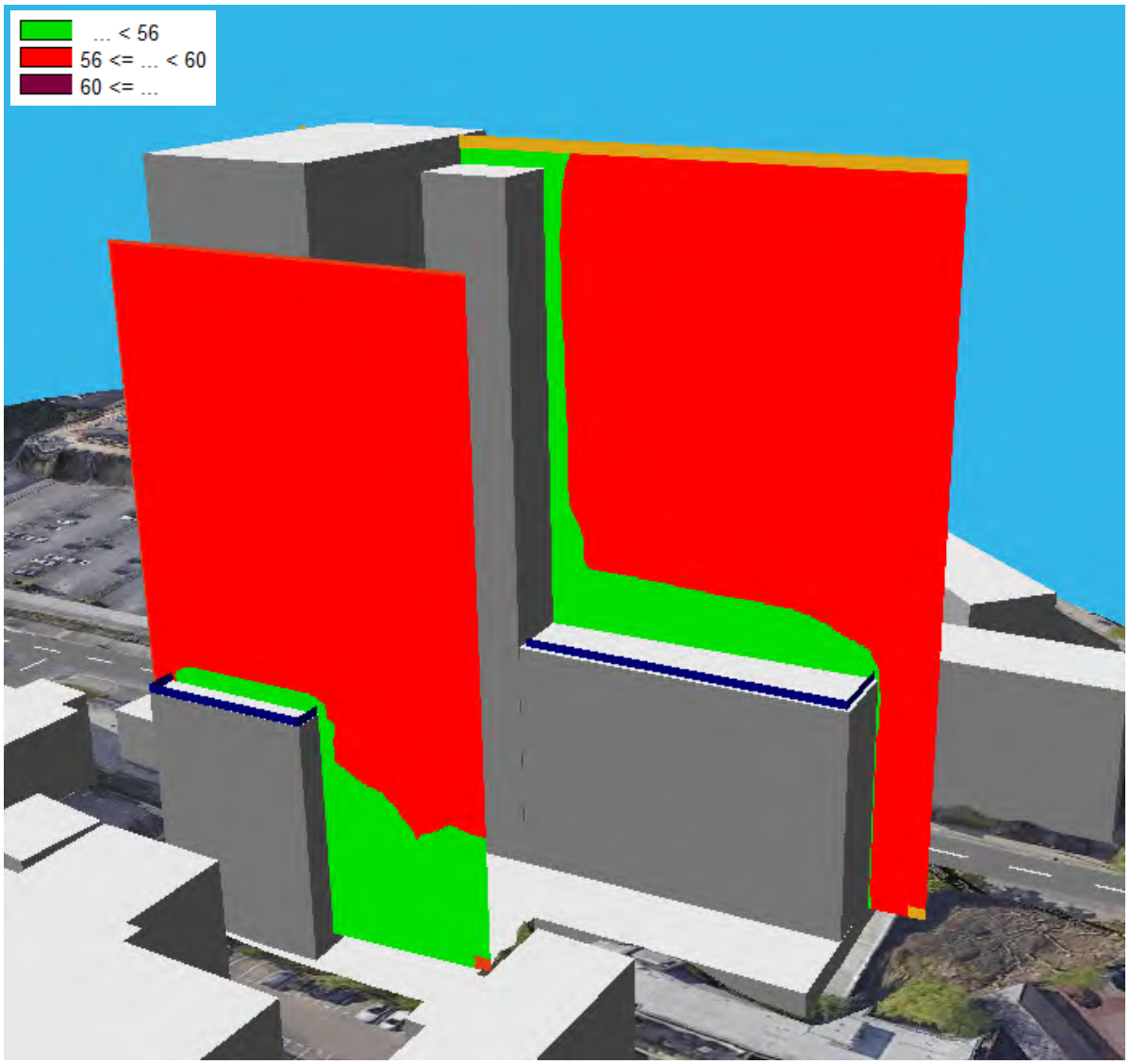
Scenario	Night-time average noise levels (LAeq,8hr) at 1.5m above ground level



Scenario	Night-time maximum noise levels (LAmax) at 1.5m above ground level



Scenario	Daytime average noise levels (LAeq,16hr) in external amenity areas



Appendix 4 Facade Calculations

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FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	3.0	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (overlooking Sparkle Street)						
RUN REF:	23244						
VARIANT:	Daytime Average Noise Levels (LAeq,16hr)						

Room Volume =	21.1	m3	
Partition Area =	7.0	m2	
Ventilation ref area =	10.0	m2	
Free Field SPL K =	3	dB	

SELECT Free Field or Façade SPL for model input >>>

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	60.0								
		41.8	45.9	49.4	52.8	56.0	53.2	48.0	**Reference spectrum**

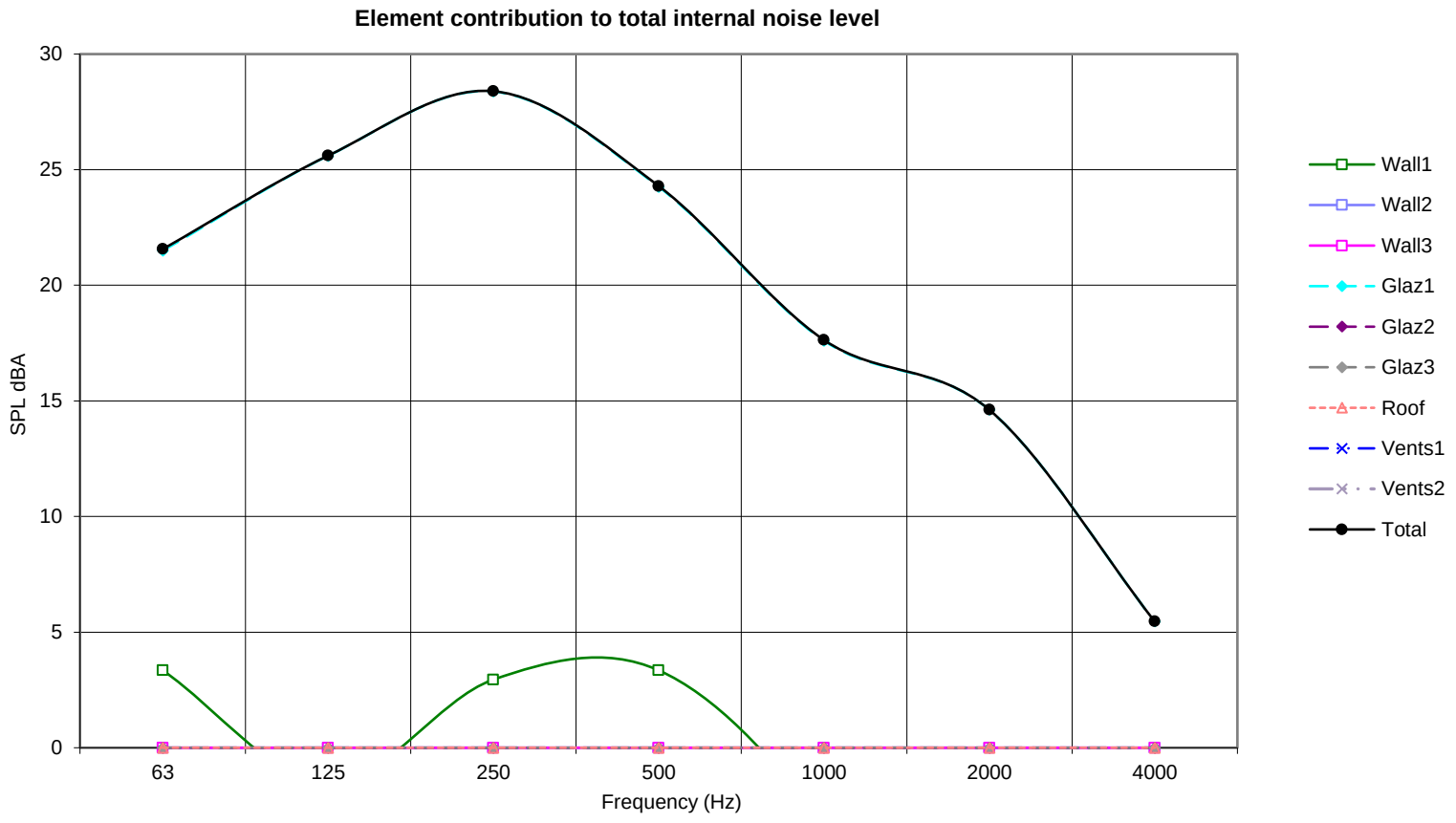
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	1.9	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	30 dB Rw + Ctr - Acoustically Upgraded Double Glazing	5.1	22	22	23	30	40	40	44	99%	30 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		23	23	24	32	42	42	46				
	Resultant SPL inside room excluding ventilators dB	31.9	22	26	28	24	18	15	5	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**31.9**	22	26	28	24	18	15	5



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	3.0	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (overlooking Sparkle Street)						
RUN REF:	23244						
VARIANT:	Night-time Average Noise Levels (LAeq,8hr)						

Room Volume =	21.1	m3		
Partition Area =	7.0	m2		
Ventilation ref area =	10.0	m2		
Free Field SPL K =	3	dB		

SELECT Free Field or Façade SPL for model input >>>

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	57.0								
		38.8	42.9	46.4	49.8	53.0	50.2	45.0	**Reference spectrum**

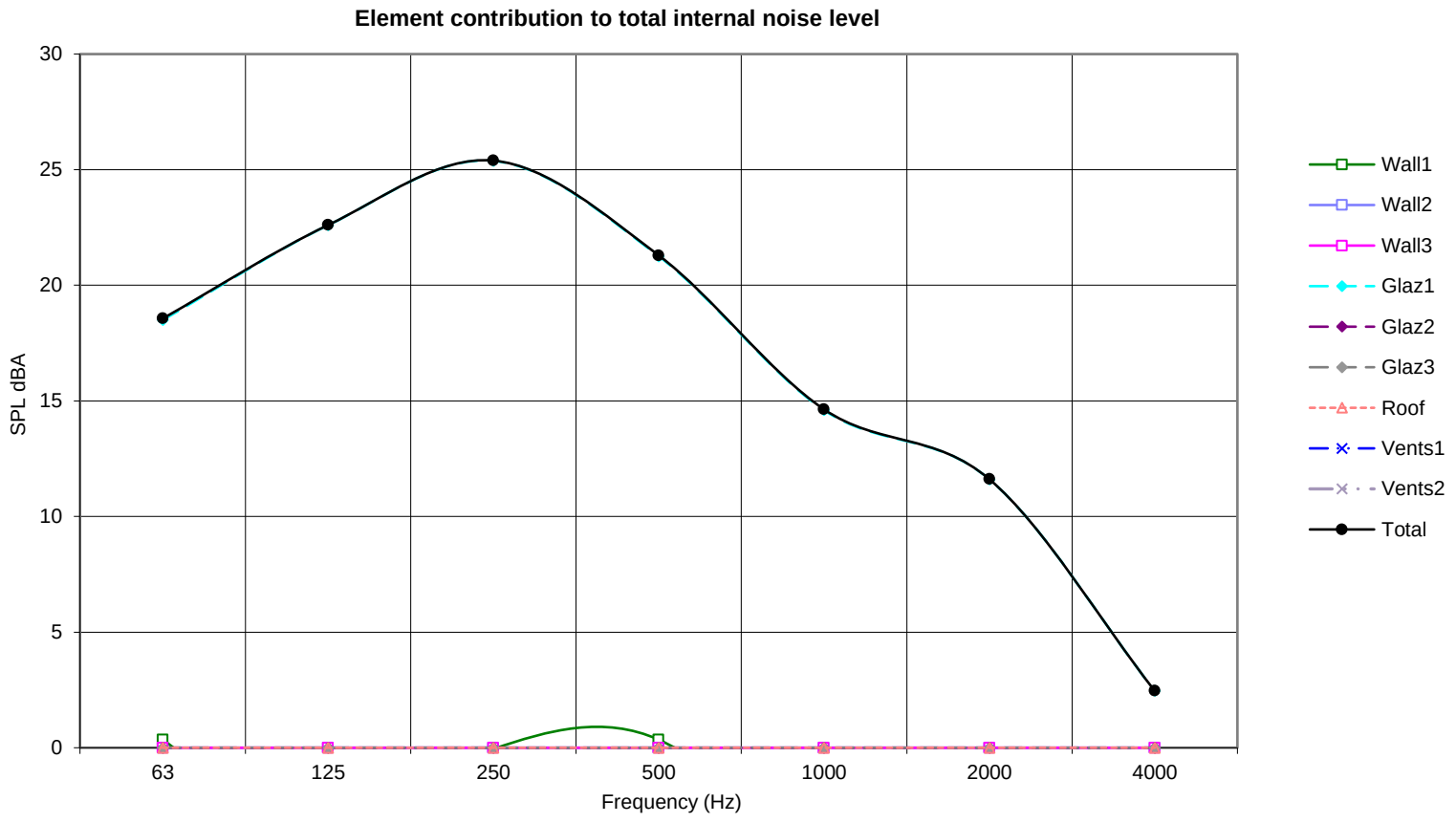
REVERBERATION TIME

DIRECT INPUT ----->								**No data**
EQUAL RT for all bands ----->								
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	1.9	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	30 dB Rw + Ctr - Acoustically Upgraded Double Glazing	5.1	22	22	23	30	40	40	44	99%	30 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Resultant composite Façade SRI			23	23	24	32	42	42	46				
Resultant SPL inside room excluding ventilators dB		28.9	19	23	25	21	15	12	2	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Resultant SPL inside room through ventilators dB		-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**28.9**	19	23	25	21	15	12	2



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	3.0	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (overlooking Sparkle Street)				Room Volume =	21.1	m3
RUN REF:	23244				Partition Area =	7.0	m2
VARIANT:	Night-time Maximum Noise Levels (LAmax)				Ventilation ref area =	10.0	m2
		SELECT Free Field or Façade SPL for model input >>>			Free Field SPL K =	3	dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	70.0	56.0	55.1	58.2	63.1	65.5	63.3	58.9	
Road traffic spectrum (according to BS 8233:1999 section 6)									
		56.0	55.1	58.2	63.1	65.5	63.3	58.9	**Direct input**

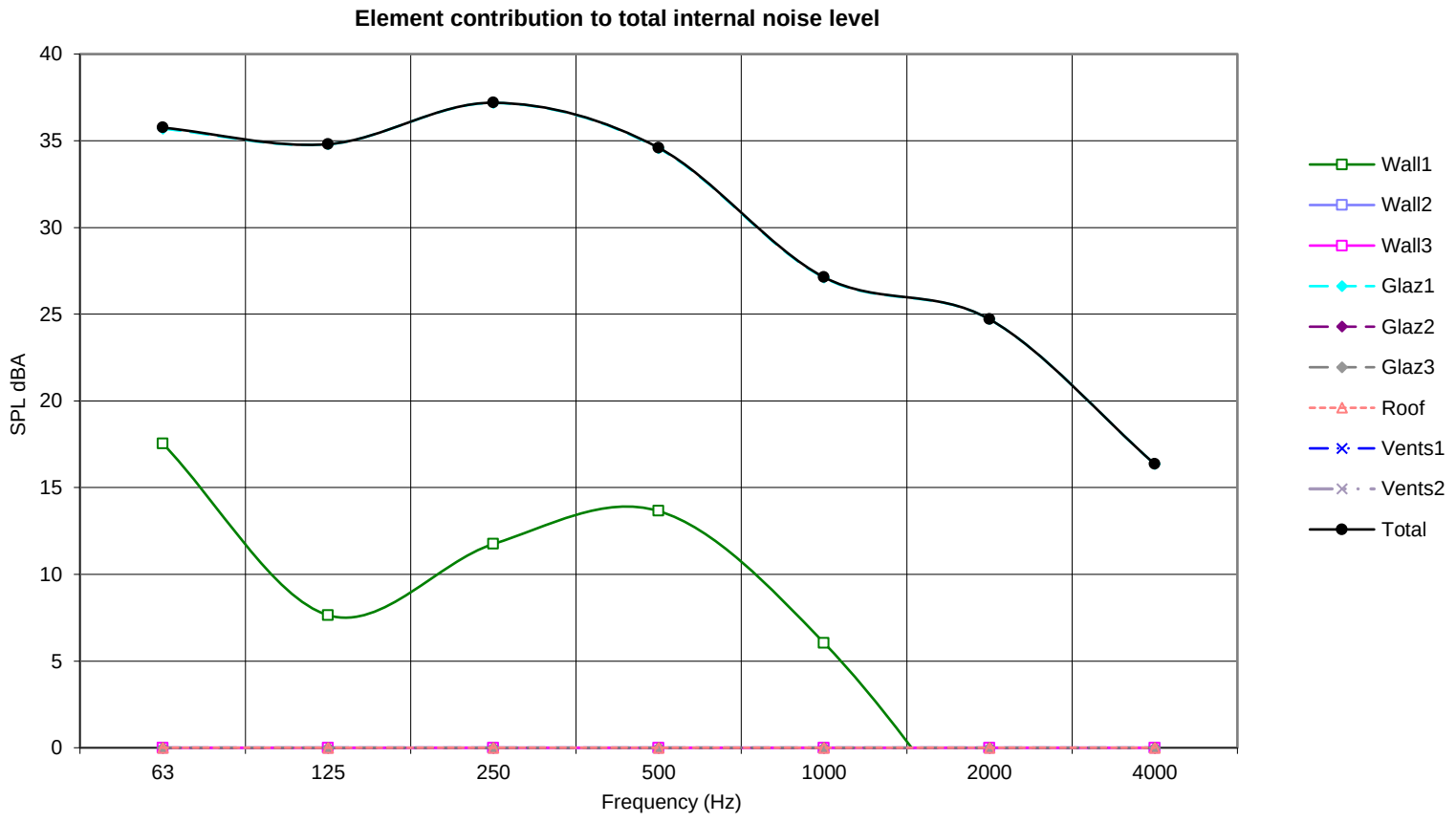
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**	

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	1.9	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	30 dB Rw + Ctr - Acoustically Upgraded Double Glazing	5.1	22	22	23	30	40	40	44	99%	30 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		23	23	24	32	42	42	46				
	Resultant SPL inside room excluding ventilators dB	42.0	36	35	37	35	27	25	16	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**42.0**	36	35	37	35	27	25	16



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	4.8	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (3 windows, overlooking Store Street)						
RUN REF:	23244						
VARIANT:	Daytime Average Noise Levels (LAeq,16hr)						

Room Volume =	33.7	m3		
Partition Area =	15.9	m2		
Ventilation ref area =	10.0	m2		
SELECT Free Field or Façade SPL for model input >>>	Free Field SPL K =	3	dB	

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	65.0								
		46.8	50.9	54.4	57.8	61.0	58.2	53.0	**Reference spectrum**

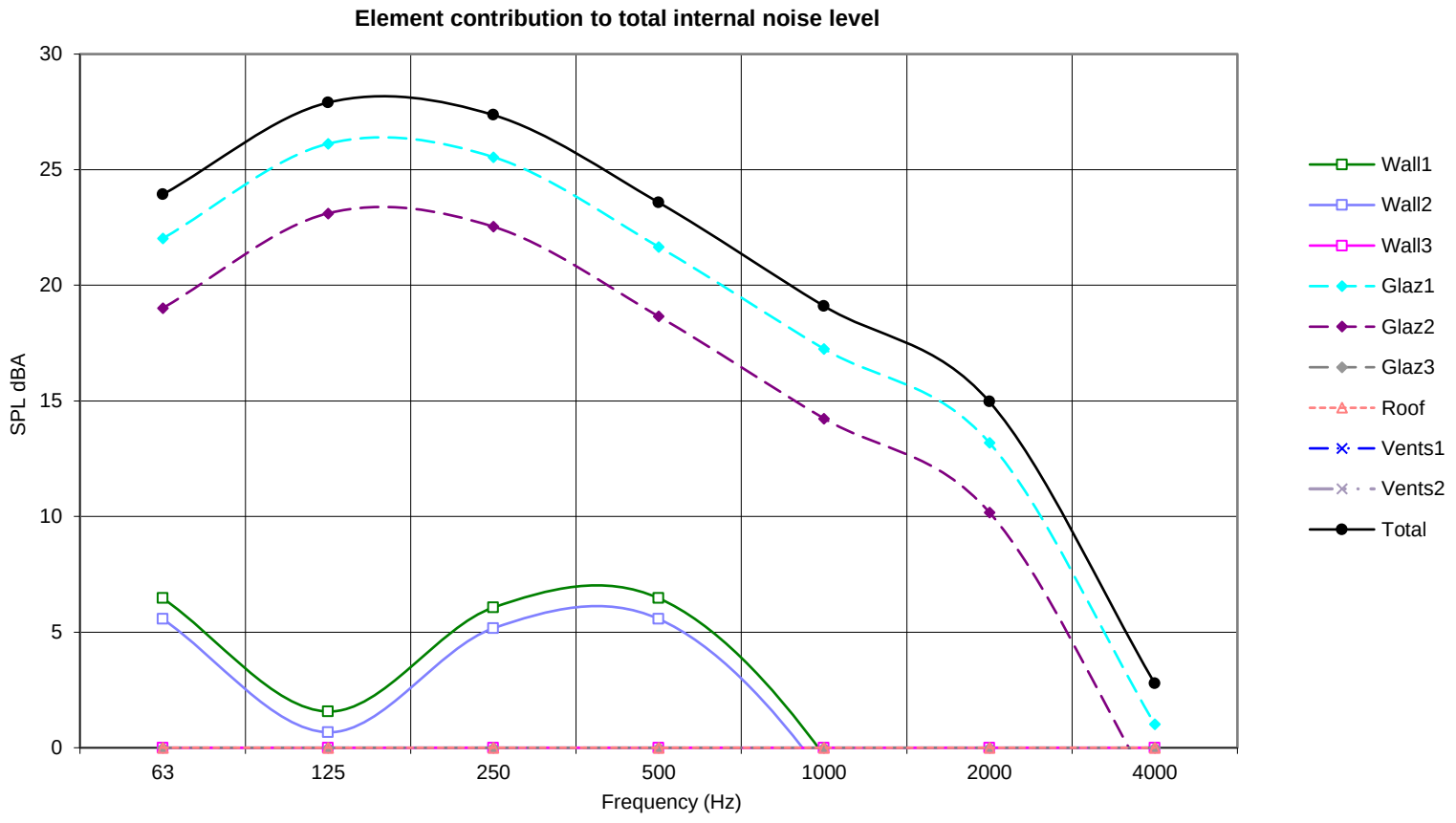
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	2.0	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 2	Typical - 102mm brick/50mm cavity/100mm block	1.6	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	8.2	27	27	31	38	46	47	54	65%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	4.1	27	27	31	38	46	47	54	33%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		28	28	32	39	47	48	55				
	Resultant SPL inside room excluding ventilators dB	32.4	24	28	27	24	19	15	3	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**32.4**	24	28	27	24	19	15	3



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	4.8	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (3 windows, overlooking Store Street)						
RUN REF:	23244						
VARIANT:	Night-time Average Noise Levels (LAeq,8hr)						

Room Volume =	33.7	m3	
Partition Area =	15.9	m2	
Ventilation ref area =	10.0	m2	
Free Field SPL K =	3	dB	

SELECT Free Field or Façade SPL for model input >>>

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	62.0								
		43.8	47.9	51.4	54.8	58.0	55.2	50.0	**Reference spectrum**

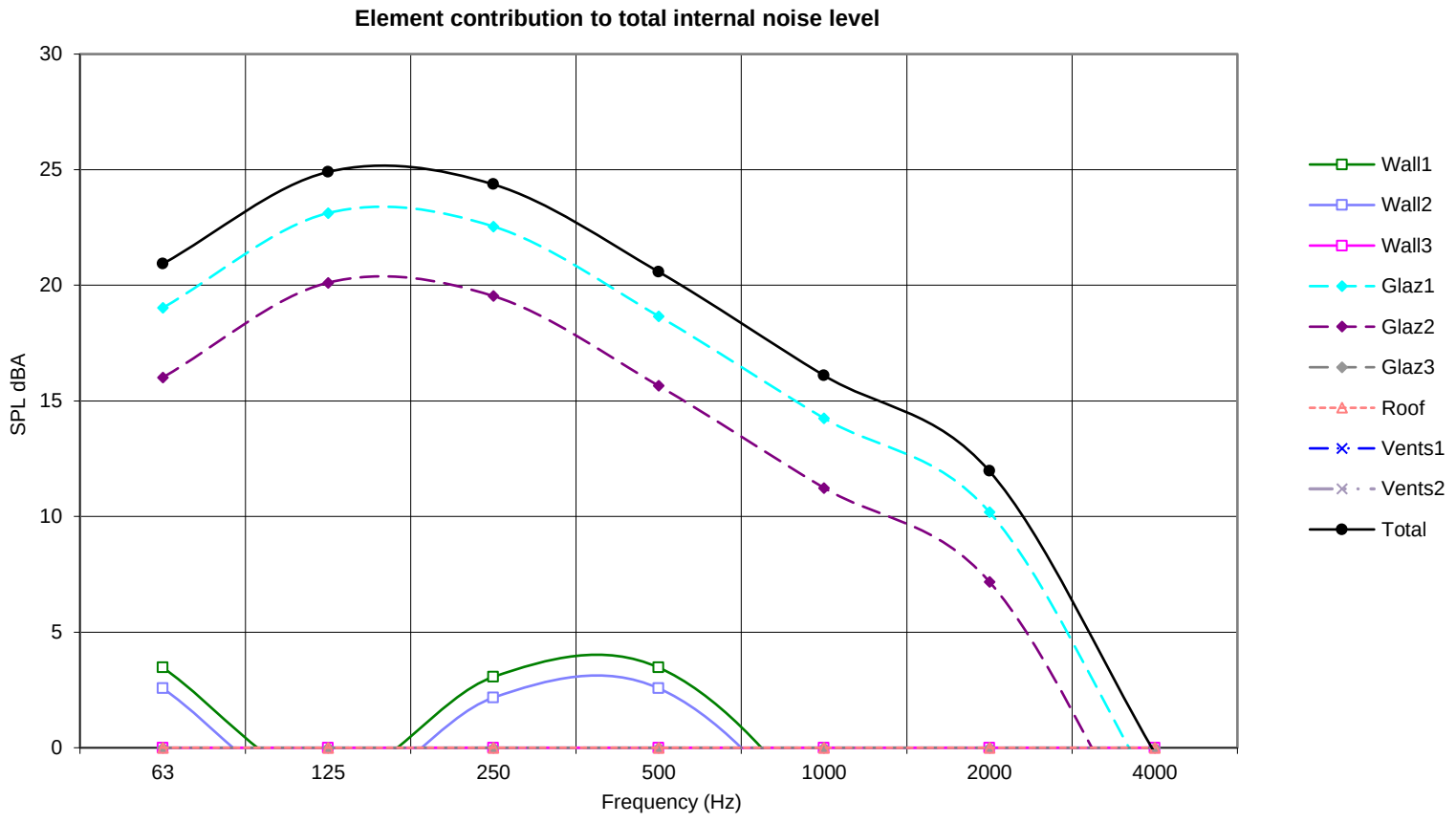
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5		**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	2.0	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 2	Typical - 102mm brick/50mm cavity/100mm block	1.6	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	8.2	27	27	31	38	46	47	54	66%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	4.1	27	27	31	38	46	47	54	33%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		28	28	32	39	47	48	55				
	Resultant SPL inside room excluding ventilators dB	29.4	21	25	24	21	16	12	0	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**29.4**	21	25	24	21	16	12	0



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	4.8	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (3 windows, overlooking Store Street)						
RUN REF:	23244						
VARIANT:	Night-time Maximum Noise Levels (LAmax)						

Room Volume =	33.7	m3		
Partition Area =	15.9	m2		
Ventilation ref area =	10.0	m2		
SELECT Free Field or Façade SPL for model input >>>	Free Field SPL	K =	3	dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	77.0	63.0	62.1	65.2	70.1	72.5	70.3	65.9	
Road traffic spectrum (according to BS 8233:1999 section 6)									
		63.0	62.1	65.2	70.1	72.5	70.3	65.9	**Direct input**

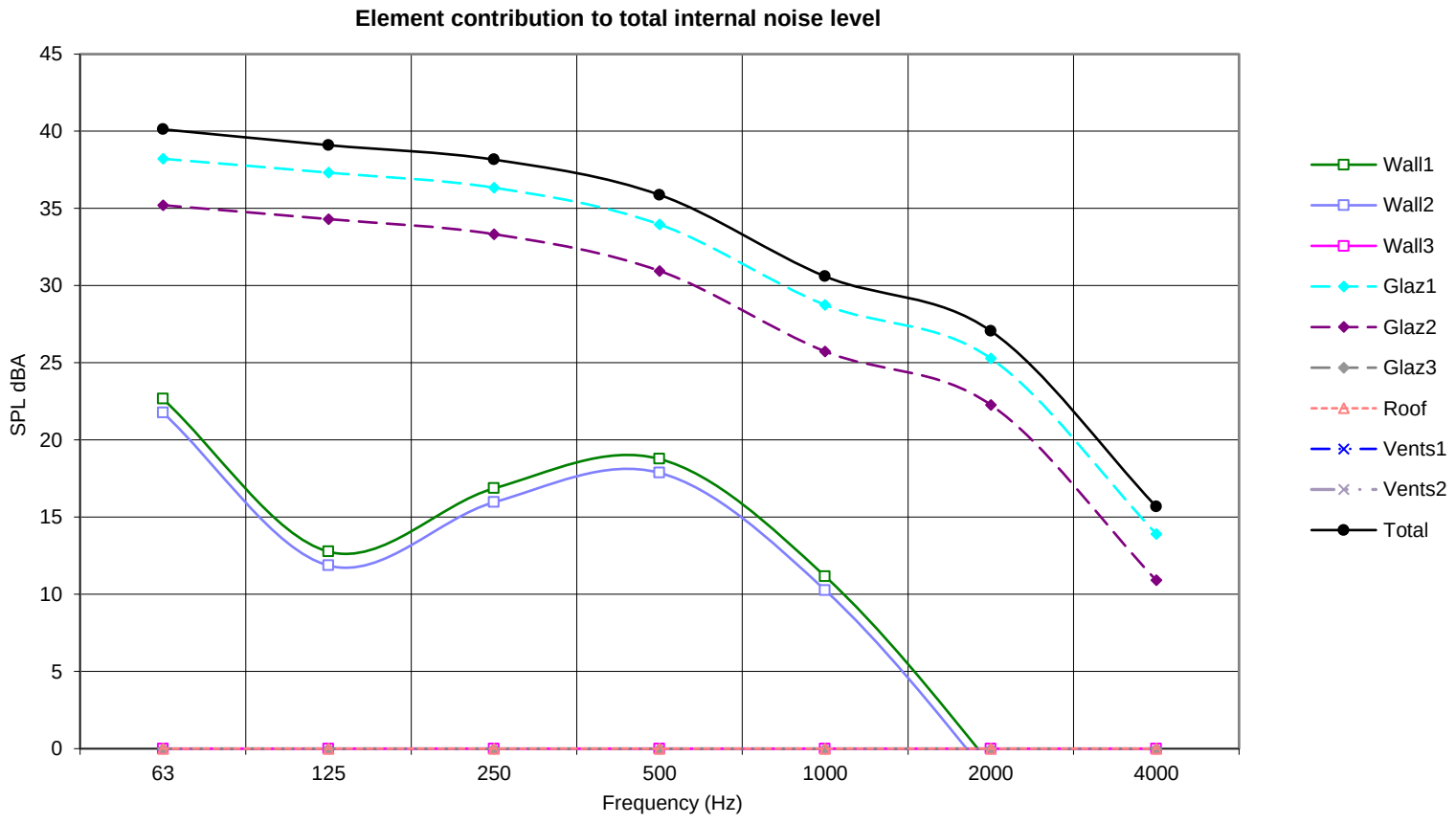
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	2.0	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 2	Typical - 102mm brick/50mm cavity/100mm block	1.6	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	8.2	27	27	31	38	46	47	54	65%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	4.1	27	27	31	38	46	47	54	33%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		28	28	32	39	47	48	55				
	Resultant SPL inside room excluding ventilators dB	44.8	40	39	38	36	31	27	16	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**44.8**	40	39	38	36	31	27	16



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.8	X	3.7	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (Townhouse)				Room Volume =	26.5	m3
RUN REF:	23244				Partition Area =	7.2	m2
VARIANT:	Daytime Average Noise Levels (LAeq,16hr)				Ventilation ref area =	10.0	m2
		SELECT Free Field or Façade SPL for model input >>>			Free Field SPL K =	3	dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	65.0								
		46.8	50.9	54.4	57.8	61.0	58.2	53.0	**Reference spectrum**

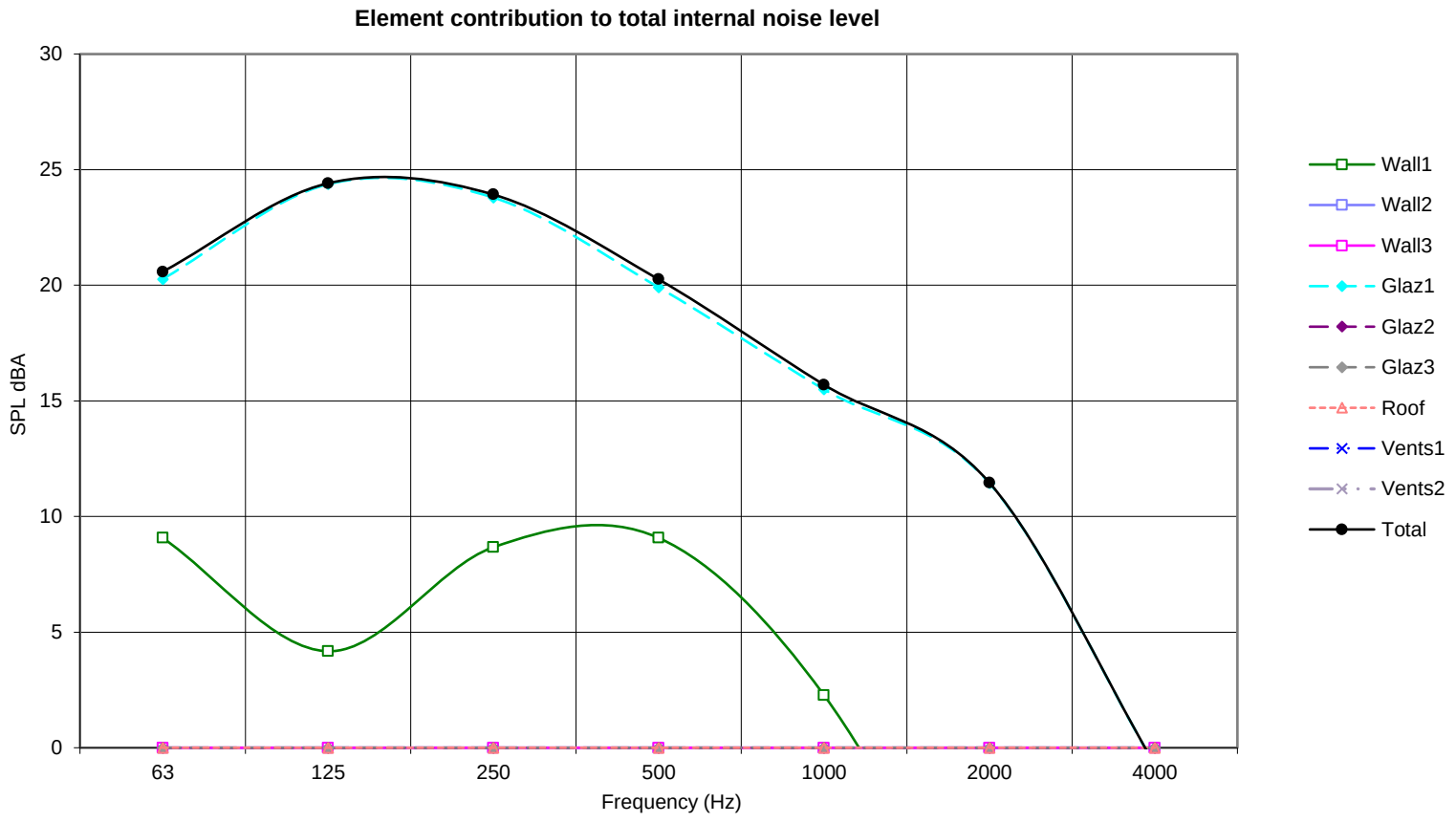
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**	

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	2.9	36	45	44	47	57	67	77	3%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	4.3	27	27	31	38	46	47	54	96%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		28	29	33	40	48	49	56				
	Resultant SPL inside room excluding ventilators dB	29.0	21	24	24	20	16	11	-1	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**29.0**	21	24	24	20	16	11	-1



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H	
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.8	X	3.7	X	2.6	
PROJECT:	Sparkle Street, Manchester							
ROOM:	Bedroom (Townhouse)					Room Volume =	26.5	m3
RUN REF:	23244					Partition Area =	7.2	m2
VARIANT:	Night-time Average Noise Levels (LAeq,8hr)					Ventilation ref area =	10.0	m2
		SELECT Free Field or Façade SPL for model input >>>				Free Field SPL K =	3	dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	62.0								
		43.8	47.9	51.4	54.8	58.0	55.2	50.0	**Reference spectrum**

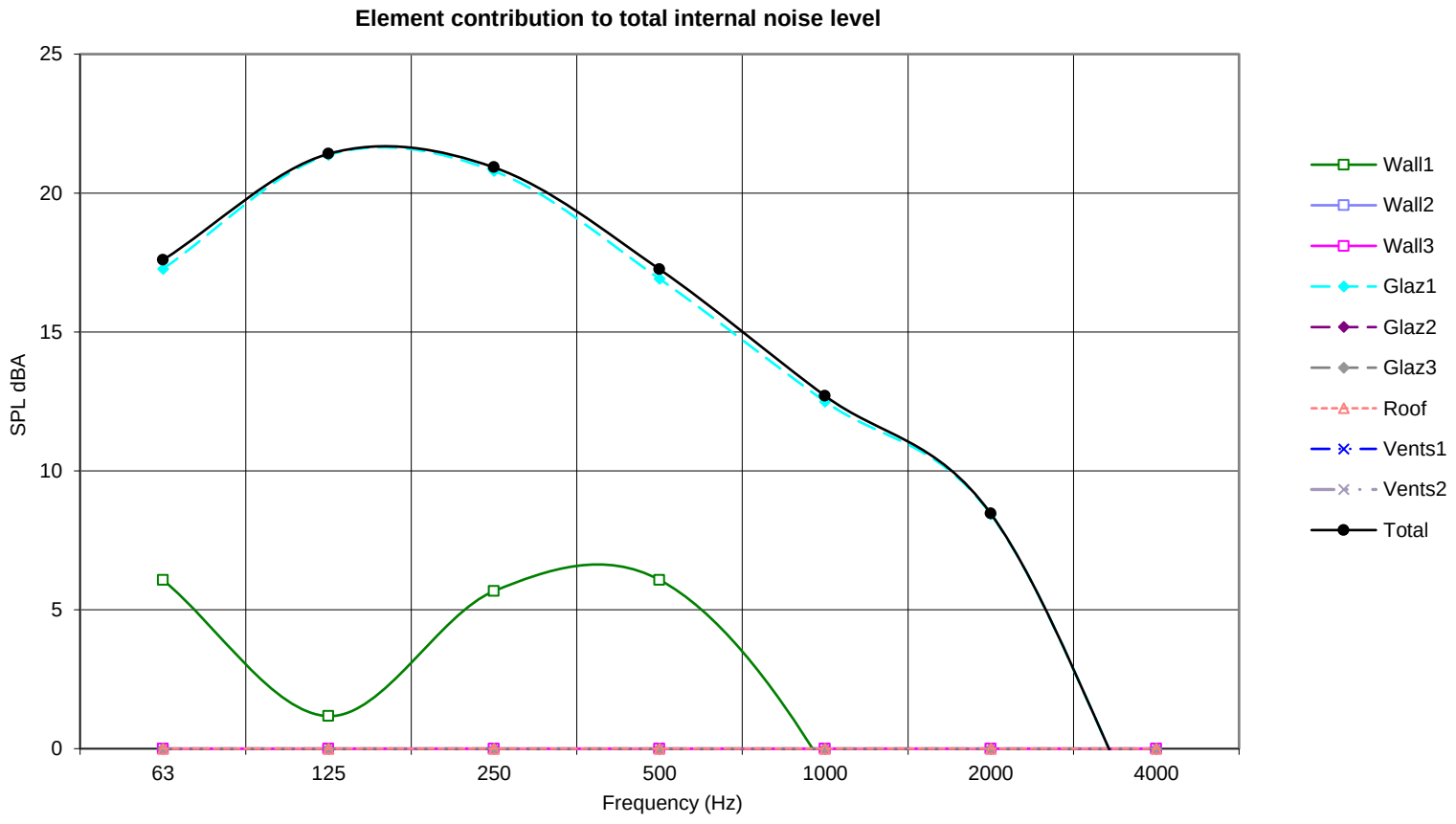
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5		**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	2.9	36	45	44	47	57	67	77	3%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	4.3	27	27	31	38	46	47	54	95%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		28	29	33	40	48	49	56				
	Resultant SPL inside room excluding ventilators dB	26.0	18	21	21	17	13	8	-4	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**26.0**	18	21	21	17	13	8	-4



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H	
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.8	X	3.7	X	2.6	
PROJECT:	Sparkle Street, Manchester							
ROOM:	Bedroom (Townhouse)					Room Volume =	26.5	m3
RUN REF:	23244					Partition Area =	7.2	m2
VARIANT:	Night-time Maximum Noise Levels (LAmax)					Ventilation ref area =	10.0	m2
		SELECT Free Field or Façade SPL for model input >>>				Free Field SPL K =	3	dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	78.0	64.0	63.1	66.2	71.1	73.5	71.3	66.9	
Road traffic spectrum (according to BS 8233:1999 section 6)									
		64.0	63.1	66.2	71.1	73.5	71.3	66.9	**Direct input**

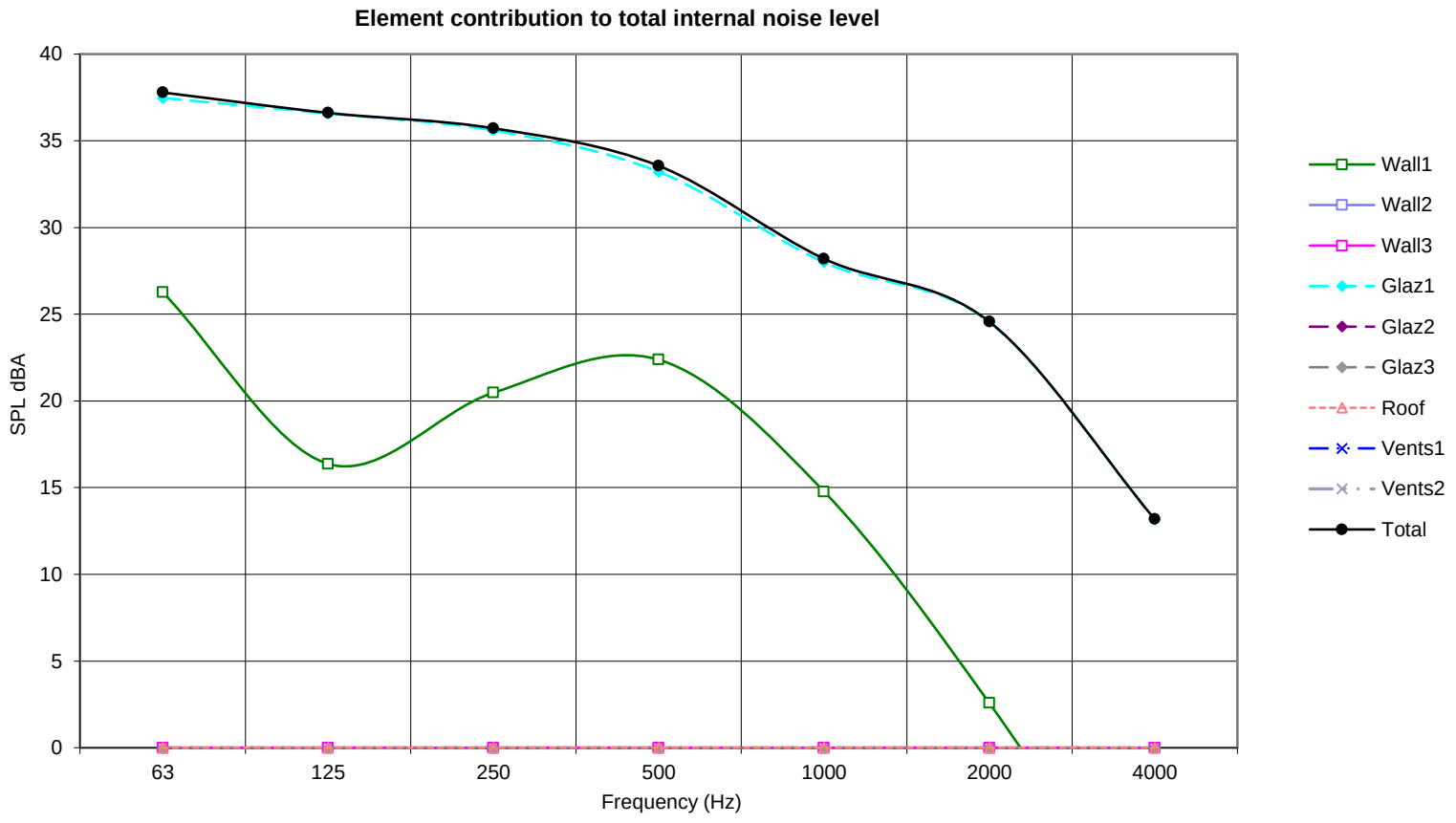
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**	

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	2.9	36	45	44	47	57	67	77	4%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	36 dB Rw + Ctr - High Acoustic Performance Double Glazing	4.3	27	27	31	38	46	47	54	96%	36 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		28	29	33	40	48	49	56				
	Resultant SPL inside room excluding ventilators dB	42.4	38	37	36	34	28	25	13	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**42.4**	38	37	36	34	28	25	13



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	3.0	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (South facing)	Room Volume =	21.1	m3			
RUN REF:	23244	Partition Area =	7.0	m2			
VARIANT:	Daytime Average Noise Levels (LAeq,16hr)	Ventilation ref area =	10.0	m2			
	SELECT Free Field or Façade SPL for model input >>>	Free Field SPL K =	3	dB			

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	55.0								
		36.8	40.9	44.4	47.8	51.0	48.2	43.0	**Reference spectrum**

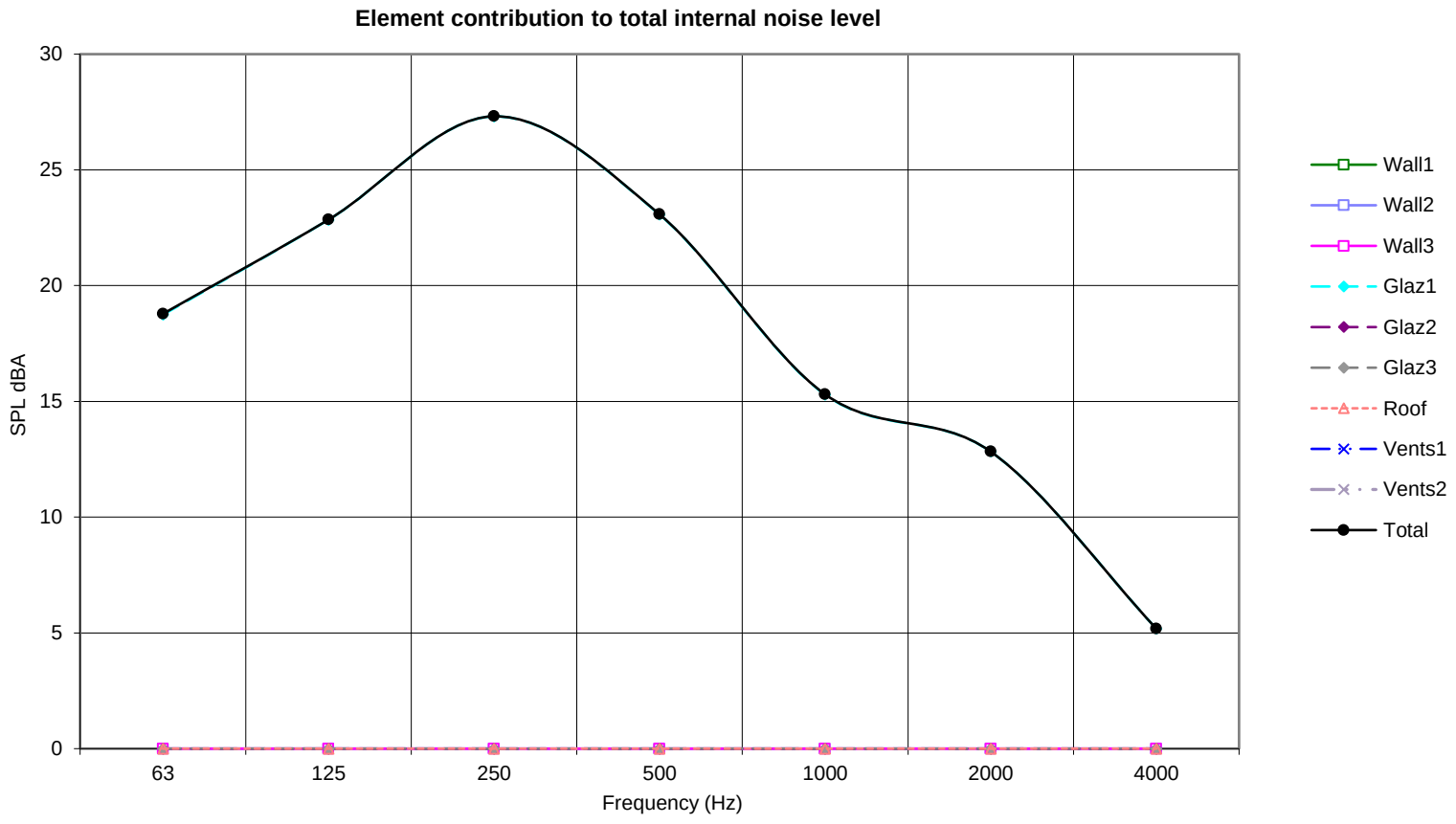
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	1.9	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	27 dB Rw + Ctr - Standard Thermal Double Glazing	5.1	20	20	19	27	38	37	40	99%	27 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		21	21	20	28	39	39	41				
	Resultant SPL inside room excluding ventilators dB	30.3	19	23	27	23	15	13	5	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**30.3**	19	23	27	23	15	13	5



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	3.0	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (South facing)	Room Volume =	21.1	m3			
RUN REF:	23244	Partition Area =	7.0	m2			
VARIANT:	Night-time Average Noise Levels (LAeq,8hr)	Ventilation ref area =	10.0	m2			
	SELECT Free Field or Façade SPL for model input >>>	Free Field SPL K =	3	dB			

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	51.0								
		32.8	36.9	40.4	43.8	47.0	44.2	39.0	**Reference spectrum**

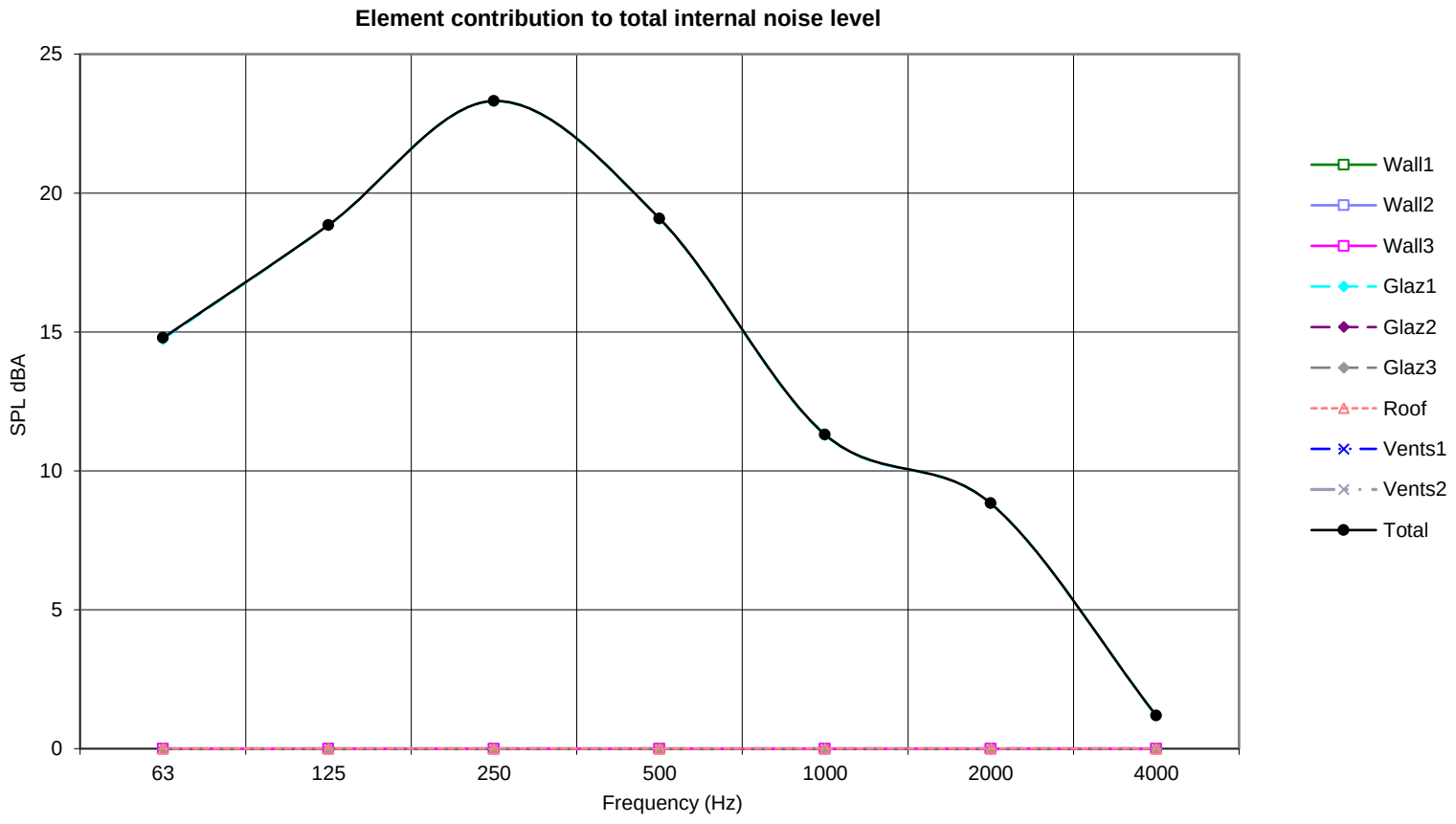
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	1.9	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	27 dB Rw + Ctr - Standard Thermal Double Glazing	5.1	20	20	19	27	38	37	40	98%	27 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		21	21	20	28	39	39	41				
	Resultant SPL inside room excluding ventilators dB	26.3	15	19	23	19	11	9	1	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**26.3**	15	19	23	19	11	9	1



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H
CLIENT:	MIDGARD LTD	Room Dimensions [m]	2.7	X	3.0	X	2.6
PROJECT:	Sparkle Street, Manchester						
ROOM:	Bedroom (South facing)	Room Volume =	21.1	m3			
RUN REF:	23244	Partition Area =	7.0	m2			
VARIANT:	Night-time Maximum Noise Levels (LAmax)	Ventilation ref area =	10.0	m2			
	SELECT Free Field or Façade SPL for model input >>>	Free Field SPL K =	3	dB			

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	64.0	50.0	49.1	52.2	57.1	59.5	57.3	52.9	
Road traffic spectrum (according to BS 8233:1999 section 6)									
		50.0	49.1	52.2	57.1	59.5	57.3	52.9	**Direct input**

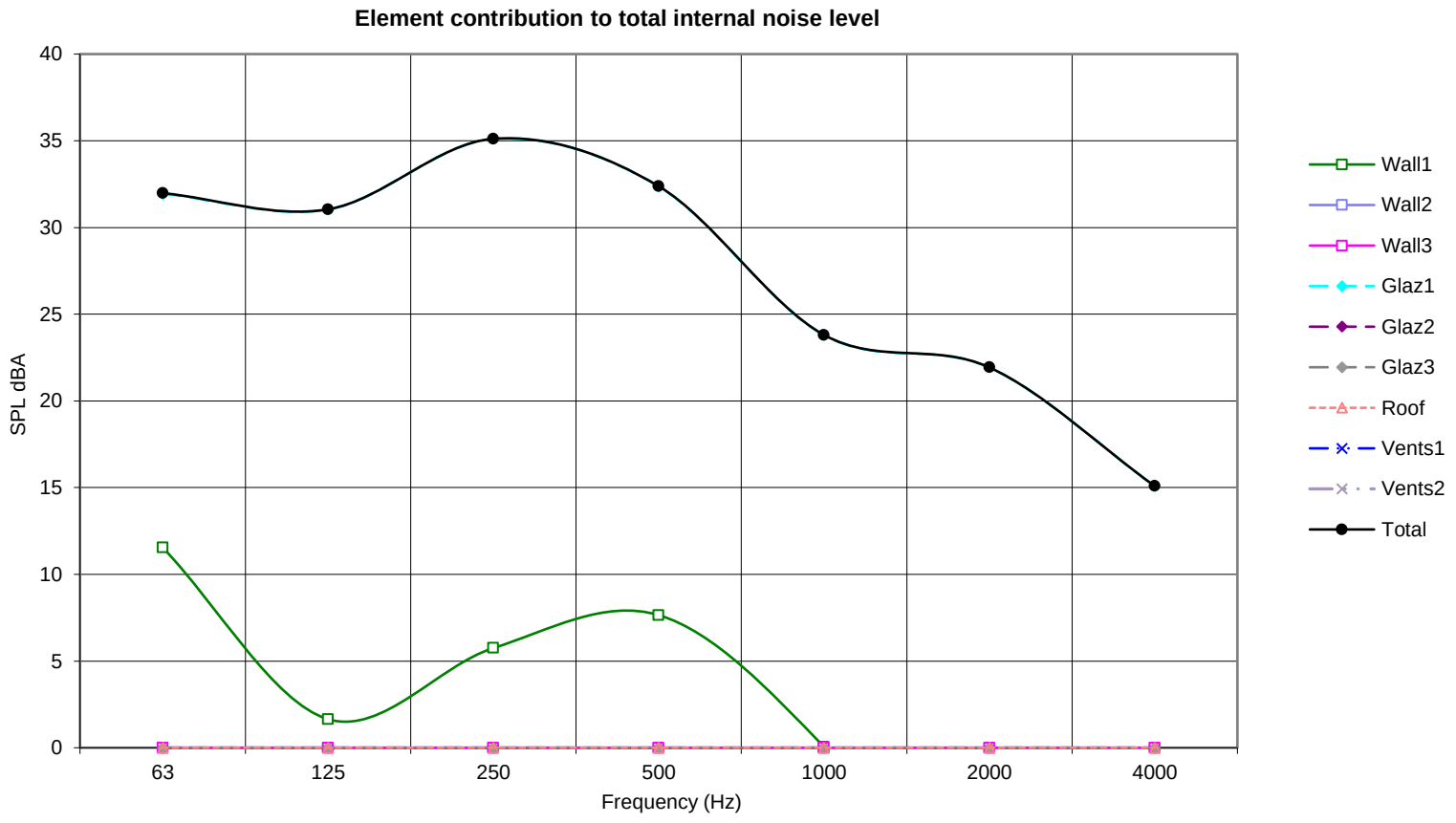
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**	

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	1.9	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	27 dB Rw + Ctr - Standard Thermal Double Glazing	5.1	20	20	19	27	38	37	40	100%	27 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		21	21	20	28	39	39	41				
	Resultant SPL inside room excluding ventilators dB	39.2	32	31	35	32	24	22	15	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**39.2**	32	31	35	32	24	22	15



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H	
CLIENT:	MIDGARD LTD	Room Dimensions [m]	5.5	X	3.8	X	2.6	
PROJECT:	Sparkle Street, Manchester							
ROOM:	Living Room (Sparkle Street)					Room Volume =	53.9	m3
RUN REF:	23244					Partition Area =	27.7	m2
VARIANT:	Daytime Average Noise Levels (LAeq,16hr)					Ventilation ref area =	10.0	m2
		SELECT Free Field or Façade SPL for model input >>>				Free Field SPL K =	3	dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	60.0								
		41.8	45.9	49.4	52.8	56.0	53.2	48.0	**Reference spectrum**

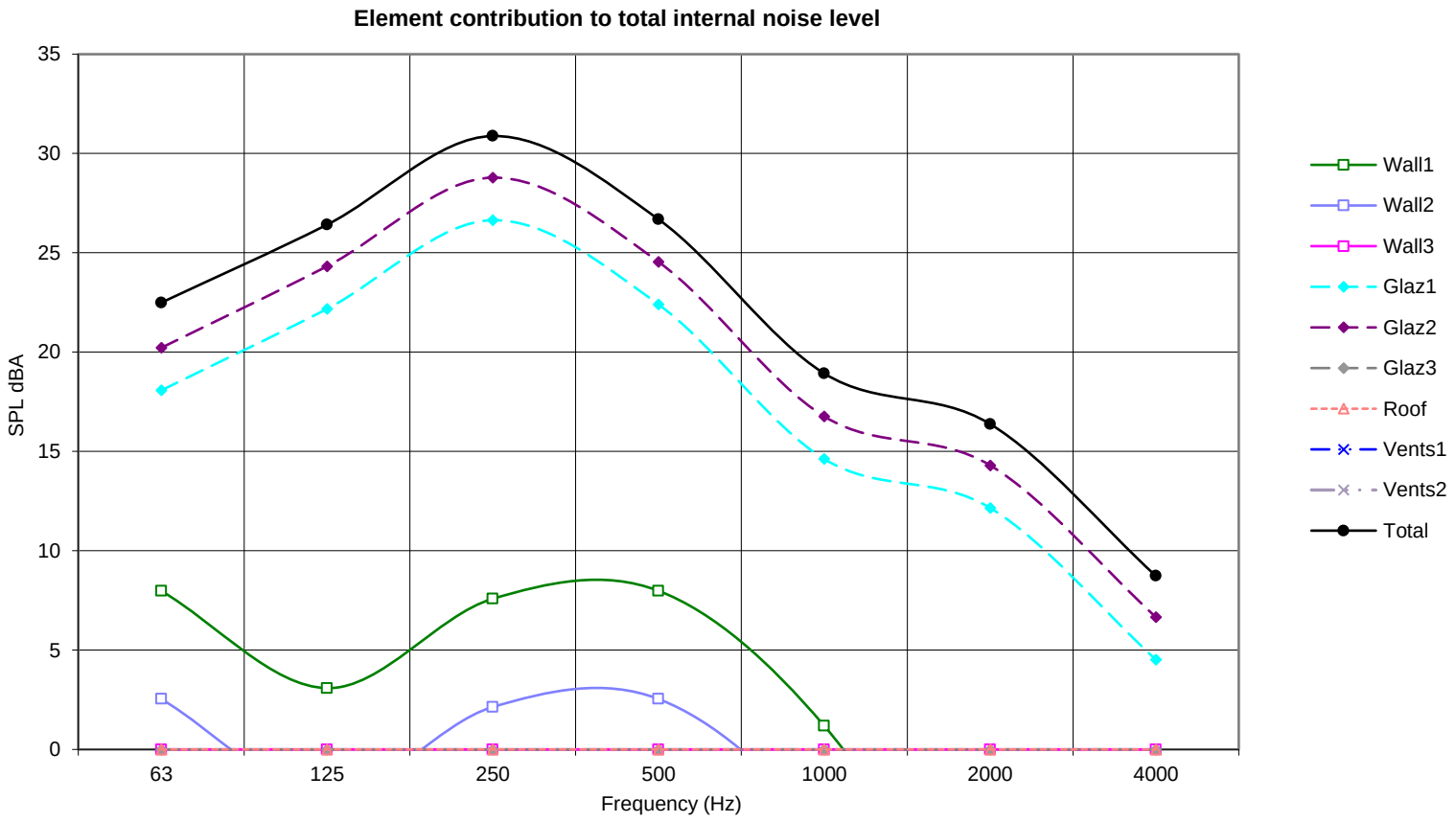
REVERBERATION TIME

DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5		**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	14.3	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 2	Typical - 102mm brick/50mm cavity/100mm block	4.1	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	27 dB Rw + Ctr - Standard Thermal Double Glazing	3.5	20	20	19	27	38	37	40	37%	27 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	27 dB Rw + Ctr - Standard Thermal Double Glazing	5.8	20	20	19	27	38	37	40	61%	27 (inc Ctr)	-	-
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		24	25	24	31	42	42	44				
	Resultant SPL inside room excluding ventilators dB	33.9	22	26	31	27	19	16	9	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**33.9**	22	26	31	27	19	16	9



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H	
CLIENT:	MIDGARD LTD	Room Dimensions [m]	5.5	X	3.8	X	2.6	
PROJECT:	Sparkle Street, Manchester							
ROOM:	Living Room (South facing)	Room Volume =	53.9	m3				
RUN REF:	23244	Partition Area =	27.7	m2				
VARIANT:	Daytime Average Noise Levels (LAeq,16hr)	Ventilation ref area =	10.0	m2				
	SELECT Free Field or Façade SPL for model input >>>	Free Field SPL K =	3	dB				

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	56.0								
		37.8	41.9	45.4	48.8	52.0	49.2	44.0	**Reference spectrum**

REVERBERATION TIME

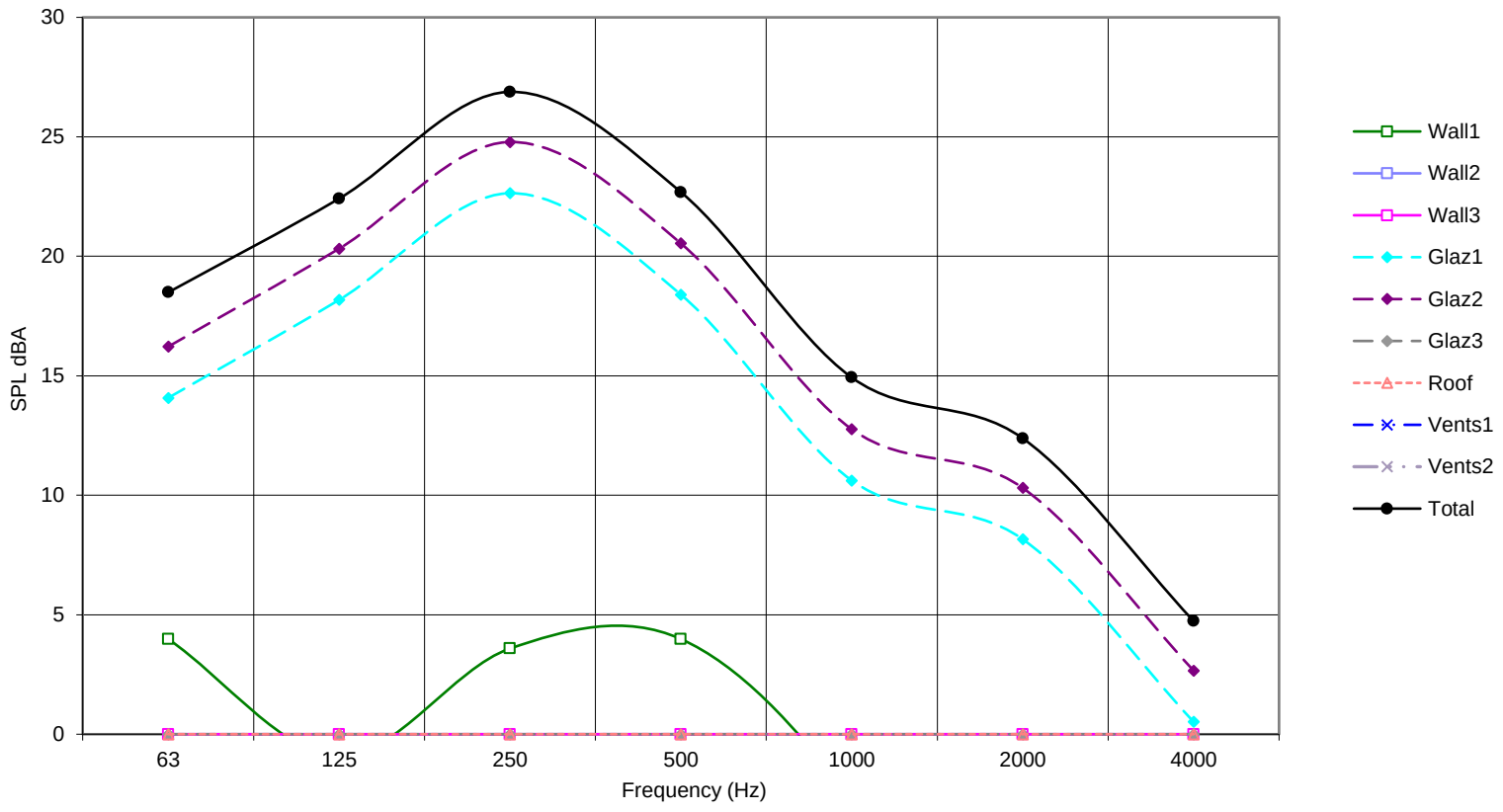
DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**	

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	14.3	36	45	44	47	57	67	77	1%	54	0	-4
	ATTENUATION												
Wall 2	Typical - 102mm brick/50mm cavity/100mm block	4.1	36	45	44	47	57	67	77	0%	54	0	-4
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	27 dB Rw + Ctr - Standard Thermal Double Glazing	3.5	20	20	19	27	38	37	40	37%	27 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	27 dB Rw + Ctr - Standard Thermal Double Glazing	5.8	20	20	19	27	38	37	40	61%	27 (inc Ctr)	-	-
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		24	25	24	31	42	42	44				
	Resultant SPL inside room excluding ventilators dB	29.9	18	22	27	23	15	12	5	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**29.9**	18	22	27	23	15	12	5

Element contribution to total internal noise level



FACSIM V2.7.4 - MODELLING OF FACADE ACOUSTIC INSULATION TO BS12354-3 and BS8233

			W		L		H	
CLIENT:	MIDGARD LTD	Room Dimensions [m]	6.8	X	5.8	X	3.6	
PROJECT:	Sparkle Street, Manchester							
ROOM:	Living Room (Town House, Ground Floor)					Room Volume =	140.9	m3
RUN REF:	23244					Partition Area =	35.5	m2
VARIANT:	Daytime Average Noise Levels (LAeq,16hr)					Ventilation ref area =	10.0	m2
		SELECT Free Field or Façade SPL for model input >>>				Free Field SPL K =	3	dB

NOTES:

EXTERNAL SPECTRUM (A weighted)

	dBA	63	125	250	500	1000	2000	4000	
Direct input - Free Field SPL (A weighted octave bands) dB ----->	-								**No data**
Road traffic spectrum (according to BS 8233:1999 section 6)	65.0								
		46.8	50.9	54.4	57.8	61.0	58.2	53.0	**Reference spectrum**

REVERBERATION TIME

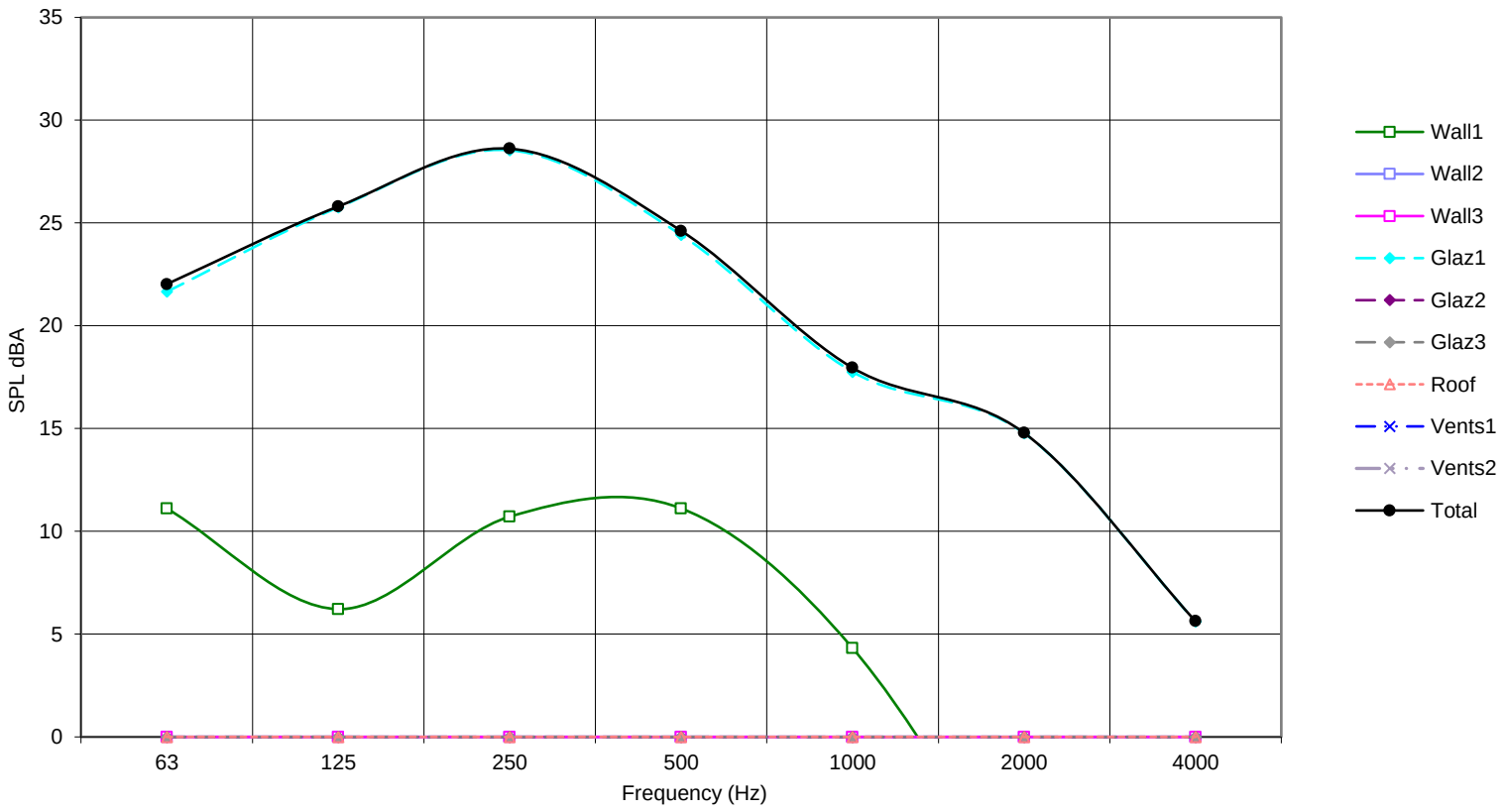
DIRECT INPUT ----->									**No data**
EQUAL RT for all bands ----->									
		0.5	0.5	0.5	0.5	0.5	0.5	0.5	**Default - RT set to 0.5s**

Façade Element		Area [m2]	SRI dB to BS EN ISO 140-3:1995								Rw	C	Ctr
Wall 1	Typical - 102mm brick/50mm cavity/100mm block	24.3	36	45	44	47	57	67	77	3%	54	0	-4
	ATTENUATION												
Wall 2	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Wall 3	WALLS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 1	30 dB Rw + Ctr - Acoustically Upgraded Double Glazing	11.2	22	22	23	30	40	40	44	97%	30 (inc Ctr)	-	-
	ATTENUATION												
Glazing 2	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Glazing 3	GLAZING		0	0	0	0	0	0	0	0%			
	ATTENUATION												
Roof	ROOF / FLOOR		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant composite Façade SRI		27	27	28	35	45	45	49				
	Resultant SPL inside room excluding ventilators dB	32.2	22	26	29	25	18	15	6	100%			

Ventilator Type		Num	$D_{n,e}$ dB to BS EN 20140-10:1992								Dnew	C	Ctr
Ventilation			0	0	0	0	0	0	0	0%			
	ATTENUATION												
Ventilation	VENTS		0	0	0	0	0	0	0	0%			
	ATTENUATION												
	Resultant SPL inside room through ventilators dB	-99.0	-96	-96	-96	-96	-96	-96	-96	0%			

Total SPL inside room	**32.2**	22	26	29	25	18	15	6

Element contribution to total internal noise level



Cass Allen Associates Ltd

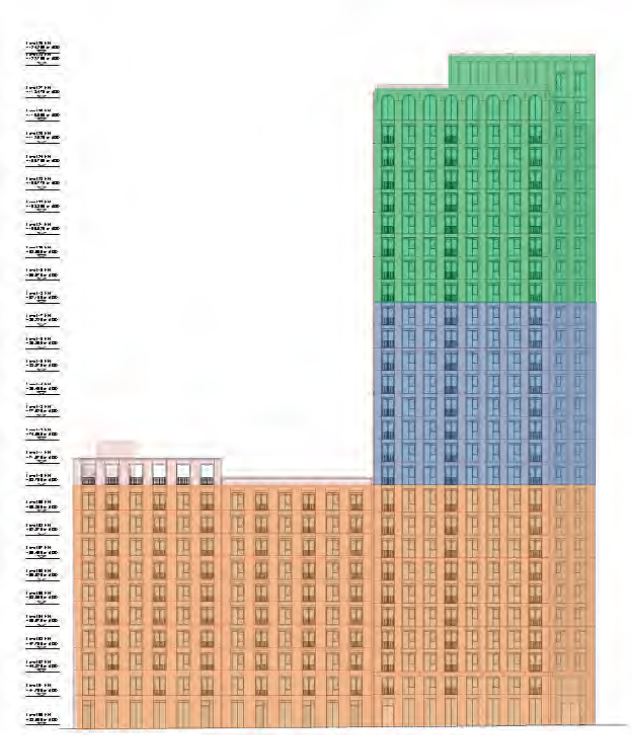
www.cassallen.co.uk

Tel. 01234 834 862
e-mail: info@cassallen.co.uk

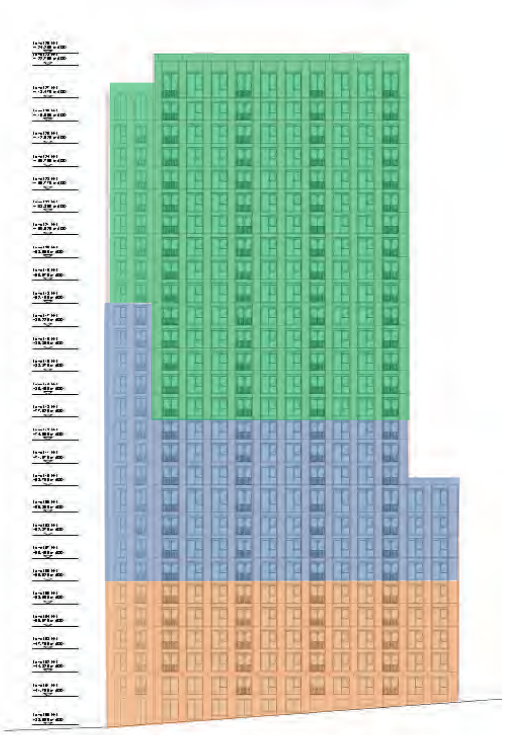
Appendix 5 Outline Acoustic Facade Specification

		Bedroom	Living Room
Reference	**Colour**	**Glazing Specification**	**Glazing Specification**
FS01		36 dB Rw+Ctr	30 dB Rw+Ctr
FS02		30 dB Rw+Ctr	27 dB Rw+Ctr
FS03		27 dB Rw+Ctr	

NOTES: Values must include the Ctr correction. Manufacturers or suppliers should provide laboratory test data demonstrating that the proposed systems are capable of achieving the values given. Windows should be tested as complete systems (rather than just the glazing in isolation).



STORE STREET ELEVATION

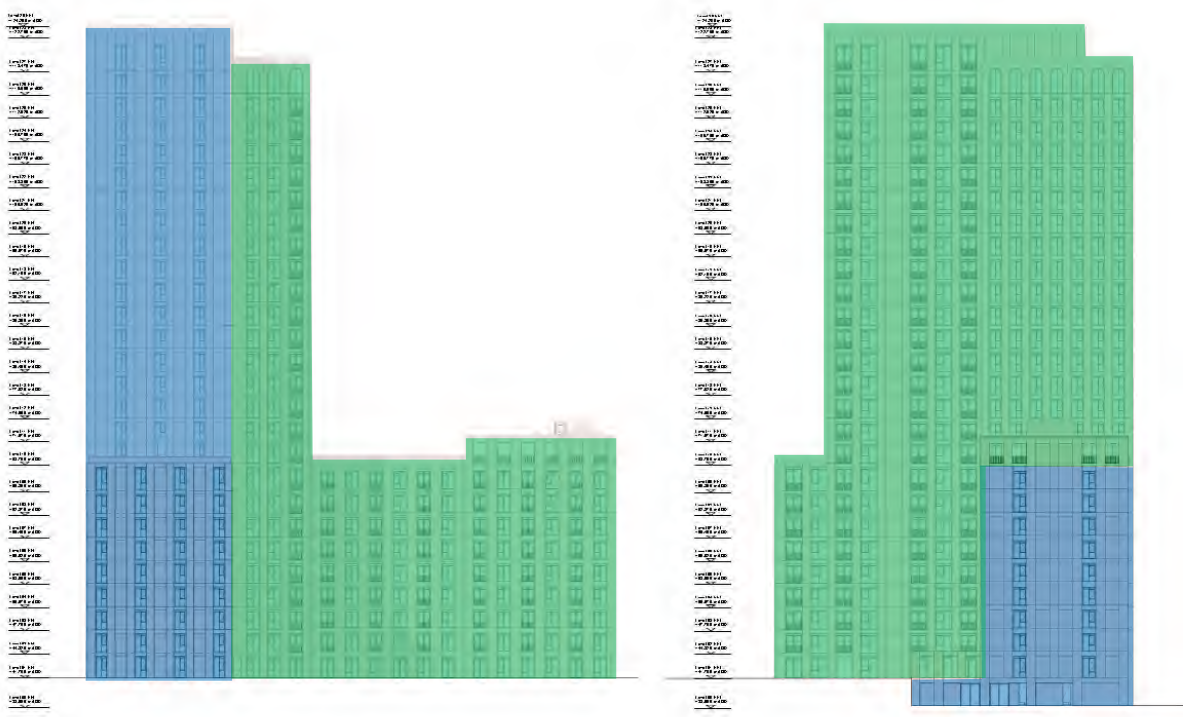


SPARKLE STREET ELEVATION

		Bedroom	Living Room
Reference	**Colour**	**Glazing Specification**	**Glazing Specification**
FS01		36 dB Rw+Ctr	30 dB Rw+Ctr
FS02		30 dB Rw+Ctr	27 dB Rw+Ctr
FS03		27 dB Rw+Ctr	

NOTES:

Values must include the Ctr correction. Manufacturers or suppliers should provide laboratory test data demonstrating that the proposed systems are capable of achieving the values given. Windows should be tested as complete systems (rather than just the glazing in isolation).



SOUTHEAST ELEVATION

NORTHEAST ELEVATION

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Noise | Vibration | Air Quality

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Appendix 4 – Desk-based Archaeological Assessment



SALFORD ARCHAEOLOGY
University of Salford

Foras (Sparkle Street) Limited

Issue: v1

SA/2022/43

Sparkle Street, Manchester

Archaeological Desk-based Assessment

Salford Environmental Consultancy

Built / Historic / Natural

REGISTERED ORGANISATION CIfA

QMS ISO 14001: 2015 45001: 2018

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1. Summary

Foras (Sparkle Street) Limited is devising proposals for Full Planning Permission for demolition of existing low rise commercial units and erection of ground + 27 storey residential development with supporting residential amenity, private terraces and private shared garden at Sparkle Street in Manchester City Centre (centred on NGR 384946, 398044). In order to support the planning applications for the scheme Foras (Sparkle Street) Limited 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 immediately to the south of the proposed route of the Roman road from Manchester to Castleshaw. During the late medieval and post-medieval periods, the proposed area lay within Manchester's agricultural hinterland, on the south-west edge of Ancoats. The site was likely undeveloped with the Shooters Brook flowing broadly east to west through the site. By the 18th century, the site had witnessed some development, comprising a row of terrace workers' housing, a long rectangular building and a small, square building. All these buildings had been cleared by the early 19th century.

By the early 19th century, Shooters Brook had been culverted, though an open section remained within the site until the second half of the 19th century. Various types of workers' houses had been erected along Berry Street, Lomas Street, Green's Court and No. 2 Passage. Housing types included double-depths, blind-backs and cellar dwellings. A timber yard had been established within the north of the site by 1851 and had been expanded along the Store Street frontage by the late 19th century. In addition, a building that functioned as a provender and stables was erected within the east of the Site.

The proposed development area remained mostly unchanged until the early 20th century when some of the timber yard buildings were remodelled. By the 1930s, all the domestic dwellings had been cleared and the timber yard was progressively expanded across the site.

The potential for the site to contain buried archaeological remains is considered to be high. The most likely remains to be encountered within the site includes various types of 19th-century workers' housing and a culverted section of Shooters Brook. The site also has potential to contain elements of the pre-industrial landscape, a potential post-medieval ford and late 18th-century buildings. The site has low potential to contain Roman remains associated with the road from Manchester to Castleshaw. Any such remains that do exist within the site are likely to be of low (local) significance or potentially medium (regional) significance and, without a programme of mitigation, the scheme could damage or destroy these remains.

The site also has potential to contain remains of a timber yard, and stables and stores, however, these would be of limited archaeological interest and may be considered negligible.

Following consultation with Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as archaeological advisor to Manchester City Council, it has been agreed that an archaeological evaluation (consisting of either a strip, map and record or trial trench evaluation) will be required to establish the presence or absence of buried archaeological

remains and, if present, their extent and significance. The evaluation will target non-designated heritage assets of low (local) significance.

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

Foras (Sparkle Street) Limited have prepared a Full Planning Permission for demolition of existing low rise commercial units and erection of ground + 27 storey residential development with supporting residential amenity, private terraces and private shared garden. 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.

2.1 Site location

The proposed development area (centred on NGR 384946, 398044) comprises a plot of land in Manchester City Centre, (herein referred to as the 'Site'), which is bounded by Store Street to the north, Sparkle Street to the west, residential apartments to the south and vacant land to the east (Fig 1; Plate 1). The Site is largely unoccupied, with its former use being a telephone exchange along with surface car parking and two buildings that are partly used for storage and distribution. The buildings are screened from the road on two sides by existing vegetation and an access route for vehicles is provided from Store Street. The Site is approximately 100 metres north of Piccadilly Railway Station and is approximately 0.25 ha in size.

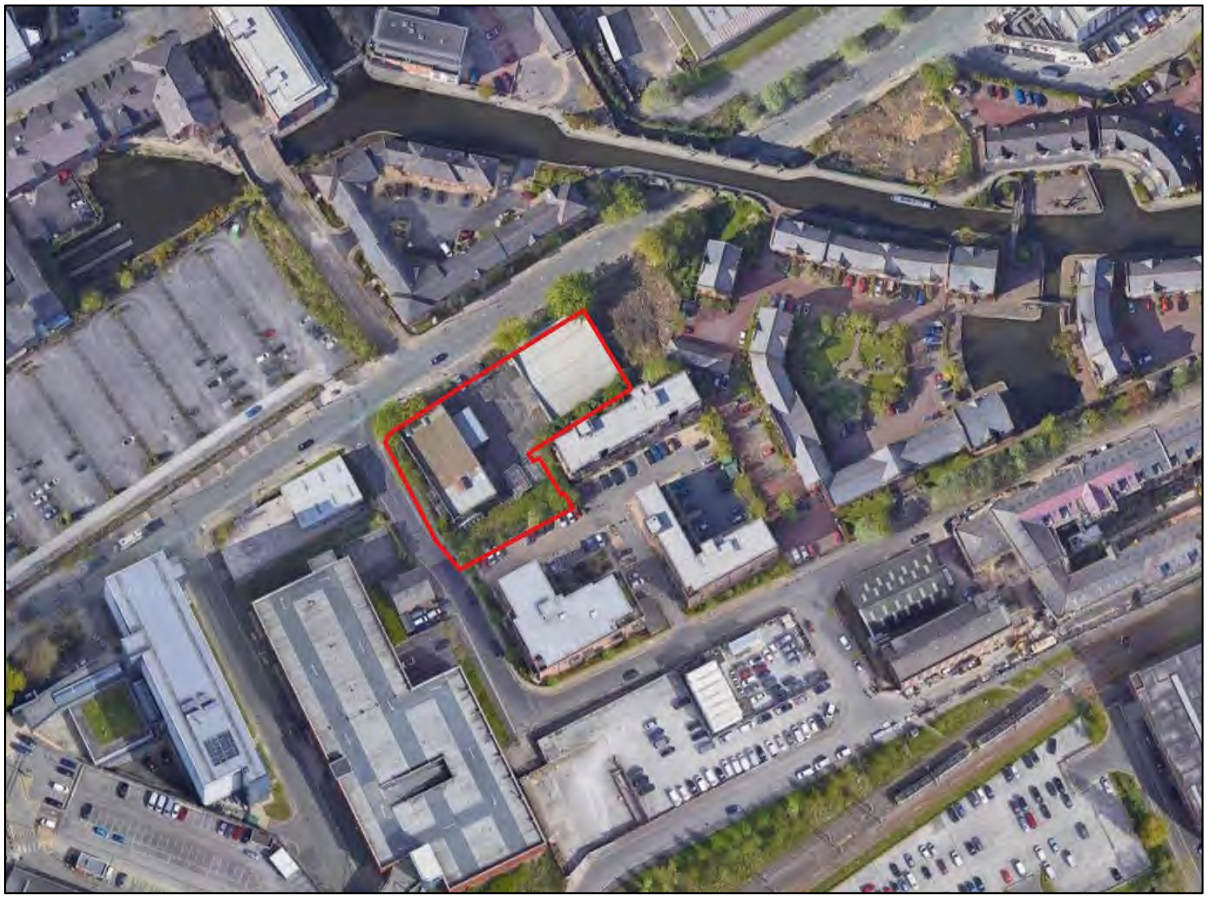


Plate 1 Extract from Google Satellite, showing the Site boundary

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 37.2m above Ordnance Datum (aOD) and is relatively flat.

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. Sedimentary superficial deposits comprising formed between 116 and 11.8 thousand years ago during the Quaternary period overlie the bedrock and comprise Devensian Till (British Geological Society, 2021).

2.3 Designations

The Site does not contain any heritage assets that are afforded statutory protection, such as Listed Buildings, Scheduled Monuments, or any Registered Parks and Gardens and it does not fall within a Conservation Area.

The Site is located within 250m of ten listed buildings (Table 1). The Whitworth Street and Princess Street Conservation Area and the Stevenson Square Conservation Area both lie just over *c* 250m of the Site. The proposed development will not have a physical impact on these designated heritage assets, and so they are not considered further in this report.

Site	Designation	List Entry	Location
Entrance Archway and Lodge to Yard of the Rochdale Canal Company	Grade II Listed Building	8370.2.0	SJ 8469 9815
Stable block to south-east of Junction Lead Mills	Grade II Listed Building	11336.2.0	SJ 8495 9816
Rochdale Canal Lock No.85 (in tunnel between Piccadilly and Dale Street)	Grade II Listed Building	12089.3.0	SJ 8466 9809
Train shed, Manchester Piccadilly Station	Grade II Listed Building	1283014	SJ 8490397859
The Place Aparthotel (former London Warehouse)	Grade II Listed Building	1217858	SJ 84758 98077
Rochdale Canal Lock Number 84 (Dale Street Lock)	Grade II Listed Building	12089.2.0	SJ 84733 98138

Junction Lead Mills, Paradise Wharf	Grade II Listed Building	11336.1.0	SJ 84917 98185
32 and 34 Laystall	Grade II Listed Building	12061.1.0	SJ 84982 98253

Table 1 Designated sites within 250m radius of the Site

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 18th century.

3.3 Site Inspection

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

3.4 The document

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

3.5 Significance assessment methodology

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

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

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

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

3.6 Impact assessment methodology

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

4. Planning and legislative background

This assessment accords with National, Regional and Local Planning Policies which relate to the historic environment. National planning policies relevant to heritage asset management are contained within the National Planning Policy Framework (NPPF 2021).

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* (Ministry of Housing, Communities & Local Government, 2021). 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 2 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).

Physical indications of human activity in the Manchester area are provided by a small number of residual finds. A Neolithic stone hammer and arrowhead, for instance, were unearthed in the Castlefield area of Manchester in 1845 (HER 119.1.0), whilst excavations at 77-83 Liverpool Road (HER 13944.1.0) produced two Mesolithic flints, one Neolithic/Bronze Age waste flake and a single sherd of late Bronze Age/Iron Age pottery. These finds complement a growing regional body of finds representing prehistoric activity, known to be concentrated on well-drained sand and gravel sites in proximity to watercourses and moss lands.

5.1.1 Archaeological potential

There is no known evidence for prehistoric activity within the Site boundary, and the potential for any such remains to survive from this period is considered to be low.

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 around *c* AD 200 (*ibid*).

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

Roads from the fort linked Manchester with Ribchester to the north, Castleshaw, and York to the north-east, Wigan to the north-west, Chester to the south, and Buxton to the south-east. The settlement was well connected in terms of trade and consequently lasted until the late 3rd century AD. Store Street potentially represents the continuation of the Roman road from Manchester to Castleshaw (HER 24.1.8). However, this awaits confirmation, and there is currently very little physical evidence for any Roman activity in the vicinity of the Site.

A section of the Roman road from Manchester to Castleshaw was excavated on Gaskell Street, Newton Heath, in 1856 (HER 24.1.0). The road was constructed *c* 79-84AD, possibly by the 20th legion. Just beyond the central station the alignment of the road is taken up by Mill Street and then by cemetery road and Briscoe Lane to Newton Heath. The road was 24 feet wide with a gravel surface on a log base, designed to carry the road over boggy areas. Roman roadside activity could have taken place within the Site, though there is no known evidence for Romano-British activity within the Site.

5.2.1 Archaeological potential

The Site lies immediately south of the Roman road from Manchester to Castleshaw. There is no known evidence for Romano-British activity within the Site however, the possibility of isolated artefacts should not be dismissed entirely, although it is considered unlikely that artefacts will be found *in-situ* given the later development 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). It is believed that from the Saxon times, a small community existed on both banks of the River Irwell close to the point where it is joined by the River Irk.

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.

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. These included Deansgate, Hunt's Bank and Long Millgate. The Site lies 1.2km to the south-east of the medieval core.

The Site was likely situated within Manchester, on the south-west edge of the Ancoats during the medieval period. The hamlet covered the area of land that roughly lies between the River Medlock and the River Irk (Plate 2). The hamlet of Ardwick lay to the south of the Site, bounded by the River Medlock to the north and the Cornbrook to the south. The name Ancoats is believed to originate from *Elnecot*, and the Old English *ana cots*, meaning 'lonely cottage' (Cooper, 2002, p. 13). The area likely remained rural during the medieval period and is first mentioned in land grants dating back to the 13th century. In 1908 Swindells described it as 'an almost idyllic rural backwater' (Swindells, 1908, pp. 19-26). In 1320 Ancoats was recorded in a survey as forming eight hamlets in the township of Manchester, within the Salford hundred. It is believed that these dwellings, formed mainly of cottages and farmhouses, may have been along Ancoats Lane (now Great Ancoats Street), Newton Lane (now Oldham Road) and Butler Lane (Miller, et al., 2007, p. 25). Land in Ancoats was bequeathed in the 14th century by Henry de Ancotes.



Plate 2 The Parish of Manchester (Farrer & Brownbill, 1911, pp. 174-87)

5.3.1 Archaeological potential

The Site most likely lay beyond medieval settlement activity and 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).

An inset in Casson and Berry's map of 1751 provides the earliest cartographic representation of Manchester, showing the extent of the town in *c* 1650 (Plate 3). The map shows that the Site most likely lay in the town's agricultural hinterland, with the post-medieval settlement of Manchester still largely concentrated around the medieval core, near the Parish Church of St Mary's and the medieval manor. Up until the 18th century, any expansion of the settlement followed the line of the established thoroughfares of Market Street Lane, Deansgate and Shudehill. Land on the southern side of Market Street Lane, in the area now occupied by Piccadilly Gardens (500m to the north-west of the Site), was the site of the town's 'daub holes', where the mud was extracted for wattle and daub buildings (Plate 4, 16).

Ancoats also remained largely rural during the post-medieval period, with the most significant building in the area being Ancoats Hall. The manor of Ancoats was held by the Byrons of Clayton Hall for over four hundred years until they sold it to Oswald Mosely. Oswald Moseley

built the timber-framed building at Ancoats Hall in 1596. Ancoats Hall overlooked the River Medlock on the eastern fringe of the area (Miller, et al., 2007, p. 25) and was described by Bruton as 'beautifully situated above the Medlock with lovely views over the green wooded country'. The Mosleys held the manor for the next two centuries until it was bought by mill owner George Murray who altered it into a Victorian brick-built mansion (Rose, et al., 2011, p. 5).



Plate 3: Plan of Manchester and Salford in c 1650

5.4.1 Archaeological potential

The Site most likely lay within the Manchester's agricultural hinterland. The potential for buried archaeological remains is considered to be low due to the later development that took place on the Site.

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 4) 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, which was navigable as far as India House on Whitworth Street. 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.

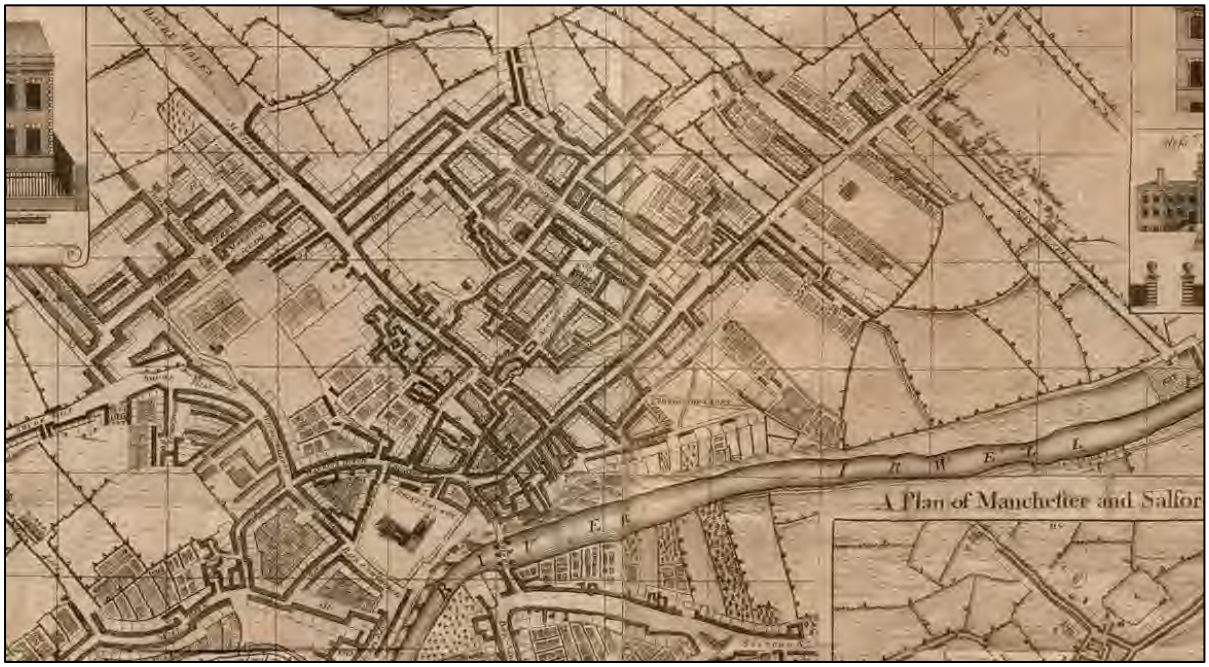


Plate 4 Extract from Casson and Berry's map of 1741, showing approximate Site location

The success of the Bridgewater Canal acted as a catalyst for the construction of numerous canals, including the Ashton Canal (HER 11312.1.0) and 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 terminus at the Dale Street Basin (HER 1386.1.0), 240m north-west of the Site. Initially, the canal opened in stages as sections were completed beginning with the Manchester to Rochdale branch in 1798. The Ashton / Rochdale Junction Canal was complete in 1799 and opened to traffic in 1800 (11312.1.0), 120m north-west of the Site. 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. The Rochdale Canal lies 170m to the north of the Site.

The Ashton Canal was proposed in 1791 and would link the factories in Manchester to the collieries in the Ashton and Oldham area. An Act of Parliament was passed in 1792, and construction commenced immediately under the direction of Edward Banks (Hadfield & Biddle, 1970). The construction of the canal required an aqueduct to cross the valley of Shooters Brook. The aqueduct was built in 1797–99 and may be the first skewed canal aqueduct to be constructed. Shooters Brook flowed in an open channel through the central arch of the aqueduct (HER 1387.1.0). The Ashton Canal aqueduct remains extant and lies 70m to the north-east of the Site.

The Ashton Canal opened in 1799 and cost approximately £170,000. It was the terminus of three canals (Ashton, Peak Forest, Huddersfield Narrow) constructed in the 1790s. Part of the impetus was the drive to deliver locally produced coal to Manchester. Many of the mills in Ancoats depended on the developing network of short branch canals for transport, coal and water for their steam-power plants. The Ashton Canal continued in use commercially until the 1950s and was used as a diversionary route during WWII. The Ashton Canal is located 60m north of the Site (HER 6361.1.0).

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 earliest textile factories consisted of water-powered mills erected along Shooters Brook to the south of Union (now Redhill) Street. There is some evidence to suggest, for instance, that New Islington Mill and Salvin's Factory originated in the late 1780s as water-powered textile mills situated on the bank of Shooter's Brook (Miller, et al., 2007). However, Shooter's Brook was a small watercourse, and in seeking a solution to the inadequate power supplied to their waterwheels from the brook, some manufacturers experimented with steam power. Notably, John Kennedy is reputed to have first applied steam power to one of his spinning mules whilst renting space at Salvin's Factory in 1793 (HER 12327.1.0; 460m north-east of the Site).

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 and warehouses were established in the Store Street area, adjacent to the Ashton Canal, including Iron and Steel Mill (HER 11406.1.0, 190m north-east of the Site), Stone Wharf (HER 11415.1.0, 120m east of the Site), Paradise Wharf (HER 11315.1.0, 90m north of the Site) and Canal Warehouse (HER 16917.1.0).

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. 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,

260m south-west of the Site). 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.

The train station and associated infrastructure expanded during the second half of the 19th century, comprising train sheds, good stations and warehouses. London Warehouse (HER 1385.1.0) had been erected by 1867 *c* 170m north-west of the Site. An earlier iron works was replaced by a Goods Station (HER 11416.1.0) by around 1867. A series of ten brick arches front Store Street, opposite the Site, which represented the surviving basement or undercroft of a warehouse. A train shed (11407.1) associated with the Store Street Station had been erected by 1881, *c* 100m south of the Site.

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 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 (the nearest section of the railway line lies 330m to the south-west of the Site) 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.

5.7 Development of the Site

The development of the Site can be traced reasonably well from the sequence of available historic mapping. Several cartographers began to map Manchester and its suburbs during the second half of the 18th century. The earliest available map that captures the Site is Green's plan of Manchester and Salford 1787-1794 (Plate 5). A row of terraced houses, with small back yards and outbuildings had been built broadly within the centre of the Site. In addition, a narrow rectangular building had been established on the east side of a lane, whilst a small, square building had been erected to the west of the lane. The function of these buildings is currently unknown. Shooter's Brook flowed through the Site. A ford provided access across the brook. The ford could have earlier origins.

Industrial premises had already been erected along the course of Shooter's Brook by the late 18th century, including several dye houses and cotton factories (Manchester Mercury, 3rd September 1793). An iron foundry was advertised for sale in 1794 and would soon lie between the Ashton and Rochdale Canals (Manchester Mercury, 29th July 1794). Land and premises along Shooter's Brook, in the Piccadilly area were being sold off during the late 19th century,

including several dwellings houses to rent (Manchester Mercury, 5th February 1793; Manchester Mercury, 30th December 1783).

Scholes's 1794 directory recorded an iron foundry occupied by Barrett and Smith along Shooter's Brook (Scholes, 1794, p. 11). Scholes' slightly later trade directory recorded Thomas Hope, a twist manufacturer at Shooter's brook and Barrett, Dawson, & Hardy, an Iron Foundry at Shooter's Brook (Scholes, 1797, p. 64 and 69). No places of business were recorded along Wharf Street, Thames Street, Mawhood Street or Norman Street.

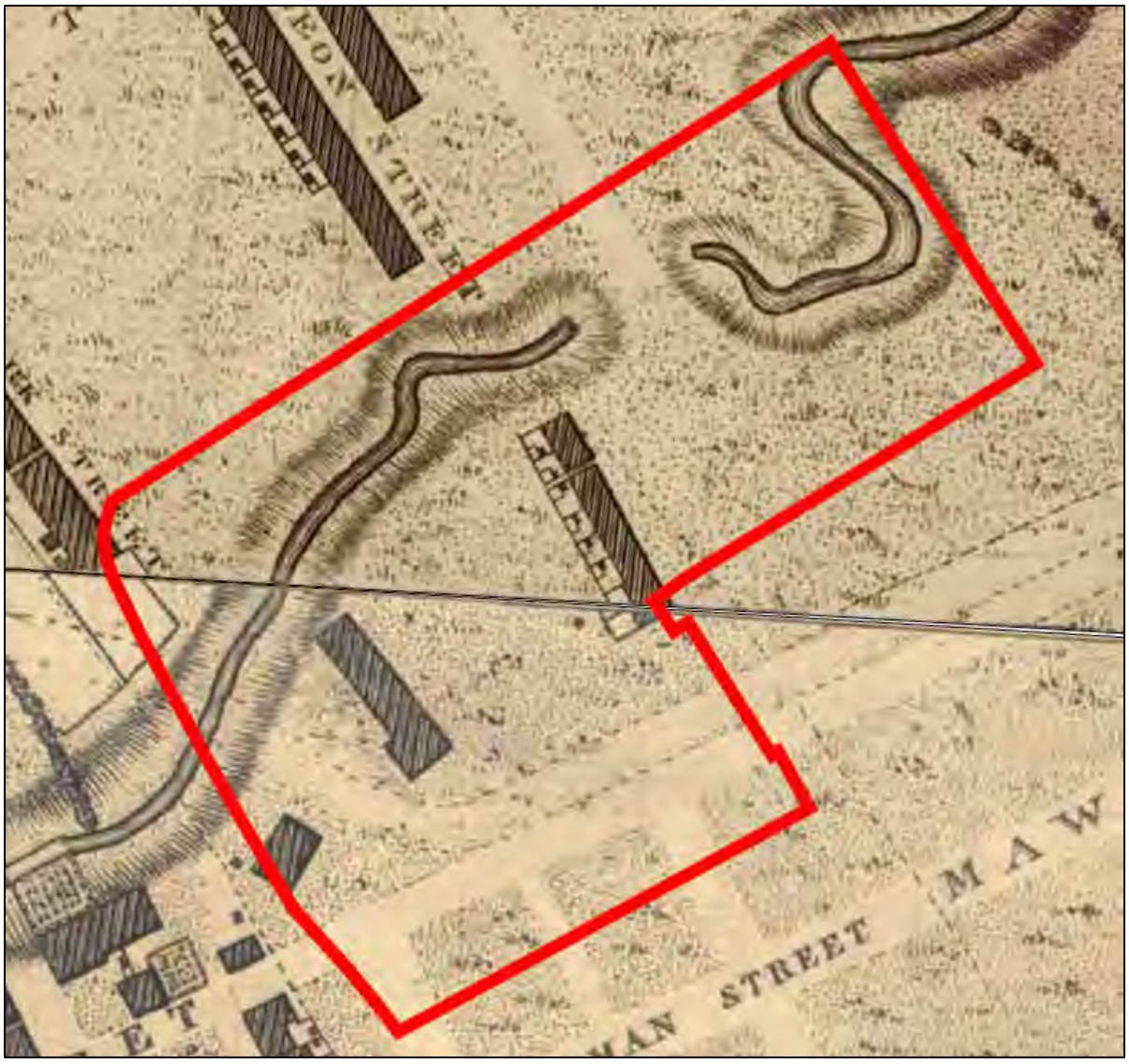


Plate 5 Extract from Green's map showing the approximate Site location

Swire's map of 1824 (Plate 6) is the next available map that captures the Site and surrounding area. The canal network and basins are clearly shown on the plan, including the Store Street (formerly Wharf Street) aqueduct (HER 1387.1.0) that crosses the street to the north-east of the Site. The development of the canal network had altered the street pattern and all the late 18th-century buildings had been cleared. In addition, the Shooter's Brook had been culverted and was not captured on 19th-century maps. The line of Berry Street had been extended northwards to form the west Site boundary. An irregular plot of buildings had been erected

along the Berry Street and Lomas Street (formerly Norman Street) frontage. Slightly later maps show that these buildings were workers' housing (Plate 7).

Bancks' map of 1831 (Fig. 3; Plate 7) replicates the footprint of buildings that were captured on Swire's plan, and shows the individual buildings. The buildings were a group of domestic workers' housing. Most of the buildings were double-depth, however, there were at least two blind-back houses. Norman's Buildings lay just beyond the east Site boundary.

Pigot and Dean's trade directory of 1821 recorded some of the occupants and their trades along Berry Street and Store Street. These included Robert Allen, a spinner, who resided at No. 2 Berry Street, Daniel Gilbert, a spinner and Joseph Hindley, a warper, who lived at No. 18 Berry Street (Pigot & Dean, 1921, pp. 2, 59 and 77). A mixture of businesses occupied Store Street, including Marsden J and L, carriers and a blacksmith and farriers owned by William Mosedale (Pigot & Dean, 1921, p. 108 and 114).



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



Plate 7 Extract from Bancks' map of 1831, showing the Site Boundary

The next available maps that capture the Site are the Ordnance Survey map of 1851 (Fig 4; Plate 8) and Adshead's map of 1851 (Plate 9), which are the first accurate plans that detail the Site. Both maps seem to replicate the footprint of buildings that were depicted on both Swire's (Plate 6) and Bancks' maps (Plate 7). The row of buildings to the west of Berry Street were on a street named Green's Court, whilst a group of blind-back dwellings were labelled as 'No. 2 Passage'. The buildings along Berry Street had external staircases, which imply that the properties within the Site had cellars. A dwelling along Lomas Street was marked as being a warehouse or place of business on Adshead's map but was not listed in Slater's trade directory (Slater, 1850).

Adshead's map of 1851 (Plate 9) shows additional buildings within the north of the Site, in comparison to the Ordnance Survey map. A timber yard appears to have been established at the Store Street and Berry Street junction. A timber yard at Store Street was occupied by John McGlugan (Slater, 1850, p. 96).

A potential water management feature was captured on the Ordnance Survey plan of 1851 (Plate 8). The south-west end of the feature was annotated with the word 'Enter', whilst the north-east extent was labelled 'Leave'. The feature was sub-oval in plan and was also shown on Bancks' map (Plate 7). Adshead's map of 1851 (Plate 9) shows that the feature was an open section of the culverted Shooter's Brook.

Slater's trade directory of 1850 highlights the transformation of the area by the arrival of the railways. Several railway warehouses, works, yards and offices had been established along Store Street occupied by the Manchester, Sheffield and Lincolnshire Railway Company (Slater, 1850, p. 96).

The 1841 census returns recorded the occupants of Berry Street within the Site boundary (Census Returns 1841, Berry Street, Manchester Township, Borough of Manchester, England). Berry Street was occupied by low-skilled workers, primarily employed in the textile industry, such as spinners, weavers, carders, piecers and silk winders. Other occupations listed included labourers, tailors and a millwright. Some of the houses may have been multiple occupancy.

The 1851 census returns shed further light on the social history of the Site, including details regarding the inhabitants of Green's Court, who were employed in low-skilled professions, such as chemical labourers, textile workers and a bricklayer. Some of the residents took in lodgers to subsidise their income, whilst other households shared their accommodation with extended family members (Census Returns 1851, Green's Court, St Andrews, Manchester, England). The residents of No. 2 Passage were also recorded, who were employed in similar occupations. The census returns confirms that most of the cellars on Berry Street were inhabited as separate dwellings, with several entries referred to as, for example, 'under No. 11 Berry Street'. The inhabitants were mostly born in Manchester and the surrounding towns (such as Wigan and Stockport), and Ireland (Census Returns 1851, Berry Street, St Andrews, Manchester, England).



Plate 8 Extract from the Ordnance Survey map of 1851, showing the Site boundary

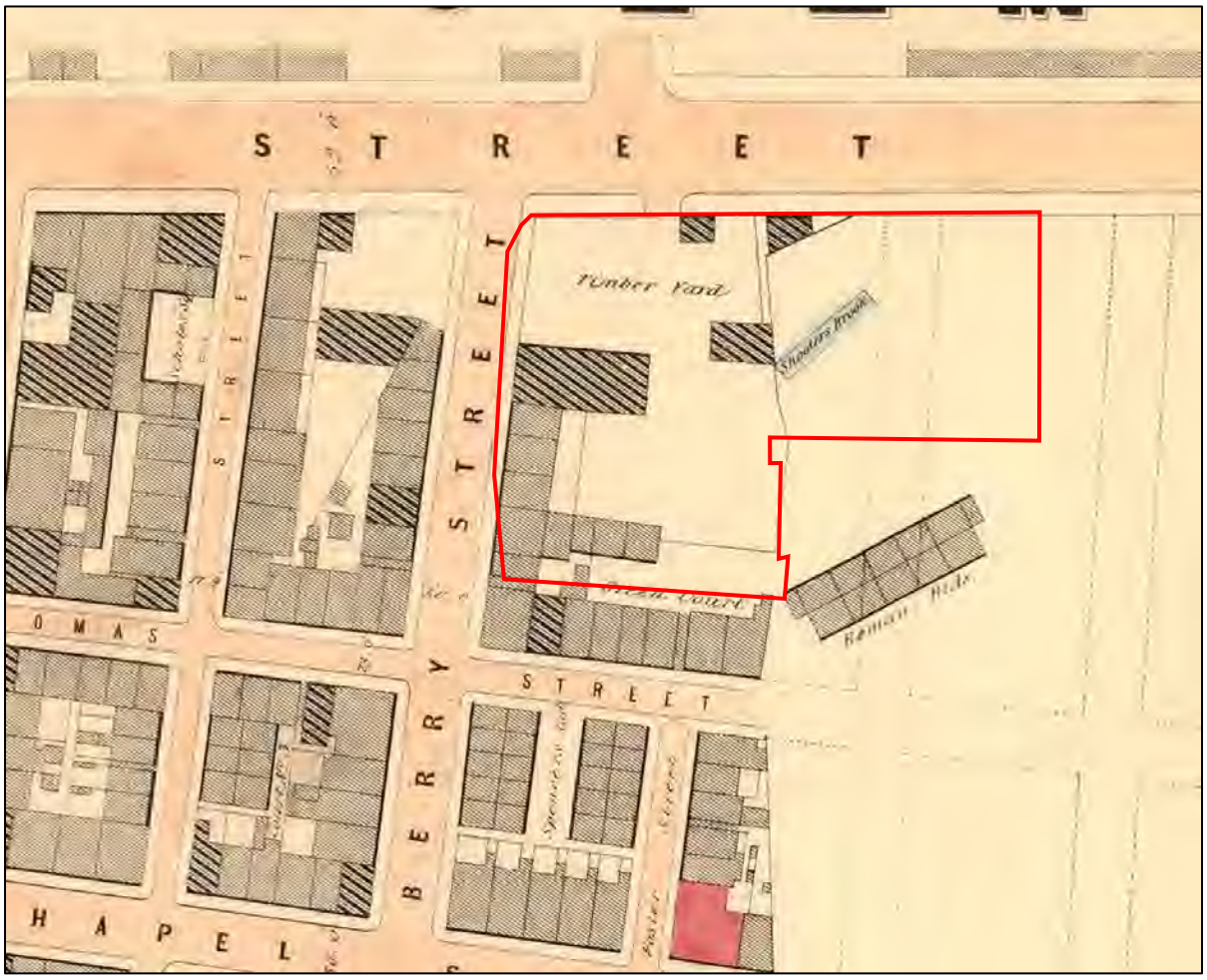


Plate 9 Extract from Adshead's map of Manchester 1851, showing the Site boundary

The 1891 Ordnance Survey map (Fig. 6; Plate 10) shows that a similar arrangement of domestic dwellings occupied Berry Street, Lomas Street and Green's Court. The remainder of the Site had been developed into a timber yard. The timber yard consisted of an L-shaped building that occupied the Berry Street and Store Street frontage, with a large yard to the rear. Slater's trade directory of 1879 recorded a timber yard that was occupied by James Southern, a timber merchant (Slater, 1879, p. 217), however, Goad's insurance maps of 1889 confirm that this lay further to the east, along Store Street, though they may have also occupied the buildings within the Site. A warehouse or industrial buildings lay in the east extent of the Site, however, the building was not listed in the trade directory. In addition, the open section of Shooter's Brook had been covered.

Goads insurance map of 1889 (Plate 11) provides further insight into the function and composition of the buildings within the Site. The plan suggests that the timber shed was two-storeys high. The occupants of the building were not recorded. Thompson, Mckay & Co, Provender Warehouse and Stables occupied land in the east of the Site. These buildings were one and two storeys high. In addition, Berry Street had been renamed Sparkle Street.

The census returns of 1891 shows No. 2 Passage, Green's Court and Berry Street continued to be occupied by working-class residents that were employed in low-skilled occupations.

None of the cellars were recorded as being occupied (Census Returns of 1891, St Clements, Manchester, England).

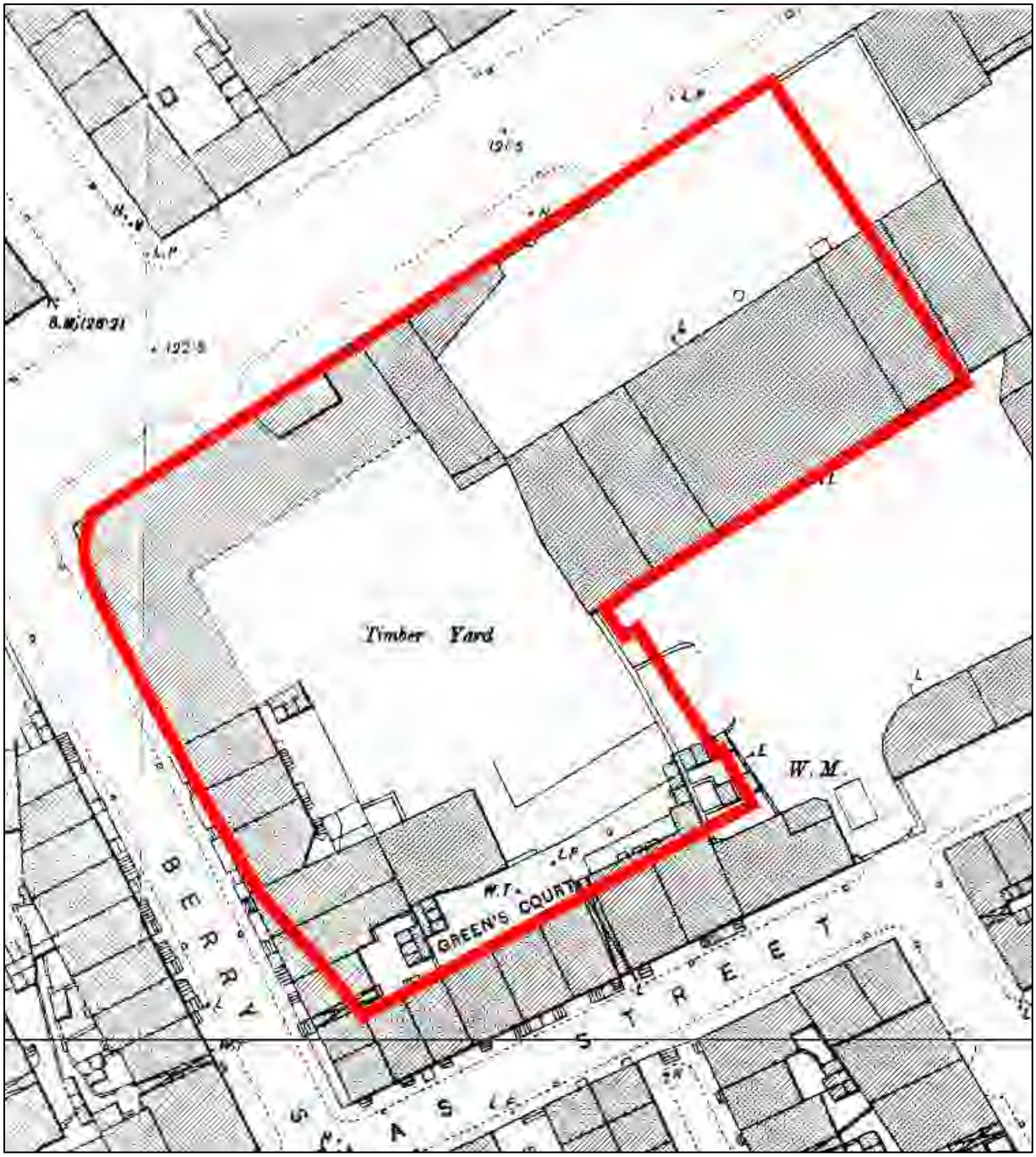


Plate 10 Extract from the Ordnance Survey Town Plan of 1891, showing the Site boundary

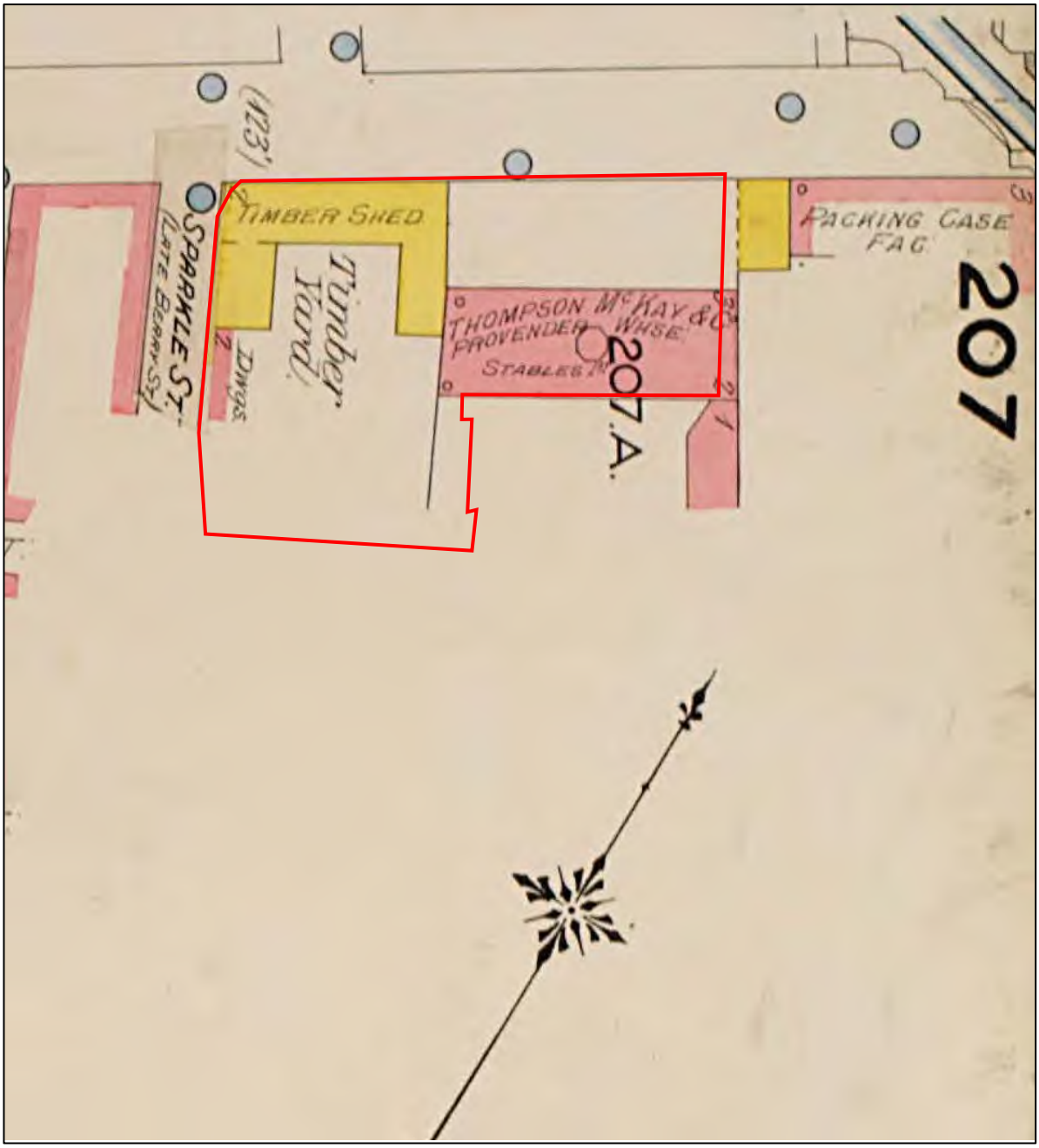


Plate 11 Goad's insurance plan of Manchester of 1889, sheet 207 (book of carriers and warehouses), showing some of the buildings within the Site

A similar configuration of buildings is shown on the 1908 Ordnance Survey map (Fig. 7), with the exception of some additional ancillary buildings erected within the Timber Yard. A few small changes had taken place within the Site by the time of the Ordnance plan of 1922 (Fig. 8). The configuration of buildings along the Store Street frontage, formerly occupied by the timber shed had been altered and consisted of five buildings. At least one of the properties along Berry Street (in the south-west corner of the Site) had been demolished to allow access to the timber yard. This also seems to have allowed for small backyards to be created at the rear of the dwellings fronting Lomas Street.

Slater's trade directory of 1911 listed the same occupants at no. 38 Store Street, including James Southern, a timber merchant and Thompson, Mackay and Co, sheet and saddlery stores (Slater, 1911, p. 671).

By 1951 (Fig. 9), all the domestic buildings within the Site had been cleared and the timber yard been expanded across the entire Site. A photograph taken in 1966 captures Sparkle Street looking north from the Lomas Street junction towards Store Street (Plate 12). The south and west edge of the Site remained vacant and overgrown since the removal of the former domestic dwellings. Buildings of various sizes occupied the Site, and consisted of two storey offices, workshops and warehouses. The timber yard occupied no's 32 and 34 Store Street. Photographs taken of the Site in 1968 shows the arrangement of buildings within the Site (Plate 13 and Plate 14). A mock Tudor building occupied the junction of Sparkle Street and Store Street. The description of the photograph implies that the building was used for commercial advertising purposes.

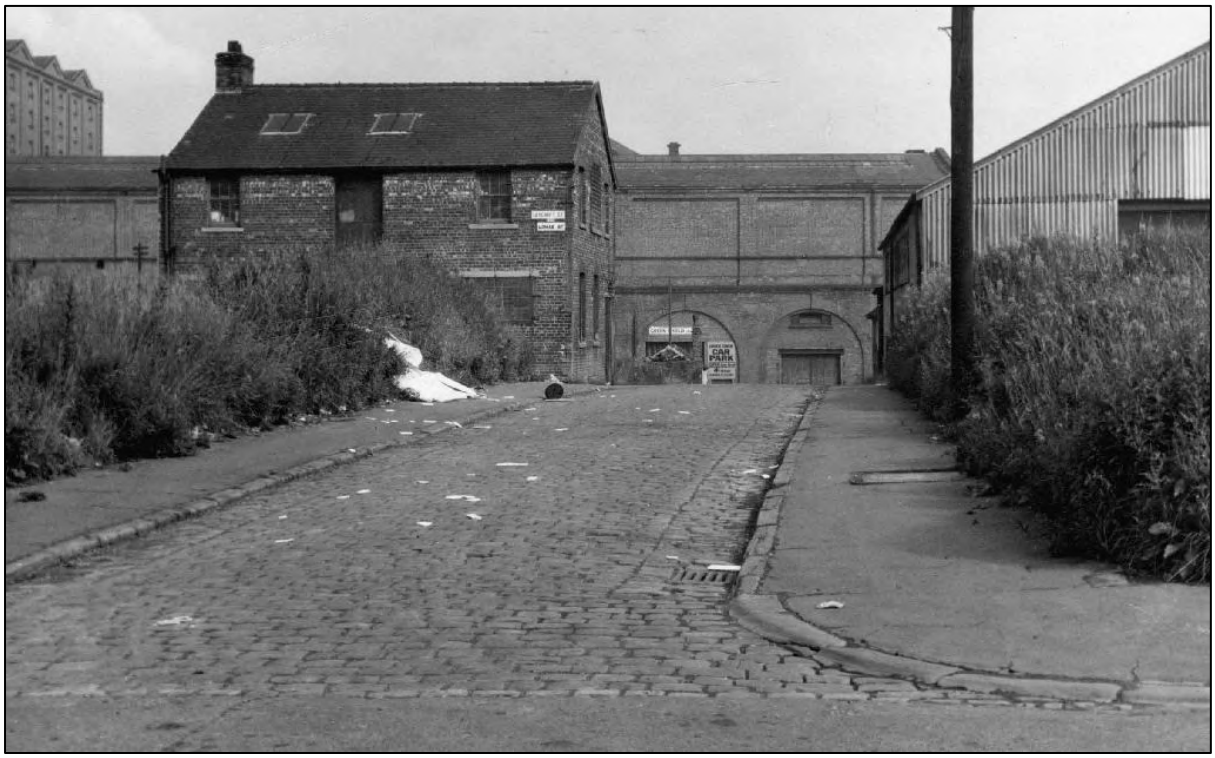


Plate 12 View of Sparkle Street, taken from Lomas Street, looking north towards Store Street, taken in 1966, courtesy of Manchester Local Image Collection



Plate 13 View of Sparkle Street taken from Store Street in 1966, courtesy of the Manchester local image collection.



Plate 14 No. 32 Store Street at the corner of Sparkle Street, used as commercial advertising, taken in 1968, courtesy of Manchester Local Image Collection

5.8 Previous archaeological works

In total, 29 archaeological events have been recorded within a 250m radius of the Site. Non-intrusive events include 12 desk-based assessments, three heritage statements, five historic building surveys and an event survey. Intrusive archaeological investigations include two watching briefs, three evaluations and three excavations.

5.8.1 Non-intrusive work

Several desk-based assessments have been produced for land surrounding the Site. The most recent of these was written in 2022 for land at Laystall Street, (EGM5448). The report concluded that the Site had potential to contain enclosed yards at the rear of a public house and back-to-back workers' housing (Salford Archaeology, 2022).

The nearest desk-based assessments to the Site include the Ashton Canal Corridor assessment (EGM3356), which was written to support the proposed route corridor for the fast bus routes and combined pedestrian and cycle routes to the Commonwealth Games Stadium, together with areas of proposed site-based environmental improvements along that corridor. The report concluded that the scheme had potential to impact archaeological remains associated with the Roman road from Manchester to Castleshaw and urbanisation dating from the 18th century onwards (UMAU, 2001).

Other nearby desk-based assessment includes Manchester Piccadilly and Oxford Road Capacity (EGM4229), which supported a planning application for proposed improvements to Manchester Oxford. The assessment identified 57 heritage assessments within the site of the

proposed scheme and concluded that further works were required at the locations of the sites of worker's housing at Piccadilly Station and at Whitworth Street West. A watching brief was recommended at land west of Oxford Street due to the significant potential for Romano-British period remains in this area. An appropriate English Heritage level of building investigation was also required at the MSJ&AR viaduct and Mayfield Station. Road and Piccadilly railway stations (Parsons Brinckeroff, 2014).

5.8.2 Intrusive investigations

Intrusive archaeological excavations adjacent to the Site have uncovered remains of 19th-century workers' houses and streets (EGM4679). The site of the former houses lies on the opposite side of Sparkle Street and has since been redeveloped into a multi-storey car park (Archaeological Research Services, 2012). The most recent intrusive archaeological works within the study area took place at Laystall Street in 2022 (EGM5394). The evaluation uncovered the remains of late 18th – and early to mid-19th-century workers' housing, along with structural remains representing the Welsh Harp public house. No further investigations were required (Salford Archaeology, 2022).

5.9 Summary of archaeological potential

No prehistoric activity is known to have taken place within the Site.

The Site lies immediately south of the Roman road from Manchester to Castleshaw. Roman roadside activity could have taken place within the Site.

No medieval activity is known to have taken place within the Site.

The Site most likely lay in Manchester's agricultural hinterland during the post-medieval period, presumably on the south-west edge of Ancoats. The Shooter's Brook flowed through the Site. A ford provided access across the brook and may have post-medieval origins.

By the late 18th century, a row of terrace houses had been established in broadly the centre of the Site. In addition, a long narrow rectangular building and small square building had been erected within the west of the Site. All these buildings had been cleared by the early 19th century.

Workers' housing had been developed along Lomas Street, Sparkle Street, Green's Court and No. 2 Passage by at least 1824. The domestic dwellings consisted of a mixture of double-depth, blind-backs and cellar dwellings (indicated by cartographic sources and the census returns). Later maps show that the dwellings either had external staircases or pavement lights, indicating that the buildings contained cellars.

A timber yard had been established along Store Street within the Site by the mid-19th century. The east side of the Site was developed into a provender and stable yard during the second half of the 19th century. The buildings associated with the timber yard seem to have been altered during the early 20th century.

All the houses within the Site had been entirely cleared by the 1940s and the timber yard was expanded across the Site.

6. Site inspection

A Site visit was carried out as part of the archaeological assessment on 6th June 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 extant Site plot is currently occupied by two modern commercial buildings (Plate 15 to Plate 17). Hard-standing surfaces paved the area between the two buildings. Materials were being stored on the hard-standing area. The Site boundary comprised overgrown vegetation and trees.



Plate 15 View of the Site from the east from Sparkle Street



Plate 16 View of the Site looking south from Store Street



Plate 17 View of the Site looking south from Store Street

7. Gazetteer

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

Gazetteer Entry 01

Site Name	Roman road
Designation	Non-designated heritage asset
HER Number	24.1.8
Site Type	Road (site of)
Period	Roman
NGR	384934, 398064
Source	HER
Description	The HER states that the present line of Store Street has been claimed as to mark the line of the Castleshaw to Manchester Roman road. The road lies immediately to the north of the Site. Roman roadside activity may have taken place within the Site
Assessment	Remains associated with Roman activity may survive within the Site and could be affected by the proposed scheme, though remains have likely been damaged by the 19th-century development within the Site.

Gazetteer Entry 02

Site Name	Pre-industrial landscape
Designation	No designation
HER Number	-
Site Type	Fields (site of)
Period	Post-medieval
NGR	384946, 398044
Source	Green's map of 1787-94
Description	The Site likely lay in Manchester's agricultural hinterland during the post-medieval period, however, no fields boundaries were captured within the Site on Green's map (Fig. 3).
Assessment	Remains of the medieval and post-medieval landscape includes former field boundaries and relict soils, which could survive in isolated patches but are likely to have been removed by the 19th-century development of the Site.

Gazetteer Entry 03

Site Name	Buildings
Designation	Non-designated heritage asset
HER Number	-
Site Type	Buildings (site of)
Period	18th century

NGR	384954, 398043; 384926, 398013; 384937, 398021
Source	Green's map of 1787-94
Description	A row of terraced housing was captured on Green's map of 1787-94 (Fig. 3). The houses had small back yard plots with outbuildings. In total, two additional buildings lay on either side of a lane in the west of the Site. These buildings consisted of a long, narrow rectangular building and a small square building. All these buildings had been cleared by the early 19th century.
Assessment	Remains associated with the 18th-century buildings may survive within the Site and could be affected by the proposed scheme.

Gazetteer Entry 04

Site Name	Domestic dwellings
Designation	No designation
HER Number	-
Site Type	Workers housing (site of)
Period	Early 19th century
NGR	384941, 398010
Source	Swire's map of 1824; Bancks' map of 1831; OS map of 1851
Description	Rows of domestic dwellings were first shown on Swire's map of 1824. Bancks' plan of 1831 shows the buildings in greater detail. Various housing types occupied the Site, including double-depth houses, blind-backs and cellar dwellings. Most of the properties included cellars, and those on Berry Street (with external staircases) were occupied as separate dwellings. Privies and outbuildings were established to the rear of houses of Lomas Street by the late 19th century.
Assessment	Remains associated with these buildings could be affected by the proposed development scheme.

Gazetteer Entry 05

Site Name	Shooter's Brook and potential post-medieval ford
Designation	No designation
HER Number	-
Site Type	Water course (site of)
Period	-
NGR	384947, 398039
Source	Green's map of 1787-94
Description	Shooter's Brook flowed through the Site on 18th-century mapping. A ford is visible on Green's map in the east of the Site (Fig. 3). The ford may have post-medieval or medieval origins. The brook was tunnelled / culverted in the early 19th century.
Assessment	Remains associated with the natural course of Shooter's Brook may lie within the Site, though this has likely been damaged by the culverting of the watercourse.

Gazetteer Entry 06

Site Name	Timber yard
Designation	No designation
HER Number	-
Site Type	Shed and yard (site of)
Period	Mid-19th century
NGR	384928, 398047
Source	OS mapping; Goad's insurance map
Description	A timber yard and associated buildings is first shown on Adshead's map of 1851 (Plate 9, p24). A timber shed was built along the Store Street frontage during the second half of the 19th century (Fig. 6). Buildings associated with the timber yard were altered during the 20th century. The timber yard was redeveloped and expanded during the 1940s. Early buildings may have been damaged or destroyed by the later redevelopment of the timber yard.
Assessment	Remains associated with these buildings have limited potential to survive as below ground remains.

Gazetteer Entry 07

Site Name	Provender and stables
Designation	No designation
HER Number	-
Site Type	Stables and stores (site of)
Period	Mid to late 19th century
NGR	384971, 398057
Source	OS mapping; Goad's insurance map
Description	A large building consisting of a provender and stables had been established partly within the east edge of the Site during the second half of the 19th century. Goad's insurance map of 1889 recorded 'Thompson, Mckay & Co, Provender Warehouse and Stables' as the occupants. The buildings were incorporated into the timber yard by at least the 1970s.
Assessment	Remains associated with these buildings could be affected by the proposed development scheme.

Gazetteer Entry 08

Site Name	Shooter's Brook culvert
Designation	No designation
HER Number	-
Site Type	Water course (site of)
Period	Mid-19th century
NGR	384947, 398039
Source	Bancks & Co's map of 1831; OS map of 1851
Description	The brook (GE05) was tunnelled / culverted in the early 19th century. An open section of the water course is captured on Bancks' map (Plate 7, p21) and the 1851 OS map (Plate 8, p23) as being within the east of the Site.

Assessment	Remains associated with the culverted section of Shooter's Brook may lie within the Site and could be affected by the proposed development scheme.

8. Significance

8.1 Policy context for heritage assets

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

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

8.2 Designated heritage assets

The Site is situated within 250m of ten designated heritage assets, however, the proposed development will not have a physical impact on these designated heritage assets, and so they are not considered further in this report (see Section 2.3).

8.3 Significance of the archaeological resource

8.3.1 Historical and archaeological interest

Historical interest

The Site most likely lay in Manchester's agricultural hinterland during the medieval and post-medieval period, presumably on the south-west edge of Ancoats.

During the industrial period Manchester saw rapid expansion. As a result, the Site and the surrounding area was developed into workers' housing, a timber yard and stables. The Site is an example of how industry completely transformed Manchester and therefore could be considered to be of historic interest.

Archaeological interest

The Site lies immediately south of the proposed course of the Roman road from Manchester to Castleshaw and therefore archaeological remains found from this period would be of archaeological interest, however, given the extent of development that occurred across the Site from the 19th century onwards, it seems likely that any buried remains from the Roman period will be, at best, very fragmentary.

The industrial period is a significant part of Manchester's history and therefore any archaeological remains of 19th-century workers' houses could be of archaeological interest.

8.3.2 Baseline significance conditions

Period

No prehistoric activity is known to have taken place within the Site, and the potential for such remains is considered to be extremely low due to the intensive development of the Site since the early 19th century.

The Site lies immediately to the south of the proposed course of the Roman road from Manchester to Castleshaw (GE01) and any remains found could be significant due to period.

No medieval activity is known to have taken place within the Site, and the potential for such remains is considered to be low due to later 20th century development. There is limited potential for the Site to contain remains of the pre-industrial landscape, which could include former fields (GE02) and Shooter's Brook and ford (GE05).

The most likely remains to be encountered within the Site could date from the late 18th century and could include three blocks of buildings (GE03), domestic dwellings (GE04), a culverted section of the Shooter's Brook (GE08), elements of a timber yard (GE06) and stables and stores (GE07). Site's reflecting Manchester's industrial heritage may be considered significant due to period.

Rarity

Buried remains associated with Roman Manchester (GE01) may be considered significant due to rarity, as would any remains pre-dating the 19th century (GE02, GE03 and GE05), as few remains survive within the area due to extensive development during the industrial period.

Archaeological remains associated with the 19th-century domestic houses may not be considered rare as several examples have been excavated in the past 30 years.

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

The sites identified in the gazetteer (Section 7) do not hold group value. However, any Roman remains within the Site might contribute to the wider understanding of the development of Roman Manchester.

Survival / condition

The survival, extent and condition of any below-ground archaeological remains within the Site is presently unknown. However, most of the 19th-century houses had external staircases or pavement lights, which implies that they contained cellars, and may, therefore, have removed remains associated with earlier period. Former houses containing cellars are more likely to survive as *in-situ* buried remains.

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 remains within the Site are mostly associated with the development of Manchester during the industrial period, and therefore may not be considered significant due to diversity.

Potential

There are no prehistoric sites within the Site or its environs, and the potential for prehistoric remains is considered to be low.

The Site lies immediately south of the Roman road from Manchester to Castleshaw. The survival of remains associated with Roman roadside 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/sample-page/roman-period):

Roman	
R11	How can we identify typologies and the development of military sites and Roman road systems?

Table 3 Roman research agendas

The Roman Road lies beyond the Site boundary and there is known no Roman remains within the Site, therefore, there is limited potential for the Site to address the research aims listed above (Table 3).

The Site was within an area of fields during the post-medieval period. The survival of elements of the pre-industrial landscape may have some potential to address the research agendas outlined in the current *Archaeological Research Framework for North West England (*https://researchframeworks.org/nwrf/sample-page/post-medieval):

Post-medieval and industrial	
PM09	How did ecological changes linked to agricultural improvement impact upon the wider landscape?
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?
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 4 Post-medieval and industrial research agendas

Elements of the pre-industrial landscape have the potential to survive within discrete parts of the Site, potentially in areas that did not contain 19th-century cellars and may have some potential to address the research aims listed above (Table 4).

Various types of workers' houses had been erected across the Site by the early 19th century, including back-to-backs, blind-backs, double-depths and cellar dwellings. 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/sample-page/industrial):

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

Table 5 Industrial Period research agendas

Structural remains of workers' houses and backyards have high potential to survive as buried remains within the Site and therefore have the potential to address the research aims listed in the table above (Table 5).

8.4 Summary of significance

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

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.

The Site has high potential to contain 19th-century houses (GE04) and to contain a culverted section of Shooter's Brook (GE08), that would be of low (local) significance (Fig. 13).

The Site has potential to contain elements of the pre-industrial landscape (GE02), late 18th-century buildings (GE03) and a potential post-medieval ford (GE05) that would be of low (local) significance (Fig. 13).

The Site has low potential to contain Roman remains associated with the Roman road from Manchester to Castleshaw (GE01). If any remains were discovered, they could be of medium (regional) significance.

The Site has the potential for remains of a mid-19th-century timber yard (GE06) and late 19th-century stables and stores (GE07), which would be of limited archaeological interest and may be considered as negligible.

9. Impact assessment

9.1 Development Proposals

Foras (Sparkle Street) Limited have prepared a Full Planning Permission for demolition of existing low rise commercial units and erection of ground + 27 storey residential development with supporting residential amenity, private terraces and private shared garden. The delivery of the proposals will involve ground-breaking works that have the potential to affect any surviving archaeological remains within the Site.

9.2 Impact upon archaeological resource within the Site

This assessment has demonstrated that the Site has the potential to retain buried remains of Roman activity, elements of the pre-industrial landscape, Shooter's Brook and ford, late 18th-century buildings, various types of 19th-century houses, a timber yard and stables and stores. Any such remains that do exist within the Site are likely to be of low (local) or medium (regional) significance and, without a programme of mitigation, the scheme could damage or destroy these remains.

10. Recommendations

10.1 Heritage Assets

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

10.2 Further Investigation

Following consultation with Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as archaeological advisor to Manchester City Council, it has been agreed that an archaeological evaluation (consisting of either a strip, map and record or trial trench evaluation) will be required to establish the presence or absence of buried archaeological remains and, if present, their extent and significance. The evaluation will target non-designated heritage assets of low (local) significance.

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

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Date accessed: 15/05/2023

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

Appendix 1: Figures

Figure 1: Site location map

Figure 2: Site boundary superimposed on modern mapping

Figure 3: Site boundary superimposed onto A Plan of Manchester and Salford, W. Green, 1787-1794

Figure 4: Site boundary superimposed onto Bancks & Co Map of Manchester and Salford, 1831.

Figure 5: Site boundary superimposed on the Ordnance Survey 60" to 1 Mile 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 Map of 1951

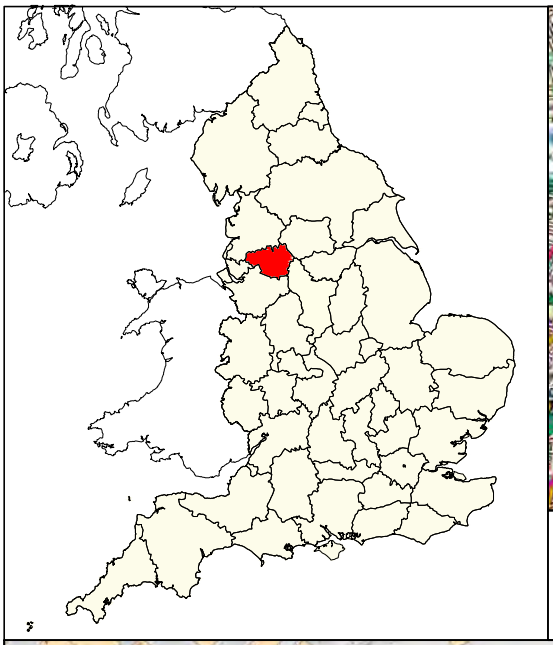
Figure 10: Site boundary superimposed on the Ordnance Survey 1:1250 National Grid Series 1969

Figure 11: Gazetteer sites superimposed onto modern mapping

Figure 12: Gazetteer sites superimposed onto modern mapping

Figure 13: Gazetteer sites superimposed onto modern mapping

Figure 14: Areas of archaeological potential



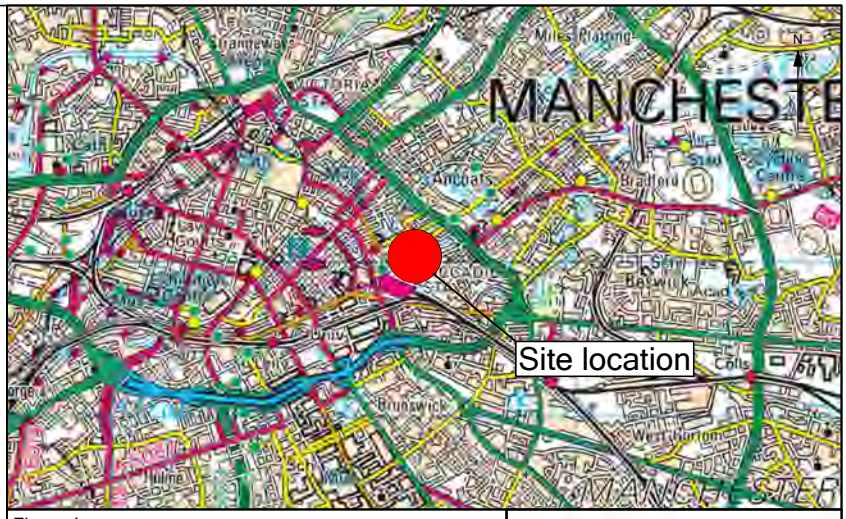
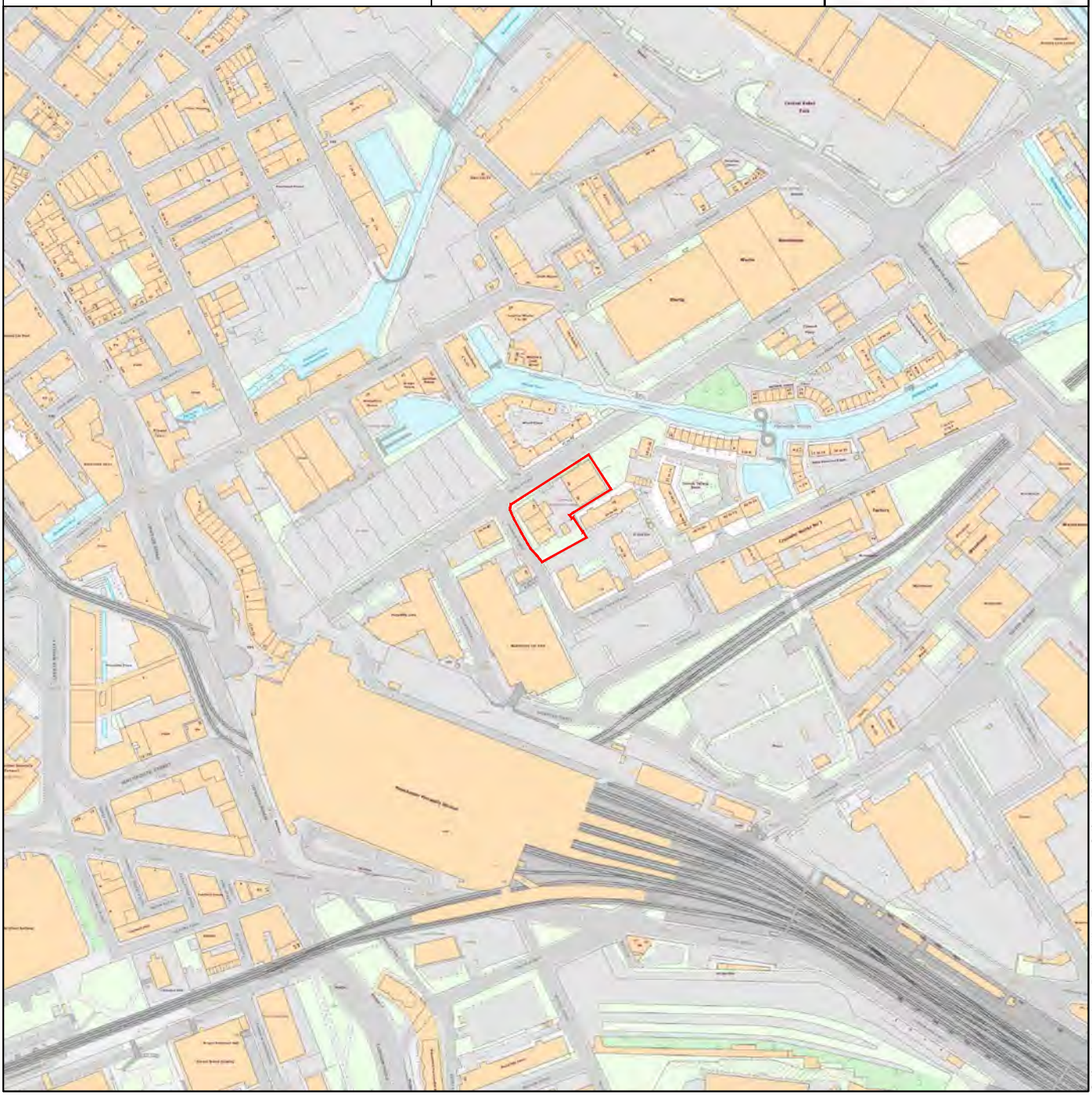


Figure 1:

Site Location

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Figure 2:

Site Boundary Superimposed onto Modern Mapping

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N

Key:

Site Boundary

SALFORD ARCHAEOLOGY

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Scale at A4 1:500

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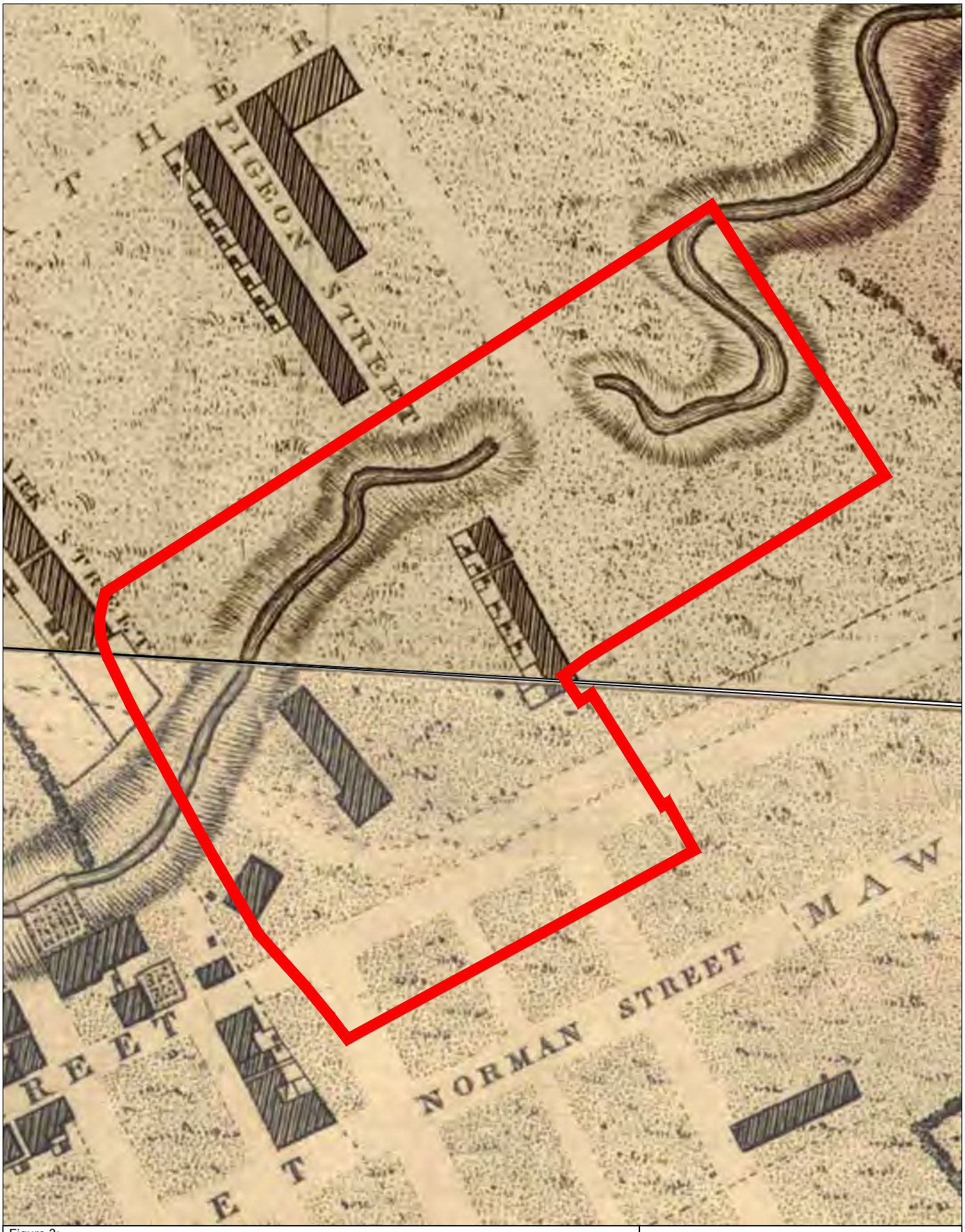


Figure 3:

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

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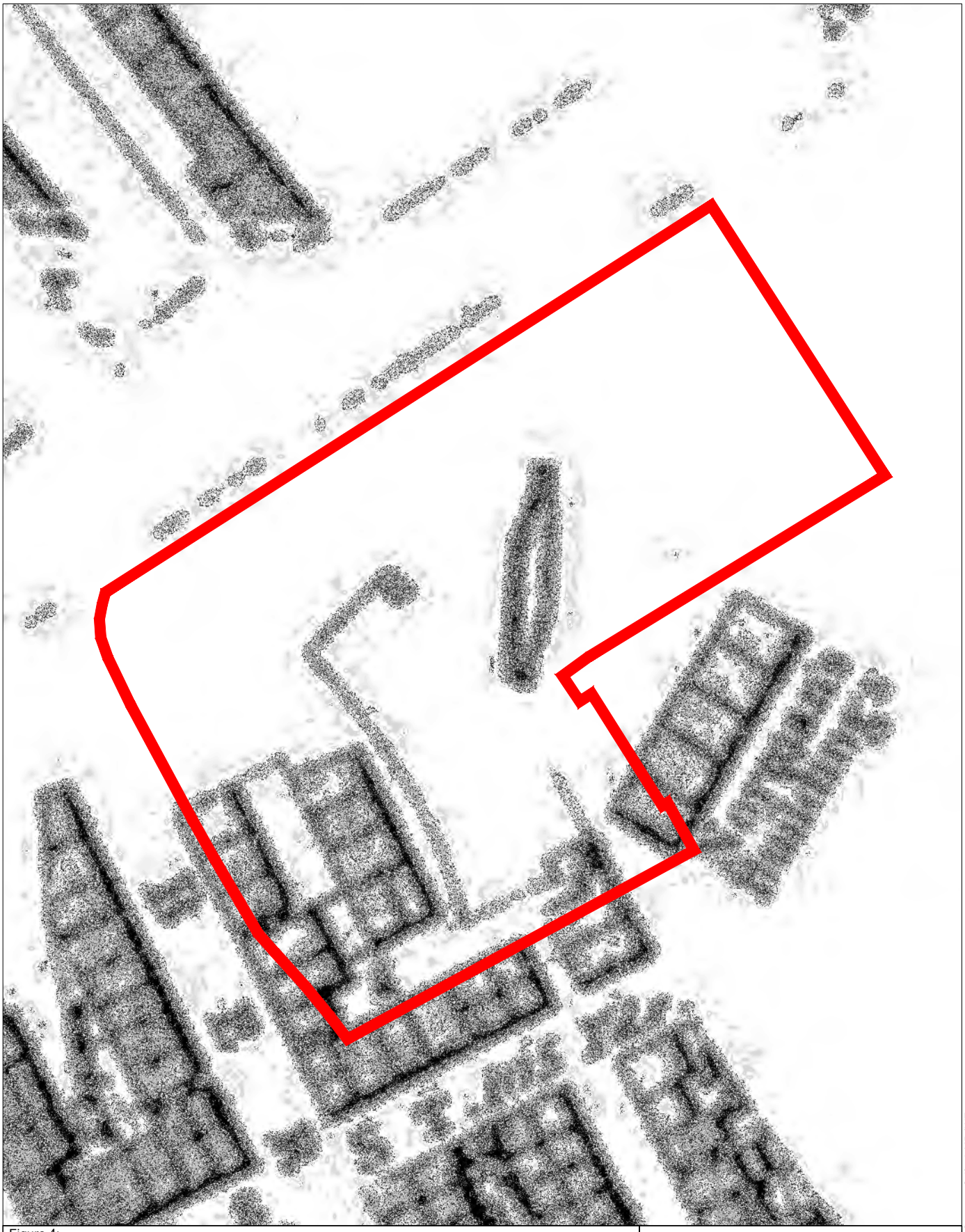


Figure 4:

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

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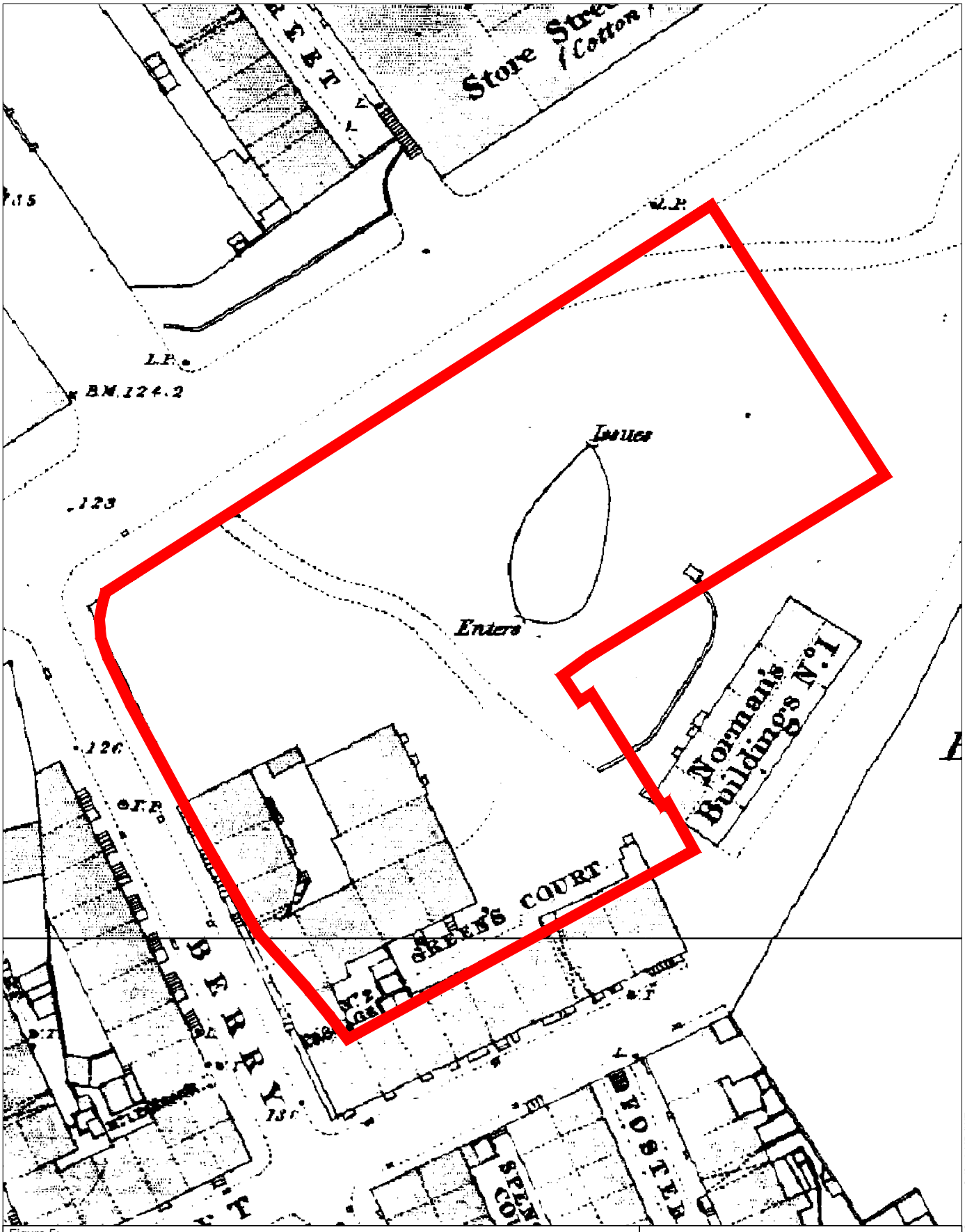


Figure 5:

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

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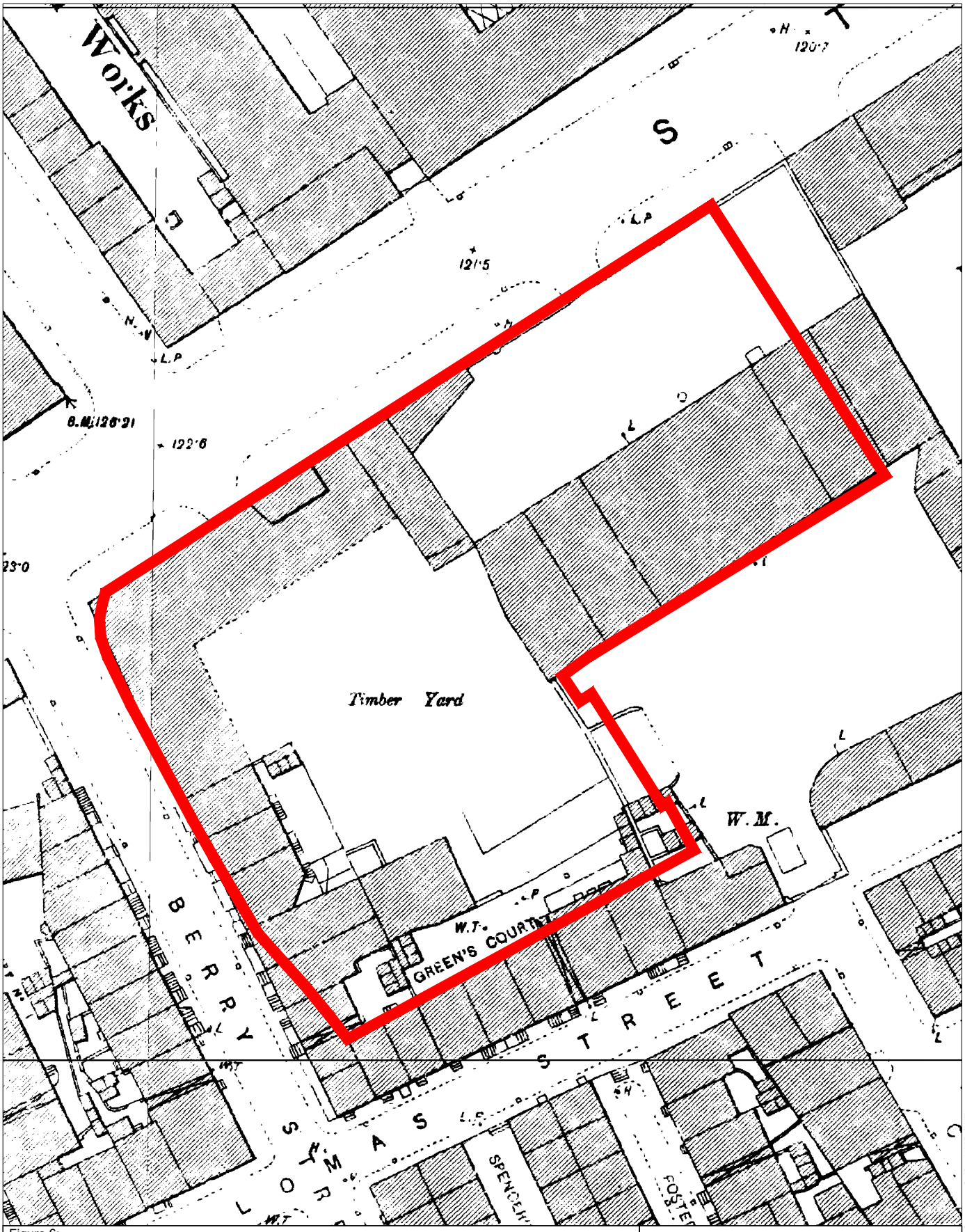


Figure 6:

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

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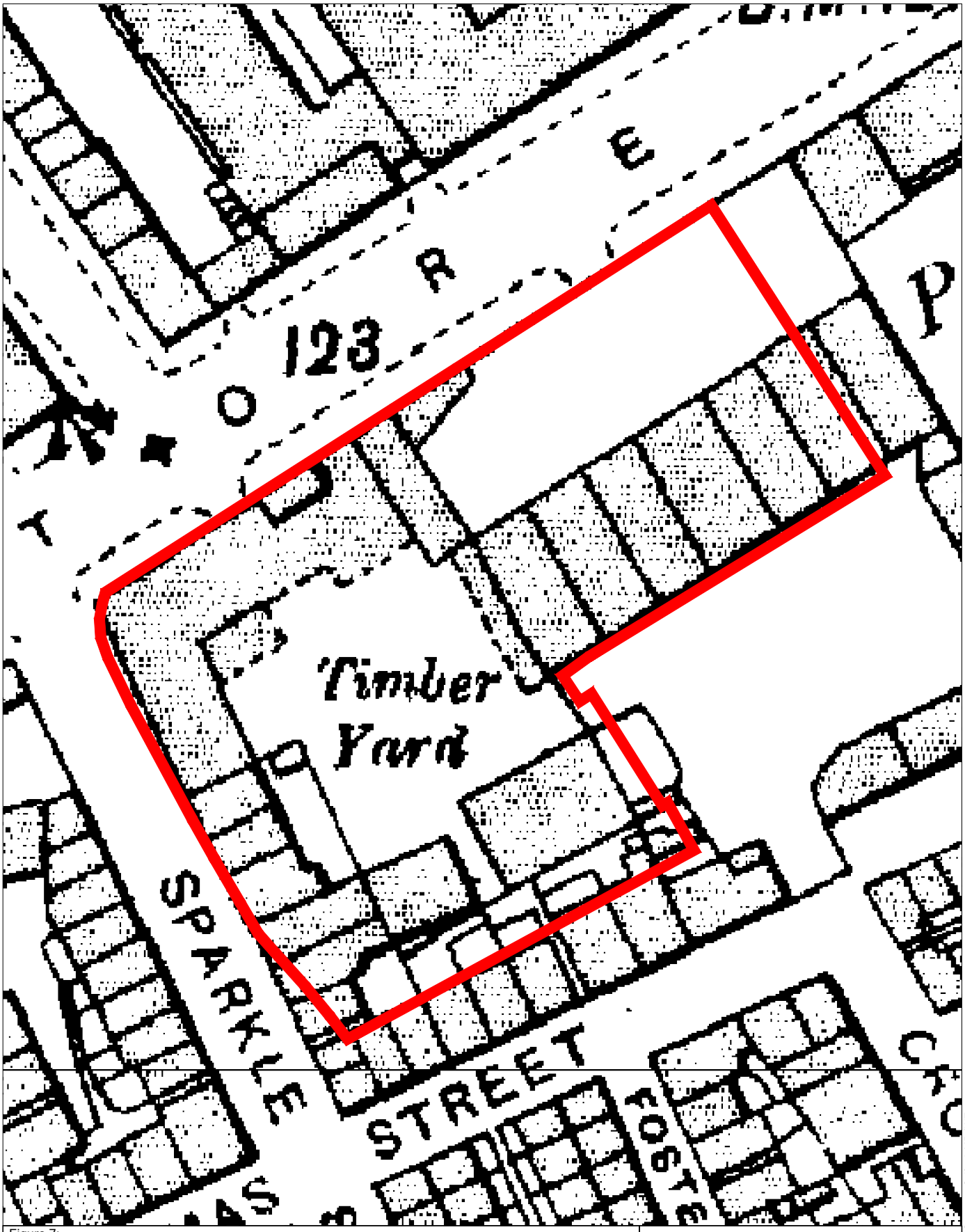


Figure 7:

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

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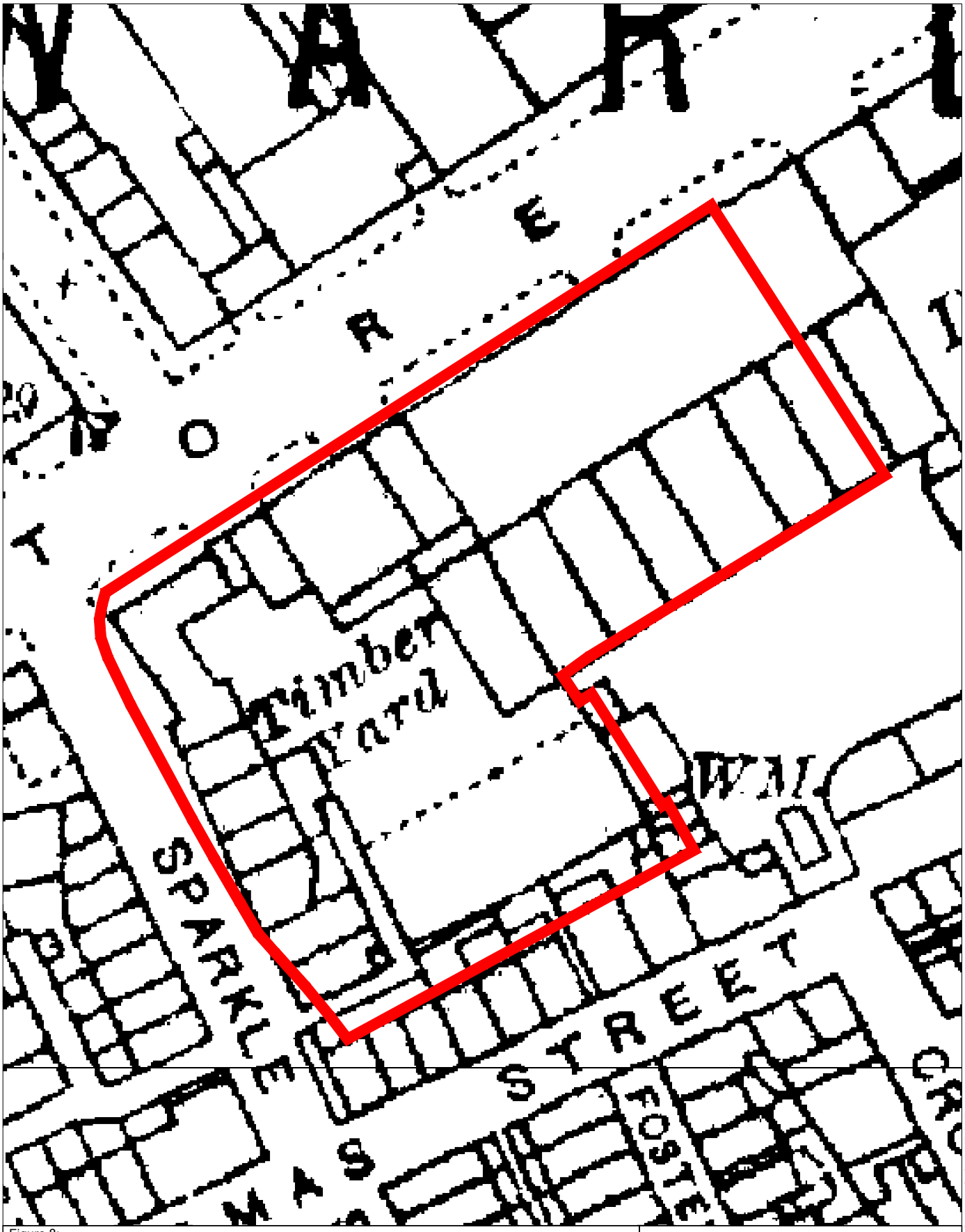


Figure 8:

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

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Figure 9:

Site Boundary Superimposed onto the 1:2500 National Grid Map of 1951

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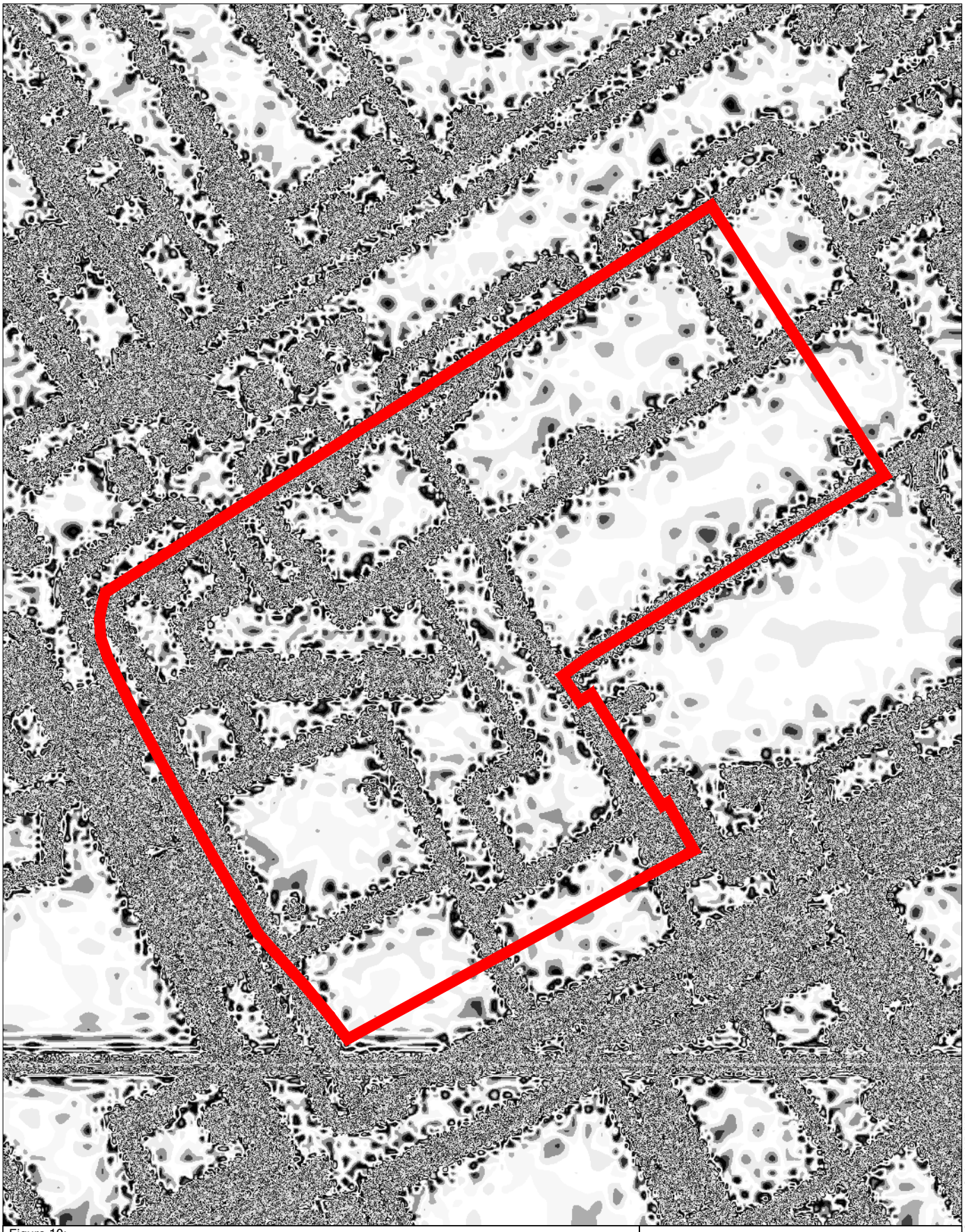


Figure 10:

Site Boundary Superimposed onto the 1:2500 National Grid Map of 1969

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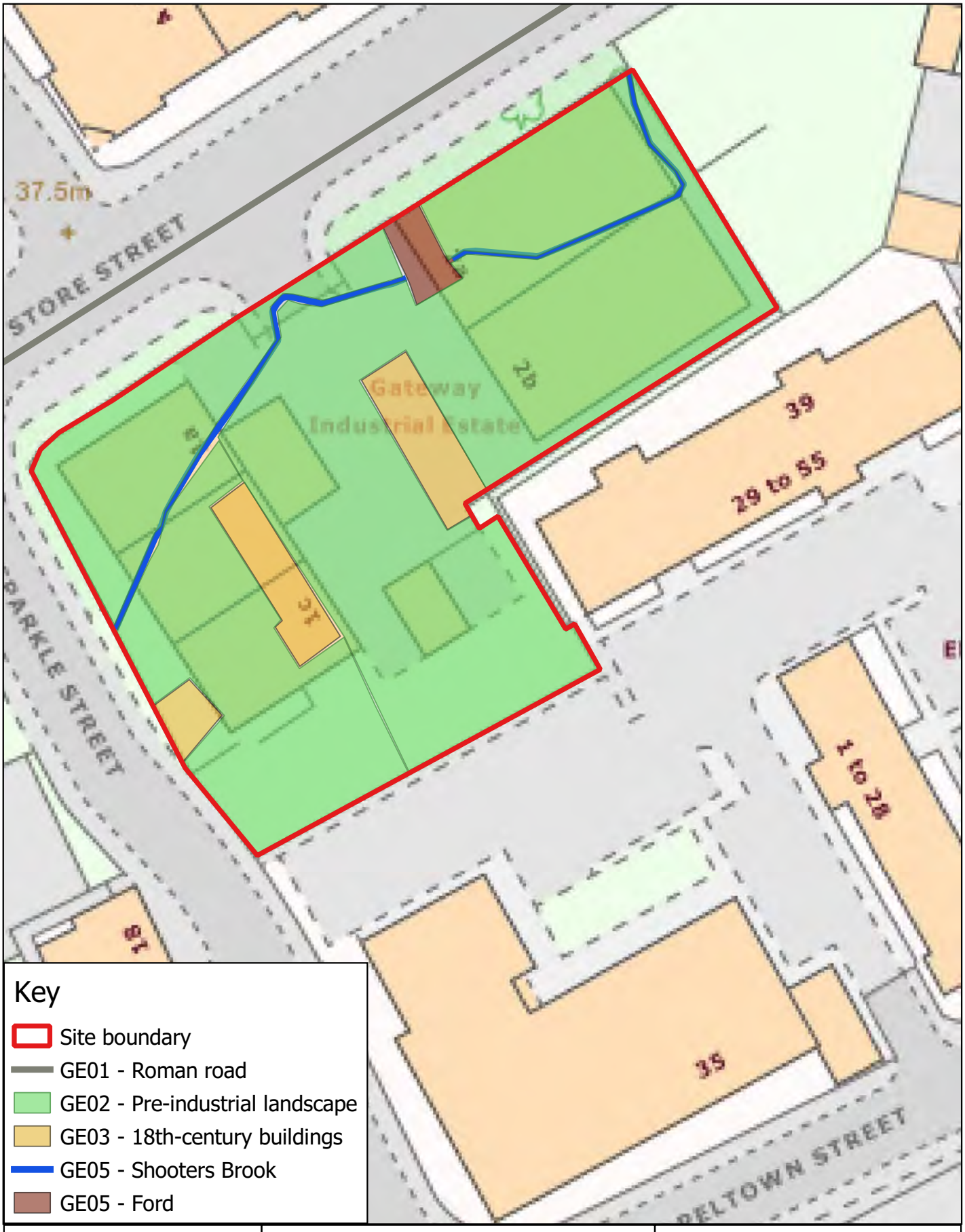


Figure 11: Locations of Gazetteer Entries

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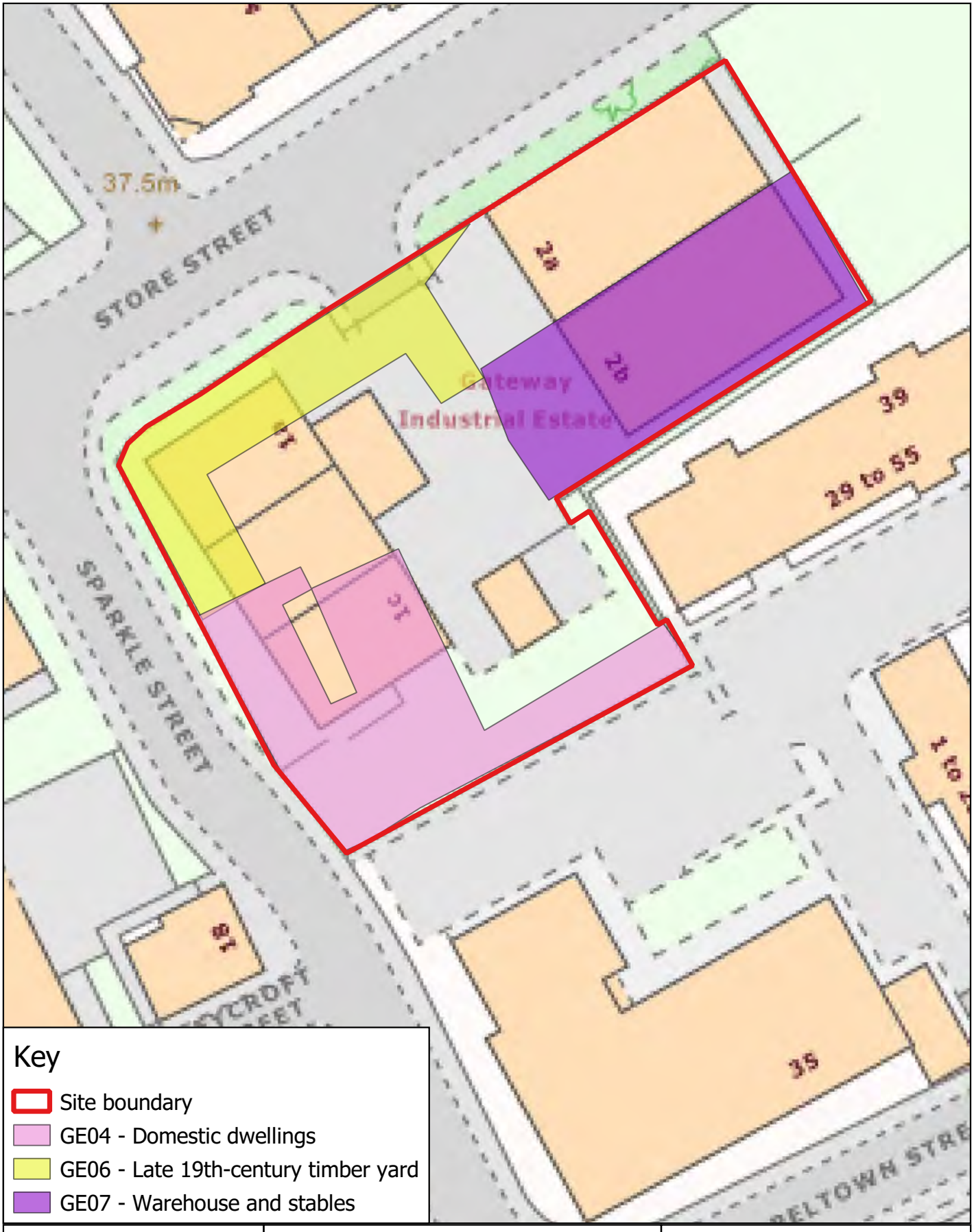


Figure 12: Locations of Gazetteer Entries

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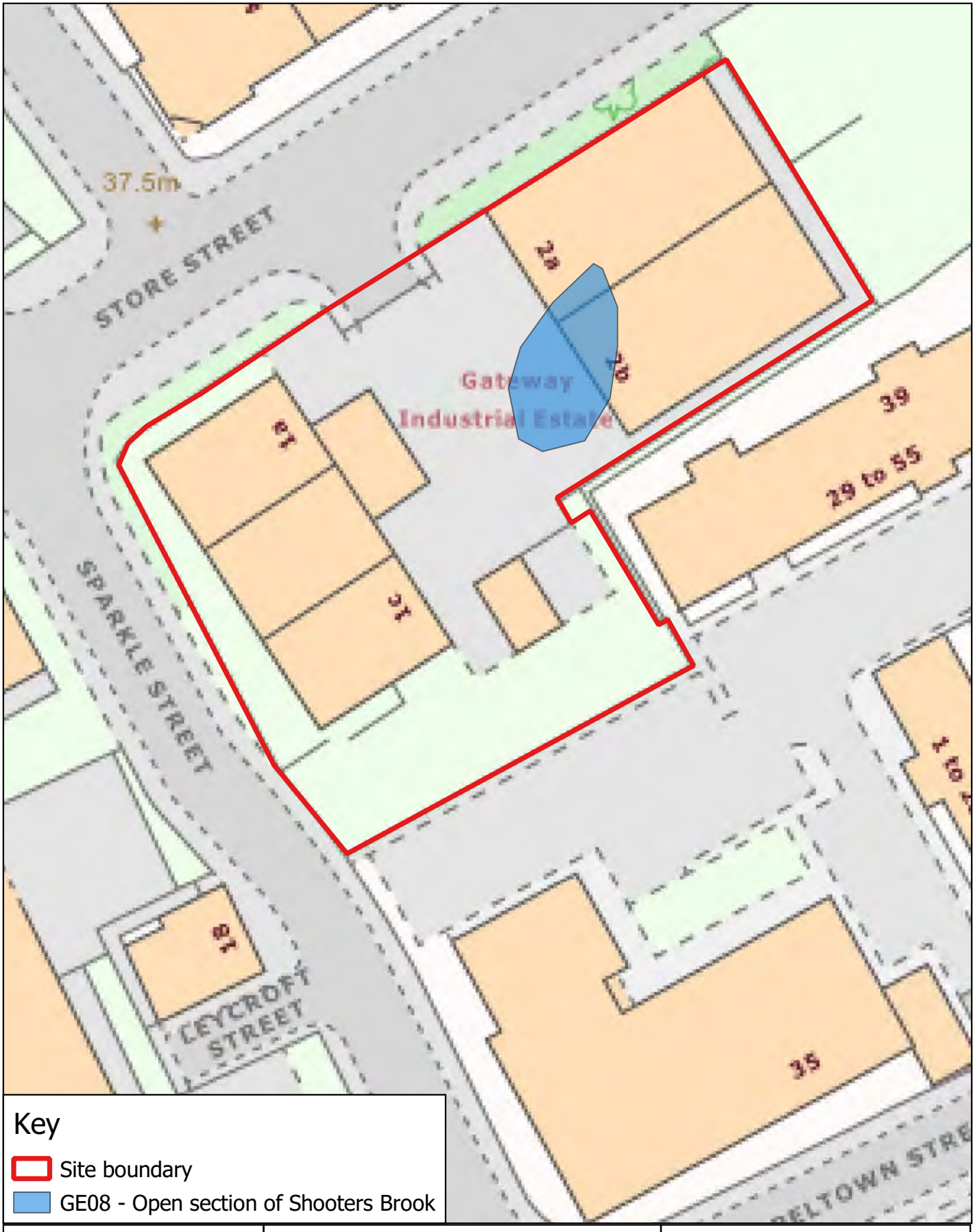


Figure 13: Locations of Gazetteer Entries

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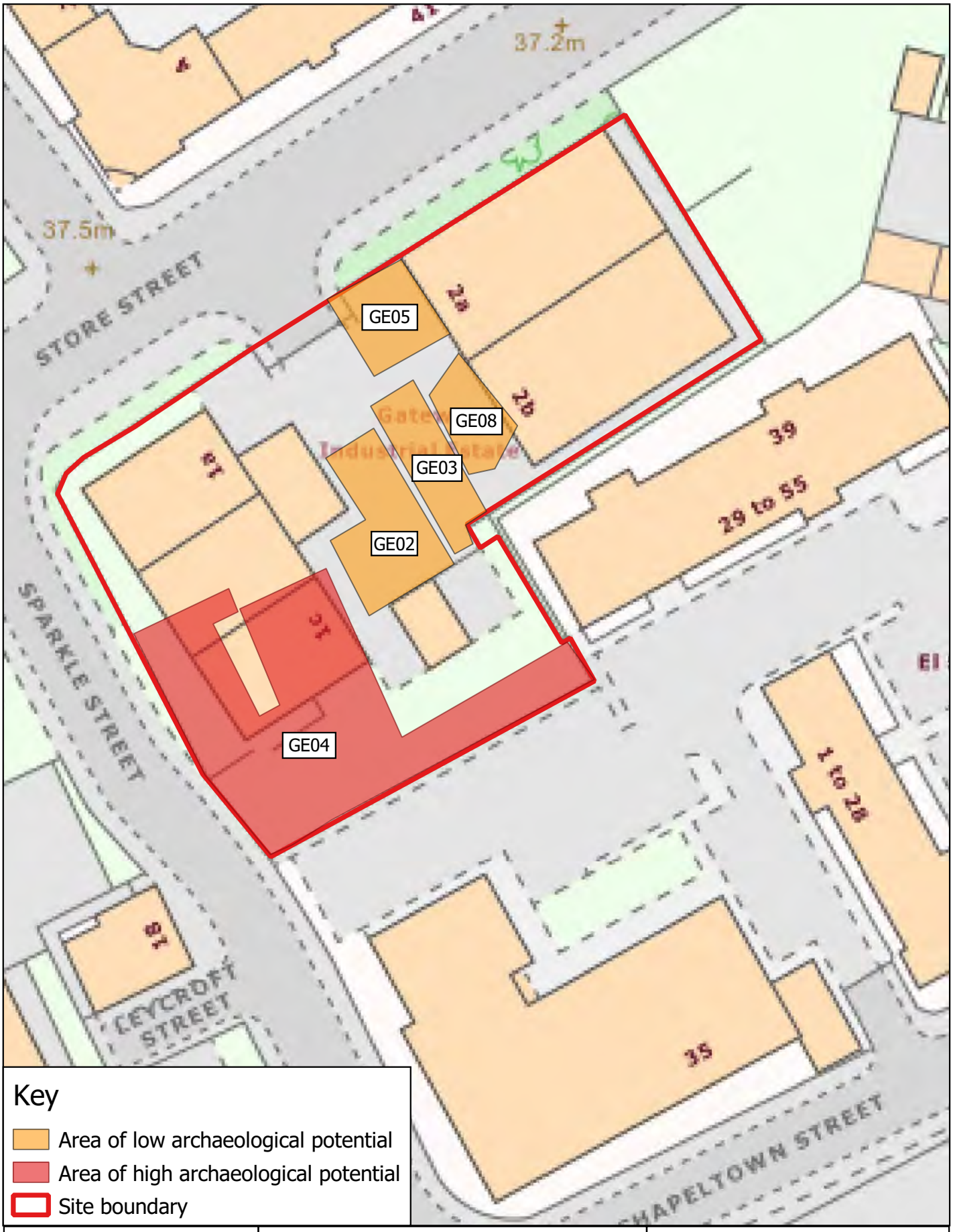


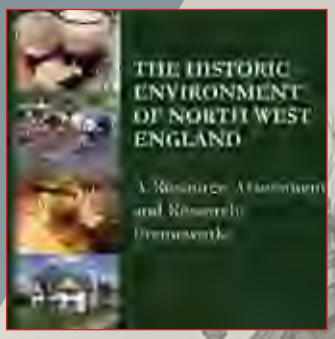
Figure 14: Areas of Archaeological Potential

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SALFORD ARCHAEOLOGY

CONSULTANCY



DESK-BASED ASSESSMENTS



WATCHING BRIEF & EVALUATION



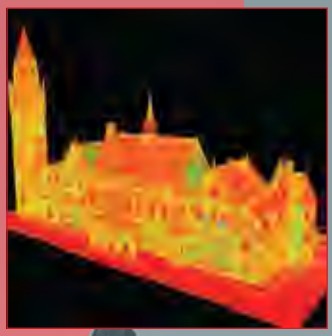
EXCAVATION



BUILDING SURVEY



3D LASER SCANNING



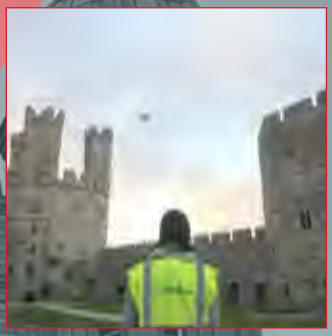
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Appendix 5 – Ecology Assessment

Sparkle Street, Manchester M1 2NJ

ECOLOGICAL SURVEY AND ASSESSMENT (Including a Licensed Bat Survey)

July 2023

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Document Control

Survey Type:	**Surveyors**[1]	**Survey Date(s)**
Phase 1 Habitat and Daylight bat survey	Brian Robinson B.Sc. (Hons) MCIEEM	6th June 2023
Reporting	**Personnel**	**Date**
Author	Brian Robinson B.Sc. (Hons) MCIEEM Senior Ecologist	24th July 2023
Signature(s)		
Checked	Rachel Brown B.Sc. (Hons)	26th July 2023
Revised and issued	Brian Robinson B.Sc. (Hons) MCIEEM	26th July 2023
Report issued to	Foras (Sparkle Street) Limited	
Version Number	1	

[1] *Licence reference number*
Bats
Brian Robinson Natural England Class Survey Licence (bats, Level 2) Registration Number 2015-13161-CLS-CLS

SUMMARY

Introduction and Scope

i. This ecological survey and assessment presents the ecological, biodiversity and nature conservation status of Sparkle Street. The assessment was requested in connection with a planning application at the site; a description of the proposals is provided below:

'Full Planning Permission for demolition of existing low rise commercial units and erection of ground + 27 storey residential development with supporting residential amenity, private terraces and private shared garden.'

ii. This report presents the results of a desktop study, data search, extended Phase 1 Habitat Survey and a licensed bat survey carried out in June 2023. The scope of survey undertaken is appropriate to identify potential ecological constraints, the remit of mitigation required and opportunities for biodiversity associated with the development proposals.

iii. The comprises buildings and hard standing, ornamental trees and shrubs at the northern and eastern site boundaries, and an area of unmanaged scrub and grassland at the rear (southern end) of the site.

Results of Survey and Assessment

iv. The proposals will have no adverse direct or indirect effect on statutory or non-statutory designated sites for nature conservation.

v. Only common and widespread plant species were found. None of the habitats present are representative of semi-natural habitat. In terms of each habitat's importance in a geographical context, the trees, ornamental shrubs and scrub are considered to be of 'site' importance. The buildings and hard standing are not considered to hold any importance on a geographical scale. Recommendations for suitable species to include in any landscape design of the proposed development at the site are presented at **Section 5.5**.

vi. The presence of Japanese Rose and Hollyberry Cotoneaster, both invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), have been detected within the site. It is considered that the proposals present an opportunity for the eradication of these species as part of the proposed development. Further guidance is presented at **Section 5.3** of this report.

vii. The site supports habitats of low suitability for use by foraging bats, nesting birds and foraging and sheltering hedgehog, a Priority Species. Measures for the protection of these species during the construction phase of the proposed development are presented at **Section 5.2**. Enhancements to include within the site design for roosting bats and nesting birds are presented at **Section 5.4**. No other protected species have been detected.

Recommendations

viii. The recommendations in **Section 5.0** outline all the mandatory measures and additional actions to be applied to ensure compliance with wildlife legislation, the National Planning Policy Framework (NPPF) and best practice.

ix. The proposals will secure an opportunity to implement beneficial measures such as habitat creation that will safeguard habitats for wildlife such as birds and bats, with the aim of providing a net gain in biodiversity in accordance with the principles of the NPPF.

Conclusion

x. It is concluded that the proposals are feasible and acceptable in accordance with ecological considerations and relevant planning policy. Redevelopment at the site will provide an opportunity to secure ecological enhancement for wildlife associated with urban areas.

1.0 INTRODUCTION

1.1 Background and Rationale

1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned by Foras (Sparkle Street) Limited to carry out an ecological assessment of Sparkle Street (hereafter referred to as the 'site'). The Ordnance Survey (OS) grid reference at the centre of the site is SJ 84942 98045. An aerial image of the site and its surrounding habitats is appended at **Figure 1** (source image: ESRI World Imagery).

1.1.2 The assessment was requested in connection with a planning application at the site; a description of the proposals is provided below:

'Full Planning Permission for demolition of existing low rise commercial units and erection of ground + 27 storey residential development with supporting residential amenity, private terraces and private shared garden.'

1.2 Scope of Works

1.2.1 The scope of ecological works undertaken in June 2023 comprised:

a. A desktop study and data search for known ecological information at the site and the local area;

b. An Extended Phase 1 Habitat Survey and assessment;

c. Assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria, as presented in *A Nature Conservation Review* (Ratcliffe, 1977);

d. Survey and assessment of all habitats for relevant statutorily protected species[1] and other wildlife including badger (*Meles meles*), barn owl (*Tyto alba*), bird species and reptiles;

e. A licensed daylight bat survey of the buildings and trees;

f. The identification of any potential ecological constraints on the proposals and the specification of the scope of mitigation and ecological enhancement required in accordance with wildlife legislation, planning policy guidance and other relevant guidance; and

g. The identification of any further surveys or precautionary actions that may be required to inform the progression of the site through the planning process or prior to the commencement of any construction activities.

[1] In accordance with *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact on the Planning System* (Ministry of Housing, Communities & Local Government, 2005) developers should not be required to undertake surveys for protected species unless there is reasonable likelihood of the species being present and affected by the development. In this instance (for example) there are no ponds within an unobstructed 500 metre radius of the site, and no water bodies or water courses within or adjacent to the site; there has been no requirement to consider great crested newt (*Triturus cristatus*), water vole (*Arvicola amphibius*) or otter (*Lutra lutra*) as part of this assessment.

2.0 METHOD OF SURVEY

2.1 Desktop Study and Data Search

2.1.1 The following sources of information and ecological records were consulted:

a. MAGiC Maps: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;

b. Greater Manchester Local Record Centre (GMLRC); and

c. Greater Manchester Biodiversity Action Plan (BAP).

2.2 Vegetation and Habitats

2.2.1 An Extended Phase 1 Habitat Survey of the site was carried out by Brian Robinson on 6th June 2023. The weather was dry and cloudy, with a light air (Beaufort scale 1) and an air temperature of 14°C.

2.2.2 A habitat and vegetation map was produced for the site and the immediate surrounding area at a scale of 1:750 and is appended at **Figure 2**. The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC, 2010) with minor adjustments to illustrate and examine the habitats with greater precision.

2.2.3 On site habitat mapping was assisted via use of GPS technology using *Sparkle Street, Manchester M1 2NA: Topographical Survey Drawing No. 60159/1 Revision A* (Malcolm Hughes, 2023) and ESRI World Imagery as base plans.

2.2.4 The plant species within the site boundary were determined with estimates of the distribution, ground cover, abundance and constancy of individual species. The estimation of abundance was based on the DAFOR system, where D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L = Locally and V = Very were additionally used to describe the plant species distributions with greater precision.

2.2.5 Stands of vegetation and habitats were described and evaluated using the National Vegetation Classification (NVC). The NVC provides a systematic and comprehensive analysis of British vegetation and is a reliable framework for nature conservation and land-use planning.

2.2.6 Habitats within the site were assessed in accordance with the UK Habitats Classification / UKHab (Butcher, et al., 2020). The UKHab has been designed to function at two scales: fine scale (25m^2 or 5 metres length) and large scale (400m^2 or 20 metres length). It has been considered for the purposes of this survey that the fine scale of 25m^2 or 5 metres length is appropriate.

2.2.7 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* (as amended) and species which are indicators of important and uncommon plant communities. Plant nomenclature follows *New Flora of the British Isles 3rd Edition* (Stace, 2010).

2.2.8 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

2.3 Animal Life

Badger

2.3.1 The survey area for badger covered the site (as annotated on **Figures 1** and **2**) and extended to accessible land within a radius of 50 metres from the site boundary. Private gardens / land were excluded from the survey.

2.3.2 The survey was conducted in accordance with guidance presented within *Badgers and Development* (Natural England, 2007) and *Badgers: advice for making planning decisions* (Natural England, 2022).

2.3.3 The following signs of badger activity were searched for:

a. Sett entrances, e.g. entrances that are normally 25 to 35cm in diameter and shaped like a 'D' on its side;

b. Large spoil heaps outside sett entrances;

c. Bedding outside sett entrances;

d. Badger footprints;

e. Badger paths;

f. Latrines;

g. Badger hairs on fences or bushes;

h. Scratching posts; and

i. Signs of digging for food.

2.3.4 Habitats within and surrounding the site were assessed in terms of their suitability for use by foraging and sheltering badger in accordance with their known habitat preferences as detailed in current guidance and *Badger* (Roper, 2010).

Bat Species

Daylight Survey

Survey Personnel

2.3.5 The site was assessed for its suitability to support roosting bats by Brian Robinson, Natural England Class Survey Licence WML CL18 (Bat Survey Level 2), Registration Number 2015-13161-CLS-CLS. The surveyor's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats* (CIEEM, 2013).

Buildings

2.3.6 The surveys were carried out in accordance with standard methodology including the *Bat Mitigation Guidelines* (Mitchell-Jones, 2004), the *Bat Workers' Manual 3rd Edition* (Mitchell-Jones & Mcleish, 2004) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)* (Collins, J. (ed), 2016).

2.3.7 An inspection of the external surfaces, walls and roofs of the buildings was carried out to find potential bat roosting habitat or accesses into internal areas where roosts may be present. Searches for evidence of bat presence in the form of droppings, urine stains, feeding signs, grease marks and other evidence were also carried out.

2.3.8 The internal survey involved an examination of the accessible internal areas (including roof voids) to find roosting bats or evidence of past use of the buildings by bats such as droppings and prey remains.

2.3.9 A list of equipment used is detailed at **Table 2.1**.

Table 2.1: Survey Equipment used during Daylight Bat Survey

Ladders
LED Lenser P14 torch
Panasonic DMC- FT1 digital camera
8x20 binoculars
Ridgid Micro Inspection Camera Borescope CA-100

2.3.10 The suitability of each building has been assessed in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn),* (Collins, J. (ed), 2016), taking into account any presence of gaps suitable for access by bats, features suitable for use by roosting bats within the building (including crevice dwelling species and species which can roost in the open in roof voids), and the suitability of the surrounding habitats for use by foraging and commuting bats.

Trees

2.3.11 A preliminary assessment of the trees within the site was conducted to assess their suitability for use by roosting bats, and to inform whether further surveys or precautionary measures were required.

2.3.12 Trees were assessed from the ground using binoculars and a high-powered torch. Each tree was searched for the presence of the following features:

Woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed platey bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy (Hedera helix) with stem diameters in excess of 50mm and bat, bird or dormouse (Muscardinus avellanarius) boxes.

2.3.13 Terms used to describe any features present follow (where possible) those outlined and described in *Bat Tree Habitat Key, 2nd Edition* (Andrews, H (ed), 2013) and *Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-care and Ecology Professionals* (BTHK, 2018).

Habitat Assessment for Commuting / Foraging Bats

2.3.14 Habitats within and adjacent to the site were assessed for their value and suitability for commuting and foraging bats in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn),* (Collins, J. (ed), 2016). Reference has been made to the categories and descriptions / examples, presented at **Table 2.2**.

Table 2.2: Consideration of Suitability of Foraging and Commuting Habitat for Bats

Suitability	Commuting Habitat	Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting bats.	Negligible habitat features on site likely to be used by foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat.	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.	Habitat that is linked to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape and is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Habitats close to and connected to known roosts.	High-quality habitat that is well-connected to the wider landscape and is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Habitats close to and connected to known roosts.

Bird Species

2.3.15 Bird species observed and heard during the survey were recorded.

2.3.16 Habitats throughout the site and in the immediate surrounding area were assessed for their value to roosting, feeding and nesting birds, as indicated by the amount of shelter, feeding value, woody vegetation structure and species diversity of tree and shrub species in the site.

2.3.17 During the internal inspection on 6th June 2023 both buildings were searched for pellets, faecal splashes and feathers which may indicate use by roosting or nesting barn owl in accordance with *The Barn Owl Conservation Handbook* (Barn Owl Trust, 2012) and *Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment. Developing Best Practice in Survey and Reporting* (Shawyer, 2011).

Reptile Species

2.3.18 The site and its surroundings were assessed in terms of their suitability for use by reptile species using the important characteristics for reptiles outlined in the draft document '*Reptile Mitigation Guidelines*' (Natural England, 2011), and the *Reptile Habitat Management Handbook* (Edgar, et al., 2010). These habitat characteristics are outlined in **Table 2.3**.

Table 2.3: Important Habitat Characteristics for Reptiles

1. Location (in relation to species range)	7. Connectivity to nearby good quality habitat
2. Vegetation Structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

Other Wildlife

2.3.19 Evidence of other wildlife (including Priority Species) observed whilst on site (but for which specific surveys were not made) was recorded and has been included in this report where it is considered of relevance to the planning application. Habitats have been assessed for their suitability for Priority Species identified in the data search results where this is considered relevant to the application.

2.4 Survey and Reporting Limitations

2.4.1 The surveys were completed under suitable conditions and at a suitable time of year. The dense scrub at the rear of the site could not be fully accessed, however it is considered that a sufficient area of scrub could be accessed and / or viewed from its exterior that a reliable assessment of the scrub was possible during the survey. No significant survey limitations were experienced.

2.4.2 All measurements within this report are approximate only, and have been either measured or estimated whilst on site or calculated using mapping software (QGIS) or internet-based mapping services such as MAGiC Maps and Google Earth.

2.5 Evaluation Methods

2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard nature conservation criteria as described in *A Nature Conservation Review* (Ratcliffe, 1977) and *Guidelines for the Selection of Biological SSSIs* (Bainbridge, et al., 2013). These are size (extent), diversity, naturalness, rarity, fragility, typicality, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal.

2.5.2 Habitats have been assessed to determine whether they meet those described in *UK Biodiversity Action Plan: Priority Habitat Descriptions* (Maddock, A (ed), 2008); these lists are used to help draw up the statutory

lists of Priority Habitats, as required under Section 41 of the *Natural Environment and Rural Communities* (NERC) *Act 2006*. Where suitable, the ecological value of the habitats present has been assessed using the terms outlined in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).

2.5.3 Government advice on wildlife, as set out in the *National Planning Policy Framework* (Ministry of Housing, Communities and Local Government, 2021) and associated government circulars has been taken into consideration. Legislation relating to protected species, such as those listed under Schedules 1, 5, 6 and 8 of the *Wildlife and Countryside Act 1981* (as amended) and *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*, is referenced where applicable, and any impacts to protected species are evaluated in accordance with current guidance.

2.5.4 The presence of any Priority Species, as listed under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006* is noted, and habitats are assessed in terms of their suitability and value for these species. The presence of habitats and / or species listed by the Greater Manchester Biodiversity Action Plans has been taken into account in the evaluation of the site.

3.0 SURVEY RESULTS

3.1 Desktop Study and Data Search

Statutory Designated Sites for Nature Conservation and SSSI Impact Risk Zones

3.1.1 The site is not and does not form part of any statutory designated site for nature conservation.

3.1.2 The site lies within a Site of Special Scientific Interest (SSSI) Impact Risk Zone for Rochdale Canal Special Area of Conservation (SAC), located 4.97 kilometres to the north-east of the site, and Hollinwood Branch Canal SSSI, located 6.21 kilometres to the east. Both sites are designated for their assemblages of aquatic plants.

3.1.3 The SSSI Impact Risk Zone requires the Local Planning Authority to consult with Natural England on likely risks from the following development categories (Ordnance Survey, 2023):

a. Airports, helipads and other aviation proposals.

b. Any industrial / agricultural development that could cause air pollution, including industrial processes, livestock and poultry units with a floorspace greater than 500m², slurry lagoons and digestate stores greater than 750m² and manure stores greater than 3500 tonnes.

c. General combustion processes greater than 50 megawatts energy input. Includes energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis / gasification, anaerobic digestion, sewage treatment works and other incineration / combustion.

3.1.4 The proposals do not match any of the criteria which would require the Local Planning Authority to consult with Natural England in respect of likely risks to the statutory designated sites.

Non-statutory Designated Sites for Nature Conservation

3.1.5 The site is not and does not form part of any non-statutory designated site for nature conservation, called 'Sites of Biological Interest' or 'SBIs' in Greater Manchester.

3.1.6 Two SBIs are located within a 2 kilometre radius from the centre of the site, and are summarised at **Table 3.1**.

Table 3.1: SBIs Within a 2 Kilometre Radius from the Centre of the Site

SBI Name	Distance and Direction from the Site	Reasons for Designation
Ashton Canal (West)	0.04 kilometres to the east	Standing Water (Fw3)
Rochdale Canal Stott's Lane - Ducie Street Basin	0.16 kilometres to the north-east	Standing Water (Fw3)

3.1.7 The presence of the SBIs is considered further at **Section 4.2**.

Priority Habitats Inventory

3.1.8 The Priority Habitats Inventory[2] was checked via MAGiC Maps. No Priority Habitats are identified at the site by the inventory.

Protected and Notable Species

3.1.9 GMLRC hold no records of protected and notable species for the site.

3.1.10 Records of protected and notable species for a 2 kilometres radius from the centre of the site are summarised at **Table 3.2**.

Table 3.2: Records of Protected Species Within a 2 Kilometres Radius from the Centre of the Site

Taxon Group	Species Name and Designations[1] and Notes
Birds – WCAs1 Species	Black redstart (*Phoenicurus ochruros*): WCAs1 and GMBAP. 157 records, dated between 1997 and 2022. The closest record is 30 metres to the south-west of the site, and from 2009.
	Hobby (*Falco subbuteo*): WCAs1. 1 record from 2008, located 1380 metres to the north-west of the site.
	Kingfisher (*Alcedo atthis*): WCAs1. 28 records, dated between 2004 and 2022. The closest record is 665 metres to the south-west of the site, and from 2010.
	Little ringed plover (*Charadrius dubius*): WCAs1. 7 records, dated between 2006 and 2014. The closest record is 345 metres to the east of the site, and from 2008.
Birds – PS and GMBAP Species	**PS Only:** Bullfinch (*Pyrrhula pyrrhula*), cuckoo (*Cuculus canorus*), curlew (*Numenius arquata*), dunnock (*Prunella modularis*), herring gull (*Larus argentatus*), house sparrow (*Passer domesticus*), lapwing (*Vanellus vanellus*), lesser redpoll (*Carduelis cabaret*), linnet (*Linaria cannabina*), song thrush (*Turdus philomelos*), spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*) and yellow wagtail (*Motacilla flava*).
Terrestrial Invertebrates	Cinnabar (*Tyria jacobaeae*): PS. 16 records, dated between 2012 and 2022. The closest record is 260 metres to the north-west of the site, and from 2017.
	White-letter hairstreak (*Satyrium w-album*): PS. 1 record from 2019, located 1125 metres to the east of the site.
Terrestrial Mammals	Brown long-eared bat (*Plecotus auritus*): EPS, WCAs5, PS and GMBAP. 1 record from 2013, located 1715 metres to the west of the site.
	Noctule bat (*Nyctalus noctula*): EPS, WCAs5, PS and GMBAP. 2 records, dated 2019 and 2020. The closest record is 180 metres to the north of the site, and from 2020.
	Otter (*Lutra lutra*): EPS, WCAs5 and PS. 3 records, dated between 2013 and 2022. The closest record is 1605 metres to the north-west of the site, and from 2018.
	Soprano pipistrelle (*Pipistrellus pygmaeus*): EPS, WCAs5, PS and GMBAP. 3 records, dated between 2006 and 2019. The closest record is 330 metres to the west of the site, and from 2013.
	Bat sp (Order *Chiroptera*): EPS, WCAs5 and GMBAP. 1 record from 2014, located 1115 metres to the west of the site.
	Common pipistrelle (*Pipistrellus pipistrellus*): EPS, WCAs5 and GMBAP. 119 records, dated between 1994 and 2020. The closest record is 110 metres to the east of the site, and from 2016.
	Daubenton's bat *(Myotis daubentonii*): EPS, WCAs5 and GMBAP. 1 record from 2009, located 1300 metres to the north-west of the site.

[2] A spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.

Taxon Group	Species Name and Designations[1] and Notes
	Myotis species (*Myotis* sp.): EPS, WCAs5 and GMBAP. 1 record from 2015, located 260 metres to the south of the site.
	Pipistrelle species (*Pipistrellus* sp.): EPS, WCAs5 and GMBAP. 39 records, dated between 1994 and 2018. The closest record is 40 metres to the south-east of the site, and from 2004.
	Badger (*Meles meles*): PBA. 17 records, dated between 2011 and 2014. The closest record is over 700 metres from the site, and from 2011.
Vascular plants	Floating Water-plantain (*Luronium natans*): EPS, WCAs8 and PS. 2 records, both from 2001. The closest record is 715 metres to the north-east of the site.
	Yellow Bird's-nest (*Monotropa hypopitys*): PS. 2 records, both from 2017. The closest record is 1625 metres to the north of the site.

[1]Key to Designation Codes:
EPS = European Protected Species under *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*.
WCAs1 = Species receives full protection under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended).
WCAs5 = Species receives full protection under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended).
PBA = Protection of Badger Act 1992.
PS = Priority Species listed under Section 41 of the NERC Act 2006.
GMBAP = Species listed on the Greater Manchester Biodiversity Action Plans

3.1.11 The presence of these protected and notable species within the wider area has been taken into account throughout this report.

3.2 Vegetation and Habitats

General Description

3.2.1 The approximately 0.39 hectares site is located adjacent to Sparkle Street and Store Street and is approximately 100 metres north of Piccadilly Railway Station in Manchester City Centre.

3.2.2 The site is largely unoccupied, with its former use being a telephone exchange along with surface car parking and two buildings that are partly used for storage and distribution. The site supports buildings and hard standing, ornamental trees and shrubs at the northern and eastern site boundaries, and an area of unmanaged scrub and grassland at the rear (southern end) of the site.

3.2.3 The site boundaries are defined by fencing. The site is bounded by Store Street to the north, Sparkle Street to the west, residential apartments to the south and vacant land to the east.

3.2.4 A Phase 1 Habitat Survey map is appended at **Figure 2**, and can be referred to for all habitat descriptions. Photographs are appended at **Section 8.2**.

Buildings and Hard Standing

3.2.5 No significant assemblage of vegetation is associated with the two buildings, which are described in detail in relation to their suitability for use by roosting bats at **Section 3.3**.

3.2.6 Refer to **Photo 1**. The asphalt hard standing within the site supports a sparse assemblage of colonising ruderal herbs, which are characterised by very locally frequent Butterfly-bush (*Buddleja davidii*) and rare Annual Meadow-grass (*Poa annua*), Bramble (*Rubus fruticosus* agg.), Creeping Yellow-cress (*Rorippa sylvestris*), Dandelion (*Taraxacum officinale* agg.), Herb-Robert (*Geranium robertianum*), Oxford Ragwort (*Senecio squalidus*), Purple Toadflax (*Linaria purpurea*), Rosebay Willowherb (*Chamerion angustifolium*) and Smooth Hawk's-beard (*Crepis capillaris*).

3.2.7 The habitat is not typical of any NVC community and is described by the UKHab as u1b6 other developed land with the secondary code 17 ruderal / ephemeral. The buildings are described by the UKHab as u1b5 buildings.

Ornamental Shrubs and Trees

3.2.8 Refer to **Photos 2** and **3**. The northern and western site boundaries support margins of ornamental shrubs and trees, which are characterised by occasional Norway Maple (*Acer platanoides*), Bramble, Butterfly-bush, Oxford Ragwort and Purple Toadflax, locally abundant Dogwood (*Cornus sanguinea*), Chinese Barberry (*Berberis julianae*), Hollyberry Cotoneaster (*Cotoneaster bullatus*), Wilson's Honeysuckle (*Lonicera nitida*), Hazel (*Corylus avellana*) and Garden exotics, and locally frequent Firethorn (*Pyracantha coccinea*), Cleavers (*Galium aparine*), Dog-rose (*Rosa canina*), Ivy (*Hedera helix*), Persian Ivy (*Hedera colchica*) and Wild Cherry (*Prunus avium*). A plant species list is appended at **Table 8.1**.

3.2.9 The habitat is not typical of any NVC community and is described by the UKHab as h3h mixed scrub with the secondary codes 11 scattered trees and 48 non-native.

Scrub at the Rear

3.2.10 Refer to **Photo 4**. The dense scrub at the southern end (rear) of the site is characterised by constant and abundant Bramble occasional Field Horsetail (*Equisetum arvense*) and Herb-Robert (*Geranium robertianum*), locally abundant Elder (*Sambucus nigra*), locally frequent Hazel, Cherry species (*Prunus* sp.), Blackthorn (*Prunus spinosa*) and Cleavers and very locally frequent Dog-rose (*Rosa canina*), Common Nettle (*Urtica dioica*) and Rowan (*Sorbus aucuparia*). A plant species list is appended at **Table 8.2**.

3.2.11 The habitat is most typical of a *W24 Bramble – Yorkshire-fog underscrub* (Rodwell, 1991) of the NVC and is described by the UKHab as h3h mixed scrub with the secondary code 77 neglected (unmanaged for 3 to 10 years).

Grassland at the Rear of the Site

3.2.12 Refer to **Photo 5**. The grassland at the rear of the site is characterised by frequent Red Fescue (*Festuca rubra*), occasional and locally frequent Field Horsetail, Smooth Meadow-grass (*Poa pratensis*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Yorkshire-fog (*Holcus lanatus*) and Meadow Buttercup (*Ranunculus acris*) and occasional Cock's-foot (*Dactylis glomerata*), Dandelion, Ribwort Plantain (*Plantago lanceolata*) and Creeping Buttercup (*Ranunculus repens*). A plant species list is appended at **Table 8.3**.

3.2.13 The grassland is not typical of an NVC community and is described by the UKHab as g3c other neutral grassland with the secondary codes 10 scattered scrub and 77 neglected (unmanaged for 3 to 10 years).

Invasive Plant Species

3.2.14 As illustrated on **Figure 2,** stands of Japanese Rose (*Rosa rugosa*) and Hollyberry Cotoneaster are present within the ornamental planting at the northern end of the site; this species is listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended); it is an offence to spread or cause their/its spread in the wild. This is considered further at **Section 4.3**.

3.3 Animal Life

Badger

3.3.1 No badger or signs of badger were detected within the site or within the access 50 metres around the site. The presence of badger is reasonably discounted.

Bat Species

Daylight Survey: Buildings

Building 1

3.3.2 Refer to **Photos 6** to **11**. Building 1 is a detached and largely single storey unoccupied former warehouse building constructed from walls of corrugated metal sheeting on a mortared brick plinth. It supports a single-

pitch roof of corrugated metal sheeting. The building is well sealed externally; no gaps suitable for access by bats were noted.

3.3.3 Internally the building supports sections with a suspended ceiling and sections which are open to the roof. The corrugated metal sheeting roofing supports a plastic lining and is supported on metal beams and trusses. The two-storey section of the building was previously used as office space and supports a suspended ceiling.

3.3.4 No features suitable for access by bats were noted externally, and no features suitable for use by roosting bats were noted internally; the building does not support any features suitable for use by species which are known to roost in crevices, such as common pipistrelle (*Pipistrellus pipistrellus*), or species which are known to roost in the open in voids, such as brown long-eared bats (*Plecotus auritus*).

3.3.5 The building is considered to be of 'negligible' suitability for use by roosting bats. No further surveys are required at the building to inform this assessment.

Building 2

3.3.6 Refer to **Photos 12** to **16**. Building 2 is constructed in a similar fashion to Building 1 but is occupied and supports a pitched roof of corrugated metal sheeting.

3.3.7 No features suitable for access by bats were noted externally, and no features suitable for use by roosting bats were noted internally; the building does not support any features suitable for use by species which are known to roost in crevices or species which are known to roost in the open in voids.

3.3.8 The building is considered to be of 'negligible' suitability for use by roosting bats. No further surveys are required at the building to inform this assessment.

Trees

3.3.9 No trees support any features suitable for use by roosting bats. The presence of roosting bats at the trees within the site is reasonably discounted.

Habitat Assessment for Commuting and Foraging Bats

3.3.10 The scrub habitat at the rear of the site will provide suitable habitat for foraging bats associated with urban areas such as common pipistrelle, although it is limited in its extent and does provide linking habitat between areas of favourable foraging or roosting habitat; it is considered unlikely that the site provides suitable habitat for commuting bats.

3.3.11 The buildings and hard standing are considered to provide habitat of 'negligible' suitability for use by foraging bats. Overall the site is assessed to be of 'low' suitability for use by foraging bats, and is of negligible suitability for foraging bats.

Summary of Results

3.3.12 A summary of the survey results presented above is provided at **Table 3.3**. The results are evaluated at **Section 4.4** below.

Table 3.3: Summary of Bat Survey Results

Building/Tree Ref	Suitability for Use by Roosting Bats	Requirement for Further Survey / Results of Activity Surveys
Buildings 1 and 2	Negligible	No requirement for further survey
Trees	Negligible	No requirement for further survey

Bird Species

3.3.13 Birds detected in the site in June 2023 are listed at **Table 3.4**.

Table 3.4: Bird species Detected on 6th June 2023

Scientific Name	Common Name	BOCC Status[1]
Columba palumbus	Wood pigeon	Amber
Erithacus rubecula	Robin	Green
Fringilla coelebs	Chaffinch	Green
Pica pica	Magpie	Green
Turdus merula	Blackbird	Green
[1]BOCC: Birds of Conservation Concern (Stanbury, et al., 2021). No Priority Species were present.		

3.3.14 The trees, ornamental shrubs and scrub are all suitable for use by nesting passerine (i.e. perching) species, including those detected within the site during the survey. This is considered further at **Section 4.4**.

3.3.15 No sign of nesting barn owl was detected during the internal inspection of the buildings, and it is considered the site is located within unsuitable habitat for foraging barn owl. The presence of barn owl is reasonably discounted.

Reptiles

3.3.16 Debris suitable for sheltering and basking reptiles was examined during the survey; no reptile species were detected.

3.3.17 The habitats within the site provide poor quality habitat for sheltering, basking and hibernating reptiles. The species-poor habitats within the site are reasonably unlikely to support a large population or a variety of invertebrate prey.

3.3.18 The site is not adjacent or linked to any areas of favourable habitat for reptile species, and there are no records of reptile for the site or the wider area. The presence of reptiles within the site is reasonably discounted.

Other Wildlife

3.3.19 The dense scrub at the rear of the site may provide suitable shelter for hedgehog (*Erinaceus europaeus*), a Priority Species, and may also form part of a larger foraging area for this species. It is unlikely, given the size of the site, that the site would form core or important habitat for this species however. The suitability of the site for hedgehog is considered further at **Section 4.4**.

4.0 EVALUATION AND ASSESSMENT

4.1 Introduction and Description of Proposals

4.1.1 The assessment was requested in connection with a planning application at the site; a description of the proposals is provided below:

'Full Planning Permission for demolition of existing low rise commercial units and erection of ground + 27 storey residential development with supporting residential amenity, private terraces and private shared garden.'

4.1.2 **Section 4.2** provides an assessment of any impacts of the proposed development on the designated sites for nature conservation present in the wider area. The ecological value of habitats within the site is evaluated at **Section 4.3**, and protected and notable species are considered at **Section 4.4**.

4.2 Designated Sites for Nature Conservation

4.2.1 It is considered that the site is sufficiently small and distant from all designated sites for nature conservation that the proposed development will have no adverse direct or indirect effect upon them.

4.3 Vegetation and Habitats

4.3.1 Only common and widespread plant species were found. None of the habitats present are representative of semi-natural habitat. The NVC communities present are typical of the geographical area and conditions present. In terms of each habitat's importance in a geographical context[3], the trees, ornamental shrubs and scrub are considered to be of 'site' importance as they represent habitats of some value to nesting birds and foraging birds and bats, but which are unlikely to contribute significantly to the ecological value of the wider area. The buildings and hard standing are not considered to hold any importance on a geographical scale.

4.3.2 Recommendations for suitable species to include in any landscape design of the proposed development at the site are presented at **Section 5.5**.

4.3.3 The presence of Japanese Rose and Hollyberry Cotoneaster, both invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), have been detected within the site. It is considered that the proposals present an opportunity for the eradication of these species as part of the proposed development. Further guidance is presented at **Section 5.3** of this report.

4.4 Protected Species and Other Wildlife

4.4.1 The buildings and trees are considered to be of negligible suitability for use by roosting bats; no further surveys are required to determine the presence or absence of roosting bats at the site. Habitats within and adjacent to the site are considered to be of low suitability for foraging bats. Recommendations to ensure foraging bats (and other wildlife) are not disturbed by inappropriate artificial lighting during the construction phase of the proposed development are presented at **Section 5.2**. Measures outlined at **Section 5.4** will ensure that the proposed lighting regime at the developed site will not deter foraging bats, and will ensure that the proposals create new habitat suitable for roosting bats. The measures outlined at **Section 5.4** will ensure that habitats remain suitable for foraging bats following the completion of the proposed development.

4.4.2 The trees, ornamental shrubs and scrub are suitable for use by nesting passerine birds; all wild birds are protected while they are nesting under the *Wildlife and Countryside Act 1981* (as amended). Measures for the protection of nesting birds during the construction phase of the proposed development are presented at **Section 5.2**. The proposals present an opportunity to create new habitat for nesting bird species associated with urban areas; measures to create new habitat for nesting birds as part of the proposed development are presented at **Section 5.4**.

4.4.3 The site supports habitats suitable for use by foraging and sheltering hedgehog, but are considered to be too small to provide core or important habitat for this species. The proposals have the potential to kill or injure hedgehog during the construction phase of the proposed development. Measures for the protection of hedgehog (and other wildlife) during the construction phase of the proposed development are presented at **Section 5.2**.

4.4.4 The presence of protected or notable species at the site is otherwise reasonably discounted.

[3] Using the terms presented at Section 4.7 of *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018), i.e. International and European, National, Regional, Local Authority-wide area, River Basin District, Estuarine system / Coastal cell or Local. The term 'site' value is additionally used to highlight ecological features considered to be of importance in the context of the wider site habitats, but which are of negligible value in the context of the local area.

5.0 RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

5.1 Introduction

5.1.1 These recommendations aim to ensure that the development is implemented in accordance with relevant wildlife legislation, Natural England guidance, the principles of the National Planning Policy Framework (NPPF), local planning policy and best practice.

5.1.2 In accordance with Chapter 15, paragraph 180(d) of the NPPF:

'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'.

5.1.3 Where possible, opportunities to enhance the ecological interest and habitat connectivity and seek biodiversity gain through appropriate landscape planting and habitat creation have been identified.

5.1.4 All recommendations are appropriate to the geographical area, the habitats in the wider area, the wildlife present in the local area (and likely to use the site post-construction) and take into consideration the end use of the site as a residential development.

5.2 Protection of Vegetation and Wildlife During the Construction Phase of the Proposed Development

Protection of Trees and Shrubs

5.2.1 If trees will be retained by the proposed development then, during the construction phase, temporary protective demarcation fencing will be used to protect the trees to be retained. The fencing must extend outside the canopy of the retained trees and must remain in position until all areas have been developed to ensure protection is provided throughout the construction phase.

5.2.2 The fencing will be in accordance with BS5837:2012 *Trees in Relation to Design, Demolition and Construction: Recommendations* (BSI, 2012).

Consideration of Lighting During Works

5.2.3 Paragraph 185(c) in Chapter 15 (conserving and enhancing the natural environment) of the NPPF states that development should:

'limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

5.2.4 Any lighting to be used at the site during construction should be directional and screened where possible, this specification should be included within a Construction Environment Management Plan (CEMP), or similar.

Protection of Nesting Birds

5.2.5 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is advised that any works such as vegetation clearance that will affect habitats suitable for use by nesting birds are scheduled to commence outside the bird nesting season. Commencement of works in the nesting season must be informed by a pre-works nesting bird survey, carried out by a suitably experienced ecologist. The bird breeding season typically extends between March to August inclusive.

5.2.6 If breeding birds are detected the ecologist will issue guidance in relation to the protection of the nesting birds in conjunction with the scheduled works. This may involve cordoning off an area of the site until the young birds have fledged.

Protection of Hedgehog (and Other Wildlife) During Works

5.2.7 It is recommended that the following Reasonable Avoidance Measures (RAMs) are adopted during the construction phase of the proposed development. A copy should be printed out and be made accessible in the site office (i.e. pinned to a site information board or similar within the site office):

a. All site personnel must be made aware of this RAMs, and the RAMs should be made part of the site induction for all personnel involved in soil strip, ground clearance, or other relevant activities;

b. Prior to any soil strip, vegetation will be strimmed to a height of no less than 0.15 metre and all arisings removed;

c. During construction, any holes, trenches or other pits which wildlife species could fall into will be covered overnight, or have sloped banks or ramps top allow escape;

d. In the unlikely event of the discovery of a hedgehog or other wildlife species whilst any site clearance or construction operations are in progress then all works in the area must cease and it must be carefully picked up, placed in a clean bucket and moved to an area of suitable habitat beyond the development area.

5.3 Invasive Plant Species

5.3.1 It is an offence under the *Wildlife and Countryside Act 1981* (as amended) to cause the spread of Japanese Rose and Hollyberry Cotoneaster in the wild. It is concluded that the preparation of an Invasive Species Management Plan is not necessary in this case and these species can be grubbed out by the roots during site clearance and disposed of either by burying on site or removal to a suitable tip.

5.4 Enhancements for Wildlife Species

Bats

Development Lighting Design

5.4.1 Paragraph 185(c) in Chapter 15 (conserving and enhancing the natural environment) of the NPPF states that development should:

'limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

5.4.2 The lighting scheme to be implemented at the developed site must involve the use of appropriate products and screening, where necessary, to ensure no excessive artificial lighting shines over areas of ecological enhancement and any landscape planting, as lighting overspill may deter use by wildlife such as foraging bats.

5.4.3 The lighting scheme will be designed with reference to current guidance, namely:

a. *Guidance Note 8: Bats and Artificial Lighting in the UK* (Institution of Lighting Professionals & Bat Conservation Trust, 2018); and

b. *Bats and lighting: Overview of current evidence and mitigation guidance* (Stone, 2014).

Enhancing Habitats for Roosting Bats

5.4.4 Whilst the site is not currently suitable for use by roosting bats, evidence shows that common pipistrelle can hibernate within large buildings such as apartment blocks within urban areas (Korsten, et al., 2016). Due to the type of building proposed, it is considered that bat access panels installed at the upper floors of the proposed buildings may provide suitable features for use by roosting bats (including hibernating common pipistrelle).

5.4.5 The bat access panels, which can be faced to match the external render or cladding of the proposed building, should not be positioned over windows or doorways where bat droppings may become a nuisance. Once the development layout has been finalised, an Ecologist should advise on appropriate positions for the bat access panels. Suitable bat access panels are available from NHBS Ecology (www.nhbs.com) or Habibat (http://www.habibat.co.uk/) and are presented at **Insert 1**, below:



Insert 1: Example of commercially available bat access panels (Schwegler 2FR and Habibat). Note that both types can be faced to match external render or cladding.

Enhancing Habitats for Nesting Birds

5.4.6 The swift (*Apus apus*) has recently been added to The Birds of Conservation Concern Red list (Stanbury, et al., 2021) owing to the recorded recent declines and its identified status as a high conservation priority.

5.4.7 The construction of the residential properties provides an opportunity for the installation of additional nesting opportunities for swift to assist their conservation. Suitable swift nest boxes are illustrated at **Insert 2** below.



Insert 2: Examples of swift nest boxes[4]

5.5 Landscape Planting

5.5.1 It is recommended that the landscape planting within the site is composed from native species and species known to be of value for the attraction of wildlife.

5.5.2 It is recommended that trees which support blossom and fruit which will attract insects are incorporated into the landscape planting. Suitable species are presented at **Table 5.1**.

[4] From left to right No. 17A Schwegler Swift Nest Box (Triple Cavity) as installation (centre), Manthorpe Swift Nesting Box (right) and Ibstock Eco-habitat for Swift (right), all available from www.NHBS.com and / or Wild Care (www.wildcare.co.uk).

Table 5.1: Suitable Native Species for Tree and Shrub Planting

Scientific Name	Common Name	Scientific Name	Common Name
Acer campestre	Field Maple	*Prunus spinosa*	Blackthorn
Corylus avellana	Hazel	*Rosa arvensis*	Field Rose
Crataegus monogyna	Hawthorn	*Rosa canina*	Dog-rose
Ilex aquifolium	Holly	*Sambucus nigra*	Elder
Malus sylvestris	Crab Apple	*Sorbus aucuparia*	Rowan
Prunus avium	Wild Cherry	*Ulmus glabra*	Wych Elm
Prunus padus	Bird Cherry	*Viburnum opulus*	Guelder Rose

5.5.3 The understorey and ground cover planting design should be prepared to optimise the attraction of invertebrates such as feeding bumblebees and butterflies. Where possible the use of native species should be maximised but where necessary non-native species known to be attractive to invertebrates should be used.

5.5.4 Planting schemes that include flowering species such as *Viburnum, Ceanothus, Hebe*, *Lavandula*, *Lonicera, Potentilla, Rosmarinus* and *Vinca* can maximise opportunities for feeding invertebrates and for the attraction of foraging bats and birds.

5.5.5 For further plants suitable for the attraction of pollinators please refer to the *Perfect for Pollinators Plant List* (Royal Horticultural Society, 2012). It is recommended that the selection of plant species at the site ensures that a variety of flowering species are available throughout the year.

6.0 CONCLUSION

6.1 This ecological assessment has demonstrated that the proposed development at the site is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework.

6.2 It is possible to implement reasonable actions for the protection and long-term conservation of fauna such as nesting birds and foraging bats associated with the site.

6.3 Redevelopment at the site will provide an opportunity to secure ecological enhancement for fauna typically associated with urban areas such as breeding birds and roosting bats.

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8.0 APPENDIX: TABLES, PHOTOGRAPHS AND FIGURES

8.1 Plant Species Lists

Table 8.1: Plant Species List for the Ornamental Shrubs and Trees

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
	Garden exotics	LA	20%
Acer platanoides	Norway Maple	O	5%
Alnus cordata	Italian Alder	R	<1%
Berberis julianae	Chinese Barberry	LA	5%
Buddleja davidii	Butterfly-bush	O	<1%
Cornus sanguinea	Dogwood	LA	1%
Corylus avellana	Hazel	LA	10%
Cotoneaster bullatus	Hollyberry Cotoneaster	LA	5%
Cotoneaster sp.	Cotoneaster species	LA	5%
Lonicera nitida	Wilson's Honeysuckle	LA	5%
Lonicera periclymenum	Honeysuckle	R	<1%
Prunus avium	Wild Cherry	LF	<1%
Pyracantha coccinea	Firethorn	LF	5%
Rosa canina	Dog-rose	LF	<1%
Rosa rugosa	Japanese Rose	R	<1%
Herb Species			
Cirsium arvense	Creeping Thistle	VLF	<1%
Galium aparine	Cleavers	LF	<1%
Geranium robertianum	Herb-Robert	R	<1%
Hedera colchica	Persian Ivy	LF	<1%
Hedera helix	Ivy	LF	<1%
Hypericum androsaemum	Tutsan	R	<1%
Lapsana communis	Nipplewort	R	<1%
Linaria purpurea	Purple Toadflax	O	<1%
Poa annua	Annual Meadow-grass	R	<1%
Poa trivialis	Rough Meadow-grass	VLF	<1%
Rubus fruticosus agg.	Bramble	O	<1%
Senecio squalidus	Oxford Ragwort	O	<1%
Solanum dulcamara	Bittersweet	R	<1%
Solidago gigantea	Early Goldenrod	VLF	<1%
Sonchus oleraceus	Smooth Sow-thistle	R	<1%
Urtica dioica	Common Nettle	VLF	<1%
Vicia cracca	Tufted Vetch	VLF	<1%
[1]**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.2: Plant Species List for the Scrub at the Rear of the Site

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
Corylus avellana	Hazel	LF	5%
Prunus sp.	Cherry species	LF	10%
Prunus spinosa	Blackthorn	LF	<1%
Rosa canina	Dog-rose	VLF	5%
Sambucus nigra	Elder	LA	30%
Sorbus aucuparia	Rowan	VLF	<1%
Herb Species			
Calystegia sepium	Hedge Bindweed	R	<1%
Epipactis helleborine	broad-leaved helleborine	R	<1%
Equisetum arvense	Field Horsetail	O	<1%
Galium aparine	Cleavers	LF	<1%
Geranium robertianum	Herb-Robert	O	<1%
Rubus fruticosus agg.	Bramble	A*	60%
Urtica dioica	Common Nettle	VLF	<1%
[1]**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.3: Plant Species List for the Grassland at the Rear of the Site

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
Rosa canina	Dog-rose	R	<1%
Herb Species			
Anthoxanthum odoratum	Sweet Vernal-grass	O/LF	10%
Arrhenatherum elatius	False Oat-grass	LF	5%
Dactylis glomerata	Cock's-foot	O	5%
Equisetum arvense	Field Horsetail	O/LF	10%
Festuca rubra	Red Fescue	F	30%
Geranium robertianum	Herb-Robert	R	<1%
Holcus lanatus	Yorkshire-fog	O/LF	15%
Plantago lanceolata	Ribwort Plantain	O	5%
Poa pratensis	Smooth Meadow-grass	O/LF	10%
Ranunculus acris	Meadow Buttercup	O/LF	<1%
Ranunculus repens	Creeping Buttercup	O	<1%
Rubus fruticosus agg.	Bramble	LF	5%
Solidago gigantea	Early Goldenrod	VLA	1%
Taraxacum officinale agg.	Dandelion	O	5%
[1]**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

8.2 Photographs



Photo 1: Hard standing within the site



Photo 2: Ornamental shrubs and trees, and northern elevation of Building 1



Photo 3: Ornamental shrubs and trees



Photo 4: Scrub at the rear of the site



Photo 5: Scrub and grassland at the rear of the site



Photo 6: Building 1, eastern elevation, southern end



Photo 7: Building 1, eastern elevation, northern end



Photo 8: Building 1, western elevation



Photo 9: Building 1, southern elevation



Photo 10: Building 1, internal area



Photo 11: Building 1, internal area, showing underside of roof



Photo 12: Building 2, northern elevation



Photo 13: Building 2, western elevation



Photo 14: Building 2, eastern elevation



Photo 15: Building 2, internal area

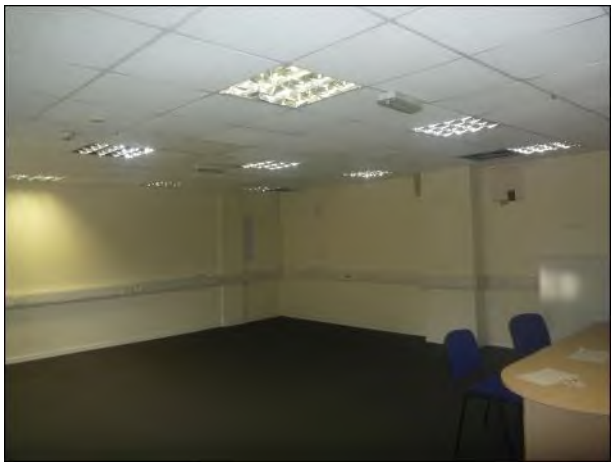


Photo 16: Building 2, upper floor of two-storey section, showing suspending ceiling

8.3 Figures

Figure 1: Aerial Image of the Site and its Surroundings

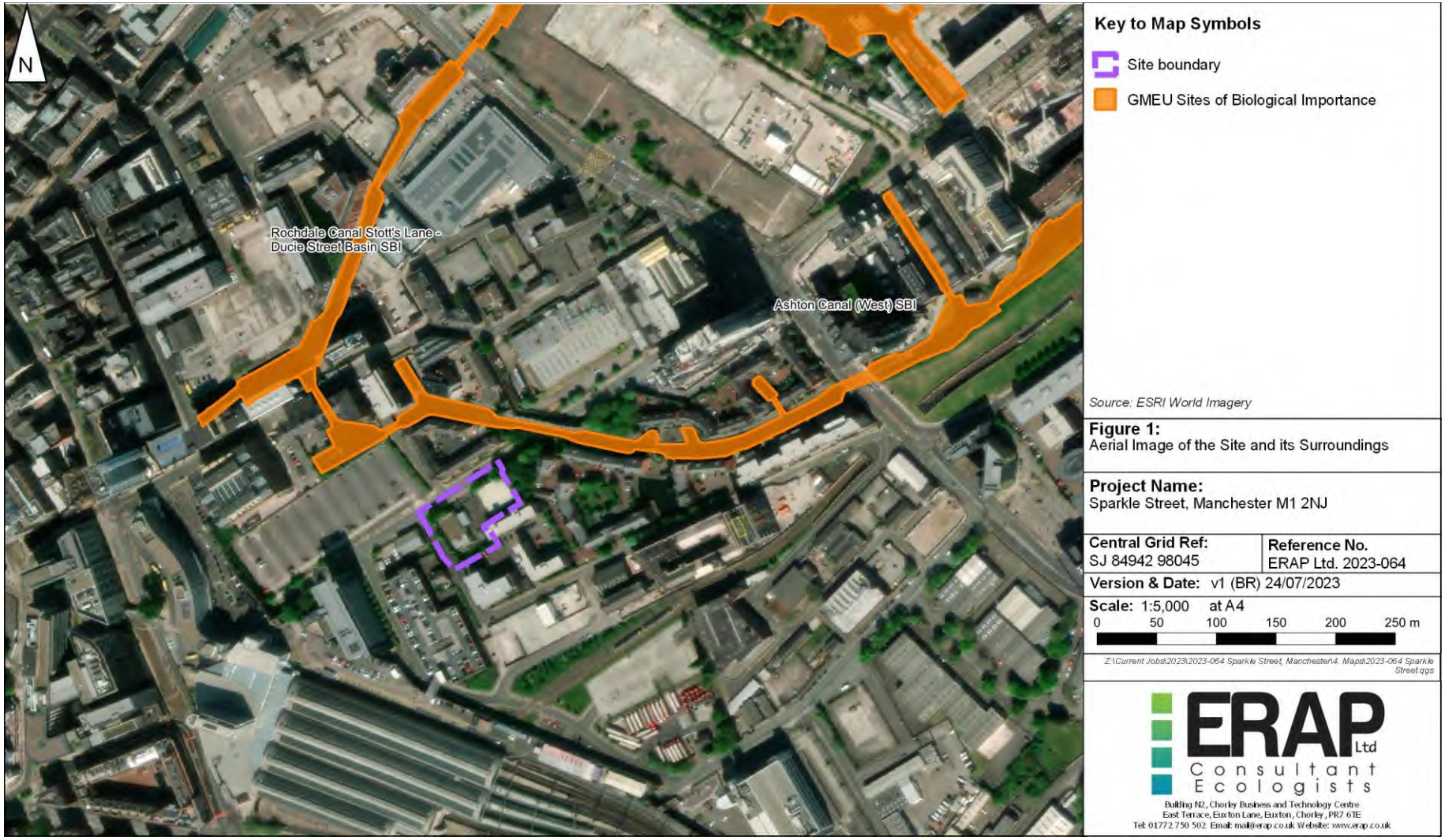


Figure 2: Phase 1 Habitat and Vegetation Map



Appendix 6 – Phase 1 Ground Conditions Assessment









Sparkle Street, Manchester

Phase 1 Preliminary Risk Assessment

Curtins Ref: 082142-CUR-00-XX-RP-GE-001

Revision: P02

Issue Date: 28 July 2023

Client Name: Foras (Sparkle Street) Limited

Client Address: 4 Elstree Way, Borehamwood, Hertfordshire, WD6 1RN

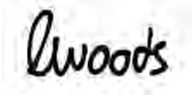
Site Address: Sparkle Street, Manchester, M1 2NA

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Rev	Description	Issued by	Checked	Date
P01	First Issue	LW	RA	02/06/2023
P02	Updated for Client Comments	LW	MH	28/07/2023

This report has been prepared for the sole benefit, use, and information for the client. The liability of Curtins Limited with respect to the information contained in the report will not extend to any third party.

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Executive Summary

Appointment	In March 2023 Curtins were instructed by Foras (Sparkle Street) to undertake a Phase 1 Preliminary Risk Assessment of the land off Sparkle Street, Manchester, M1 2NA. The site is centred on NGR SJ 84949 98045 and covers an area of approximately 0.3 Ha. It is understood that the current development proposals comprise the development of the site for residential end use comprising the following: • Demolition of existing buildings on the site. • Construction of a multistorey residential scheme.
Current Site Status	The site is currently occupied by the Gateway Industrial Estate comprising of two brick and metal buildings to the west and east of the site, with hardstood ground and various large brick/concrete plinths in the centre of the site. There is a large retaining wall at the south-eastern boundary along with a steep slope on the south-western boundary. The northern boundary is marked by Store Street, the primary access road, and the western boundary by Sparkle Street. The southern boundary borders three residential apartment blocks with associated carparking off Comet Street, and the eastern boundary by the Thomas Telford Basin residential properties. The surface cover is largely hardstood ground across the majority of site, with the northern, southern, and western boundaries lined with large trees and shrubbery. The site is approximately level, excepting a steep slope extending upwards at the southern boundary.
Site History	Earliest mapping from 1851 shows the site to be vacant excepting a small depression within the centre of the site (perhaps a pond) along with a footpath running north to south within the western portion of site. From 1889 to 1978 the site was occupied by a Timber Yard and associated buildings along with Thompson McKay & Co occupying a large rectangular building within the east of the site, with various other small structures throughout history. From 1978 onwards, the Timber Yard no longer appears on site and instead the site contained 2 buildings in the east and the west, with an open yard in the centre, from 1996 this has been labelled as the Gateway Industrial Estate and remains relatively unchanged up to present day. The area surrounding site has undergone numerous changes since earliest mapping, and consists of mixed land-use including residential, several manufacturing works, railway land, carparks and warehouses. Early mapping (1889 – 1891) the surrounding area of the site contained residential properties to the south and west, a Goods Station (railway), tin works and cotton mill to the north, and a Packing Case Manufactory to the east. A large railway station along with associated railway tracks is located 150m south-west of the site and from early mapping (1889) was known as London Road Station, which subsequently changed to Piccadilly Railway Station from 1958 onwards.
Geology	BGS mapping indicates the site is underlain by Glacial Till underlain by the Chester Sandstone Formation. From the available BGS borehole logs in close proximity to the site, bedrock is anticipated to be encountered between 0.00m and 3.35m bgl. The site is located in a lower probability radon area where less than 1% of homes are above the radon Action Level.
Mining	The site is in a coal mine reporting area but does not lie within a Development High Risk Area. The risk from historic coal mining is considered to be **Low**.
Hydrogeology	The site is underlain by a Secondary Undifferentiated Aquifer associated with the superficial deposits and a Principal Aquifer associated with the bedrock formation. The site is not located within a Source Protection Zone (SPZ) and there are no potable groundwater abstraction points located within 1500m of the site.
Hydrology	The nearest surface water feature is the Ashton Canal pond 37m north of the site. There is one surface water abstraction located 879m west of the site where surface water from the canal is used for cooling purposes.

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Unexploded Ordnance	Online UXO risk mapping identifies the site as being in a moderate-risk area. Post war building clearance potentially associated with bomb damage is noted within 1km of the site. The site is situated in central Manchester, which is identified as a Moderate risk area in UXO risk mapping. Post war building clearance potentially associated with bomb damage is noted on historical mapping within 1km of the site. Due to this, a detailed UXO Risk Assessment was procured for the site from a specialist contractor, 1st Line Defence, in order to assess risk during any intrusive ground investigation undertaken by Curtins only. The risk of UXO being encountered during any Curtins intrusive ground investigation works was assessed as Low Risk from items of German air delivered UXO. 1st Line Defence recommended the following risk mitigation measures for Curtins intrusive ground investigation works: • UXO Risk Management Plan • Site Specific UXO Awareness Briefings to all personnel conducting intrusive works. For intrusive works undertaken by a third party, the Principal Contractor must undertake their own UXO risk assessment, and if deemed to be required by their own preliminary risk assessment procure their own Detailed UXO Risk Assessment.
Initial Ground Contamination Assessment	The risk from Made Ground soils posed to the site's end-users is considered to be **Moderate** to **Moderate/Low** due to the potential for contaminated Made Ground soils from the long history of industry, construction, and demolition both on and immediately surrounding site since the late 1800s. The risk presented to groundwater and surface water receptors is considered to be **Moderate/Low** and **Very Low** respectively**.** The risk posed to site end-users from ground generating gases arising from organic / putrescible soils on or near the site is considered to be **Moderate/Low**.
Recommendations	The following recommendations are made with regards to further works at the site: 1. Undertake an intrusive ground investigation; 2. Undertake a GQRA as part of the ground investigation; and 3. Undertake Ground Gas Monitoring over a period of two-three months for methane, carbon dioxide, oxygen, hydrogen sulphide, gas flow in l/hr, weather conditions and barometric pressure (with confirmation if falling, steady or rising). 4. Third parties must undertake their own UXO risk assessments prior to undertaking any intrusive works, with reference to their specific scope of works. It is further recommended that this work is completed in advance of any development works taking place.

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Appendices

Appendix A **Drawings**

Appendix B **Envirocheck Report**

Appendix C **Detailed UXO Report**

Appendix D **Qualitative Risk Assessment Rationale**

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1.0 Introduction

1.1 Project Background

In March 2023, Curtins were instructed by Foras (Sparkle Street) to undertake a Phase 1 Preliminary Risk Assessment of land off Sparkle Street, Manchester, M1 2NA.

The location and extent of the site is shown in *Figure 2.1* on the following page. It is understood the current development proposals consist of a residential end use scheme comprising the following:

- Demolition of the existing building on the site.
- Construction of a multistorey residential scheme.

Current proposed site plans are available for review within *Appendix A*.

1.2 Scope of Services

The Phase 1 PRA is intended to provide an overview of the geo-environmental and geotechnical setting of the site, prior to the proposed development of the site.

Through this overview, the Phase 1 PRA aims to develop both a working conceptual and ground model for the site, as well as present an initial assessment of any risks that could be presented to the development including its intended end users and the wider environment.

Specifically, the Phase 1 PRA provides an initial assessment of the site regarding:

a) Potential on and offsite contamination from historical and/or current uses, including potential ground gas generating sources;
b) The potential impact on the wider environment by historical and or current use of the site of interest;
c) The potential impact from surrounding land uses and other environmental factors;
d) Potential problems associated with geological features such as faulting, mineral extraction, mining and land instability; and
e) The location of apparent sub-surface structures that may affect the proposed redevelopment.

Consideration of detailed flood risk, ecology and archaeological issues are outside of the scope of this report.

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2.0 Current Site and Surrounding Area Details

2.1 Site Location and Current Details

Site use, location and description are shown below in *Table 2.1* and *Figure 2.1*.

Table 2.1 – *Site Details*

Site Address	Land off Sparkle Street, Manchester, M1 2NA
NGR	SJ 84949 98045
Area of Site	0.3 Ha.
Current Site Use and Description	The site is located south of Store Street, east of Sparkle Street, west of 'Thomas Telford Basin' residential properties, and north of 'Home Apartments' residential properties. The site is currently occupied by the Gateway Industrial Estate comprising of two brick and metal buildings and hardstood carparking space along with several large brick/concrete plinths. The western boundary is marked by Sparkle Street, and the northern boundary by Store Street, the primary access road. Beyond Store Street are 'Wharf Close Apartments' and a large NCP carpark. Beyond Sparkle Street further west is a multistorey carpark associated with Manchester Piccadilly Train Station along with an industrial/warehouse unit and 'Cultivate Agency', a fashion agency, with associated carpark. The southern boundary borders three residential apartment blocks with associated carparking off Comet Street, and the eastern boundary by the Thomas Telford Basin residential properties. The surface cover is largely hardstood ground across the majority of site, with the northern, southern, and western boundaries lined with large trees and shrubbery. The site is approximately level, except for a steep slope extending further south off site.



Figure 2.1 *– Site Location Plan (site boundary shown in pink and 250m and 500m buffer in purple).*

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2.2 Surrounding Area Details

The following information was established through undertaking an environmental database search. The full Envirocheck report (Ref. 1) is included in Appendix B.

Table 2.2 – Surrounding Land Uses

Surrounding Area	**N**	Store Steet, with a large carpark and residential properties.
	S	Residential apartments and associated carparking off Comet Street.
	E	The Thomas Telford Basin residential properties.
	W	Sparkle Street, with 'Cultivate Agency' warehouse/industrial unit and a multistorey car park associated with Manchester Piccadilly Train Station further west.

3.0 Site History

A review of the available historical mapping and other information for the site, as presented within the Envirocheck Report (Ref. 1), has been undertaken and is presented in *Table 3.0* below.

Table 3.0 – *Previous Site and Surrounding Area Uses and Potential Sources of Contamination.* ***Bold text refers to on-site activity.***

Date	Description	Potential Sources of Contamination
1851 - 1958	**The earliest available mapping (1851) shows the site to be vacant, excepting a depression (perhaps a pond) within the centre of the site and a footpath running north-south within the western portion of the site.** **Mapping from 1889 shows the site primarily occupied in the west by a Timber Yard with what appears to be associated buildings in the north-west and housing in the south-west.** **There is a large rectangular building labelled as 'Thompson McKay & Co Provender WHSE Stables' present within the east of the site.** **Between 1948 – 1951, the residential housing within the south-west of the site appears to have expanded.** From earliest mapping (1889 – 1891) the surrounding area of the site contains residential properties to the south and west, a Goods Station (railway), tin works and cotton mill to the north, and a Packing Case Manufactory to the east. Various other works are located to the east and south-east of the site, labelled as the Phoenix Works (Machinery) and Phoenix Works (Brass & Iron) along with a disused Foundry. By 1908 the disused foundry has been converted into a Clothing Factory and an Iron & Steel Warehouse. By 1951 the Phoenix Work's are labelled as the Crusader Works (Stationary). From 1931 onwards, many of the blocks to the west and south-west of site appear to be vacant of buildings. The Manchester & Ashton Under Lyne Canal is located approximately 45m to the north-east of the site. An Extensive Railway Network is located between 80m and 250m of the site and is labelled as London Road Station, L & N.W and M. S & L lines.	• Potential for ground gas due to the infilled depression. • Potential for uncontrolled deposition of Made Ground during on-site and off-site construction. • Potential of contamination from on-site buildings uses, including localised spills from tanks onsite and off-site.
1958 - 1978	**By 1958, the Timber Yard has extended eastwards and by 1959 the Timber Yard is labelled as a 'Depot'.** To the south of site on Chapeltown Street is a large warehouse. The Packing Case Manufactory to the immediate east of the site is now labelled as a Factory with Travelling Crane. From 1958 onwards, the London Road Station is labelled as Piccadilly Station. By 1966, a large section of the Railway Network connecting part of the large Goods Station to the mainline has been removed 100 – 150m south-west of the site. By 1968, the tin works and cotton mill to the north of the site appear to have been demolished and the land now stands	• Potential for uncontrolled deposition of Made Ground during on-site and off-site construction. • Potential of contamination from on-site buildings uses, including localised spills from tanks on-site and off-site.

Date	Description	Potential Sources of Contamination
	vacant. And from 1975 onwards the Stainless Steel Works and Sweet Factory to the south-east appear to have been demolished.	
1978 - 1996	**By 1978, the Timber Yard is no longer labelled, and its associated buildings appear to be demolished.** **In the east of the site is a large square shaped unlabelled building, and in the west, there is a long rectangular unlabelled building. Between the two buildings is an open yard.** **The residential buildings once in the south and south-west appear to have been demolished, and mapping (1978) shows a steep slope extending upwards from site at the southern boundary.** Mapping from 1978 shows the three small blocks to the west have been consolidated and converted into a carpark. From 1978, a large section of the former goods station associated with Piccadilly Railway Station north of the site has been converted into a carpark. The Packing Case Manufactory to the immediate east of site is no longer present on mapping.	• Potential for uncontrolled deposition of Made Ground during on-site and off-site construction. • Potential for uncontrolled deposition of Made Ground during on-site demolition. • Potential of contamination from on-site buildings uses, including localised spills from tanks on-site and off-site.
1996 – Present	**By 1996, the site is now labelled as the 'Gateway Industrial Estate'. No visible changes to site on mapping between 1996 to the present day, with the rectangular building present in the west and the square building in the east, along with the steep slope running upwards towards the southern site boundary.** The former tin works and cotton mill to the north of the site is labelled as Paradise Park (1996), before the construction of the Wharf Close Apartments in 2000. Between 1993 and 1999 the Thomas Telford Basin residential apartments have been constructed to the immediate east of the site. Between 2003 and 2006, the three residential apartment blocks to the south of the site have been constructed.	• Potential for uncontrolled deposition of Made Ground during on-site and off-site construction. • Potential for uncontrolled deposition of Made Ground during on-site demolition. • Potential of contamination from on-site buildings uses, including localised spills from tanks on-site and off-site.

Potential sources of onsite contamination are further discussed in *Section 6.0*.

4.0 Geology, Hydrogeology and Hydrology

4.1 Geology and Hydrogeology

A study of the Envirocheck (Ref. 1) Report and the British Geological Survey (BGS) 1:50,000 mapping records (Superficial and Bedrock Editions) for Manchester (Sheet 085) dated 2010 (Ref. 2) indicates the following geological and hydrogeological succession underlying the site:

Table 4.1a – *Geological/Hydrogeological Succession*

Geology	Associated Hydrogeological Classification
Glacial Till, Devensian[1]	Secondary Undifferentiated Aquifer[2]
Chester Formation[3]	Principal Aquifer[4]

Notes:
1. *A heterogenous mixture of clay, sand, gravel and boulders varying widely in size and shape.*
2. *This is assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.*
3. *The upper part are sandstones or pebbly sandstones of the Helsby Sandstone Formation, or generally laminated mudstones, siltstones, and sandstones of the Mercia Mudstone Group. The lower part varies across the country. In the North-West of the country, the formation comprises conglomerates and reddish-brown, cross-bedded, pebbly sandstones with beds of red-brown mudstone.*
4. *Layers of rock or drift deposits with high permeability layers and are strategically important rock units with a large water storage capacity.*

There is one available BGS borehole log located on site, with four more available within 250m of the site, present in *Table 4.1b* below.

Table 4.1b – *BGS Borehole Records*

Record Number	Location (Grid Ref.)	Details (depth to top of strata / lithology/ designation/thickness)
SJ89NW5	On-site (84937 98063)	– 0.00m, Clay (9.45m) **Borehole terminated at 9.45m bgl**
SJ89NW4	99m west of the site (84836 98010)	– 0.00m, MADE GROUND (3.35m) – 3.35m, Clay (2.74m) – 6.10m, 'Red Rock' (3.35m) **Borehole terminated at 9.45m bgl**
SJ89NW4079	115m west of the site (84793 98020)	– 0.00m, MADE GROUND, Coarse angular limestone over sets (0.30m) – 0.30m, MADE GROUND, Black medium sand, with much fine to medium gravel of ash, coke, slag, coal and clinker (0.40m). – 0.70m, MADE GROUND, Soft brown sandy clay with much fine to medium subangular gravel of coke, clinker, coal and slag. Some fine to medium subangular gravel of sandstone and occasional

Record Number	Location (Grid Ref.)	Details (depth to top of strata / lithology/ designation/thickness)
		medium gravel of brick, and occasional pockets of medium sand (4.80m). – 5.50m, MADE GROUND, Soft brown clayey sand, with occasional pockets of clay. Much fine to medium subangular gravel of sandstone, some cobbles of coarse grained red and white sandstone and quartz. Some organic material (wood) at 7.35m bgl (2.10m). – 7.60m, Coarse orange brown SAND, completely weathered sandstone (0.40m). **Borehole terminated at 8.00m bgl.**
SJ89NW4078	198m west of the site. (84724 97999)	– 0.00m, MADE GROUND, Soft brown very sandy clay, with much fine to medium subangular gravel of brick and coke. Some half brick fragments and occasional coarse gravel of limestone, occasional fragments of wood (7.00m). Medium gravel of coal below 2.00m bgl. Pockets of black silt below 6.00m bgl. **Borehole terminated at 7.00m bgl.**
SJ89NE33	250m southeast of the site. (85221 97908)	– 0.00m, MADE GROUND, 'Filling' (2.31m). – 2.31m, Stiff dark brown CLAY (1.96m). – 4.27m, BOULDER CLAY (4.57m). – 8.84m, Red Roach (5.79m). – 10.06m, Red Sandstone (13.71m). **Borehole terminated at 23.77m bgl.**

There are no fault lines on site, the nearest is 50m southwest of the site orientated northwest to southeast, downthrow not shown.

The site is not situated within a Source Protection Zone (SPZ). There are no potable groundwater abstraction points located within 1000m of the site.

There are no pollution incidents to controlled water that has occurred on the site in the last 30 years, the nearest occurred 191m northwest of the site and relates to a chemical spill (flouroscein) recorded in 1996 which was recorded as having a minor impact, Category 3. A second occurred 252m southwest of the site and relates to a sewage spill in a Tributary to the River Mersey recorded in 1991 and was declared a major incident, Category 1.

4.1.1 Mining

A review of the Coal Authority interactive mapping (Ref. 4) for the area indicates that the site is located within a Coal Mining Reporting Area but does not lie within a Development High Risk Area.

There are 11 recorded mine entries between 800m and 900m east and southeast of the site, and coal outcrops and probable shallow coal workings 1.3km northeast of the site.

Consequently, the risk to development from historic coal mining is considered to be **Low**. No further actions are required to further assess the risk to development from historic coal mining.

There are no recorded BGS mineral sites located within 1.5km of the site.

4.1.2 Other Ground Stability Issues

The Envirocheck Report (Ref. 1) confirms that there is a no hazard to very low risk from the following ground stability hazards on the site; collapsible ground, compressible ground, ground dissolution, landslide ground, running sand and shrinking or swelling clay.

4.1.3 Ground Gas

There is one historical landfill located within 1000m of the site, located 712m southeast of the site.

There are no BGS recorded landfill sites within 1000m of the site.

There are five licensed waste management facilities within 1000m of the site, the nearest is located approximately 548m southeast of the site for inert and excavation waste TS and treatment.

There are six recorded areas of potentially infilled land (water) within 250m of the site associated with unknown filled ground (such as quarries and pits) and infilled ponds/marshes/rivers/streams/docks. No areas of infilled land are recorded onsite. The closest is 83m east of the site. Due to the proximity of recorded areas of infilled land to the site, ground gas may be present on site from such sources.

The Envirocheck Report (Ref. 1) and BGS Radon Mapping (Ref. 5) confirms the site is situated in a Lower probability radon area where less than 1% of homes are above the radon action level. Radon protection measures are therefore not considered necessary within the proposed development. The advice of a specialist radon assessor should be sought where the development incorporates a basement.

4.2 Hydrology

The nearest surface water feature is located 37m north of the site, recorded to be the Ashton Canal.

One recorded pollution incident to controlled waters has occurred within 250m of the site. This was located 191m northwest of the site due to a chemical spill, occurring on 31st October 1996.

There is one surface water abstraction within 1000m of the site. This is located 879m west of the site where surface water from the canal is used for cooling purposes.

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There is one active discharge consents within 500m of the site. This is located 493m south of the site and relates to United Utilities Water Limited storm sewage overflow.

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5.0 Unexploded Ordnance Risk Assessment

Military activities including those conducted as part of both the First and Second World Wars have resulted in a legacy of unexploded ordnance (UXO) being present within the shallow soils of the UK.

UXO result from various sources including both allied (military training) and German (bombing raids) with a guide figure of approximately 10% of all munitions failing to function as designed.

An assessment of the likelihood of being UXO encountered has been undertaken to advise any intrusive ground investigation in the event that this is undertaken by Curtins. This risk is influenced by a number of factors including the proximity to strategic targets, the nature of the works being undertaken and evidence of local damage in the post-war periods amongst others. In order to determine the likelihood of UXO being present on a site, a stepwise risk assessment process is followed. This process is outlined within CIRIA C681 Unexploded Ordnance: A Guide for the Construction Industry (Ref. 6). with the following commentary considered to represent a Preliminary Risk Assessment intended to guide if and where there is a requirement for a Detailed Risk Assessment.

5.1 Preliminary UXO Assessment

The risk presented by Unexploded Ordnance, identified using preliminary Unexploded Bomb (UXB) risk maps retrieved from Zetica UXO (Ref. 7) has placed the site in a Moderate-risk area in respect to the potential presence of UXB as a result of World War Two bombing. Moderate risk regions are those with a bombing density of 15-49 bombs per 1000 acres or higher.

A review of the available historic mapping identifies the presence of possible features indicative of bomb damage (empty plots) following WWII within 1km of the site boundary.

A Detailed UXO Risk Assessment was procured for the site from a specialist contractor, 1st Line Defence, in order to assess risk during Curtins Ground Investigation works, the findings of which are summarised below with a copy of the report enclosed in Appendix C.

No positive evidence of bombing within or directly surrounding the site boundary could be found in available record sets, and no obvious indicators of damage are observable on-site in post-war aerial imagery. The significant level of clearance throughout the southern and western vicinity of the site shown on post-war mapping appears to pre-date the war, as the same clearance can be observed in oblique imagery dated 1937 – it does not appear that this clearance was caused by bomb damage and is therefore not considered to be of concern.

It was however noted that while risk from UXO is not considered significant enough to warrant active UXO risk mitigation measures, it is certainly recommended that ground personnel are given UXO safety and awareness briefings to make them aware of what to look out for, and what to do in the event that a suspect item is encountered.

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The following risk mitigation measures are recommended to support Curtins Ground Investigation works, only, at Sparkle Street, Manchester:

- UXO Risk Management Plan
- Site Specific UXO Awareness Briefings to all personnel conducting intrusive works.

Contractors undertaking excavations should undertake their own risk assessments with regards to UXO, and where deemed to be required procure their own Detailed UXO Risk Assessment, with specific reference to their own scope of works.

If unexploded ordnance is discovered during any works, stop immediately, prevent access to the area, and inform the police. If the site boundary or location changes then the UXO risk should be reassessed.

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6.0 Conceptual Site Model & Qualitative Risk Assessment

The conceptual site model (CSM) and Qualitative Risk Assessment (QRA) are presented in the table within this section.

The CSM details the source-pathway-receptor linkages or potential pollutant linkages (PPL) that have been identified for the site. The QRA details the associated level of risk relating to these potential pollutant linkages.

The CSM and QRA concern risk to human health and water environment with additional, more specific risk assessment protocols contained within the main body of this reporting, as detailed in *Section 6.1* below.

The 'risk rating' within the QRA refers to the risk that the source, pathway, receptor linkage or PPL is complete. Unless specifically stated it does not necessarily refer to an immediate risk and is intended to be used as a tool to assess the necessity for further assessment/investigation.

6.1 Additional Risk Assessments

The following risk assessments, listed below, are not included within the main CSM and QRA but nonetheless can be of critical importance to the onward development of the site:

- The risk presented by Mining is discussed and assessed in *Section 4.1.1*.
- The risk presented by Radon is discussed and assessed in *Section 4.1.3*.
- The risk presented by Unexploded Ordnance is discussed and assessed in *Section 5.0*.

Under current health and safety legislation, employers are required to carry out their own appropriate risk assessments and mitigation to protect themselves and their employees, other human receptors, and the environment from potential contamination. Such risks must be adequately mitigated by law, specifically the Construction Design Management (CDM) Regulations, 2015 (Ref. 9) which require that potential risks to human health and the environment from construction activities are appropriately identified and all necessary steps taken to eliminate / manage that risk. It has been assumed that any future construction works on site will be undertaken in compliance with these requirements.

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- The table below represents the first stage in the land quality risk assessment process: The Qualitative Risk Assessment.
- For a development site to be deemed 'suitable for use', the level of risk needs to be brought down to acceptable levels, i.e. low to very low risk. The purpose of each stage of risk assessment is ultimately to establish, if there is a requirement for additional levels of assessment to be made to have sufficient confidence to support a risk characterisation or management decision, e.g. remedial action.
- In the absence of specific site data, a Generic Quantitative Risk Assessment is invariably recommended.

Conceptual Site Model			Qualitative Risk Assessment			Recommended Actions
Source	**Pathway(s)**	**Receptor(s)**	**Consequence**	**Likelihood of Occurrence**	**Risk Rating**	
Significant sources of on-site contamination: • Made Ground of unknown composition from uncontrolled deposition of materials on site during the construction and demolition of the early residential properties, Timber Yard, and various mixed-use industrial buildings. • Potential for contamination due to nature of historical buildings on site, including Timber Yard and Industrial Estate. Significant sources of off-site contamination: • Made Ground of unknown composition from uncontrolled deposition during construction of the residential housing, packing case manufactory, railway tracks and station, brass & iron works, machinery works and canal.	Direct contact, ingestion, inhalation (dust and vapours)	**End-user of site** (Commercial) **& Construction Workers**	**Medium** Chronic health risk	**Likely** Based on the site's development history it is considered that Made Ground is likely present underlying the site. Given the ages of the buildings that have since been demolished on site, along with the previous land uses (Timber Yard), the risk of encountering gross contamination within the Made Ground soils is considered Likely. Likelihood of construction workers coming into contact with contamination on site can reduced by appropriate PPE.	**Moderate**	**Ground Investigation** Including soil sampling **Generic Quantitative Risk Assessment** Recommended as part of the ground investigation.
	Vertical migration through the superficial deposits (soils) May occur due to existing service corridors and physical processes including; capillary action and downwards into the natural deposits through infiltration.	**Controlled Waters** (Groundwater) Secondary Undifferentiated Aquifer (superficial deposits) and Principal Aquifer (bedrock) The site is not within a designated Source Protection Zone.	**Medium** Pollution of classified groundwater	**Low** Considering the lack of SPZ and potable abstractions points within 1000m, it is considered that there is a low likelihood that contamination in soils would negatively impact the principal/undifferentiated aquifer.	**Moderate/ Low**	**Ground Investigation** Including groundwater sampling **Generic Quantitative Risk Assessment** Recommended as part of the ground investigation.
	Horizontal migration over and through the superficial deposits (soils)	**Controlled Waters** (Surface Water) The nearest surface water feature is located 37m north. One surface water abstraction point, 879m west.	**Mild** Pollution of non-sensitive water resources	**Unlikely** Considering the distance to the surface water feature; 37m to the canal, this pathway is considered Low.	**Very Low**	No further action required unless gross contamination identified in site soils in GI
Significant sources of ground gas: • Potential organic matter from unknown material within on and off site Made Ground or superficial deposits.	Vertical and horizontal migration through existing service corridors and the underlying superficial deposits	**End-user of site** (Commercial)	**Medium** Human health risk	**Low** There is potential for gas generation from any localised organically rich deposits present in the Made Ground or superficial soils.	**Moderate/ Low**	**Ground Gas Monitoring as part of the ground investigation** Shallow gas monitoring to assess the risk

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7.0 Conclusion and Recommendations

The qualitative risk assessment (QRA) determined a varied level of level of risk associated with the proposed development (Very Low to Moderate/Low).

The QRA concluded by recommending that generic quantitative risk assessments (GQRA) were conducted to confirm the assessment of risk ascribed to each of the respective potential pollutant linkages (PPLs). It is recommended that the GQRA is conducted as part of a ground investigation in support of the engineering design of the proposed development.

In summary, the following recommendations are made:

- Procure a Detailed UXO Risk Assessment;
- Undertake an intrusive ground investigation;
- Undertake a GQRA as part of the ground investigation; and
- Undertake ground gas monitoring over a period of two-three months for potential hazardous gases.

It is further recommended that the site investigation works are completed in advance of any development works taking place.

7.1 Contaminants of Concern

Potential contaminants of concern associated with the sources identified within the Conceptual Site Model in *Section 6.0* of this reporting include but are not limited to: broad range aliphatic and aromatic hydrocarbons present within any fuel oils; polycyclic aromatic hydrocarbons (PAHs); inorganic compounds including heavy metals; formaldehyde adhesives, wood preservatives, fire retardants, bitumen used in the timber processing industry; PCB's where electricity equipment across the site was present; and asbestos present in discarded building materials.

Potential contaminants associated with the airborne dust/particulates include but are not limited to: polycyclic aromatic hydrocarbons and inorganic compounds including toxic metals that are also accounted for by potential onsite contaminants of concern.

7.2 Other Considerations

The requirement for additional surveys, e.g. arboricultural and ecological surveys, should be confirmed through advice from a suitably qualified and experienced professional.

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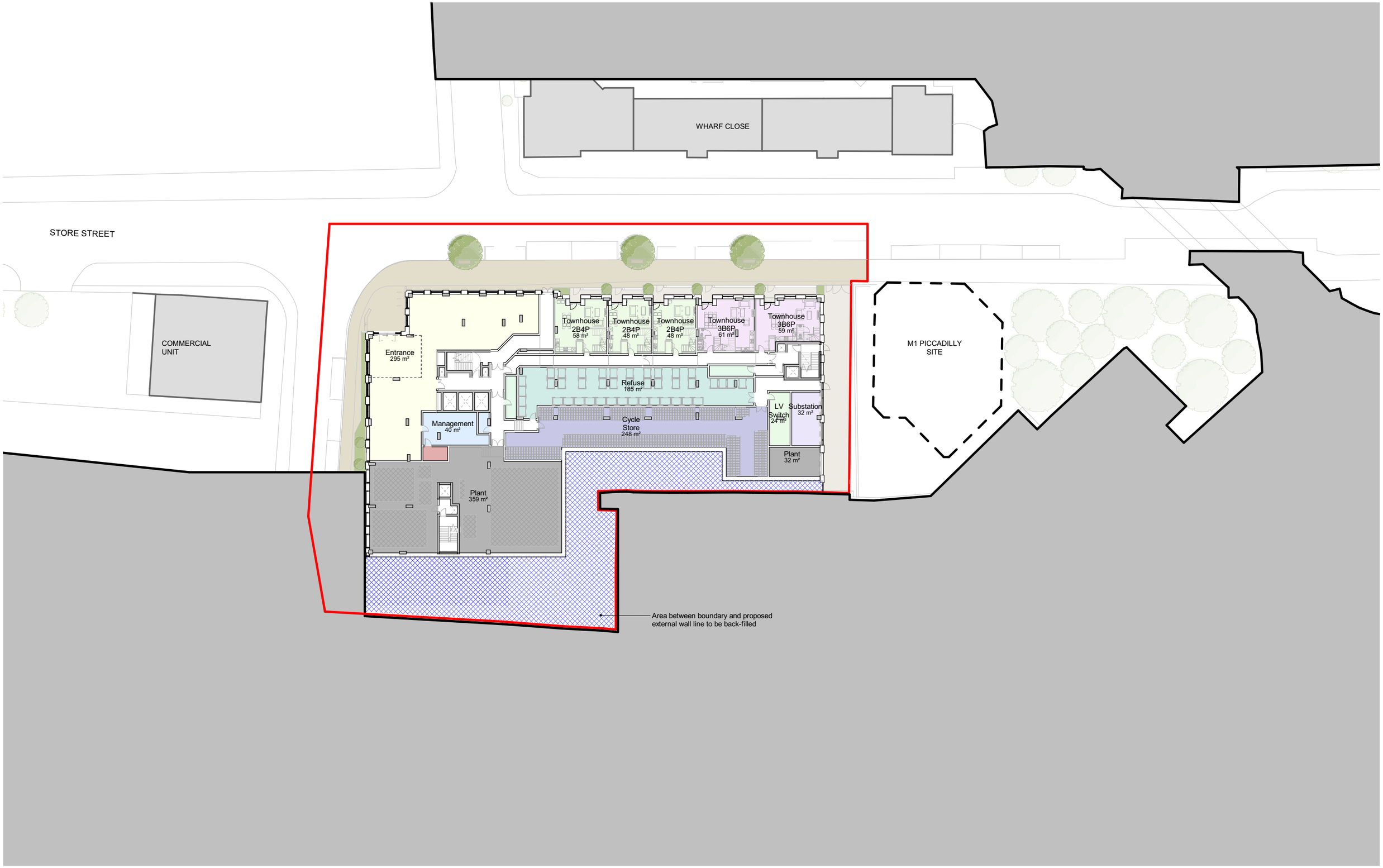
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Appendix A Drawings

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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.

NOTE:

NORTH

Rev	Date	Description
P01	2022-10-13	First Issue
P02	2023-03-20	Design Update
P03	2023-04-06	Design Update
P04	2023-04-27	Design Update
P05	2023-05-22	Design Fix Issue
P06	2023-07-03	Minor Facade/Layout Amendments. Landscape Design Integrated.
P07	2023-07-07	Bin quantity amended to reflect fortnightly collection

Project Title
Sparkle Street
Manchester

Drawing Title
General Arrangement
Ground Floor Plan

Project No
10413

Scale
1 : 500 @ A3

Status
FOR INFORMATION

SHP Drawing Code
PROJ - ORIG - ZONE - FCLF - CLAS - TYPE - LOC - SEQ
10413-SHP-Z1-A-G200-PL-00-001

Revision
P07

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Appendix 7 – TV Reception Survey

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Sparkle Street, Manchester

Television and Radio Reception Impact Assessment

CHANGE HISTORY

Issue	Date	Details of Changes	
0.0	08/06/2023	Working draft	
0.1	21/06/2023	First draft issue	
Author: G Phillips			Reviewer: O Lloyd

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3 - Available Television and Radio Broadcast Services **13**

4 - Survey Methodology & Description of Baseline **15**

5 - Predicted Impacts and Effects **17**

6 - Mitigation Measures **20**

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Television Transmission Frequencies

VHF (FM) Radio Transmission Frequencies

Signal Measurements

An Overview of Signal Measurements

Survey Equipment

Calculation of Received Field Strength

References

Mapping Data

Local Planning Guidance

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GTech Surveys Limited

GTech Surveys Limited is a Midlands based broadcast and telecommunications consultancy conducting projects throughout the entire UK. We undertake mobile phone network, television and radio reception surveys (pre- and post-construction signal surveys), conduct broadcast interference and reception investigations, and support telecommunications planning work for wind energy developers, construction companies, architects, broadcasters and Local Planning Authorities.

In addition to radio interference modelling services and television reception surveys, we produce EIA and ES Telecommunications Chapters (also known as an 'Electronic Interference Chapter'); satisfying the requirements of Part 5, Regulation 18 (Parts 5a and 5b) of The Town and Country Planning EIA Regulations 2017. We peer review ES and EIA work, liaising with telecommunications providers (Arqiva, BT etc.) and advise developers with respect to associated Section 106 (Town and Country Planning Act 1990) and Section 75 (Town and Country Planning (Scotland) Act 1997) agreements.

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Professional broadcast trained project engineers deliver, and supply QBE insured technical products to support planning applications, discharge planning conditions (including S106 Agreements) and for due diligence. For more information about GTech Surveys Limited please visit our website - www.gtechsurveys.com

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Executive Summary

A baseline signal survey and reception impact assessment have been undertaken to determine the potential effects on the local reception of television and radio broadcast services from the proposed Sparkle Street development in Manchester. As requested by Manchester City Council (MCC) planning guidance, any development over four storeys requires a TV and radio reception impact assessment. Consequently, this report has been produced to support the planning application submission and to provide the existing reception data to assist with any further studies. Accordingly, impacts to the reception of VHF (FM) radio, digital terrestrial television (DTT, also known as Freeview) and digital satellite television services (such as Freesat and Sky), have been assessed. Impacts to the reception of analogue television services have not been assessed in this study because analogue terrestrial television services were switched off in Manchester (Granada TV region) during 2009 and throughout the rest of the UK by 2012.

Widespread interference to DTT (Freeview) reception is not expected, however, the Proposed Development may cause reception degradation for receptors located immediately to the southeast of the Site. If any interference occurs, simple and cost-effective antenna betterment or antenna relocation should restore the reception of DTT services.

The Proposed Development is likely to cause disruption to the reception of digital satellite television services in areas to the immediate northwest of the Site, within 201m from the base of the proposed building. In these locations (Store Street, Jutland Street and towards Ducie Street), tower crane structures and the Proposed Development itself could obscure required views of the southeastern skies (where the satellites are located), resulting in reception interference. If any interference does occur, the repositioning of satellite dishes to new locations without an obscured line-of-sight view to the serving satellites should restore reception. If this action is not possible or does not restore optimal reception, the use of DTT receiving equipment would also offer any affected digital satellite television viewer an alternative source of digital television broadcasts. Any sporadic interference arising from tower crane use is expected to be limited in duration (only occurring during working hours) and will cease completely when the cranes are removed.

The Proposed Development is unlikely to adversely impact the reception of VHF(FM) radio broadcasts due to the existing good coverage in the survey area and the technology used to encode and decode radio signals.

Overall, the Proposed Development is likely to cause disruption to the reception of DTT and digital satellite television services in areas to the immediate northwest and southeast of the Site. With respect to digital satellite television reception, in the identified areas, the required clear views of the southeastern skies could be obscured by the structure, resulting in interference. If interference does occur, the repositioning of the satellite dish to a new location without an obscured line-of-sight view to the serving satellites should restore all

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services. If satellite dish relocations are not possible, the use of DTT receiving equipment is likely to offer any affected viewer an alternative source of digital television broadcasts. With respect to DTT reception, the massing and built form of the proposed development could reduce signal propagation for areas to the southeast of the Site, resulting in interference. Antenna betterment should restore reception if interference occurs.

This report provides the existing level and quality of radio and television signal reception in the study area and can be used to support the planning application submission.

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1 - Introduction

This report outlines the findings of a reception impact assessment and pre-construction signal reception survey to determine the viewing preference of receptors located around the proposed Sparkle Street development and identifies what effects the Proposed Development may have on the reception of television and radio broadcast services. This report has been prepared for the applicant, Foras (Sparkle Street) Limited.

The Proposed Development comprises of the demolition of existing low-rise commercial units and erection of ground + 27 storey residential development with supporting residential amenity, private terraces and private shared garden. of a four storey block of flats to create four apartments following the demolition of the existing property. The building height is expected to be ground + 27 storeys (+124.250m AOD).

The site is located adjacent to Sparkle Street and Store Street, approximately 100 metres north of Piccadilly Railway Station in Manchester City Centre and is approximately 0.25 ha in size. The site is largely unoccupied, with its former use being a telephone exchange along with surface car parking and two buildings that are partly used for storage and distribution. The buildings are screened from the road on two sides by existing vegetation and an access route for vehicles is provided from Store Street. Figure 1 shows the location of the Site.



Figure 1 - The Location of the Site

The Site is bounded by Store Street to the north, Sparkle Street to the west, residential apartments to the south and vacant land to the east.

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The Assessment

Manchester City Council (MCC) requires applications for developments over four storeys in height to include a TV and radio reception impact assessment. Further guidance can be found in the document; *"Full, Outline, Reserved Matters & Variation/Removal of Conditions Planning Applications - Is Your Application Valid?"*, September 2018 (revised January 2020), MCC. The requirement states;

> *Television Reception*
>
> *MCC planning guidance, any development over four storeys requires a TV reception impact assessment.*
>
> *Information on TV and radio reception and interference. Please provide a report on the possible interference created by the proposed development on TV and radio reception within the area. (Core Strategy Policy EN2)*

A desktop study was first undertaken, based on broadcast transmission information, plans of the Proposed Development and maps of the area. The relevant TV and radio signal survey area for the Proposed Development was identified and a site visit was then subsequently conducted to establish the baseline television reception conditions. Modelling techniques and field assessments of viewers' choice of television and radio transmitter were then used to predict the potential effects upon television and radio broadcast reception in the area. The impacts from the Proposed Development are consequently analysed, and together with various mitigation options, conclusions are drawn on the overall effects of the Proposed Development on television and radio broadcast service reception for local residents.

This study was undertaken to investigate whether the Proposed Development could cause interference to local television and radio broadcast reception. The effects on VHF (FM) radio, digital terrestrial television and digital satellite television service reception are discussed. The area around the Site is no longer served by analogue television transmissions due to the completed Digital Television Switchover. All analogue services were switched off in the Granada television region during 2009. This report follows the following structure:

Chapter 1 introduces the assessment, the location of the Site, the Proposed Development and the requirements of the work

Chapter 2 discusses the different forms of structure generated television and radio interference and how these can impact the reception of different television and radio broadcast platforms

Chapter 3 describes the available television and radio services in the survey area

Chapter 4 describes the pre-construction television and radio reception conditions around the Site

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Chapter 5 describes the predicted impacts of the Proposed Development upon television and radio broadcast reception before any mitigation measures are applied

Chapter 6 describes any suitable mitigation measures for any affected TV viewer or radio listener

Chapter 7 presents the conclusion

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2 - The Mechanisms of Interference to Television and Radio Broadcast Services

Terrestrial Television Services

Any structure will produce two zones of potential disruption to television reception. One zone is where the development creates a ‘shadow’ (affects all television broadcast platforms) and the other where it gives rise to a ‘reflection’. At the frequencies used for broadcasting, the processes of creating a ‘shadow’ or a ‘reflection’ are somewhat more complicated than with visible light but thinking of the problem in these terms is still a helpful way of approaching the matter.

Signal ‘Shadowing’ Effects

In the area behind the structure, the television transmitter is effectively screened from the viewer and the strength of the signal is reduced - Figures 2 and 3.

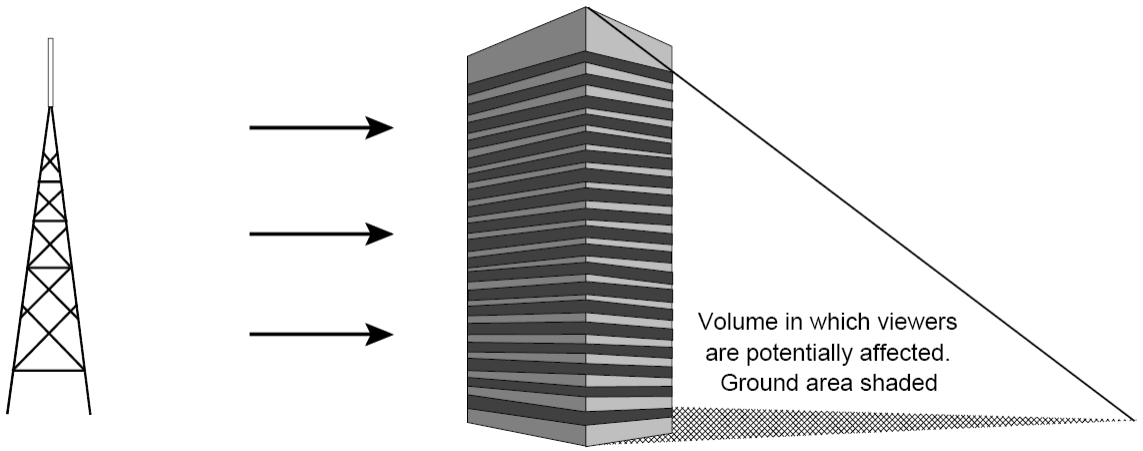


Figure 2 - Affected area in the ‘shadow’ zone behind the structure

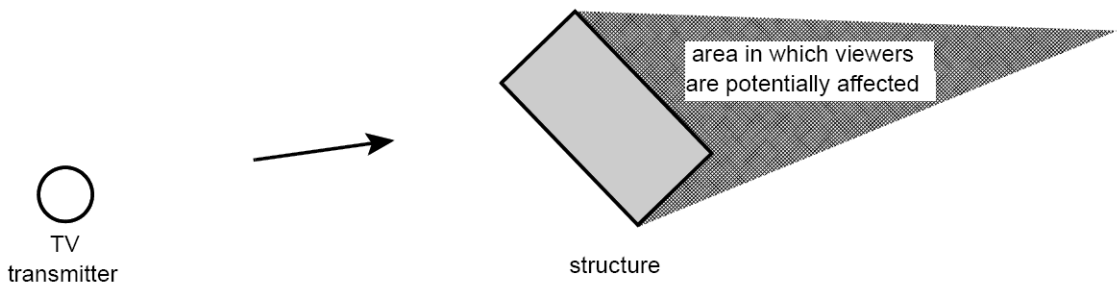


Figure 3 - Plan view of the ‘shadow’ zone

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Television signals do not create such a ‘hard’ shadow as visible light, and for the purposes of explanation, a ‘shadow’ zone must be considered which is divided into three sub-zones.

i. Within a few tens of metres from a solid structure, over the region where optical view of the transmitter is lost, the reduction in signal strength is critically dependent on the specific design and composition of the structure. For most brick and concrete buildings, the reduction can be severe and, in some cases, almost total if existing reception conditions are poor.

ii. Further away from the structure (e.g. beyond 25 to 50 metres, but this varies depending on its size) the limit of the ‘shadow’ zone and signal reduction are determined by diffraction at the edges of the structure and reflection off surrounding structures. The simple condition of whether or not a location has an optical view of the transmitter is not enough to classify the potential interference zone adequately. In general, the effect is that the signal appears to bend around the sides of the structure; the shadow zone reduces in size and the signal strength is reduced by much less than simple ray optics would suggest.

iii. Even further away from the structure (e.g. 250m) complex multiple reflections and diffraction, caused by structures in the locality, may result in the ‘shadow’ zone becoming almost non-existent, against interfering signals that arrive on significantly different bearings. This can result in an increase in the ratio of wanted to unwanted signal as presented to the television receiver.

Signal ‘Reflection’ Effects

The second zone of potential interference is produced by ‘reflection’ or ‘scattering’ of the incident signal, see Figure 4.

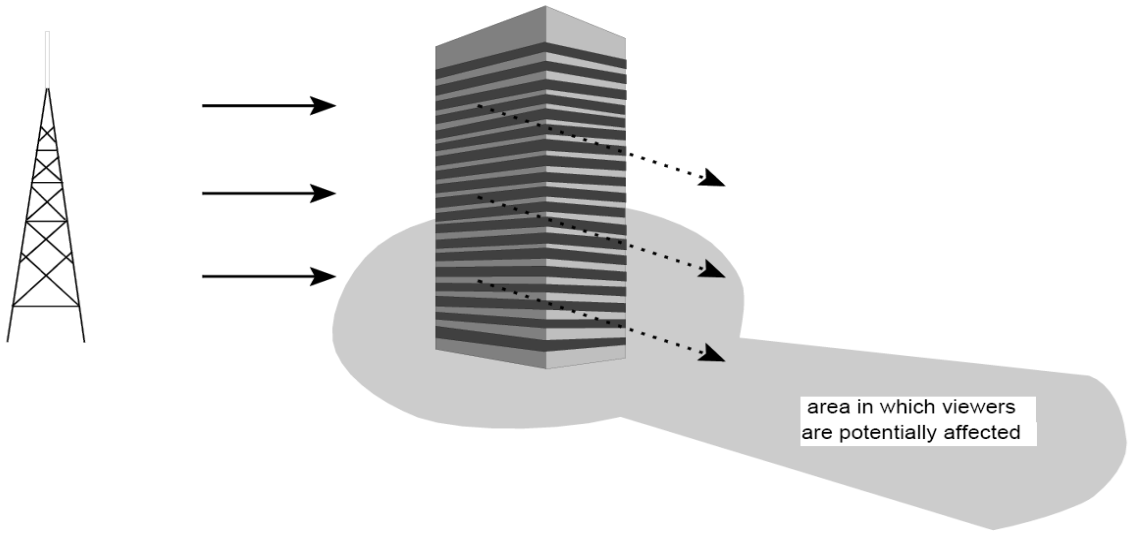


Figure 4 - Affected areas in the ‘reflected’ zone of the structure

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Consider Figure 5, the direct signal travels a distance P1 to the viewer, whilst the signal reflected from the structure travels slightly further, distance (P2 + P3). Although travelling at the speed of light, the different path lengths can mean that one signal arrives with a significant delay relative to the other. This results in a degradation in signal quality.

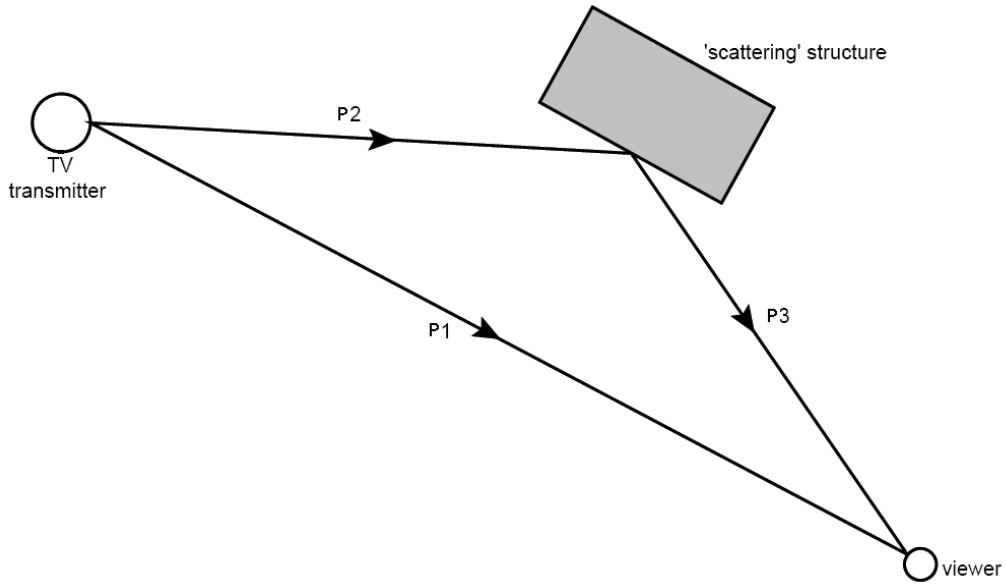


Figure 5 - Direct and Indirect Signal Paths

To avoid interference, it is necessary to ensure that the ratio of wanted signal along the direct path (P1) to the unwanted signal along indirect paths (P2+P3) is sufficiently high. Domestic TV receiving antennas generally have a significant directional response to incoming signals, which means that the antenna may discriminate against interfering signals that arrive on significantly different bearings. This can result in an increase in the ratio of wanted to unwanted signal, as presented to the television receiver.

Digital Terrestrial Television (DTT) - Freeview

The digital television broadcast platform offers many advantages over older analogue broadcast technologies. Due to the way picture signals are encoded and broadcast, digital television offers a much more resilient platform against interference. The construction of digital signals ensures that they are much more impervious to the effects of interference from indirect secondary reflections, which consequently ensures good quality and coherent data stream integrity at the receiver, resulting in an interference free picture. Disruption to DTT services is normally caused by a poor-quality receiving antenna system or locally generated wideband electrical noise. Signal blocking caused by buildings can also degrade received signal quality.

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Digital Satellite Television Services - Freesat & Sky

Digital satellite television services are provided by geo-stationary earth orbiting satellites positioned above the equator. To ensure good reception of digital satellite television services, satellite receive antennas (satellite dishes) are normally positioned away from trees and other clutter and are orientated to face the southeastern horizon.

Disruption to digital satellite television services is normally caused by an obstruction on the line-of-sight from the satellite to the receive antenna e.g. a tall building or tall trees. Adverse weather can also influence reception. In the United Kingdom, Freesat and Sky services come from the 28.2 degrees east ASTRA satellite cluster.

Figure 6 below shows typical clearance distances and obstruction heights for interference free satellite television reception.

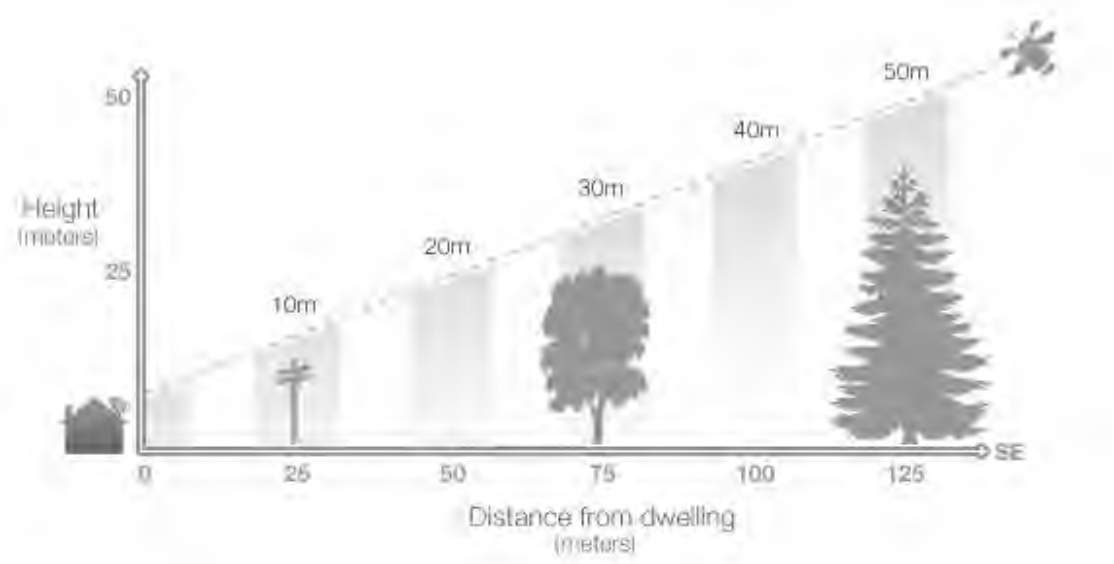


Figure 6 - Typical Clearance Distances and Obstruction Heights for Interference Free Satellite Television Reception

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VHF (FM) Radio

VHF (FM) radio services are broadcast from similar structures as terrestrial television services. Many things can cause radio interference, however simple remedies exist that can quickly reduce the effects. Most reception problems on FM radio are caused either by a weak signal or by some kind of interference.

Radio transmission signals will reflect into ‘shadow’ areas and also reflect from structures to cause ‘multi-path’ effects. The effect of multiple signals is to create zones of signal cancellation and signal enhancement. This is often demonstrated by the need to carefully position portable radio receivers for good reception or the fluctuation in signal quality whilst listening to VHF (FM) broadcasts in a vehicle. Due to the wavelength of the VHF (FM) signal (at 100 MHz, the wavelength is 3 metres), zones of interference can quickly and easily physically move around, as the interference is generated from the sum interaction of all incoming signals. Consequently, prediction of VHF (FM) interference is not practically possible due to the complex interaction of reflected signals with wanted signals, the design of radio receivers and radio signal propagation characteristics.

Buildings rarely cause radio interference but there is little that can be done during the design stage to reduce any adverse effects. Due to the lower frequencies in use for radio transmission (with respect to television services) and the methods by which the radio signals are encoded, it is very unlikely that a new structure in an already cluttered urban environment will disrupt the reception of radio services.

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3 - Available Television and Radio Broadcast Services

Digital Terrestrial Television (DTT) - Freeview

The survey area is served by DTT services (Granada TV region) from the Winter Hill transmitter (grid reference SD 66053 14463), on a bearing of 311° (with respect to true north) and 25km away. The Winter Hill transmitter is shown with respect to the Site in Figure 7.

Technical transmission information for each DTT service broadcast from the Winter Hill transmitter site is detailed in Table A, found in the Appendix - *Television Transmission Frequencies*.

Up to date technical information regarding the Granada TV region and Winter Hill transmitter group can be found on the Digital UK website[1].

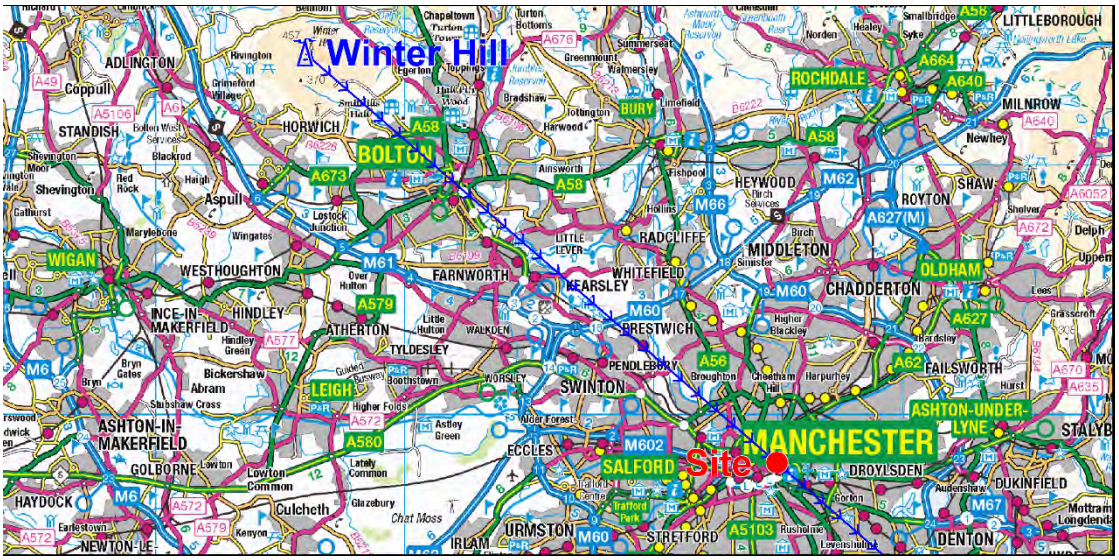


Figure 7 - The Locations of the Winter Hill Transmitter, the Site and the direction of the incoming DTT signals at the Site (indicated by the blue arrowed line)

Non-Terrestrial Television Services (Digital Satellite Television)

For the reception of the 28.2 degrees east ASTRA satellite cluster (Freesat and Sky services), dish elevations of 22.9 degrees are required at this latitude. Optimal receive dish azimuths are 143.8 degrees with respect to true north (approximately southeast).

1 - http://www.digitaluk.co.uk

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VHF (FM) Radio

The areas around the Site are served by VHF (FM) radio services of

BBC Radio 1, 2, 3, and 4 from the Holme Moss transmitter (NGR SE 09550 04050)

Technical transmission information for each radio service broadcast from the Holme Moss transmitter are detailed in Table B in the Appendix - *VHF (FM) Radio Transmission Frequencies.*

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4 - Survey Methodology & Description of Baseline

Due to the complex nature of television interference in cluttered urban environments, field investigations must be undertaken in the general area around a site to fully evaluate any potential effects. In this study, measurements were undertaken up to one kilometre from the Site, however, the survey mainly focused around the Site and areas to the immediate northwest and southeast. Additionally, investigations are carried out in all areas where predicted (modelled) interference may occur. These are identified in Figure 8, and the measurements are detailed in Tables C and D, found in the Appendix - *Signal Measurements*. The following data was recorded:

- Field strength and technical signal measurements of DTT transmissions from the main serving transmitter
- Viewing preference (choice of television transmitter) of residents in all areas visited
- Field strengths of VHF (FM) radio transmissions from the serving transmitter

All television measurements were carried out using a UHF log-periodic receive antenna. VHF (FM) radio field strength measurements were taken with a resonant half wavelength folded dipole antenna at 2 metres AGL, industry standard height for such work. During the survey, no assessment was made of reception conditions within viewers' homes. Equipment details are detailed in the Appendix - *Survey Equipment*.

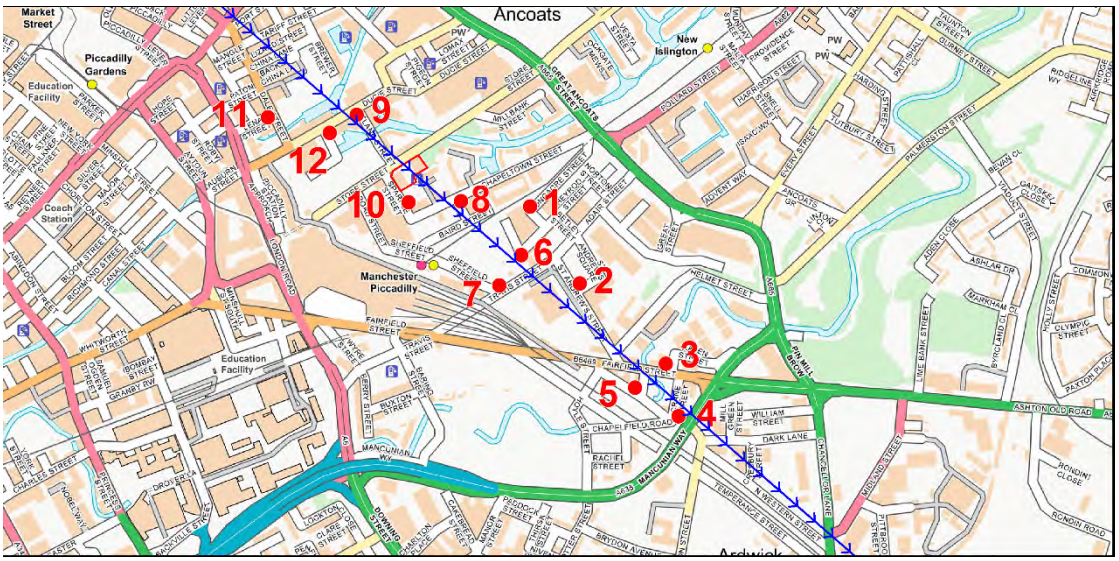


Figure 8 - Surveyed Locations. The blue arrows indicate the direction of the incoming DTT signals from Winter Hill transmitter. The Site is delineated in red

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Survey Results and Observations

In general, building use around the Site is mainly for entertainment, food outlets, car parking, residential and commercial use. There are a number of newly built tall and wide buildings located around the Site. All signal receiving antenna systems are mounted on rooftops, ensuring optimal reception conditions. Terrestrial television antennas are directed towards the Winter Hill transmitter.

Digital Terrestrial Television (DTT) - Freeview

Few antennas were seen during the survey and this was due to the typical building use in the study area. DTT services were available at all surveyed locations from the Winter Hill transmitter. At all locations, received signal levels were in excess of recommended minimum amounts and the technical quality of received signals was found to be good[2]. DTT services currently provide very good coverage and service throughout the study area.

Digital Satellite Television - Freesat & Sky

Due to the building use within the study area, few satellite dishes were seen. Additional satellite dishes may have been mounted on rooftops and at the rear of properties; however, these would not be visible from any publicly accessible area. No existing interference has been identified for any satellite television platform.

VHF (FM) Radio

VHF (FM) radio reception conditions were deemed to be good[3] throughout the study area. In-car reception was deemed to be good at all locations. This is due to the proximity of the Holme Moss high-power radio transmitter with respect to the Site.

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2 - Signal levels as specified by the CAI - Association for Audio Visual Professionals Code of Practice (COP) For the Installation of Aerials/Antennas & Receiving Equipment in the Single Dwelling Unit CAI COP 2: September 2022

Additional technical information regarding the Freeview signal can be found in the Appendix - An Overview of Signal Measurements

3 - Minimum Recommended Field Strengths for Acceptable Levels of VHF (FM) Radio Service

Monophonic audio - 40 dBµV/m
Stereophonic audio (excellent quality) - 54 dBµV/m

Source - https://www.ofcom.org.uk/__data/assets/pdf_file/0013/54310/annex-f.pdf

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5 - Predicted Impacts and Effects

Methodology

To assess the effects of the Proposed Development upon television and radio broadcast service reception, the structures were considered to create interference to services in the immediate areas around the Site, in signal reflection areas and in the signal shadow zones. These assessment methods used in conjunction with broadcast transmission information, plans of the Proposed Development, maps of the study area / Site and reception impact modelling techniques, contribute towards predicting the potential effects upon television and radio broadcast reception in the study area for receptors.

The survey then investigated the areas identified as being at risk of interference and assessed all available broadcast services and the transmitter viewing preferences of receptors in order to determine if the computed risk is practically valid. The assessed data was finally used to determine what actual risks exist and what viable solutions are available to minimise any adverse effects. The predicted effects on television and radio broadcast reception are discussed below and summated in Table 1.

Digital Terrestrial Television (DTT) - Freeview

Widespread interference is not expected to occur due to the existing good coverage in the study area. However, the massing and form of the Proposed Development and the use of tower cranes ***may*** cause signal reception disruption to properties adjacent to the Site, located to the immediate southeast (Comet Street, Sparkle Street and Chapeltown Street, and in addition, areas around Baird Street and Congou Street), where signal levels from the Winter Hill transmitter could be reduced by the massing of the Proposed Development. Easy to implement mitigation, as discussed in Chapter 6, is likely to restore the reception of Freeview services for any affected viewer.

Digital Satellite Television - Freesat and Sky

Tall structures, trees and buildings can disrupt digital satellite television reception by causing obstructions on the line-of-sight to the signal receive dish from the serving satellite. This is discussed further in Chapter 2.

Using trigonometry and based on the maximum height of the Proposed Development, the angle and orientation of the incoming satellite signals, theoretical signal shadow zones for the 28.2E ASTRA satellite cluster are up to 201m from the base of the proposed structure. This area extends in a northwesterly direction (323.8 degrees with respect to true north) from the building's base, falling over Store Street, Jutland Street and towards Ducie Street. Whilst widespread interference is not expected, the use of cranes for construction and the Proposed Development could cause signal disruption to satellite television reception in these identified areas. It is not certain if satellite dishes are in use on the rooftops of these buildings, but if dishes are located in

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these areas, interference could occur. Easy to implement mitigation, as discussed in Chapter 6, is likely to restore the reception of digital satellite television services for any affected viewer.

VHF (FM) Radio

Modelling VHF (FM) radio interference in a cluttered urban environment is not possible due to the number of constantly changing variables. VHF(FM) broadcast radio reception is robust throughout Manchester, evident by the survey results and signal availability with a typical car radio. Whilst any new development or structure will change local radio signal propagation and reception characteristics, due to the technical methods involved with encoding and receiving these transmissions, good reception will remain possible. Furthermore, as the reliance on VHF (FM) radio reception decreases due to the uptake of digital audio broadcasting (DAB) receivers in vehicles[4], and online streaming in properties, any possible impact effects are further reduced. Overall, the Proposed Development is not expected to impact the reception of VHF (FM) radio broadcasts.

Broadcast platform	**Area(s) of predicted interference**	**Risk of interference & reasoning**	**Mitigation**
DTT (Freeview)	Limited to localised areas to the immediate southeast of the Site - Comet Street, Sparkle Street and Chapeltown Street, and in addition, areas around Baird Street and Congou Street.	Possible, because antennas are located in this area and may be in use	Antenna betterment (if interference occurs)
Digital Satellite TV (Freesat and Sky)	Up to 201m to the immediate northwest from the base of the tallest proposed building - Store Street, Jutland Street and towards Ducie Street	Possible, only if satellite dishes are located in this area and are in use	Satellite dish relocation or the use of DTT receiving equipment. Alternatively, TV over broadband or fibre
VHF(FM) Radio	Non-identified	No because coverage is robust	Not required

Table 1 - Summary of Predicted Interference

4 - The Road Vehicles (Approval) Regulations 2020 came into force on 1 September 2020 and has implemented the provisions of the EU Directive covering the compulsory fitment of digital radio in passenger cars and buses that come fitted with a radio.

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Predicted Effects - Conclusions

Whilst widespread interference to DTT service reception is not expected, the Proposed Development and use of cranes could cause unwanted interference for adjacent properties (to the immediate southeast of the Site) receiving Winter Hill DTT transmissions. Antenna betterment / antenna repositioning should restore the optimal reception of all services and is most simple and most cost-effective mitigation solution. If this is required, it is advised that a registered antenna installer undertakes all required work. This is detailed further in Chapter 6.

The Proposed Development is likely to cause interference to the reception of digital satellite television services in areas to the immediate northwest of the Site, up to 201m from the base of the Proposed Development. The use of tower cranes could also cause signal disruption in similar areas. Should satellite dishes be located in this general area (Store Street, Jutland Street and towards Ducie Street), repositioning satellite dishes to new locations where views of the south-eastern skies are no longer obscured would restore services for any affected satellite television user (receptor). If this action is required, it is advised that a registered antenna installer undertakes all required work, as detailed in Chapter 6. Additionally, the use of DTT receiving equipment would also offer viewers alternative sources of broadcasts if satellite dishes cannot be relocated. TV over broadband and fibre also offers viewers alternative sources of television broadcasts if satellite dish moving / relocating is not possible.

The Proposed Development is not expected to affect the reception of VHF(FM) radio broadcasts.

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6 - Mitigation Measures

For any affected Freeview viewers to the immediate southeast of the Site, the betterment of antennas is likely to restore good service reception. Betterment of antenna systems could include any of the following;

- Replacement of components not fit for purpose (damaged, water ingress in cables / antennas, electrically faulty, old brown type coaxial etc.);
- Replacement or installation of a mast head amplifier and new antenna;
- Replacement or old coaxial cable to better signal throughput and to reduce unwanted external electrical pickup (interference);
- Installation of a higher gain antenna;
- Good earthing on antenna systems and associated components to help reduce unwanted electrical system noise and unwanted electrical pickup (interference); and
- Installation of a higher antenna (above ground level) in a location as far away from the Site (the signal obstruction) as possible i.e. on another chimney stack, gable end etc.

Such mitigation measures may be required because the proposed massing of the Proposed Development is likely to increase signal attenuation over the Site to receptors.

For any affected digital satellite television user located to the northwest of the Site (within 201m northwest from the base of the proposed building), relocating satellite dishes to new locations where views to the southeast horizon are no longer obscured should restore the reception of satellite television services. Affected digital satellite television viewers could also use DTT reception equipment to restore services. In addition, TV over broadband and TV over fibre would also offer affected viewers alternative sources of television broadcasts.

All these are common and simple mitigation solutions for similar situations where local television reception conditions have been degraded by new development and adjacent construction work. A registered antenna installer should be able to advise on the most effective mitigation measures once the existing installed antenna system has been inspected and construction-generated interference has been identified.

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It is recommended that all antenna work (dish moving, relocating etc.) is undertaken by a registered installer (CAI accredited) and any system components used must be CAI benchmarked. More information regarding the Confederation of Aerial Industries can be found on the following website[5].

The CAI's benchmarking scheme ensures that the cables and antennas have passed minimum requirements for the use of DTT and digital satellite television reception. The use on non-benchmarked products in an antenna system would degrade overall performance and effectiveness of the system, increasing the risk from interference. More information on CAI benchmarked products can be found on the CAI's website[6].

It should be noted that because tower cranes are normally taller than the structure being built and tower cranes operate over a wide area, moving satellite dishes to different locations may not resolve all reception issues during the construction phase of the Proposed Development. To reduce tower crane interference, it is advised that the crane jibs / arms are positioned in a northwesterly to southeasterly facing orientation at the end of the working day, hence reducing the overall cross-sectional area presented to the incoming satellite signals. This action reduces interference because the satellite transmissions originate on a bearing of c. 145 degrees with respect to true north (for Freesat and Sky digital satellite television services), and so encounter less of the crane's structure if parallel to the direction of the incoming satellite signals.

5 - http://www.cai.org.uk/index.php

6 - https://www.cai.org.uk/index.php/services/product-certification-scheme

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7 - Conclusions

A desktop-based study and reception survey have been performed to assess the possible effects and impacts on the reception of television and radio broadcast services from the proposed Sparkle Street development in Manchester. The study has focused on the reception of VHF (FM) radio and the two television broadcast platforms that could possibly be impacted by the Proposed Development - digital terrestrial television (DTT) and digital satellite television services.

Digital Terrestrial Television (DTT) - Freeview

Whilst widespread interference to Freeview reception is not expected, the Proposed Development and use of cranes may cause reception degradation for receptors immediately to the southeast of the Site. If any interference occurs, simple and cost-effective antenna betterment should restore the reception of all services. This is a standard and easy to adopt mitigation solution. If any antenna betterment is required, it is advised that a registered antenna installer undertakes the work.

Digital Satellite Television - Freesat & Sky

The use of tower cranes and the Proposed Development itself is likely to cause disruption to the reception of digital satellite television services in areas to the immediate northwest of the Site, within 201m from the base of the proposed building. In this area (Store Street, Jutland Street and towards Ducie Street), tower crane structures and the Proposed Development could obscure the required views of the southeastern skies, resulting in interference. If any interference does occur, the repositioning of satellite dishes to locations without an obscured line-of-sight view to the serving satellites should restore reception. If this does not restore optimal reception, the use of DTT receiving equipment would also offer any affected viewer an alternative source of digital television broadcasts. In addition, TV over broadband and TV over fibre would also offer viewers alternative sources of television broadcasts. Any sporadic interference arising from tower crane use is expected to be limited in duration (only occurring during working hours) and will cease completely when the cranes are removed.

VHF(FM) Radio

Due to the existing good coverage and robust technical nature of the broadcast radio network with respect to building-generated signal interference, the Proposed Development is not expected to affect the reception of VHF(FM) radio services.

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Overall, the use of tower cranes and the Proposed Development itself is likely to cause disruption to the reception of DTT and digital satellite television services in areas to the immediate northwest and southeast of the Site. With respect to digital satellite television reception, in this area (Store Street, Jutland Street and towards Ducie Street), clear views of the southeastern skies could be obscured, resulting in interference. If interference does occur, the repositioning of satellite dishes to new locations without an obscured line-of-sight view to the serving satellites should restore all services. If satellite dish relocations are not possible, the use of DTT receiving equipment would also offer any affected viewer an alternative source of digital television broadcasts. Alternative sources of satellite content are also available vie broadband and fibre. With respect to DTT reception, the massing and built form of the Proposed Development could reduce signal propagation in areas toward the southeast of the Site, resulting in interference. Antenna betterment should restore reception if interference has occurred. These are standard and easy to employ mitigation measures and are commonly used to restore optimal reception conditions.

This report provides the existing level and quality of radio and television signal reception within the survey area and can be used to support the planning application submission.

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APPENDIX

Television Transmission Frequencies

VHF (FM) Radio Transmission Frequencies

Signal Measurements

An Overview of Signal Measurements

Survey Equipment

Calculation of Received Field Strength

References

Mapping Data

Local Planning Guidance

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Television Transmission Frequencies[7]

Digital TV Multiplex	Multiplex Operator	UHF Channel Number[8]	Channel Frequency Fc (MHz)[9]	Transmitter Power (kW)
BBC A	BBC	32	562.000	100.0
D3&4	Digital 3 & 4	34	578.000	100.0
BBC B (HD)	BBC	35	586.000	100.0
SDN	SDN	29	538.000	100.0
Arqiva A	Arqiva	31	554.000	100.0
Arqiva B	Arqiva	37	602.000	100.0

Table A - Winter Hill Digital Terrestrial Television Services

Public Service Broadcaster (PSB) Digital Multiplexes
Commercial (COM) Digital Multiplexes

VHF (FM) Radio Transmission Frequencies

Service	Frequency (MHz)	Transmitter Power (kW)
BBC Radio 1	98.9	250
BBC Radio 2	89.3	250
BBC Radio 3	91.5	250
BBC Radio 4	93.7	250

Table B - Holme Moss VHF (FM) Radio Services

7 - Information correct at time of writing. Information provided by DigitalUK and Arqiva

8 - Digital multiplexes with a "+" or "-" sign operate with a frequency offset making the channel frequency + or - 167 kHz

9 - The nominal channel frequency, Fc (in Megahertz) of the multiplex can be calculated using Fc = 8n+306, where ‘n’ is the UHF channel number

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Signal Measurements

Measurement Point Number	Channel	32	34	35	29	31	37
	Frequency	562.00	578.00	586.00	538.00	554.00	602.00
	Service	BBC A	D3&4	BBC B	SDN	Arqiva A	Arqiva B
1	FS	83.7	84.0	84.9	82.7	84.4	88.2
	CSI	23.5	22.5	-	21.2	22.8	24.7
	MER	28.9	30.7	-	32.5	30.8	29.7
2	FS	87.6	85.6	81.3	87.0	82.9	85.0
	CSI	19.9	19.9	-	25.1	25.4	19.5
	MER	28.2	28.0	-	30.7	27.1	29.1
3	FS	83.7	85.3	86.4	87.5	85.9	83.3
	CSI	26.8	29.4	-	26.3	23.9	21.0
	MER	32.1	29.0	-	29.5	27.3	29.3
4	FS	83.4	80.1	81.3	81.5	83.7	82.6
	CSI	27.2	26.7	-	20.2	23.0	31.3
	MER	30.7	30.4	-	28.3	31.2	31.4
5	FS	83.7	83.5	87.4	81.2	84.5	84.6
	CSI	24.2	29.0	-	23.6	21.8	32.5
	MER	29.1	28.1	-	30.9	30.4	31.2
6	FS	83.4	84.0	80.6	86.8	84.4	82.1
	CSI	23.4	20.9	-	24.8	29.8	23.8
	MER	29.4	29.8	-	30.0	30.2	29.9
7	FS	80.9	88.2	89.4	87.6	84.3	85.9
	CSI	22.1	20.6	-	16.9	20.9	24.1
	MER	29.8	32.0	-	29.9	30.3	30.9
8	FS	80.8	85.0	84.6	86.2	79.6	80.0
	CSI	20.2	17.7	-	24.7	26.6	19.2
	MER	28.8	31.2	-	29.5	29.1	31.3
9	FS	85.3	86.0	80.1	79.5	87.0	78.5
	CSI	23.8	28.4	-	23.3	22.3	19.4
	MER	31.1	31.2	-	29.9	30.0	30.6
10	FS	82.7	80.6	87.3	83.1	82.7	78.9
	CSI	27.2	23.5	-	19.8	18.1	29.2
	MER	29.9	29.5	-	28.0	29.7	30.2
11	FS	88.4	80.7	81.6	83.9	85.0	79.0
	CSI	22.2	28.1	-	24.4	20.7	30.4
	MER	30.4	30.3	-	29.0	30.8	32.0
12	FS	79.3	83.2	85.1	82.8	81.9	81.6
	CSI	20.5	17.5	-	20.3	23.4	25.1
	MER	29.8	31.8	-	28.4	28.8	28.7

Table C - Winter Hill Digital Television Services

Frequencies listed are in MHz
Field strength (FS) values are indicated in dBμV/m
CSI Channel Status Information (%)
MER Modulation Error Ratio (dB)

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Location	Service	Radio 1	Radio 2	Radio 3	Radio 4
1		56.1	61.3	57.5	57.8
2		60.0	51.5	57.8	60.5
3		65.8	59.6	58.6	58.1
4		55.4	57.5	59.0	53.0
5		53.1	58.4	57.6	58.7
6		57.2	55.1	58.6	56.4
7		62.8	61.5	57.9	61.6
8		57.5	59.3	61.2	61.7
9		56.2	58.6	59.9	52.6
10		59.9	53.3	59.2	54.6
11		51.8	62.4	51.3	53.2
12		55.2	60.5	63.6	61.3

Table D - Field Strength Measurements of Holme Moss VHF(FM) Radio Services

Values are indicated in dBμV/m

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An Overview of Signal Measurements

The first and easiest parameter to check is signal level (also referred to as amplitude or terminated signal strength). In many cases this gives a good indication of the available decoding margin, or the extent of any shortfall.

At the receiver input, the terminated level of a DTT signal is measured in the usual units of dBμV (a maximum signal level of 70 dBμV and a minimum signal level of 50 dBμV). It is helpful to understand that the level of a DTT signal represents the total power of all the carriers in the Coded Orthogonal Frequency Division Multiplexing (COFDM) signal and not the level of each individual COFDM carrier. For satisfactory reception of digital signals, it is important the signals applied to the receiver are within these ranges. These maximum and minimum levels define a so-called window of operation for the receiver.

Common practice dictates that in order to measure the quality of a received DTT signal we have to look at one or more of the following parameters: Bit-Error Rate (BER), Channel BER (CBER), Carrier-to-Noise Ratio (CNR) and Modulation Error Ratio (MER). The Channel State Information (CSI) feature available in DTT measurement equipment is a very valuable tool providing additional insight into the quality of reception in a typical domestic or professional DTT installation.

Using the BER alone is an ill-advised “hit-or-miss” strategy because of the 'cliff-edge effect' characteristic of any digital TV system. A BER reading below the reference quasi error free (QEF) value of 2×10-4 might wrongly lead us to conclude that the receiving conditions are satisfactory.

However, the BER provides a very narrow signal measurement range. Even for vanishingly small BER readings, a small drop in the level of received DTT signal can push the DTT receiver over the digital cliff edge beyond the point of system failure. The CBER is closely related to the BER providing a wider signal measurement range. Depending on the type(s) of unknown disturbance(s) affecting our DTT installation (noise, co-channel or adjacent PAL, co-channel DTT, etc.), the CBER corresponding to the reference QEF BER of 2×10-4 varies between 4 and 7 in 100 [1]. Unfortunately, the CBER is not a reliable indicator of how far the digital cliff edge is.

DTT engineers need a tool with a wide measurement range that solves the shortcomings of the BER and CBER. This measurement tool should provide some estimate of the noise margin of the DTT installation. A first candidate comes to mind: CNR or, alternatively, its sibling the MER.

The CNR is defined as the ratio of the average RF power of the DTT signal to the power of the noise present in the UHF channel. Similarly, the MER is defined as the ratio of the average power of the DTT signal to the average power of the constellation errors. It can therefore be used to give a more direct indication of decoding margin when, as is often the case, there is co-channel

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interference as well as noise in the channel. The higher the MER value, the **better** the reception conditions.

In situations where there is no multipath propagation so that the channel frequency response remains reasonably flat, CNR and MER are in principle the same thing. In practice, the accuracy of the measured CNR is limited by the noise floor of the measurement equipment and by the presence of other disturbances on adjacent UHF channels. Likewise, both the receiver's noise floor and other issues resulting from its practical implementation degrade the MER estimate.

Channel State Information (CSI)

Some flavour of CSI is used internally by all commercial DTT receivers to achieve the recommended target system performance[10]. The CSI counts the effect of both the noise present in the channel and the shape of the transmission channel itself. In other words, the CSI gives a measure of the reliability of the received DTT signal. We measure the average of the CSI across the UHF channel occupied by the DTT signal. The higher the percentage value of CSI, the **less** reliable DTT reception is.

As explained, the CSI can be used as a means to measure the noise margin in a DTT installation. Let us call CSI_{QEF} the percentage CSI measured at the point where the measurement equipment displays the reference QEF BER. The noise margin in dB is then approximately given by –

$$NM\ (dB) = \frac{CSI_{QEF} - CSI}{2.6}$$

This empirical approximation represents a good estimate for NM below 8dB. The CSI alone, on the other hand, has a wider measurement range, providing meaningful results for NM of up to 15dB.

10 - *J. Lago-Fernández, "Using Channel State Information (CSI) to Characterize DVB-T Reception", IBC, Amsterdam, 12-17 September 2002*

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Survey Equipment

1 x Promax Prolink 4C Premium – Serial Number PK4COPAB11B / 060419030005 Running firmware version 2.47

1 x Sony Wide screen CRT Reference Receiver KV–16TIU – Serial Number 4014480

1 x Professional Broadcast Wideband Log Periodic 8 element antenna (Amphenol Jaybeam (details below))

Amphenol JAYBEAM

468-860 MHz

A Log Periodic antenna designed for UHF Broadcast, TETRA and Cellular communications applications. This antenna is often used in a stacked array to form a rugged, high power, extended range antenna. Produced to the highest quality standards, these robust antenna designs will insure reliable operation in harsh environmental conditions.

Replace "x" with desired model number option.

LPU/Rx

V-Pol or H-Pol | Log Periodic | 70° | 7.9 dBd

Electrical Characteristics		
Frequency band	468-860 MHz	
Model number options (x)	Model Number LPU/R-N LPU/R-7/16	Connector type N-Female 7/16-DIN Female
Polarization	Vertical or Horizontal	
Horizontal beamwidth	70°	
Gain	7.9 dBd	
Impedance	50Ω	
VSWR	<1.3:1	
Maximum power	250 W	
Connector type	see model number options above	
Lightning protection	DC grounded	
Mechanical Characteristics		
Materials	Aluminium Alloy	
Dimensions (Length x Width)	1210 x 320 mm	47.6 x 12.6 in
Weight without bracket	3.5 kg	7.7 lbs
Mounting Options		
Mounting	Mounting bracket included to fit 38-50 mm dia. pipe.	



Technical Specification for an Amphenol Jaybeam Professional Broadcast Wideband Log Periodic 8-Element Antenna

All RF cables, interconnects and systems of professional quality and calibrated to determine feeder losses and antenna gains. These are factored into the results, providing accurate descriptions of actual field strength values – see *Calculation of Received Field Strength*

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Calculation of Received Field Strength

The Field Strength (dBµV/m) is derived from the Terminated Level (dBµV) as measured at the input of the measurement receiver.

Field Strength (dBµV/m) = Terminated Level (dBµV) – Aerial Gain (a) + Dipole Factor (b) + Feeder Loss (c)

where -

Dipole Factor (to matched load)	(b)	$20Log(\frac{2\pi}{\lambda})$ *Where λ = Transmission Wavelength (m)*
Feeder Loss	(c)	3 dB
Aerial Gain (dB_{dipole})	(a)	10 dB

References

The building information found in Chapter 2 was sourced from the following Ofcom document[11].

Mapping Data

This report includes mapping and mapping data provided by Ordnance Survey (OS), under the terms of the Open Government Licence, OS data Crown copyright and database copyright (2023).

11 - http://licensing.ofcom.org.uk/binaries/spectrum/fixed-terrestrial-links/wind-farms/tall_structures.pdf

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Local Planning Guidance

Manchester City Council (MCC), "Full, Outline, Reserved Matters & Variation/Removal of Conditions Planning Applications - Is Your Application Valid?", September 2018 (revised January 2020), MCC

Broadband Connectivity Assessment

All new build residential developments must incorporate measures to facilitate digital connectivity for all new build residential properties having regard to the Data Ducting Infrastructure Guidance produced by the Department for Communities and Local Government. (Section 10 NPPF, above)

Television Reception

MCC planning guidance, any development over four storeys requires a TV reception impact assessment.

Information on TV and radio reception and interference. Please provide a report on the possible interference created by the proposed development on TV and radio reception within the area. You may wish to contact the Office of Communications (Ofcom) on tel. 0207 981 3000 for suggestions of companies who may be able to carry out such work. (Core Strategy Policy EN2)

Tall Buildings

If the proposed building is considered to be a 'Tall Building', you will need to make a case for the height of the tall element and take into consideration Historic England and Design Council guidance on 'Tall Buildings'. The design statement should make reference to Design Council guidance to assess its impact on the surrounding area. A visual impact assessment with visualisations of the building form key views needs to be included. The statement should include details of pre-application discussions held with local residents and the outcome of these discussions. If the Proposal is a Tall Building, it may require an Environmental Statement, as it would have the potential to generate significant impacts over and above the existing use(s) on site. Most notably impacts relating to visual impact; wind microclimate; sunlight / daylight / shading / solar dazzle / privacy and overlooking; transport issues; noise and vibration; air quality; ground conditions and contamination; water resources hydrology; ***radio and television interference****; and sustainability. (Core Strategy Policy EN2)*

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The UK's terrestrial television and radio networks are highly complex engineering systems and are constantly being modified, re-designed, upgraded and maintained. The reception conditions detailed in this report were those prevailing at the time of the survey in the study area. Engineering work at transmitter sites, weather conditions and the time of the year will influence the quality and coverage of terrestrial services and their susceptibility to interference. Whilst every effort was made to accurately measure and assess the available television and radio transmissions and services at the time of the survey, GTech Surveys Limited cannot assume that any part of the television or radio broadcast network or transmission from any transmitter was operating in required specification or correctly to any design criteria. The signal measurements undertaken during the survey work were used to define the possible impacts to television and radio reception for this project. Although best practice has been applied in understanding the potential impacts, due to the complex nature of the subject, GTech Surveys Limited is not accountable in anyway whatsoever if unpredicted impacts occur at any location anywhere in the study area.

Modelling parameters assume that all installed UHF antenna systems are mounted at least 10m AGL and installed to a modern standard, with all components meeting CAI quality standards. Antennas mounted at lower heights and poor-quality installations will be more prone to the effects of interference from external sources and as such, reception conditions to installations with the aforementioned characteristics have not been accounted for in any impact modelling. Consequently, properties with such installations may be prone to interference effects that have not been identified. Such installations are commonly found in camping and caravan parks, on bungalows and properties where it is not possible to attach an antenna to the exterior roof. Antennas mounted in lofts are also more prone to interference effects arising from the signal attenuation caused by roofing materials. Again, reception conditions to properties with the aforementioned antenna installation characteristics have not been accounted for in any impact modelling and as such, properties with these installations may be prone to interference effects that have not been identified.

Digital terrestrial television (Freeview) coverage may vary as a result of engineering works or any frequency changes authorised by Ofcom. We advise that consumers always check future reception predictions (http://www.digitaluk.co.uk/coveragechecker/) before buying TV equipment. GTech Surveys Limited, Ofcom and Digital UK are not responsible for household TV reception arrangements.

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Appendix 2.2 – Committed Developments

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Sparkle Street, Manchester

Committed Developments - DRAFT

May 2024

Application Reference	Description of Development Proposals	Date Approved	Map No	Distance from Site	Status
Baseline					
The Foundry / Presbar / Dyecast 133523/FO/2022	Change of use (for a temporary period of three years only) from an industrial foundry (Class B2) to a mixed-use development with retail, leisure and office uses (Use Class E and Sui Generis (drinking establishment)), external alterations including creation of new entrances and over-cladding of the roof, temporary installation of new structures within the forecourt and associated works including cycle parking and new electric vehicle charge points, the erection of external pergolas	31 May 2022	1	60m	Completed
32-34 Laystall Street / Sligo House 128911/FO/2020	Erection of 9 storey residential building (Use Class C3) comprising 89 residential units (28 x 1 bed and 61 x 2 bed) and conversion of and 3 storey extension to 32-34 Laystall Street for use as offices (Class E) with associated external works following demolition of outrigger and associated structures along with other associated works including access, servicing, landscaping and secure cycle parking	2 February 2022	2	160m	Under construction.
Lomax 120149/FO/2018	Erection of 7 to 8 storey residential building (Class C3) to provide 41 apartments (7 x 1-bedroom 1-person apartments, 6 x 1-bedroom 2-person apartments, 6 x 2-bedroom 3-person apartments, 22 x 2-bedroom 4-person apartments) with associated landscaping and other works.	19 March 2019	3	170m	Under construction.
The Castings 127317/FO/2020	Erection of a part 25 part 21, part 14, part 7 storey building for 352 apartments comprising 39 Studios, 77x 1 bed, 227 x 2 bed and 9 x 3 bed (Use Class C3) with ground floor commercial space within 4 units (494m2) for Class A1 (Shop), A2 (Financial and Professional Services) A3 (Café and Restaurant), A4 (Drinking Establishment), A5 (Hot Food Take Away), B1 (Office) and D1-D2 uses, ancillary indoor and outdoor amenity space (including 1st and 21st floor external areas) car parking for 20 vehicles, cycle parking and associated hard and soft landscaping works, following demolition of existing buildings	9 February 2021	4	250m	Under construction / nearing completion
London Road Fire Station 125712/FO/2019	Refurbishment, restoration, reconfiguration and extension of former London Road Fire Station site to create a mixed use development comprising of hotel (Use Class C1), workspace/office (Use Class B1, D1), commercial floorspace for shop and food and drink uses (Use Classes A1, A3 and A4), residential apartments (Use Class C3) and leisure (Use Class D2), together with access and highways works, servicing, rooftop plant and associated works	17 April 2020	5	280m	Under construction
Victoria House 122000/FO/2018	Erection of a part 25 part 3 storey residential tower (Use Class C3) for 177 apartments comprising 59 x 1 bed (34 x 1 bed 1 person and 25 1 bed 2 person), 113 x 2 bed (44 x 2 bed 3 person and 69 x 2 bed 4 person) and 5 x 3 bed (3 bed 5 person) with ground floor commercial space (Use Class A1, A2, A3, A4 and D1) above partial basement level associated shared amenity spaces at 3rd floor level, realm enhancements following demolition of existing buildings	26 August 2020	6	300m	Completed
New Islington Wharf (Phase 4) 126669/FO/2020	Erection of a Part 16/ Part 11 storey building to form 106 no. apartments (C3 Use Class) together with ground floor commercial uses (Use Class A1, A2 A3 and/or B1), with associated ancillary space, surface car parking, landscaping and associated works	5 August 2020	7	300m	Completed
The Fairfax 121099/FO/2018	Construction of two residential buildings (Use Class C3) comprising Block 1 (29 storeys) (224 apartments (4 x 1 bed 1 person, 52 x 1 bed 2 person, 64 x 2 bed 3 person and 104 x 2 bed 4 person) 25% 1 bed and 75	16 March 2021	12	200m	Under construction.

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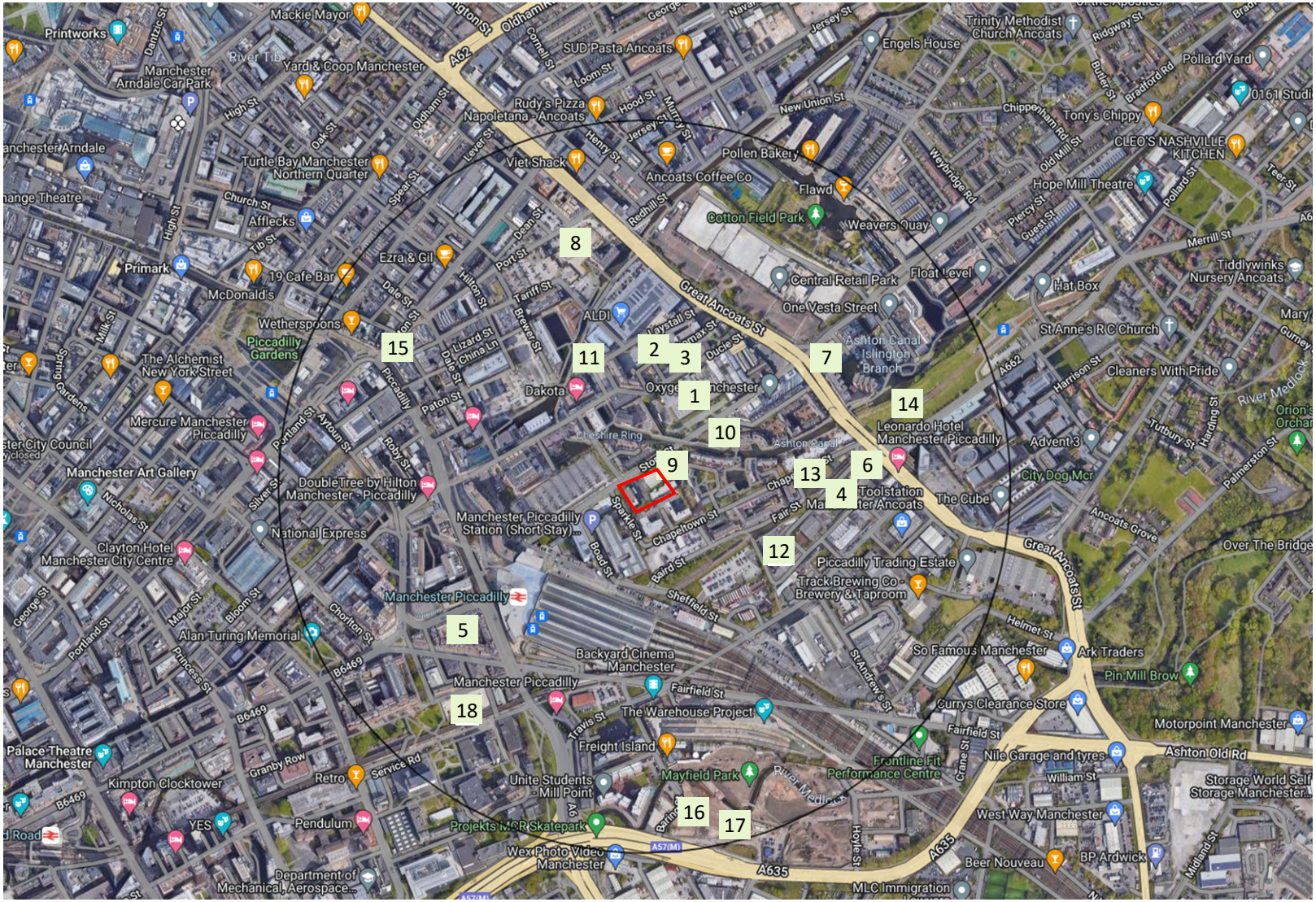
Application Reference	Description of Development Proposals	Date Approved	Map No	Distance from Site	Status
	% 2 bed) Block 2 (23 storeys) (264 apartments 44 x1 bed 1 person, 44 x 1 bed 2 person, 92 x 2 bed 3 person and 84 x 2 bed 4 person) (33% 1 bed and 67%% 2 bed) with a linked central podium, to deliver 488 units, shared amenity space, 27 car parking spaces, 492 cycle spaces, landscaping (including new public park) , lighting, highways and associated works following demolition of existing buildings and structures				
IQ Echo Street 136874/FO/2023	Erection of 3 interlinked towers ranging from 27, 21 and 16 storeys together with intermediary link buildings (15 and 11 storeys) to form Purpose Built Student Accommodation (Sui Generis) with associated amenity space and external landscaping and other associated works	12th September 2023			Under construction.
One Port Street 132489/FO/2021	Erection of a part-33, part-11, part 9 part 7 storey residential building above semi-basement level, with associated residents' amenity space including gym (Use Class C3) (comprising 481 dwellings), commercial space (Use Class E), basement car parking (47 spaces), cycle parking (481 spaces) landscaping, and other associated works	7 October 2022	8	329m	Under construction.
Cumulative					
M1 Piccadilly, Store Street 132626/FO/2022	Erection of 15 storey building comprising 54 apartments (Use Class C3) with associated residential facilities (residents lounge and terrace and office space), 2 car parking spaces and 57 cycle parking spaces, landscaping, access and associated development.	21 December 2022	9	0m	No start on site.
Store Street 126608/FO/2020	Erection of part 4, part 11 storey residential (Class C3) development (with roof top plant room) comprising 66 (Class C3) residential units (3 x 2 bed town houses, 46 x two bed apartments and 17 x one bed apartments) together with associated car parking (10 spaces including 5 EVC spaces), cycle parking (66 spaces) communal roof terrace (level 6), landscaping and ancillary infrastructure including rooftop PV panels, alterations to access onto Store Street	13 November 2020	10	85m	Diggers on site, but no official start on site.
Ferrous 132214/FO/2021	Erection of a 15 storey building to form 107 apartments (Use Class C3) at floors 1 to 15, residential amenity facilities including a roof terrace (level 14), associated ground floor cycle storage (68 spaces), two ground floor commercial units (Use Class E/ Sui Generis (Drinking Establishment), multipurpose events Pavilion (Use Class E/ Sui Generis (Drinking Establishment), associated landscaping to site perimeter and rooftop PV panels.	1 December 2022	13	200m	Diggers on site, but no official start on site.
Electric Park 128191/FO/2020	Erection of five office buildings and new public realm comprising: 3 no. 8 storey mixed use buildings (Buildings A, D and E) comprising workspaces (Use Class E) together with flexible uses at ground floor (Use Class E) and/or theatre/bar (Sui Generis) together with a multi use rooftop amenity area to Building A; and 2 no. 5 storey mixed use buildings (Buildings B and C) comprising workspaces (Use Class E) together with flexible uses at ground floor (Use Class E) and/or theatre/bar (Sui Generis); together with cycle parking, creation of pedestrian and cycle routes, external amenity spaces, new public realm and other associated engineering and infrastructure works	18 December 2020	14	320m	No start on site.

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Application Reference	Description of Development Proposals	Date Approved	Map No	Distance from Site	Status
67 Piccadilly 127538/FO/2020	Erection of 11 storey building on site of 67 Piccadilly, as a Hotel (Use Class C1) with associated ground floor retail and leisure uses (Use Class A3 (Restaurant and Café), A4 (Drinking Establishment)and D2 (hotel leisure gym/ fitness area); provision of flexible amenity space at roof level; installation of external plant at roof level; provision of new public realm and associated works following demolition of 67 Piccadilly/4 - 6 Newton Street ('67 Piccadilly')including internal and external alterations to 69-75 Piccadilly (Halls Building) (comprising refurbishment and infilling of an existing rear void of to provide a 9-storey infill) relating to the reuse, refurbishment of the building for use along with the new 11 storey building.	16 December 2020	15	380m	No start on site.
Mayfield Phase 1 (Plot O, N and Park), Office Development, Baring Street 132255/JO/2021	Phased creation of circa 2.4 ha (6 acres) of public park, including hard and soft landscaping and new bridges across the River Medlock; erection of 9 storey office development above basement with mezzanine and plant level (Class B1) with ground floor Class A1 (Shop), A2 (Financial and Professional Services), A3 (Café and Restaurant), A4 (Drinking Establishment) B1 (Office) uses, rooftop amenity spaces and terrace levels, associated public realm and riverside walkway; erection of 11 storey Multi-Storey Car Park to provide 581 car parking spaces with associated landscaping; highways and infrastructure works including the creation of new junction from London Road to provide access to the multi-storey car park (MSCP) (Use Class Sui Generis); works to Baring Street, stopping up of Bond Street and Nether Street (alongside associated Traffic Regulation Orders to manage unrestricted parking to Buxton Street, Berry Street and Travis Street (to be delivered and implemented prior to the MSCP becoming operational)) alongside enabling works comprising phased demolition and site clearance, earthworks including re-profiling and construction of retaining walls for the land bounded by the Mancunian Way to the south, Mayfield Depot to the north, Baring Street to the west and Hoyle Street to the east	29 July 2022	16	430m	Park is now completed. Plot O and N due to commence development in 2024.
The Republic 125248/FO/2019	Erection of 13 storey building (including ground and mezzanine) comprising office space (Use Class B1) above flexible uses at ground and mezzanine levels (Class A1 (Shop), A2 (Financial and Professional Services), A3 (Café and Restaurant), A4 (Drinking Establishment) /D1 (Art Gallery, Museum and Conference & Training Centre)/D2 (Cinema)/ Theatre (Sui Generis)) with rooftop amenity spaces and external terrace levels, internal ancillary storage spaces for waste, cycles, rooftop plant, back of house functions and associated landscaping works	14 February 2020	17	470m	Sire remediation and piling works have been commenced. Above ground due to commence in 2024.

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Committed Development Diagram



Appendix 2.3 – EIA Scoping Response from Local Planning Authority

MANCHESTER CITY COUNCIL

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Our reference: Sparkle Street

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3rd May 2024

FAO Micheal Percival
Deloitte LLP
The Hanover Building,
Corporation Street,
Manchester,
M4 4AH

Dear Sir / Madam

Environmental Impact Assessment Regulations, the Town and Country Planning (EIA) (England) Regulations 2017 (as amended) (the "EIA Regulations").

Scoping Request Under Part 4 Regulation 15(1)

Site bounded by at junction of Sparkle Street and Store Street

Scoping Opinion of Manchester City Council Pursuant to Regulation 15

Further to your request in respect of the above from July 2023.

In coming to a formal opinion on the scope of the Environmental Statement ("ES") , Manchester City Council, as Local Planning Authority, has considered the supporting information contained within your " Sparkle Street, EIA Scoping Report" and submitted by yourselves on behalf of the Applicants Foras (Sparkle Street) Limited (and comments from statutory consultees).

I have now had a chance to consider your scoping request and I outline my response below.

The Proposed Development is considered an EIA development as it falls within the description and thresholds in Schedule 2 10(b) of the EIA Regulations as an 'Infrastructure Project - Urban Development Project' which has the potential to have significant effects on the environment. In accordance with Schedule 2, Categories 10(b) (urban development projects) of the EIA Regulations and owing to the location, scale and nature and of the

Proposed Development, I note that you recognise the need for an EIA and have therefore submitted the scoping report for consideration to the City Council, as Local Planning Authority.

Before adopting a Scoping Opinion the City Council, as Local Planning Authority, must take into account the information specified in Regulation 15(6) of the EIA Regulations.

(a) any information provided by the applicant about the proposed development;

(b) the specific characteristics of the particular development;

(c) the specific characteristics of development of the type concerned; and

(d) the environmental features likely to be significantly affected by the development.

This Scoping Opinion sets out the information that the City Council, as Local Planning Authority, considers should be included in the ES that the applicant intends to submit with the planning application in respect of the Proposed Development.

In formulating this Scoping Opinion the City Council, as Local Planning Authority, has taken account of, the requirements of the EIA Regulations, the nature and scale of the Proposed Development, the nature of the receiving environment, current best practice in the preparation of environmental statements, and the views expressed by the organizations and bodies that responded to consultation on the Scope of the proposed ES.

This Scoping Opinion should not be construed as implying that the City Council, as Local Planning Authority, agrees with the conclusions set out in the Scoping Request regrading impacts of the proposal. This Scoping Opinion is without prejudice to any decisions subsequently taken in respect of any planning application submitted in respect of the Proposed Development.

Your report of July 2023 sets out the proposed chapters that the ES will cover, and the disciplines which you believe should be scoped out of the EIA.

These are as follows:

Scoped In

- *Climate Change*
- *Daylight, Sunlight and Overshadowing*
- *Townscape and Visual Impact*
- *Wind Microclimate*

Scoped out

- *Acoustics*
- *Agricultural Circumstances*

- *Air Quality*
- *Archaeology*
- *Aviation*
- *Ecology*
- *Flood Risk and Drainage*
- *Ground Conditions*
- *Heritage*
- *Human Health*
- *Socio-economic*
- *Television, FM Radio and DAB Radio Reception*
- *Traffic and Transport*

You have not covered Accidents and Disasters, Lighting, and Waste.

Below is a consideration of the scoping report for the Proposed Development and comments on the approach which you have outlined.

CONSULTATIONS

Regulation 15 (4) of the EIA Regulations require the City Council, as Local Planning Authority, to consult appropriate bodies prior to adopting a Scoping Opinion.

Having regard to Regulation 2 of the EIA Regulations, the following consultees were consulted who have specific environmental responsibilities and which the City Council, as Local Planning Authority, considers are likely to have an interest in the development proposal.

- Historic England;
- Natural England;
- Environment Agency;
- Greater Manchester Ecology Unit (GMEU);
- Greater Manchester Archeology Advisory Service (GMAAS);
- Transport for Greater Manchester (TfGM);
- City Council Highway Services;
- City Council Environmental Health;
- City Council Flood Risk Management;

- Manchester Airport Group Safeguarding.

All responses of the consultees contacted by the City Council, as Local Planning Authority, during the EIA scoping process are appended to this letter.

You are strongly recommended to consult further with consultees as appropriate throughout the planning application process as the development proposal evolves. It is thereby recommended all consultee responses are reviewed by the applicant in full.

Any subsequent ES submitted with a planning application should reflect the points raised by the consultation bodies where this reflects the requirements of the Regulations. It is recommended that the ES summarises the scoping responses from the consultation bodies and how they are, or are not, addressed in this regard. Any consultation responses received after the date of this letter, that have not been taken into account within this Scoping Opinion, will be forwarded to the applicant and should be given due consideration in the planning application and EIA process.

CONTEXT

The Site is approximately 0.3 hectares and currently vacant. There are 2 vacant buildings on the Site formerly used for a telephone exchange and for storage and distribution. The remainder of the site is surface car parking. The buildings are screened from the road on two sides by existing vegetation and an access route for vehicles is provided from Store Street.

The Site falls within the boundary of the HS2 Piccadilly Station Strategic Regeneration Framework (“SRF”) (2014) and Manchester Piccadilly SRF (2018) which identifies the Site as an opportunity for development within a wider regeneration initiative involving the areas surrounding Piccadilly Station. This area is changing incrementally with significant levels of development interest and investment in the last 5/7 years.

The Site is in close proximity to Piccadilly Village and adjoins existing residential properties to the south, east and north of the site. Existing residential buildings at the Site’s boundaries are generally circa 5 Storeys in height.

The area which is the subject of this Scoping Opinion is located lies within the centre of the SRF Area but close to the eastern boundary. The Site is not located within a Conservation Area but is close to a number of listed buildings whose setting may be impacted by development of this site including the Grade II* listed Ashton Canal Aqueduct, London Warehouse to the west of the Site on Ducie Street (Grade II Listed), Piccadilly Station (Grade II Listed) to the south of the Site, Crusader Works on Chapeltown Street to the east (Grade II Listed) and London Road Fire Station (Grade II* Listed) located 120m to the southwest of the Site.

The site lies within a highly accessible City Centre close to Piccadilly Station’s and the Piccadilly Metrolink stop. The Site is also near several bus stops on Great Ancoats Street and London Road, providing services across Greater Manchester, including the free shuttle bus services located adjacent to the Railway Station. As such the Site is well serviced by the main forms of public transport

SENSITIVE RECEPTORS

The site is located within the Greater Manchester Combined Authority Air Quality Management Area (AQMA). The site is not within, nor does it contain, any ecological designations including sites of specific interest (SSSI), sites of biological importance (SB1) or special protection areas (SPA). The site is not located in an Area of Outstanding Natural Beauty (AONB) or any other area designated for its landscape value. The closest watercourse to the site is the Ashton Canal located to the north of the site but outside of the site boundary.

The Site, is mainly located in Flood Zone 1 and this portion of the Site is of a low risk of flooding (indicating a less than 1 in 1,000 annual probability of flooding). The site is situated within the Manchester, Salford and Trafford Critical Drainage Area (CDA).

There are no designated heritage assets (Scheduled Monuments, Grade I, II* and II Listed Buildings, Conservation Areas, Registered Parks and Gardens or Registered Battlefields) within the site boundary. The closest Conservation Areas are Whitworth Street (located 280m to the south west) and Stevenson Square (located 250m to the north west).

There are 5 designated heritage assets within a 250m radius of the Site with the closest being the Grade II* Ashton Canal Viaduct c. 50 m to the north east. These are as follows:

1. Ashton Canal Aqueduct - Grade II* listed
2. The London Warehouse- Grade II Listed.
3. Piccadilly Station- Grade II Listed.
4. Crusader Works- Grade II Listed.
5. London Road Fire Station - Grade II* Listed

Due to the high level of built form around the Site it is considered this radius is proportionate for the purposes of this assessment.

PROPOSED DEVELOPMENT

The Proposed Development would involve the construction of a residential development comprised of 395 residential units and up to 28 (c+124.250 AOD) storeys in height with external terraces and private rear garden, landscaping, access and other associated works. It should be noted that the proposed figures are not fixed and are part of an evolving design taking into consideration the maximum quantum of development which is being considered for this Site. There would be 395 cycle parking spaces.

ASSESSMENT OF THE SCOPING REPORT

I have now had a chance to consider your scoping request alongside the consultation responses received and I outline my response below.

Overall, I can confirm that the content of the submitted ‘Formal Scoping Opinion Request’ is considered to be appropriate and will form a generally appropriate structure for the Environmental Statement. This is also reflected in the nature of the consultation responses issued with this letter. You should note the specific points I have made below within the specific discipline areas which reflect the comments of the consultees and particularly regard must be given to these and those of the City Council, as Local Planning Authority.

These matters should also be included and addressed within the relevant chapters of ES.

Discussion of alternatives

Paragraph (3)(d) of Regulation 18, and paragraph 2 of Schedule 4 of the EIA Regulations, require that environmental statements include discussion description of the reasonable alternatives to the Proposed Development and an indication of the main reasons for the option chosen, that have been considered by the applicant.

The approach to alternatives detailed within the scoping report are considered to be acceptable. The ES should include an indication of the main reasons for each the option chosen, including a comparison of the environmental effects.

Presentation and content of the Environmental Statement

The purpose of an ES is to enable significant environmental impacts of a proposed development to be fully considered before an application for planning consent is determined.

The ES provides environmental information to aid the decision making process. The ES should be laid out clearly, with minimum use of technical terms (where appropriate) and should provide an objective and realistic description of the likely significant impacts of the proposed development.

The information should be presented in a manner which is comprehensible to the specialist and non-specialist alike. The ES should be concise with supporting technical information placed in appendices

Mitigation

Mitigation measures may fall into a range of categories namely:

- avoidance of impacts;
- reduction in the magnitude of impacts; or
- compensation for losses incurred through unavoidable impacts;

These should identified in this manner within each of the technical chapters of the ES.

Mitigation measures should not be developed in isolation, as they may relate to more than one aspect of the environment (e.g. mitigation to address issues of landscaping, surface water management, air quality and biodiversity).

The ES should set out the mitigation measures required to prevent, reduce and where possible offset any significant adverse effects. The ES should also identify any residual effects that could be expected to persist even with mitigation in place.

The anticipated effectiveness of any mitigation measures proposed should be addressed within the ES. Only mitigation measures that can be shown to be deliverable (i.e. technically and financially viable), and which the applicant can deliver and implement as part of any planning permission granted, should be taken into account as part of the assessment.

It is further recommended that a section is included in the ES in which the mitigation measures proposed across all the technical chapters are collated and presented as an integrated package.

It is considered best practice to outline in the ES, the structure of the environmental management and monitoring plan.

Cross references and summarising of the findings

All specialist chapters should be cross-referenced to other relevant disciplines (for example air quality impacts on ecology, traffic impacts on air quality). Consideration of the potential for interactions between the different aspects of the environment is essential to the production of a robust assessment.

The ES should not just be a collection of separate specialist chapters, but a comprehensive assessment of the environmental impacts of the proposed components of the wider scheme, and should account for how the identified impacts could be mitigated or avoided, or how suitable compensation could be provided to offset those effects.

In accordance with the requirements of paragraph 6 of Schedule 4 of the EIA Regulations, each technical chapter should include a description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of any difficulties (e.g. technical deficiencies, lack of know-how, etc.) encountered by the applicant during the preparation of the ES and the main uncertainties involved.

ENVIRONMENTAL MATTERS TO BE SCOPED OUT OF THE ES

The City Council comments as follows, based on the information provided, on the matters proposed to be scoped out of the ES.

Acoustics

The comments within the Scoping Report are noted and on the basis that a stand alone Noise Assessment is submitted with the application this topic area can be scoped out of the EIA.

Agricultural Circumstances

The scoping report states the site is on brownfield land in an urban environment. There will be no likely significant effects on agriculture and therefore this topic area can be scoped out of the EIA.

Air Quality

The comments within the Scoping Report are noted and on the basis that a stand alone Air Quality Assessment (AQA) is submitted with the application this topic area can be scoped out of the EIA. The AQA should include consideration of any impacts on adjacent schools and nurseries.

Aviation

It is noted that the Proposed would exceeds the 90m AOD aviation safeguarding threshold. In line with best practice, details of the GPS coordinates and height of the buildings should be provided to NATS as part of ongoing pre-application discussions which the Airport Safeguarding Group. It is considered that the aviation discipline will not give rise to likely significant effects on the environment this discipline can therefore be scoped out of the EIA.

Archaeology
The comments within your scoping report are noted. On the basis of an Archaeological Desk-Based Assessment (DBA) and a Heritage Statement (HS) being submitted with the application it is considered that this topic matter can be scoped out of the ES.

Ecology and nature conservation

The comments within your scoping report are noted. The Site comprises buildings and hard standing, ornamental trees and shrubs at the northern and eastern site boundaries, and an area of unmanaged scrub and grassland at the rear (southern end) of the Site.

The Ashton Canal SBI is located 37m to the north of the Site, located above the ground within the Store Street Viaduct. There are no other statutory ecological designations on or within a reasonable distance to the Site.

The Site contains or is adjacent to 17 shrubs and trees that could be affected by the proposals, which are classed as follows:

- 2 category U groupings of trees and scrub vegetation;
- 10 category C trees and 2 category C hedges; and
- 3 category B trees.

7 of these trees recorded are located outside the Site boundary and will be unaffected by the development and retained, including 2 of the category B trees.

The Site supports habitats of low suitability for use by foraging bats, nesting birds and foraging and sheltering hedgehog, a Priority Species.

It is noted that an Ecology Assessment will be submitted with the application. On the basis that this includes the following:

- measures for the protection of the species identified above during the construction phase of the proposed development
- enhancements to include within the Site design for roosting bats and nesting birds
- details of enhancement in terms of ecology and biodiversity on the site as part of its redevelopment as required by Schedule 7 of the Town and Country Planning Act 1990 (inserted by the Environment Act 2021)

I accept that an ecological assessment can be scoped out of the ES and can instead form part of the supporting documents to the planning application.

It should be noted should the planning submission be delayed beyond survey season 2024/2025 then the survey would need to be revisited.

Flood Risk and Drainage

The comments within your scoping report are noted and are generally acceptable however the following should be noted:

The proposed development is situated within Flood Zone 1. The Site is at low risk of flooding from the Ashton Canal. The Flood Map for Rivers and Sea can be viewed at: http://maps.environment-agency.gov.uk/.

The proposed development is generally within an area at very low risk of surface water flooding. The proposed development is at a low risk of groundwater flooding occurring at the surface.

The area is situated within the Conurbation Core Critical Drainage Area and in accordance with the Manchester City Council SFRA at least a 50% reduction in surface water runoff should be provided through SUDS as part of any development which is situated on a brownfield site.

Surface water management for the site needs to follow the drainage hierarchy:

- Infiltration into ground
- Connection to the watercourse
- Connection to discharge water sewer and as a last resort;
- Connection to the combined sewer.

Surface water should be managed to ensure there is no increased surface water from the proposed development and runoff from extreme events should be retained within the site such that the adjacent third party land is not affected.

The Government has strengthened planning policy on the provision of sustainable drainage systems (SuDS) for 'major' planning applications which was introduced on 6 April 2015 (Paragraph 103 of National Planning Policy Framework and Ministerial Statement on SuDS). As per the guidance issued by the Department of Communities and Local Government (DCLG), all 'major' planning applications being determined from 6 April 2015, must consider sustainable drainage systems. Due to the size of the development the restriction for implementing SuDS within the site layout is minimal. We would also recommend that SuDS are drawn up within the site layout at the early stages of design.

The suitability of sustainable drainage systems should be assessed in accordance with paragraphs 051, 079 and 080 of the revised NPPF Planning Practice Guidance for Flood Risk and Coastal Change (http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/).

Sustainable drainage systems should be designed in line with national Non-Statutory Technical Standards for SuDS (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf) and local policies EN08, EN14 and EN17 of the Core Strategy.

Hydraulic calculations and drawings to support the design need to be provided and updated along with proposed standards of operation and maintenance in accordance with paragraph 081 of NPPF Planning Practice Guidance.

On the basis that the above and any mitigation is captured within the Flood Risk Assessment and Drainage Strategy it is agreed that Water Resources (including Drainage and Flood Risk) can be scoped out of the ES.

Ground conditions

The comments within your scoping report are noted. It is accepted that subject to a Preliminary Risk Assessment and Phase 2 Ground Investigations being submitted as part of the supporting documents for the planning application that Ground Conditions can be scoped out of the ES.

Heritage

The comments within your scoping report are noted. It is accepted that subject to a Heritage Assessment being submitted as part of the application that Heritage can be scoped out of the ES.

Human Health

The comments within your scoping report are noted. Notwithstanding this there could be potentially levels of adverse effects on human health arising from a development of this scale and nature in this location and cumulatively with other development and that by their nature are considered to require consideration as part of an ES as such it is not agreed that the topic matter can be scoped out of the ES.

Transport and Access

The comments within your scoping report and are noted. I consider that Transport and Access does not need to be included as part of the EIA and can be scoped out of the ES. However, the application will need to be supported by a full transport assessment at planning submission stage with a particular emphasis on the following:

- An audit of the accessibility of the site by all modes of travel.
- A review of highway safety within the vicinity of the site.
- Consideration of the multi-modal traffic generation associated with the development proposals.
- Consideration of the impact of the development, by all modes, on the highway network.
- A review of the development access, parking and servicing provision including the need for on-street parking (such as car club bay and disabled bay provision).
- Construction Management requirements.
- Travel planning requirements

MCC Highways would also request that the submission is supported by the following, to be conditioned with any approval:

A Servicing Management Plan and a Waste Management Plan to ensure that all deliveries/servicing vehicles are coordinated to ensure that the development can cater for all requirements internally and to ensure such trips take place outside of busy peak-hour periods.

The developer should identify appropriate mitigation to accommodate any increases in traffic generation and increased pedestrian and cyclist movements. Any appropriate mitigation should be identified in conjunction with TfGM UTC and MCC who will be happy to work with the developer to agree an approach.

The TA should consider the impact of the development on the existing public transport networks in terms of extension of bus services, additional person trips. Mitigation measures should be considered where appropriate.

Television, FM Radio and DAB Radio Reception

The comments within your scoping report are noted. On this basis it is considered that this topic matter can be scoped out of the ES but information on this should form part of the supporting documents to the planning application.

Lighting

There are no comments within your scoping report in relation to lighting however it is considered that Lighting is capable of being scoped out of the ES but information on this should form part of the supporting documents to the planning application.

Socio- Economic

The comments within your scoping report are noted. Notwithstanding this there could be potentially levels of adverse socio-economic effects arising from a development of this scale and nature in this location and cumulatively with other development and that by their nature are considered to require consideration as part of an ES as such it is not agreed that the topic matter can be scoped out of the ES.

Waste

There are no comments on this within your scoping report. The approach to waste management should cover management of commercial waste with a waste assessment and a completed waste proforma will need to be provided with the application to demonstrate that the commercial waste storage and collection regime will comply with the requirements of GD04. Subject to this detail and a Site Waste Management Plan ('SWMP') forming part of the supporting documents to the planning application, Waste can be scoped out of the ES.

Accidents and disasters

There are no comments on this within your scoping report however it is considered that the nature of the proposed development is such that it not considered to pose risk of major accidents and/or disasters. As such, accidents and disasters can be scoped out of the ES.

Summary

I agree that the matters you have identified to be scoped out of the ES are appropriate with the addition of Accidents and Disasters, Lighting and Waste however Human Health and Socio-Economic Impacts need to be scoped in.

The planning application must be supported by appropriate documentation, including any mitigation, to minimise any effects as a result of the Proposed Development from the matters confirmed above for scoping out. The City Council reserves the right to re-consider this position following a more detailed consideration of the reports which will accompany the planning application.

ENVIRONMENTAL STATEMENT CHAPTERS - SPECIFIC COMMENTS ON THE TECHNICAL CONTENTS

The ES should be proportionate in its consideration of the aspects of the environment listed under Paragraph 2 of Regulation 4 of the EIA Regulations. Those aspects of the environment that are subject to the most significant impacts from the Proposed Development should be the primary focus of the ES.

Your scoping report advises that the ES will cover the following topic areas.

- *Climate Change*
- *Daylight, Sunlight and Overshadowing*
- *Townscape and Visual Impact*
- *Wind Microclimate*

General Comments

The scoping report identifies the development site as being located within Manchester City Centre. For planning purposes, the development site is located in the Regional Centre (policy EC3) as defined within the Manchester Core Strategy (2012).

The significance of the site in regional terms should be reflected throughout the ES. The Environmental Chapters must therefore consider the impacts of the Proposed Development on the local context 'Regional Centre' together with Manchester City Centre, the North West Region and the national context (where appropriate) in order to determine any wider significant environmental impacts.

Climate Change

The comments within your scoping report are noted and on this basis are acceptable in terms of their consideration in the ES subject to consideration of including a broad approach and methodology for assessing the impact on climate change. Impacts and potential mitigation from the other technical chapters should feed into this assessment particularly around management of surface water, waste management, green and blue infrastructure, biodiversity and ecology, travel planning and efficiency of the building fabric, an assessment of the lifecycle of the building (including management of embodied carbon) and use of renewable energy as part of promoting a low carbon development and reducing emissions and the likely environmental impacts of this.

It should be noted that sensitive receptors should include any adjacent schools and nurseries.

Daylight, Sunlight and Overshadowing

The comments within your scoping report are noted and on this basis are acceptable in terms of their consideration in the ES

Townscape and Visual Impact

The comments within your scoping report including the Receptors and Key views within Appendix 8.1 Visual Zone of Influence and Key Viewpoints are noted and are generally acceptable in terms of their consideration in the ES however it is considered that an additional view from the junction of Congou Street and Baird Street adjacent to Crusader Mill to the rear of the site should be included.

It is essential that the ES considers the cumulative impacts of other developments in order to full understand the likely impacts of the Proposed Development.

Wind Microclimate

The comments within your scoping report are noted and on this basis are acceptable in terms of their consideration in the ES.

Cumulative impacts

The list of cumulative sites for assessment has been considered in order to assess any cumulative impacts of developments in this part of the City Centre can you include Echo Street (136874/FO/2023) in the assessment is acceptable in terms of consideration in the ES.

FURTHER INFORMATION

The City Council, as Local Planning Authority, has undertaken a thorough consideration of the information contained within your scoping report together with providing comments from relevant statutory consultees. The issuing of this Scoping Opinion does not preclude the City Council, as Local Planning Authority, from requesting further information at a later stage as the development proposals evolve or whilst a future planning application is being formally considered.

This letter also confirms the matters within part I of Schedule 4 to the to the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 that need to be covered within the Environmental Statement.

If you wish to discuss the above please contact Angela Leckie on the above number.

Yours sincerely



Julie Roscoe

Head of Planning (attachments sent by e-mail)

3. Alternatives and Design Evolution

No appendices

4. Site, Surroundings and Description of Proposals

No appendices

5. Demolition Method Statement and Construction Management and Phasing

Appendix 5.1 – Demolition Management Plan

Sparkle Street Demolition Works

Demolition Environmental Management Plan



16/06/2023	16/06/2023	16/06/2023
Mick King	Andy Moore	Andy Moore
Contracts Manager	Operations Director	Operations Director
Prepared By	Checked	Approved

1. Review & Amendments

The Project Manager will be responsible for reviewing the construction stage safety and health plan on a quarterly basis and recording any changes made. (Record “no changes” if no amendments are made).

Review Date	Revision Number	Page Numbers	Comments/ Amendments	Name
16.06.23	0	All	Initial	

This Demolition Logistics Plan is to be read in conjunction with;

Document Title	Revision Number
Demolition Logistics Plan	00

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1.0 INTRODUCTION

This Demolition Management Plan has been developed to demonstrate the logistical feasibility of the project. Its purpose is to provide foundation principles, for the method of demolition and the protection of neighbouring facilities. A demolition programme indicating anticipated works periods has been generated to run alongside this plan

Its main purpose is to ensure the project is undertaken in an environmentally responsible manner and to current industry best practice and standards. It also seeks to ensure works are carried out with minimal disturbance to neighbouring properties, highways and members of the public by setting out a methodology within which the demolition works will be carried out.

Where appropriate options have been identified and assessed in accordance with relevant selection criteria. The key elements reviewed include:

- Site Security and Access Control
- Programme
- Pedestrian and Vehicular Traffic Management
- Materials Delivery Co-ordination
- Material Distribution
- Waste Management
- Good Neighbour Policies / Environmental Impacts



2.0 PROJECT PLANNING

2.1 Environmental Management System

JRL Group's environmental policy has been developed in accordance with the nature, scale and environmental impacts of the company's activities. This policy provides a broad framework for setting environmental objectives and targets and delivering sustainable development and has the full support and commitment of the Board of Directors. Our environmental policy includes a commitment to continual improvement in the prevention of pollution and to compliance with the relevant environmental legislation, regulations and requirements. The Policy is updated annually and forms part of the EMS, which is certified to ISO 14001: 2015 standard.

It is the responsibility of the Project Manager to ensure effective implementation and understanding of the environmental management system. This should be undertaken with the support of environment manager, advisor, specialists and other suitably qualified personnel. It must also be made clear to all site personnel that each individual has a responsibility to ensure no environmental incidents occur.

The following outlines the processes and plans to be implemented on site to ensure all environmental aspects and impacts are identified and sufficient measures are put in place to reduce risks associated with the works.

2.2 Aspects & Impacts Register

In line with JRL Group Ltd. procedures, an Aspects and Impacts Register and Risk Assessment has been completed for the project in order to reduce the environmental impact of our site activities. This register also includes the control measures which will be put in place to minimise our environmental impacts. The Project Manager is responsible for ensuring that the control measures are fully implemented and monitored. The Risk Assessment is scored by analysing whether the aspects are regulated by legislation, are a contractual requirement and according to the likelihood and severity of the aspect occurring.

The Significant Environmental Aspects which have been identified for this project are:

- Dust
- Noise
- Vibration
- Vehicle movements

2.3 Working Hours

Site Working Hours will be 08:00-18:00 Monday to Friday and 08:00-1300 Saturdays. There will be no working on Sundays or bank holidays

We will also be using the 2hrs on 2hrs off for noisy works.

Noisy works will be carried out between

08:00-10:00, 12:00-14:00, and 16:00-18:00

Work outside these hours will be subject to advance notice given by JRL Demolition to Manchester City Council and agreement obtained as well as neighbouring occupants affected, furthermore the works are to ensure that they do not conflict with the Authority's laws, i.e. noise levels and labour laws restricting abnormal work hours. There are at the time of writing no intended plans to do so.

2.4 Scope of Works

Scope of Works	Programme Date
Progressive dismantling and demolition of the site Buildings	06.04.24
Ground Slab Removal	06.06.24
Site Demobilisation	06.07.24

2.5 Project team Roles and Responsibilities

All members of the Project team are responsible for the effective planning, implementation, management, monitoring and review of all environmental control measures identified in this plan.
It is the responsibility of the Project Manager to ensure that team members are aware of their environmental responsibilities and that they are suitably trained as necessary.

Role	Responsibilities
Project Manager	To write and maintain the CEMP. To complete the Environmental Aspects and Impacts Register. To inform subcontractors and suppliers of significant environmental impacts and control measures required to minimise them. To request, review and comment on the subcontractors' method statements. To manage and control all of the environmental documentation produced on this project
Environmental Manger	To carry out monthly SHE 8E site inspections To carry out formal environmental management system audits. To advise the project team on environmental queries To champion and promote environmental best practices on site.
Environmental Advisor	To collate monthly environmental data provided by the Environmental Champion To assist the site in preparation for Considerate Contractor Audits. To assist the site with maintaining a good relationship with local residents. To arrange events with local charities, schools etc. To champion environmental best practices and the Considerate Contractor Scheme on site
Environmental Champion	To sign the 'Environmental Compliance Letter'.

	To carry out weekly SHE 6E environmental inspections. To check waste transfer notes are compliant and collate in the site file. To check timber delivery notes are compliant and collate in the site file. To collate material delivery notes in the site file. To provide water and electricity meter readings and photos of meters to the Environmental Coordinator. To provide fuel consumption figures to the Environmental Coordinator. To provide the NRMM details for all plant on site to the Environmental Coordinator. To promote awareness of the RMP among the workforce. To enforce waste segregation on site (i.e. separate hazardous waste streams in separate Hazibags). To conduct a monthly environmental toolbox talk to raise environmental awareness amongst the workforce. To conduct on-site training with the workforce (e.g. spill kit training) when advised by the Environmental Team.

3.0 Demolition Works

3.1 Pre – Start

Visual surveys will inform the method and confirm the nature of the structure and the Temporary Works required. Alongside the surveys record and archive drawings will assist and develop the method and confirm the assumptions made. Such results will be made available to the project team.
During this period applications for licenses and agreements are made while designs are informed for Temporary Works and the protection of the retained services.

3.2 Site Establishment and Facilities

On receipt of the Instruction to Proceed, the primary objective will be the establishment of office and welfare facilities. Our proposal in this respect is during the early stages of the works, to set up an Oasis Unit within the site boundary. The facilities will comprise drying room, canteen, office and toilets.
The facilities will comply in all respects with current HSE guidelines including the provision of mains water and electrical services and have a dedicated PPE free safe access to them at all times. There will be no parking on site. Operatives will be encouraged to use public transport to access the site.
The facilities will have dedicated cleaning staff to ensure they are maintained to the highest standard.

3.3 Fire Safety



JRL Group will produce a fire plan which will be displayed on site notice boards and included in the site induction. Any Fire Safety duties performed by personnel will be undertaken in accordance with the Fire Plan.
Fire marshalling duties will be undertaken by appropriately trained and certified operatives.
Additionally, JRL Group will carry out regular reviews / updates of the Fire Plan to ensure it remains current.
JRL Group will provide fire points, which will be strategically located throughout the work areas. Fire points will include, as a minimum, fire point stand, fire extinguishers (1No Co_2 and 1No water), sand bucket, rotary hand bell and back panel for fixing appropriate signage (evacuation route, emergency procedures, etc.).
Appropriate signage will be positioned around the demolition area to effectively communicate the plan to the operatives. Emergency escape routes and exits will also be prominently signed.
In addition, the existing fire escape routes will be kept clear and maintained at all times. These will be indicated on the fire plan and briefed to all operatives during the induction.

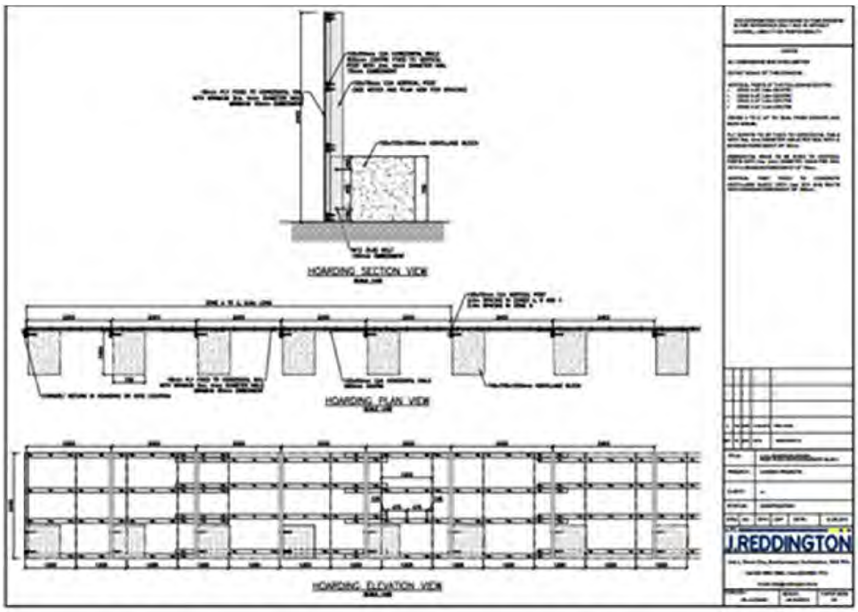
3.4 Emergency Contact Details

Name	Contact Details
Operation Director	Andy Moore 07825 563093
Contracts Manager	Mick King 07557 369296
Project Manager	Graham Beekmeyer 07714164215
Emergency Services	999/112 Local Hospital: Manchester Royal Infirmary 0160 276 1234
Environment Agency	0370 850 6506
BREEAM Assessor	Alice Dear 07776071560
Head of Sustainability	Andrew Berry 07825 561 657

3.5 Demolition Works

3.5.1 Temporary Heras Fencing Layout

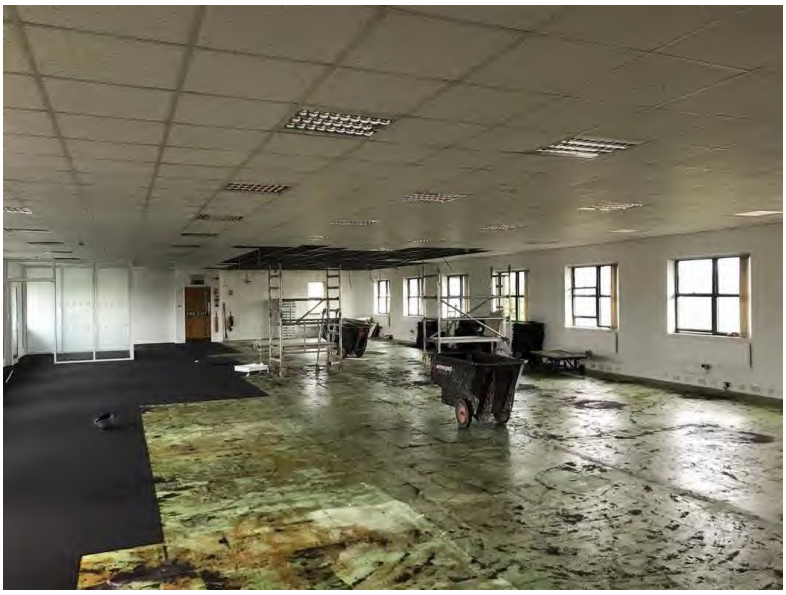
As part of the site set up works a heras fence will be installed on water filled barriers to secure the site and prevent access whilst the hoarding is erected



3.5.2 Hoarding erection

A 2.4m high timber hoarding will be erected on precast concrete blocks along the agreed boundary line with the retained building. The hoarding will be erected, painted and completed prior to moving removing the heras fencing on water filled blocks.

3.5.3 Soft Strip



Initially a small element of pre-strip will be required to facilitate any asbestos removal. Once complete and the asbestos materials have been removed releasing critical zones or complete floors the soft strip removal will progress. Soft strip will comprise the removal of carpets, ceilings, fixtures, fittings, tenant's rubbish, non-load bearing partitions and mechanical and electrical installation.

The soft strip will be carried out in two phases by operatives skilled in works of this type. Phase One will comprise all combustible materials and be completely removed prior to the commencement of Phase Two. Phase Two will be predominantly the mechanical and electrical installation, which will involve the use of 'hot works'. Phase Two will be carried out under a strict 'Hot Works Permit Regime'.

Materials generated from the soft strip will be segregated into the following for recycling: -

- Joinery, doors, architraves, skirtings, etc. will have nails, screws and ironmongery removed and sent to the Particle Board Industry.
- Glass, where suitable, will be sent for Cullet Merchants.
- Plasterboard will be sent for recycling by British Gypsum.
- Ferrous and non-ferrous materials will be sent to scrap metal merchants for recycling.

Material will be deposited vertically through the building utilizing the existing lifts and well holes down to ground floor. Material from ground and basement will be loaded via the existing access points at ground floor along the front elevation at an early stage to avoid clashes with the facade retention construction
All waste is further segregated and sorted off site prior to recycling in order to achieve the minimum amount of material sent to landfill. We are currently achieving 97% or better.

3.5.4 Asbestos Removal



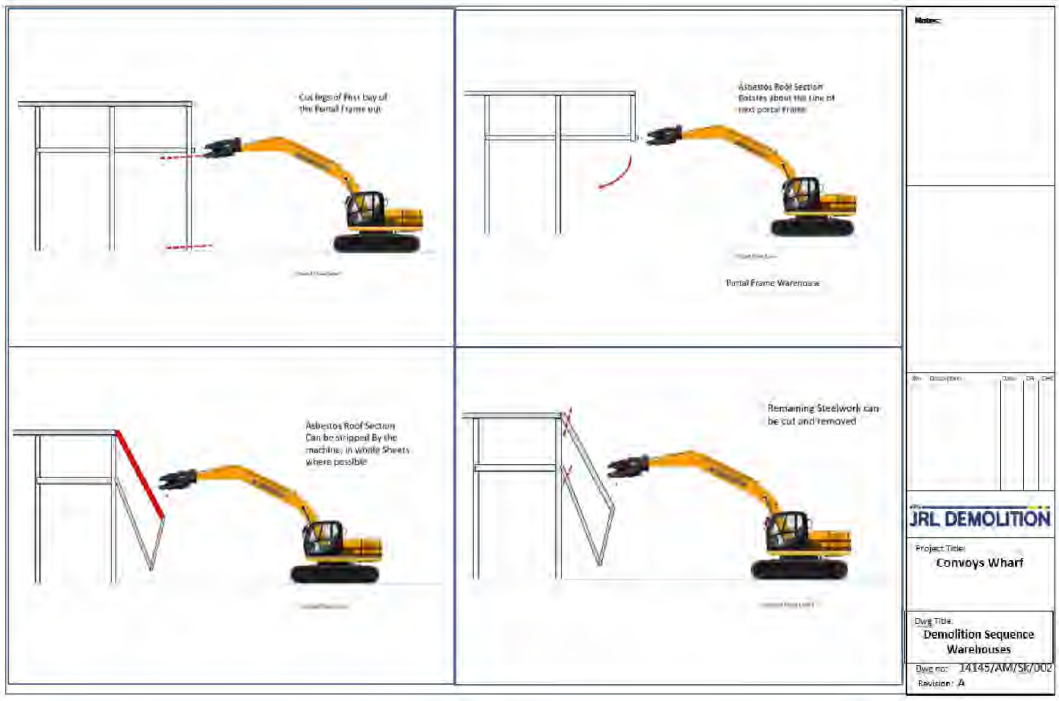
A full Pre-Demolition and Refurbishment survey will be completed for site. We expect that this will locate mainly AIB paneling and Asbestos cement sheeting
The existing buildings that require soft stripping pre-demolition may contain previously unidentified asbestos containing materials.
A detailed 'Working Method Statement' and HSE ASB5 Notice will be issued for licensable asbestos materials.
Removal of any asbestos containing materials (ACM's) will be done in accordance with the pre-demolition / refurbishment reports in accordance with Control of Asbestos Regulations 2012 and prior to the demolition work commencing.



Any asbestos identified will be double bagged. All bagged ACM will be placed in to a fully lined skip with 1000-gauge polythene and once full the polythene will also cover the top. The work area will be cordoned off with appropriate signage posted and only operative with the correct additional PPE will be permitted to enter i.e.: disposable overalls and half masks with P3 filters. A decontamination unit will be plumbed in to the site welfare area and a safe transit route established from the work area to the DCU.
All asbestos work will have full time supervision and JRL's Asbestos Manager will make regular visits and inspections.
All employees are asbestos awareness trained and all asbestos will be identified on site following the completion of the pre-demolition survey with asbestos stickers and/or spray paint as appropriate ensuring all operatives are aware of the potential hazard.

3.5.5 Demolition Works

The buildings once stripped of accessible asbestos will be demolished using a demolition excavator. The walls and infill. The demolition works will be carried out using a 30t demolition excavator with various attachments. The main demolition excavator will cut down the buildings and place the material behind it where a 20t demolition excavator will process the materials for recycling and removal. Panels will be removed to expose the frame of the structure and internal columns will be folded into the structure to ensure that the demolition is carried out within the footprint of the building. Once the internal area is clear the infill walls will be pulled into the centre of the structure and cleared away. This will leave the frame to be removed. The legs of the frame will be cut allowing the roof to "sit down" so the asbestos roof can be stripped off using the attachments to the excavator. The debris caused by this operation will be cleared form the slab and sent away in the relevant waste streams.



3.5.6 Crushing and Processing

Demolition arisings from the site will first be processed using 360 excavators with muncher attachments. Re bar collected from this process will be bundled into bails and loaded into 40 yard steel bins, processed concrete will then be moved to a designated crushing area on site . The crusher will be established in the area and connected to a mains water supply to run the integral dust suppression system. This can be supplemented by other dust suppression if required. Dust and noise will be minimised by good practice, such as minimising the distance that material drops and rewetting of the stockpile to be crushed

3.5.7 Load Away Arisings & Processing

We will have a water supply at hand for dust suppression to ensure that dust impact on the environment is reduced to a minimum.

Material will be loaded away as work proceeds in order to maintain a clean and unobstructed work environment. A road sweeper will be on call at all times to ensure the public highway is kept clean. In addition vehicles will have the wheels washed as they exit the site.

All soft strip material and other hazardous materials will be removed off site in a timely fashion to minimise the risk of fire and contamination.

3.5.8 Waste

The project team will be committed to maintaining the highest environmental standards and demand the same standards throughout the supply chain. In conjunction with the logistics provider, regular audits will be conducted or preferred waste carriers, transfer stations and landfill sites. These audits are intended to confirm compliance with legislation and to ensure every effort is being made to maximise the recycling of waste generated from site. Best practice dictates that waste segregation should be undertaken at source. This does not simply mean 'on site' but actually at the point of waste generation at the workface. Segregation at source is the only methodology that does not require a secondary process to sort collected mixed waste.



Mixed waste collected from site will be segregated off side at a local waste transfer station where all materials will be processed through a MRF (Material Recycling Facility). Materials will be handpicked and sorted into various categories ready for onward transportation to recycling depots. Materials that are deemed to be recyclable will then be sent through a trommel to be pulverised and used for fines, any materials remaining from the process will be sent to landfill. It is estimated that at least 96% of non-hazardous construction waste generated on the project is recyclable. The project team will agree a target benchmark for waste reclamation (i.e. waste diverted from landfill). This target will be published in the Site Waste Management Plan. On a regular basis, or on demand as quantities dictate, our roll on/off vehicles will attend site to remove all collected rubbish. The waste is transported from site and deposited at a licensed transfer station where it will be segregated for onward transportation to various recycling houses. Residual waste is sent to landfill. Waste segregated on site will be collected by other registered carriers and transported either to a licensed transfer station for bulking or directly for recycling / reuse.

3.5.9 Site Waste Management Plan

A project waste champion will be appointed to ensure procedures are kept relevant and up to date and also to ensure waste materials leaving site are recorded for project benchmarking purposes. The client shall appoint a waste 'champion' to be responsible for the development of the Site Waste Management Plan and subsequent implementation and compliance. This may be the principal contractor but an alternative appointment may be made to ensure design and pre-construction activities are incorporated.

3.5.10 Post Demolition.

On Completion of the demolition the site will be made safe for the works which follow on the removal of the Ground and Basement slabs. All pits and voids will be filled with suitable material and all slab edges ramped down to avoid trip hazards. Where edges cannot be safely ramped fencing will be secured to the slab around the hazard. All treatment of Hazards will be noted in the H&S File.

3.5.11 Load Away Arisings & Processing

We will have a water supply at hand for dust suppression to ensure that dust impact on the environment is reduced to a minimum. Material will be loaded away as work proceeds in order to maintain a clean and unobstructed work environment. A road sweeper will be on call at all times to ensure the public highway is kept clean. In addition vehicles will have the wheels washed as they exit the site. All soft strip material and other hazardous materials will be removed off site in a timely fashion to minimise the risk of fire and contamination.



3.6 Water Management

Gullies that are within the demolition zone will be sealed to prevent the ingress of debris to the sewer system. This will be by use of a gully guard or similar system. Where gullies are outwith the demolition debris zone they will be cleaned about and filled with sandbags to prevent debris from being able to access the drainage system. The gullies will continue to drain water through the sandbags to maintain surface water drainage and prevent a build-up of surface water that can run off. At the end of the demolition the sand bags will be removed from the gullies and the gullies re-cleaned out as required.

3.7 Health & Safety

Health & safety is an integral part of the planning process for each project. Implementation of comprehensive Health & Safety System and Procedures ensures every facet of the construction process is planned, managed and monitored. This also ensures compliance with statutory obligations.
Designers and contractors engaged on the project will be competent and adequately resourced. This will be achieved by:

- Completion of prequalification health & safety questionnaire
- Interviews to ascertain compliance with their legal duties
- Review of existing health & safety policies and procedures
- Review of their health & safety performance and site visits

As Principal Contractor we will produce the Construction Phase Plan based on the current information and the pre-tender plan. The plan will set out the arrangements for managing and monitoring the project. Contractors engaged to carry out works on the project will be issued with this Health & Safety Plan so that they can integrate this management philosophy into their health & safety plans. The project team will implement the plan assisted by specialist health & safety advisors.
All persons will be encouraged to express their views and concerns about health & safety. This is achieved by the formulation of various routes. These include:

- Project Health & Safety committees
- Safety representatives from each contractor
- Toolbox talks including a feedback process
- Discussion and briefing on method statements and risk assessments

An ‘open door’ policy will be employed whereby any individuals can discuss health & safety issues with any member of the project team. Site notice boards, toolbox talks and posters are used to convey relevant information to persons on the project.

3.8 Party Walls

There are party walls to the buildings to be demolished

4.0 SITE SECURITY & ACCESS CONTROL

4.1 Introduction

All security operations shall be developed and implemented in accordance with the latest British Standards applicable to the security industry i.e. BS 7858:2006 and BS 7499:2007 and full compliance with the Private Security Industry Act 2001.

4.2 General

The general security of the site falls into three main categories:

a) Maintaining a secure perimeter
b) Preventing unauthorised access
c) Deterring acts of theft and vandalism

This protection is provided by a combination of physical and manned security.

4.3 Physical Security

Physical security of the site will be afforded by the erection of perimeter hoarding and fencing erected in accordance with BS6187 Code of Practice for Demolition

Hoardings will incorporate a number of lockable gates to effect access and egress for both pedestrians and vehicles. Proposed barriers are identified on the logistics plan. Further measures including alarms to scaffolding (when installed at the perimeter of the site) and floodlighting to security sensitive areas during the hours of darkness will also be considered. To maintain the security of the works, the working area will be enclosed a 2.4m minimum height hoarding constructed with suitable concrete foundations and sub framing fully designed to temporary works code of practice 2008 BS5975 to withstand wind or minor impact load. The hoardings will be clad with marine quality plywood which will be decorated using good quality paint products with lighting and clear signage for pedestrian routes installed to the hoarding.

Regular inspections of the security hoarding will be carried out at the start of every shift, to ensure that their condition has not deteriorated and will also be inspected weekly to ensure that they are secure and fit for purpose.

During working hours, access gates to the site will be kept closed, except in emergency. The Site access / egress points will operate a security system, and access to the Site will only be granted after a Site induction has been

undertaken. Site entrances and exits will be clearly marked with fixed warning signs at the entrance / exit and around work perimeters which will detail the potential hazards of the area. Segregated access for pedestrian and vehicle entrances will be provided.

5.0 PEDESTRIAN ACCESS

5.1 Maintaining Site Security

In order to maintain site security it is important to provide the minimum practicable number of pedestrian access/egress points. In this instance a single access point into the project is proposed. Access into the site will be managed to ensure only authorised personnel gain access. The primary control point will be located at the designated pedestrian access. This control point shall be permanently manned to process visitors and non-inducted personnel.



5.2 Security Access Control

All personnel and visitors arriving on site should immediately report to the project security reception within the project accommodation. All personnel entering the site will be required to log in and out of the site this point, this attendance information being essential should there be an emergency site evacuation.

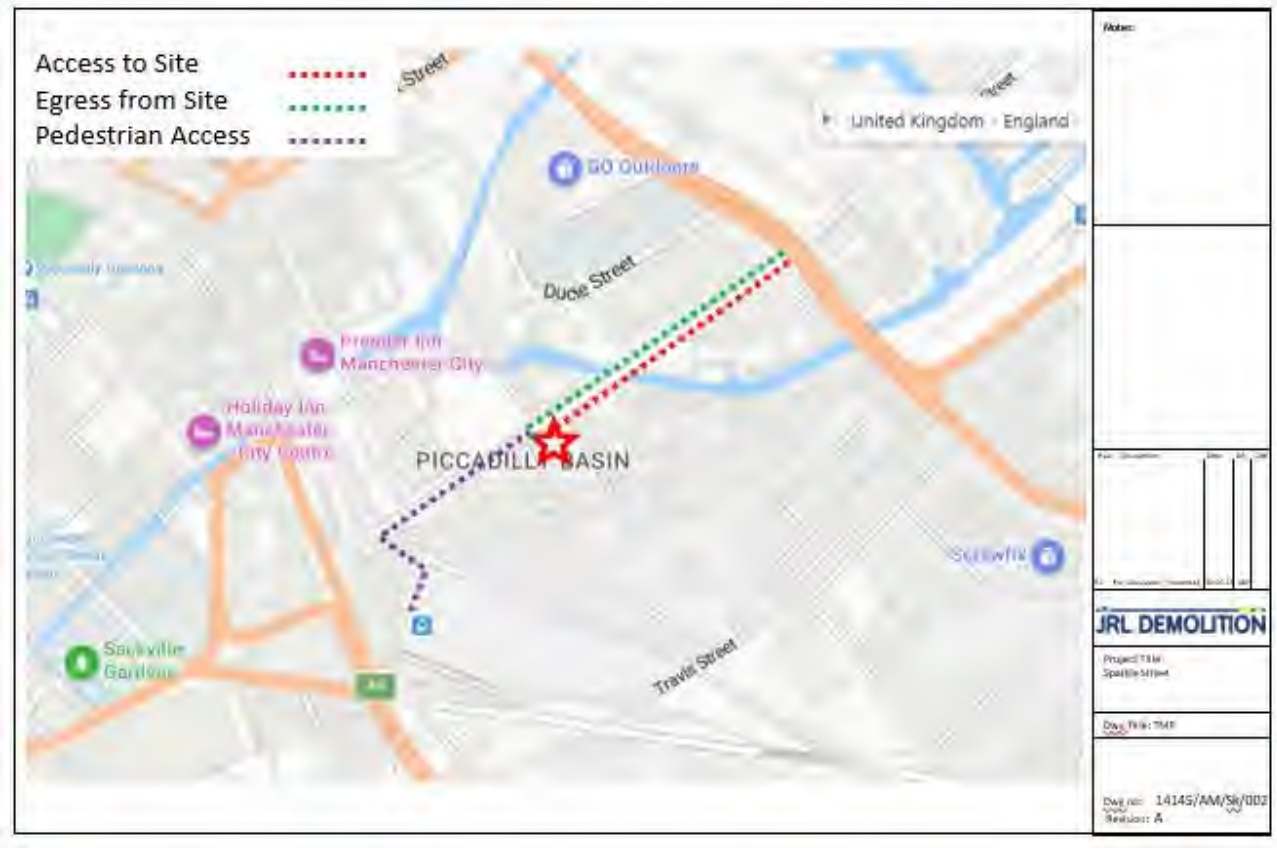
5.3 Site Layout

Pedestrian access / egress points and primary circulation routes are depicted on the site logistics plan. Vehicles making deliveries to the site or demolition material will travel via the designated routes.
Operatives will attire themselves with appropriate PPE within the site welfare before proceeding onto site. When passing between the welfare compound and the working site all personnel will be required to pass through a security control point. Within site, pedestrian routes will be delineated, segregated from vehicular construction traffic. These shall be classified as site walkways and the wearing of PPE in these areas shall be mandatory.

5.4 Traffic Routes

The Traffic Management Plan requires that the works will be organised in such a way that the traffic routes are suitable for the passage of vehicles using them with regard to locations and width of lanes.
Traffic routes will not be approved unless:
Vehicles can use the traffic route without causing danger to themselves or other road user.
Pedestrian access or egress is sufficiently separated from vehicle routes as will enable the pedestrian to see any approaching vehicle or plant.
There is sufficient separation between vehicles and pedestrians, or where this is not reasonably practicable or in an emergency there are other means for the protection of pedestrians;

There are effective means of warning of the approach of any vehicle.



Site Access Routes for all Vehicles

5.5 Construction Worker's Travel Plan

A robust, realistic and achievable travel plan is considered crucial in encouraging sustainable travel choices by those visiting the site. The aims of the Construction Worker's Travel Plan are to consider the safety and travel patterns of other road users and pedestrians and ensure the environmental and highway capacity impact is minimised. Reducing single occupancy private vehicle trip will support the mitigation of potential impact on the temporary increase in the number of traffic movements on the local road network during construction.
It is expected at peak, there will be 15 workers on site who in large will be travelling during the peak hours of 6:30 to 8:30 and 17:00 to 19:00 Monday to Friday. JRL are committed to encourage our employees to utilise active travel methods and to not travel via private car to work. There is no parking available on site or in the nearby roads (adjoining the site) for any construction traffic related to the site.

6.0 VEHICULAR ACCESS

6.1 Introduction

When considering vehicular access the four primary issues to consider are:

a) Maintaining site security
b) Segregation of pedestrian and vehicular traffic
c) Manoeuvring of vehicles

d) Delivery co-ordination

6.2 Maintaining Site Security

In order to maintain site security it is important that vehicle areas provide access to vehicular traffic only. Pedestrian access should be prohibited at these points. Vehicle access gates should be kept closed, opened only to receive or disperse vehicles. Vehicle access will be manned during site operational hours.

6.3 Vehicular / Pedestrian Segregation

Vehicles and pedestrians should, wherever practicable, not share access / egress or circulation routes and vehicles shall enter/exit the site at a separate location to pedestrians. Protected pedestrian routes will be established within the site to ensure segregation from vehicles.

6.4 Delivery Co-ordination

Site access / egress for all materials and waste will require tight control, and daily Liaison with neighbouring businesses. Early Doors deliveries will be utilised for large deliveries. All delivery vehicles will drive into site with the assistance of the traffic marshal to the designated loading/unloading area. Traffic Marshalls will halt pedestrians and cyclists if necessary while vehicles are entering and leaving the site. Once the vehicle is unloaded or loaded, the vehicle will leave site under the Traffic Marshall's guidance.
The development of a scheduling system will provide an efficient and effective means of controlling all deliveries. The implementation of pre-agreed delivery schedules and programmes will ensure that all deliveries arrive at the right time with materials being efficiently despatched to the correct offloading and storage zone. Daily delivery schedules should be provided at all gate posts/offloading points. Regular delivery meetings between all trade contractors should be implemented to ensure that the delivery schedules are pre-agreed with all. All suppliers will be required to service the site utilizing FORS members.

6.5 Manoeuvring of Vehicles

In order to promote safe manoeuvring in and around the site it is recommended that reversing of vehicles is excluded wherever possible. This is most commonly achieved by the implementation of one way systems and / or drive through delivery zones. Where reversing of vehicles is unavoidable, such manoeuvres should be kept to a minimum and due consideration given to, amongst others, the space required to complete such manoeuvres, the exclusion of personnel from this area and the supervision, direction and control afforded to the manoeuvre

6.6 Vehicle Arrival and Dispersal

There is one access onto the site down Store Street. Vehicles will approach from the south along Store Street and following this round to the site. Directed by prominent signage and controlled by attendant banksmen, vehicles shall enter and exit the site in accordance with the current traffic management plan. Deliveries will be booked in 24hr in advance with Security.



Access Routes to Sparkle Street Site

Vehicles exiting the site will exit back onto Store Street for dispersal back onto the road network.

6.6.1 Site Entrance



The site is such that there will be one main entrance on Store Street. The pedestrian entrance is as close as possible to the welfare facilities to allow a safe access to these facilities for the operatives to change and ensure they have the correct Personal Protective Equipment on prior to entering the site itself.
At the site entrances any visitors will be ushered through a safe segregated walkway to the site offices to meet with the site management for a site induction.

The gates will be controlled all the time via the Gatemen/Traffic Marshals. When the Gate is not in attendance then the gates shall be closed.

6.7 Vehicle Access & Egress

Vehicles
Any vehicle being used for construction work will:

- Be driven in a manner that is safe.
- Be loaded in a way that it can be driven, operated or towed safely.
- Have suitable steps taken to prevent unintended movement of the vehicle.
- Have the person in control of the vehicle the capability to give adequate warning to any person liable to be at risk from the movement of the vehicle.
- Be fully aware of weight restrictions and exclusion zones on the site.
- Be fully aware of the TM plan speed restrictions on approach to the site and speed restriction on site - 5mph.

To that end no person shall;

- Be allowed to ride on, or in a vehicle unless a proper place has been provided for that purpose.
- Be required or permitted to remain on any vehicle during the loading or unloading of any loose material, unless a safe place has been provided for that purpose.
- Where any vehicle is being used in the proximity of any excavation, edge of ramp or embankment, suitable and sufficient measures will be taken to prevent the vehicle overrunning the edge

Where any vehicle is being used in the proximity of any excavation, pile-bores, edge of ramp or embankment, suitable and sufficient measures will be taken to prevent the vehicle overrunning the edge or falling in the bore.
All vehicles will comply with the rules of London's Ultra Low Emission Zone. Vehicles which don't meet the criteria will be charged. All JRL vehicles will comply with the following criteria:

- Diesel – Euro 6 (VI) standard or better (roughly end of 2015 onwards);
- Petrol - Euro 4 standard or better (roughly 2006 onwards);
- Gas – Euro 6 (VI) standard or better;
- Fully electric or hydrogen fuel cell – all are compliant and avoid CAZ charges;
- Hybrid electric – the diesel/petrol engine must meet the relevant criteria above.



Vehicles delivering to site should be a minimum of FORS Silver.
Anticipated traffic movements will vary throughout the programme period, as will the size and type of vehicle. As a general rule the number and size of vehicles will be greater during the earlier phases of the project whilst our scope of the ground and structural works are underway. Traffic will decrease as the internal and finishes works are carried out.

6.8 Site Entrances

There is only one site access on the site. The gate off Store Street, the pedestrian access to the site is via a separate entrance gate also on Store Street. The pedestrian entrance will always be as close as possible to the welfare facilities to allow a safe access to these facilities for the operatives to change and ensure they have the correct Personal Protective Equipment on prior to entering the site itself.
There will be no waiting on the shared access road. Access and egress for construction vehicles may vary according to the particular stage of works but generally will follow the logistics plan Deliveries will be phased and controlled on a 'just in time' basis all being clearly marked to show their destination. This will minimise transport around the site and any associated noise.
Local waiting areas will be used to stack vehicles and call them in as appropriate. This will be particularly important for the Tippers first thing in the morning.
At the site entrances any visitors will be ushered through a safe segregated walkway to the site offices to meet with the site management for a site induction.
The gates will be controlled all the time via the Gatemen/Traffic Marshals. When the Gate is not in attendance then the gates shall be closed. Loading and unloading arrangement – Site deliveries/collection activities
All delivery vehicles will drive/reverse into site with the assistance of the traffic marshal to the designated loading/unloading area. Traffic marshals will halt pedestrians and cyclists while vehicles are entering and leaving the site. Once the vehicle is unloaded or loaded, the vehicle will leave site under the TM's guidance.

As a general rule, construction vehicles will only be allowed to park on site for the purposes off loading and unloading. All sub-contractors are to inform site management of any deliveries coming to site.

6.9 Details of how pedestrian and cyclist safety will be maintained

When vehicles are entering or leaving the site, these will be supervised by a Traffic marshal. The general public/pedestrians will have right of way along the pathways that surround the site. The construction site gates will be kept closed and monitored by site security, only when deliveries are made to the site will they be opened to allow vehicles onto the site, at which time barriers will be put across the pavement to prevent access by pedestrians. These barriers will be manned by our site security. All delivery vehicles will be supervised/controlled by a banksman.
The Project Manager will also ensure that the external perimeter of the site is regularly patrolled (twice a day) to ensure that any debris is kept clear of the pavements.
With regard to cyclist safety, our banksman will pay special attention to any pedestrians or cyclist when vehicles are moved onto or off the site.

6.10 Control of Dirt Noise and Dust on the Public Highway

Mud and debris on the road is one of the main environmental nuisance and safety problems arising from construction sites. JRL Demolition will make provisions to minimise this problem.
In the early stages of the project when ground works are being carried out, the area outside the vehicle gates will be constantly swept and washed down. If necessary jet washers will be used to wash down all vehicles that enter/leave the construction site.
We will also make provision for cleaning the adjoining roads daily and/or as required by an approved road sweeper. We will insist on all muck away lorries be fully sheeted to minimise the risk of any mud over-spilling onto the highway.

6.11 Traffic Management Operatives



All vehicle entrances and exits shall be manned by security traffic marshals responsible for receiving and dispersing vehicles. Duties will include checking that vehicles arrive in accordance with the planned delivery schedules, advising drivers of site rules, issuing vehicle passes and directing to the appropriate off-loading zone. When leaving, marshals will collect passes, confirm the legitimacy of any plant or materials being removed from site and check vehicles' cleanliness before finally dispersing back onto the public highway. Marshals will also be responsible for directing and banking vehicles to ensure that manoeuvres are executed safely, minimising the risk to the general public.

6.12 Plant Movements

Plant movements are to be managed by the JRL supervisors and managers in the following way:
All plant movements on site wherever possible shall operate a one-way system
Whenever there is a need to reverse a vehicle then a fully competent 'Traffic Banksman' will be in attendance.
The driver is to adhere to the Traffic Banksman instructions.
If the driver cannot see the traffic banksman then the driver is to stop.
All onsite vehicles are to have 'Flashing Amber Beacons' and an all-round vision aids such as extra mirrors like Frizzle mirrors [convex], reversing cameras or banks-men.
All site personnel are to wear yellow hi-viz vest or coat unless they are traffic marshals/banksman where the hi-viz is to be orange with the words in black stating what they are (e.g. Traffic Marshall).
The segregation of the pedestrian on site will be by a segregated walkway running from the gate to the site facilities.
The walkway will be constructed from fixed scaffold tubes and combi-safe panels.
Trained competent operators will only operate mobile plant. Plant Operators will be identified by wearing a grey hard hat and a yellow hi visibility vest with 'Plant Operator' written on the back.

7.0 WASTE AND MATERIAL MANAGEMENT

7.1 Introduction

Waste management can be considered under three broad headings:

- Collection and transportation from the workface
- Removal off site and disposal
- Environmental issues (segregation, recycling etc.)

7.2 Material Management

Material distribution has been reviewed and assessed in line with the following key considerations:

- Off-loading materials close to their final location where practicable (minimise distribution around the site).
- Distribution directly from off-load to workface ("just in time" deliveries to minimise storage and double handling).
- Use of materials handling equipment to transport materials around site and to each level within buildings (minimise manual handling).
- Once the tower crane is erected this will be used to pick material from the street and load away waste

7.3 Collection and Transportation

A sufficient number of 240/660 litre wheeled bins will be delivered to site and distributed up / down to and across all floors by the logistics operatives manually. As operatives fill the bins, logistics labour will be deployed to exchange full bins for empties. Once emptied wheelie bins will be returned back to the floors for refilling. Where practicable and economically viable, waste streams will be segregated on site and separate arrangements made for removal / disposal.

7.4 Removal and Disposal

On a regular basis, our roll on/off vehicles will attend site to remove all collected rubbish. The waste is transported from site and deposited at a licensed transfer station where it will be segregated for onward transportation to various recycling Facilities. Waste segregated on site will be collected by other registered carriers and transported either to a licensed transfer station for bulking or directly for recycling / reuse.

7.5 Demolition Wastes

All waste will be segregated on site into the various waste streams and using the relevant EWC codes
Wastes will be divided into the following categories
Recyclables

- Metals-Structural members and services
- Glass-Windows and Partitions
- Concrete/Brick -form the main structure
- Timber- Various
- Plasterboard- partitions

Non recyclables

- Asbestos wastes
- Bitumen roofing

7.6 Waste Operatives

Waste operatives from the logistics team will undertake bin distribution and removal as described above but, in addition, will also undertake the following tasks:

- Maintaining and keeping clear emergency escape routes and exits.
- Maintaining access routes.
- General cleaning of unallocated rubbish.
- General site cleanliness (litter picking)

7.7 Segregation & Recycling

As indicated above, on-site segregation, where practicable, will be promoted. However, any mixed loads will still be subject to off-site segregation to maximise reuse, recycling or recovery.

7.7.1 Onsite Segregation



Segregation of waste on site is subject to certain constraints i.e. available space. On site segregation will only be performed on wastes which are deemed to be in recyclable condition i.e. uncontaminated and where we believe there is sufficient volume of a single waste stream to warrant a dedicated container. Best practice dictates that waste segregation should be undertaken at source. This does not simply mean 'on site' but actually at the point of waste generation at the workface. Segregation at source is the only methodology that does not require a secondary process to sort collected mixed waste. Onsite segregation relies

on the support of all site management to ensure unauthorised use of dedicated containers for general builder's rubbish is prohibited. Loads found to contain over 5% diversity are deemed as contaminated and subject to increased transport and handling costs of waste transfer stations.

7.7.2 Offsite Segregation

Mixed waste collected from site will be segregated off side at a local waste transfer station where all materials will be processed through a MRF (Material Recycling Facility). Materials will be handpicked and sorted into various categories ready for onward transportation to recycling depots. Materials that are deemed to be recyclable will then be sent through a trommel to be pulverised and used for fines, any materials remaining from the process will be sent to landfill. It is estimated that at least 96% of non-hazardous construction waste generated on the project is recyclable.

7.8 Reclamation Performance

The project team will agree a target benchmark for waste reclamation (i.e. waste diverted from landfill). This target will be published in the Site Waste Management Plan. Waste reclamation includes:

- Reuse on site
- Reuse on other sites
- Salvaged for reuse
- Return to supplier via a 'take back' scheme
- Collected from site by an approved licensed waste management contractor who shall segregate waste streams for recycling, recovery or reuse.

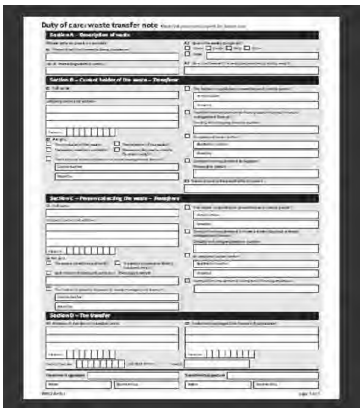
7.9 Site Waste Management Plan

A project waste champion will be appointed to ensure procedures are kept relevant and up to date and also to ensure waste materials leaving site are recorded for project benchmarking purposes. The client shall appoint a waste 'champion' to be responsible for the development of the Site Waste Management Plan and subsequent implementation and compliance. This may be the principal contractor but an alternative appointment may be made to ensure design and pre-construction activities are incorporated. The Site Waste Management Plan shall include the following:

- Identification of the waste champion (the nominated individual responsible for implementation of the plan).
- The target benchmark for resource efficiency (the minimisation of waste generated).
- The target benchmark, by weight or volume, for waste reclamation (i.e. diversion from landfill through reuse, recycling or recovery). This target has been set at 98% non-hazardous recycled, 96% demolition waste.
- Procedures and commitments for minimising hazardous and non-hazardous waste to achieve or exceed the target benchmark.
- Procedures for monitoring, measuring and reporting hazardous and non-hazardous waste to identify and record the type and quantity of waste produced.
- Procedures for sorting waste generated into defined waste streams for subsequent reuse, recycling or recovery (either on site or off site at a licensed facility).
- Procedures for monitoring, measuring and reporting hazardous and non-hazardous waste to identify and record where and how each waste stream is disposed and the quantity reclaimed.
- Procedures for communicating the plan to management and operatives including appropriate targeted training.

- A review process to monitor the success of the foregoing procedures and promote continuous improvement during the project and for future projects.

7.10 Duty of Care



As a waste producer, the client has a duty to ensure that any contractor who removes waste from the site is registered with the Environment Agency. We shall be required to provide documentary evidence that all waste carriers and waste brokers employed in connection with the project are appropriately licensed. Site records including transfer notes and conveyance notes shall be collected and retained.

7.11 Environment

The project team will be committed to maintaining the highest environmental standards and demand the same standards throughout the supply chain. In conjunction with the logistics provider, regular audits will be conducted or preferred waste carriers, transfer stations and landfill sites. These audits are intended to confirm compliance with legislation and to ensure every effort is being made to maximise the recycling of waste generated from site.

Monthly newsletters will be issued to the local community and neighbours as well as being discussed at the monthly liaison meetings and will include details of any proposed major traffic management changes.

8.0 MANAGING ENVIRONMENTAL IMPACTS

8.1 Minimising Impacts on Surrounding Areas

Daily visual and audio checks are carried out to determine if the site could be considered a nuisance.

- Is the site and surrounding area tidy and free of visual intrusion?
- Are footpaths and roads kept clean and free of obstruction?
- If you were a local resident is there anything that would annoy you?
- Are measures being implemented to keep the air clean i.e. reduce dust?
- Are there areas close to the site at higher risk such as flora, fauna and water courses?
- Can noise be limited or eliminated?

Noise monitoring will be carried on a number of different occasions and locations across the Site. Baseline vibration monitoring will be undertaken at the Site. The surveys will be undertaken to establish the potential for perceptible vibration and structure-borne noise effects.

8.2 Mitigation Measures

The following mitigation measures should be implemented by all contractors at all times to minimise noise and vibration generated from Site activities and disruption to any sensitive receptors:

- Hoarding and sheeting to public boundaries, with sensitive receptors.
- Controlled lorry movements.
- Use of modern plant with inherent noise suppression (e.g. Exhaust silencers) where available.

- Use equipment that crushes bursts or “nibbles” concrete in preference to percussive tools where practicable.
- Use of screens around static plant, and other temporary acoustic barriers where appropriate.
- Shutting down or throttling down machines in intermittent use.
- Appropriate handling of storage materials.
- Restrictions on working hours, for particularly noisy activities. 2hrs on 2 Hrs off for example.
- Regular maintenance in accordance with manufactures’ instructions.
- Trigger levels will be set and monitored daily and if they are exceeded then a revised method of working will be used.
- Reviewing techniques, especially in response to exceeding of the action level and / or complaints.

During phases that have the potential to generate excessive noise and / or vibration, continuous monitoring is likely to be required. During quieter periods, monitoring may be undertaken once or twice per week.
During quieter activities, sample noise and vibration monitoring using portable equipment once per day by the Demolition Contractor is likely to be suitable. Dust and noise monitoring record sheets will be completed.
Trigger levels should be set and monitored daily and if exceeded then a revised method of working will be used.
The residential properties within the vicinity of the site will be particularly sensitive receptors but are more likely to be impacted.
Measures will be taken to ensure that vehicles will be switched off and left without engines idling unnecessarily. Consultations will be held with the residents, and the existing receptors and baseline monitoring figures will be used to establish whether there is a need to take any additional measures to screen the works from the residents.

Where the results of the monitoring exercises indicate that the noise levels have been exceeded, the following actions should be undertaken:

- The activity or activities causing the Action Levels to be exceeded will be identified through discussions with the Environmental Monitoring Co-ordinator.
- Investigations will be made to determine whether the activities could be easily changed or other simple actions taken to substantially reduce noise levels.
- If simple and effective remedial measures are not identified, consideration will be given to the implementation of alternative techniques and / or additional mitigation measures.
- In all cases where Action Levels are anticipated to be exceeded, neighbourhood liaison will be carried out to the degree that is appropriate for the levels likely to be reached and their estimated duration.

8.3 Monitoring Site Impacts

As noted above construction activity has the potential to cause nuisance, or even harm, from environmental disturbance such as noise, vibration and dust. Such issues are often a cause for concern to the Local Authority, the project’s neighbours and the public at large. Whilst mitigation measures can be adopted to minimise nuisance, it is also important to conduct environmental monitoring to measure site performance in relation to

baseline data and to ensure noise limits are met.



NVD Monitoring Layout

8.4 Noise

JRL Demolition will work towards an average noise level of 85 dB LAeq,T in line with best practice during the demolition phase. Monitoring will be done using suitable equipment which satisfies local authority requirements. Noise: (Class I Integrating Logging Sound Level Meter calibrated (before and after) with a Class I Acoustic Calibrator. LAeq and LAFmax, noise levels)

'Standard' hours permitted for noisy work will normally be the following:

- 08:00 - 18:00 hours (Monday to Friday);
- 8:00 - 13:00 hours (Saturday);
- No noisy working is permitted on Sundays, Bank or Public Holidays.

Work outside standard hours

Outside 'standard hours' the following noise generating activities will not usually be permitted where the activities are likely to cause disturbance:

- Cutting using power tools;
- Breaking out using power tools;
- Other noise generating activities, depending on the specific location of site and neighbours.

• The use of impact fasteners;
• The loading of heavy materials;
• Other noisy activities, depending on the specific location of site and neighbours, deemed unacceptable by Environmental Health Officers.

Compliance reporting will be carried out and included in the Progress Reports.
All machinery will be modern and in good repair to minimise noise. Where a silenced option exists it will be used as a preference to non-silenced machinery
Acoustic mats and hoardings will be used between the site and the retained building to limit the transmission of noise.
Acoustic mats will also be used around machinery where practicable to further reduce sound levels
A system of quiet times will be utilised as is common practice during the day to allow respite from the nosier elements of works.

8.5 Vibration

The methods chosen by JRL Group, as our proposal for the execution of this project, is specifically geared to minimising the impact of our works on the adjacent neighbouring buildings and the wider environment. Our predictions are that we will remain comfortably <5mm/sec PPV during the works. In terms of the wider environment, we would expect these numbers to be below 1.0mm/sec PPV.

8.6 Dust and Air Quality

PM10 Concentrations: <250 µg/m3 averaged over a 15-minute period (as per Institute of Air Quality Management)
If any trigger levels are exceeded, then any dust producing activities will cease until a revised methodology and/or further mitigation measures are approved.

Dust will be measured on a continuous real time dust meter in agreed locations. SMS text alerts will be set up to nominated individuals. Should the dust levels exceed the stated limit then a red trigger will be generated. JRL will cease dusty operations on receipt of this trigger until measures are put in place to bring the dust below the Red Trigger Level.
Minimising dust is the best way to avoid any issues arising and this can be done by simply employing a vigorous housekeeping regime that uses an absorbent sweeping compound such as Dusmo. The use of water, wet vacs, equipment fitted with direct dust suppression attachments (for e.g. cut off saw) mechanical sweepers and Hoovers may also be used as an effective way of keeping dust to a minimum.



8.7 Light Disturbance

The surrounding vicinity to the site currently creates a significant amount of light pollution. Any further task

lighting required on the project is not expected to cause a nuisance. All task lighting, however, will aim to minimise the impacts of light spillage on adjacent retained habitats as far as reasonably practicable by ensuring any security lighting that is left on overnight is kept to a minimum and away from any sensitive receptors.
Lighting will be timed to be off outside of normal working hours.

8.7 Managing Site Impacts

Controls for day to day issues affecting the local environment will include:-

- Dust Suppression – stand pipes with shower head hoses should be available around critical areas of the project. Hose heads should be spring loaded to ensure that water cannot be left running whilst unattended.
- Maintaining road cleanliness – during early works the use of a pressure washer to be used by gatemen should be considered to clean vehicle wheels upon exit from site. A visiting road sweeping service should also be considered to help upkeep the surrounding roads.
- Cleanliness of the site perimeter – hoardings should be cleaned regularly to help maintain the site's tidy image. This should be achieved with neighbours in mind and executed within a cordoned area during off peak periods
- Provisions for inclement weather – grit bins should be available and positioned at the site gate and be filled with brown salt grit which can then be used for the purpose of snow clearance and frost preparation.
- Pest control – the provision of adequate means into which canteen and office waste can be deposited will greatly reduce the possibility of attracting vermin but will not entirely negate the need for a suitable pest control regime.
- Spill kits – spill kits for use on site in the event of a spillage should be readily available. These kits should be located at areas of the project which post the most significant risk. In this instance we recommend that they be placed at the vehicle gate plus the nominated fuel storage zone and the main vehicle unloading area.

Appendix 5.2 – Construction Environmental Health and Safety Plan

Sparkle Street

Construction Phase Health & Safety Plan



24/07/2023	24/07/2023	24/07/2023
Lee Grounds	Lee Grounds	Mike Rawcliffe
Design Manager	Design Manager	Managing Director
Prepared By	Category 2 Checked	Approved

Current version

Suitability	Revision	Security	Date	Notes
A1	P01	Internal	24.07.23	Review

Version history

Suitability	Revision	Security	Date	Notes

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1.0 Introduction

The purpose of this Plan is for the Management Team to demonstrate in writing how Health and Safety is to be managed during the Construction Phase of the Project.

The Plan is set out in accordance with Regulation 12(1) of the Construction (Design and Management) Regulations 2015 and is laid out in similar context to Appendix 3 of the Approved Code of Practice.

This Plan should be developed as the project progresses. The JRL Group Health, Safety and Environment Manual should be referred to as a means of identifying information included within the Plan.

2.0 Construction Phase Plan

2.1 Project Description (Scope of Works)

The project is to construct a part ten, part twenty eight-storey tower, with ground floor comprising plantrooms, cycle store and bin store, along with 5 townhouses and then twenty seven floors of apartments. The proposed development consists of 354 residential apartments and associated communal areas. Resident's roof terraces areas are also included at Level 1 and 10.

The project will include landscaped areas around the buildings.

The demolition works will be carried out by JRL Group and the methodology is captured in a separate Demolition Environmental Management Plan (DEMP)

Midgard Limited is the Principal Contractor for the works. Midgard Limited is a company of the JRL Group of Companies, and hence can at any time during the construction of the works, call upon the directly controlled resources of the Group.

The main construction activities are planned to commence from July 2024, with an approximate contract programme duration of 91 weeks leading to an anticipated practical completion on March 2026.

2.2 Programme Details

Event	Commencement Date	Completion Date
Demolition works	06 April 2024	06 July 2024
Construction works	07 July 2024	07 March 2026

2.3 Liaison with External Bodies

Role	Contact	Position	Tel	Fax	Mobile	Email Address
Client						
JRL Group	Paul Cummins	Development Director	0208 953 7800		07881 446207	paul.cummins@jrlgroup.co.uk
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Development Management						
Central and Urban	Dan White	Co-Founder			07827 983375	dwhite@centralandurban.com
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Quantity Surveyors						
TBC						
Principal Designer						
Storm Tempest Ltd	Simon Scurfield	Managing Director	0191 300 9977		07894 233213	Simon.scurfield@stormtempest.com
Principal Contractor						

Role	Contact	Position	Tel	Fax	Mobile	Email Address
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Architect						
Simpson Haugh	James Hind	Partner	0161 835 2345		07879 635591	j.hind@simpsonhaugh.com
	Jack Poulton	Architect	0161 835 2345			j.poulton@simpsonhaugh.com
Civil, Structural & Highways Engineer						
Curtins	Jon Moister	Board Director	0161 236 2394			Jon.moister@curtins.com
	Kevan O'Brien	Associate	0161 236 2394		07525 907714	Kevan.o'brien@curtins.com
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Role	Contact	Position	Tel	Fax	Mobile	Email Address
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Landscape Architect						
Re-Form	David Livesey	Director	0161 397 4953		07852 784481	David.livesey@re-formlandscape.com
	Eugenio Da Rin	Associate	0161 397 4953		07946 001043	Eugenio.darin@re-formlandscape.com
	Johanna Rutherford	Landscape Architect	0161 397 4953			Johanna.rutherford@re-formlandscape.com
Planning Consultant						
Deloitte LLP	John Cooper	Director	0161 832 3555		07786 682258	johcooper@deloitte.co.uk
	Michael Percival	Assistant Director	0161 832 3555		07972 298634	mipercival@deloitte.co.uk

Role	Contact	Position	Tel	Fax	Mobile	Email Address
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A&E Hospital						
Manchester Royal Infirmary Oxford Road Manchester M13 9WL			999/112			
			0161 276 1234			Emergency and Urgent Services - Manchester Royal Infirmary (mft.nhs.uk)
Police Station						
Greater Manchester Police Longsight Police Station 2 Grindlow Street Manchester. M13 0LL			999/112			www.gmp.police.uk
			0161 872 5050			
Fire Station						
Greater Manchester Fire and Rescue Service			999/112			
Manchester Central Community Fire Station Thompson Street, Manchester. M4 5FP			0161 608 5302			Manchester Central Community Fire Station - Greater Manchester Fire Rescue Service
Building Control						
Clarke Banks	Samuel Wright	Group Director	0333 344 5227		07989 352 773	sam@clarkebanks.com

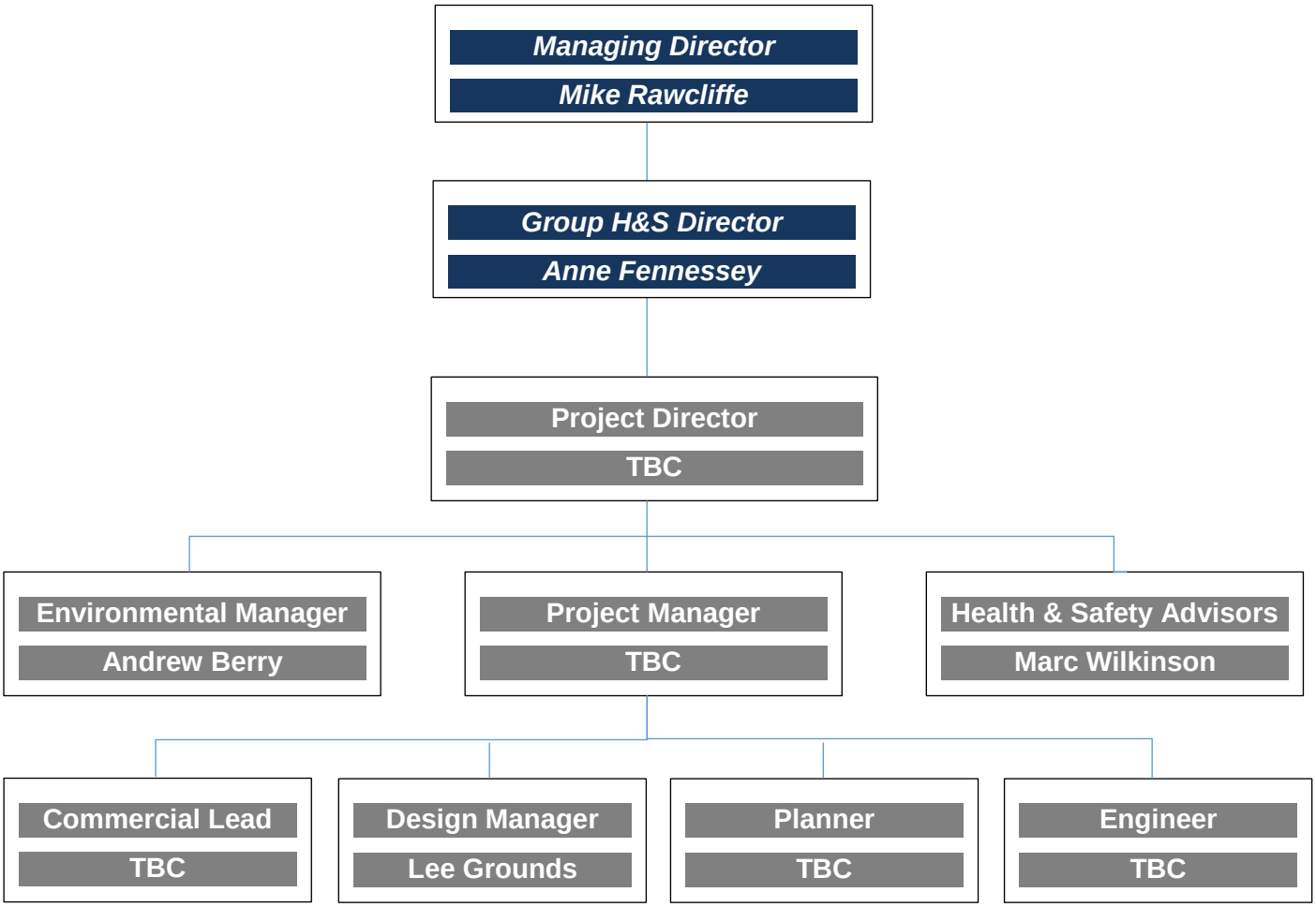
Role	Contact	Position	Tel	Fax	Mobile	Email Address
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Environmental Agency						
Mirwell Business Centre Carrington Lane Sale. M33 5NL			0161 973 2237			apps.environment-agency.gov.uk

2.4 Existing Information

Pre-Construction Information in section 6 of the Construction Phase H&S Plan folder

3.0 Management of the Works

3.1 Management Structure



3.2 Responsibilities

3.2.1 Project Director Duties

- Be aware of the requirements of the Group health and safety policy and arrangements;
- Monitor the health and safety performance on the projects under their control including the effectiveness of project management teams in maintaining suitable health and safety standards, and take such action as is necessary to remedy any shortcomings;
- Ensure that staff under their immediate control are familiar with those parts of the health and safety policy and procedures that affect them or the activities in which they are engaged;
- Ensure that the health and safety policy and procedures are being implemented fully and report any shortcomings to their Managing/Operations Director.
- Ensure that tender information is adequate to cover good standard methods of working and that information with respect to a safe system of work e.g. Method Statements; is in place prior to commencing operations on site;

- Determine at the planning stage, where practicable, in consultation with the project management team and Group Safety Manager the:
  - Most appropriate methods of working;
  - Welfare facilities to be provided;
  - Responsibilities of contractors and others;
  - Most suitable materials to be used;
  - Arrangements for the protection of members of the public, especially children.
- Arrange pre-start meetings to discuss safe working methods and other site health and safety requirements;
- Ensure that the proper procedures are followed for the reporting and recording of all incidents;
- Ensure that all staff under their control are trained in accordance with the company's Health and Safety Policy
- Set a personal example of safe behaviour.

3.2.2 Project Manager Duties

- Organise the site so that work is carried out to the required health and safety standard with minimum risk to operatives, equipment and materials;
- Know the requirements of the health and safety policy and arrangements;
- Ensure that the health and safety policy and arrangements are being implemented;
- Ensure that staff under their immediate control are familiar with those parts of the health and safety policy and project health and safety documents which affect them or the activities in which they are engaged;
- Ensure that every operative under their control is inducted before work starts for the first time and the induction is recorded
- Ensure that the requirements of the company's health and safety and environment management systems as set out in this manual are observed;
- Ensure that all registers, records and reports are maintained and that "competent persons" are appointed to supervise operatives, operate plant and machinery;
- Liaise with their site supervisors, foremen and operatives to ensure that risk assessments or safe systems of work are provided, checked and deemed as adequate prior to the work starting on site;
- Ensure that task specific permits are obtained / issued before work commences
- Ensure that the company procedures are followed for the reporting and recording and investigation of all incidents including near misses;
- Arrange delivery and storage of materials safely and plan and maintain a tidy site;
- Ensure that all operatives and others under their control on site fulfil their duties with regard to health and safety;
- Encourage the workforce to work in a safe and tidy manner;
- Make provision to prevent unauthorised access to site so far as it is reasonably practicable to do so;
- Ensure all personnel working on or visiting the project receive relevant site safety information through the induction programme and tool box talks;
- Liaise with the group safety managers to actively promote health and safety on site
- Undertake regular health and safety inspections of their project as set out in this manual and accompany the group safety manager during their scored audit visits;
- Set a personal example of safe behaviour.

3.2.3 Site Supervisor Duties

- Organise sites so that work is carried out to the required standard of safety with minimum risk to persons, equipment and materials;

- Ensure that all site employees receive tool box talks in relevant risk assessments and safe systems of work;
- Ensure that all new arrivals to site attend the site Induction and are given adequate information and instruction;
- Plan and maintain a tidy site;
- Ensure provision of adequate access/egress;
- Ensure that the working methods established promote healthy and safe working conditions and do not require or allow persons to take unnecessary risks.
- Make sure that suitable protective clothing is available where appropriate and that it is used.
- Ensure that all machinery and plant, including power and hand tools are regularly checked and are in good condition and that any defects are reported to the relevant line manager.
- Ensure that appropriate fire-fighting appliances are maintained on site;
- Ensure that adequate first-aid facilities are established and are available;
- Co-operate with the Health, Safety and Environment Managers or Advisors and act on their recommendations;
- Ensure that new or transferred employees receive tool box talks in relevant risk assessments and safe systems of work;
- Ensure that statutory notices are displayed, and that statutory registered are being maintained up to date;
- Set a personal example of safe behaviour

3.2.4 All Operatives Duties

- Observe and comply with the requirements of the Group policy and health and safety arrangements;
- Attend site induction prior to work on any new site.
- Use the correct tools and equipment for the job, including safety equipment and protective clothing.
- Keep tools in good condition.
- Report to supervisor any defects in plant or equipment.
- Develop a personal concern for safety of themselves and others, particularly newcomers and young people.
- Avoid any improvisation which may entail unnecessary risks.
- Warn new personnel of known hazards and risks.
- Refrain from horseplay and the abuse of welfare facilities.
- Report incidents, which have led or may lead to injury, co-operate in the investigation of accidents and suggest ways of eliminating hazards.
- Wear adequate and suitable PPE, including suitable safety footwear.

3.2.5 Safe Lifting Team (Appointed Person, Lifting Co-ordinator & Lifting Supervisor)

- Organise the duties for a crane supervisor, crane operator, slinger/signaller and others involved in the lifting operation (Safe Lifting Team are named in the Internal Site Coordinators Schedule listed at the beginning of this document).
- Follow the requirements of legislation, regulations, and codes of practice that relate to lifting duties.
- Follow the requirements for basic, standard and complex lifts.
- Identify the capabilities of different types of crane and their limitations for given lifting operations.
- Identify the maintenance, inspection, thorough examination and testing requirements for lifting equipment and accessories.
- Specify the setting up, erection, levelling and dismantling requirements for different types of lifting equipment and lifts.
- Specify the requirements when planning the lifting of persons.

- Allocate the different types of lifting accessories for various applications.
- Identify the relevant information relating to different types of lifting accessories, i.e. markings, certificates, thorough examination reports, etc.
- Specify the sling sizes and angles for different types of loads.
- Specify slinging techniques for various types of loads including balanced, unbalanced and loose.

3.2.6 Permit to Work Co-ordinator Duties

- Development of a PTW system.
- Preparing and registering permits to work.
- Inspecting to check that defined precautions are in place prior to start of work.
- Monitoring compliance of workers to the PTW requirements.
- Cancelling or closing out of permits.
- Inspecting to check that work areas are left safe prior to permit cancelation.
- Collecting and filing all closed permits to a file on site.

4.0 Project Health & Safety Objectives

Specific to the project we aim to:

- Ensure everyone who enters the site is inducted in the JRL Group processes.
- Take necessary steps to prevent access by unauthorised persons to the construction site.
- Ensure that facilities for welfare, in accordance with the CDM Regulations 2015 are provided throughout the construction phase.
- Ensure that specific measures are included in the Construction Phase Health and Safety Plan concerning work which falls within one or more of the categories set out in Schedule 3 of the CDM Regulations 2015.
- Ensure all JRL Group health and safety management process are implemented.
- Ensure effective cooperation with those engaged in the construction work and consult them on matters connected with health and safety.
- Reinforce behavioural safety at all levels through both programmed and site activities.
- Zero fatalities
- Zero major injuries
- Zero dangerous occurrences

5.0 Risk Assessment and Safe System of Work

The following describes how the JRL Group carries out a risk assessment:

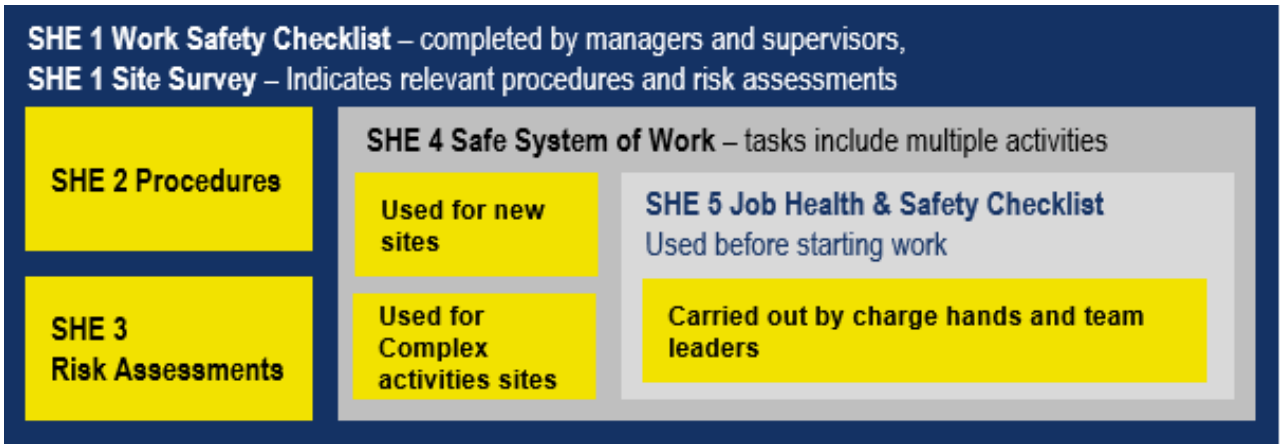
- Initially, managers and supervisors survey the overall site & operations using the SHE 1 Work Safety Survey Checklist form.
- The completed form then helps Managers and Supervisors select the relevant Health and Safety Guidance (HSGs) found in section 3 and procedures in section 2 of the Manual. The Work Safety Survey Checklist automatically selects appropriate HSGs and HSPs as sections are completed.
- The key Health and Safety procedures (HSPs) in cover activities and topics where we must always comply with an agreed practice.
- For tasks that include multiple activities the Safe System of Work Form is used to develop a work plan, providing all the documents and information required for more complex activities on site.
- Finally, A Safe System of Work Form is partially completed automatically upon filling out a Work Safety Survey Checklist form via the intranet site. SHE 5 is the work checklist for Charge hands or team leaders to ensure that regular checks are carried out on key safety issues.

BO-JRLG-SM-SHE-FM-Z-0001 Work Safety Survey Checklist

BO-JRLG-SM-SHE-FM-Z-0002 Key Health & Safety Procedures and Health & Safety Information Sheets

BO-JRLG-SM-SHE-FM-Z-0004 Safe System of Work Form

5.1 SHE Process



5.1.1 Plan Safe – Key Health and Safety Procedures

BO-JRLG-SM-SHE-FM-Z-0002 Key Health & Safety Procedures and Health & Safety Information Sheets

Health and Safety Procedures (HSPs) have been developed for a number of key processes in the JRL group and are listed in this document. For these processes it is essential to follow the instructions set out in the relevant HSP. No deviation should be made from the procedure unless specifically agreed by your health and safety advisor.

5.1.2 Plan Safe - The Risk Assessment Form

BO-JRLG-SM-SHE-FM-Z-0003 Risk Assessment Guide and Briefing Template

The Risk Assessment form template should be used for single work activities for which Risk Assessment is required. The project Health and Safety Advisor should be consulted when completing these forms.

5.1.3 Health and Safety Guidance (HSG)

BO-JRLG-SM-SHE-FM-Z-0003 Risk Assessment Guide and Briefing Template

Generic risk assessment guidance for regular activities which are carried out in the JRL Group has been developed and can be used as the base for creating site specific risk assessments. The guidance can be used to help to create Risk Assessments. It is very important that only the information relevant to the specific site being assessed is used. In addition, specific controls which are relevant to the site and which are not in the HSG must be included.

5.1.4 Plan Safe – Safe Systems of Work

BO-JRLG-SM-SHE-FM-Z-0004 Safe System of Work Form

For tasks that include multiple activities, Safe System of Work Form, is used to develop a work plan, providing all the documents and information required for more complex activities on site.

Additional information should be included, for example, sequence of main job tasks. When completed, this document provides a full work plan or method statement for the work.

Where the Safe System of Work and been developed using the Safe System of Work Form, it is important to communicate the main points of the system to those who will be carrying out the work. Note: it is absolutely essential to ensure that section L of the Safe System of Work Form is completed otherwise the form is considered as invalid.

6.0 Monitoring & Auditing

6.1 Monitoring

We need to monitor our activities both to ensure we are doing what we say and that we have a record of our actions. This part explains the forms we use to monitor activities and how to use them.

NB: Monitoring of sub-contractors is dealt with in section 7 of the HS&E Manual, 'managing contractors'.

In addition, fundamental to the review process are the managers' health and safety meetings. Findings and observations need to be reviewed and action taken. This part allocates the review process in management meetings. The appendix of this Plan includes core agendas for various levels of health and safety meetings to be held throughout the company and on this specific project.

What are the monitoring activities and who will be involved?

The main monitoring checklists for managers and supervisors are SHE 6 A-C forms.

A copy of each checklist as described below can be found in the appendix of this Plan. Managers and supervisors should each complete a minimum of one relevant inspection per month. It is perfectly acceptable to share the duties between different managers and supervisors on site.

6.1.1 The Task Observation Checklist

Task Observation Checklist BO-JRLG-SM-SHE-FM-Z-0006A

This form should be used at least once a month by managers and supervisors responsible for directly supervising the work of others. This simple checklist allows the manager or supervisor to see that adequate risk assessments are in place.

- That the team is following the requirements of the risk assessment/s.
- That there are good standards of housekeeping.
- That the correct PPE is being worn.

It also allows the manager or supervisor to identify any specific health and safety issues and get these addressed promptly.

6.1.2 The Office Observation Checklist

Office Observation Checklist BO-JRLG-SM-SHE-FM-Z-0006B

This checklist should be completed at least once a month by managers and supervisors responsible for directly supervising the work of others. It assesses the office health and safety, covering issues such as first aid, display screen equipment (DSE) and fire precautions.

6.1.3 The Site Observation Checklist

Site Observation Checklist BO-JRLG-SM-SHE-FM-Z-0006C

This form should be used at least once a month by managers and supervisors responsible for directly supervising the work of others. It assesses general health and safety compliance across the site in addition to checking compliance with risk.

6.1.4 Senior Manager/ Director Site Visit Checklist

Senior Manager/ Director Site Visit Checklist BO-JRLG-SM-SHE-FM-Z-0007

The senior manager's/ director site visit checklist should be carried out once a month by senior managers, contract managers, business managers and at least four a year by directors.

Senior manager's/ Directors site visit checklist is designed to reflect the senior manager/ Director's overall view of the site and so has five general questions. A copy of completed form is to be kept on file in the project office.

6.1.5 The Health and Safety Site Inspection

Health and Safety Site Inspection BO-JRLG-SM-SHE-FM-Z-0008

This form is used by the HS&E team. In carrying out a site inspection the Health, Safety and Environment team members should consider the adequacy of any related documents and records, etc. The HS&E team will regularly carry out at least two inspections of this site each month using this checklist.

It will be the responsibility of the project manager to close out all actions noted and send a signed off copy of the back to the HS&E Department.

6.1.6 Review of Health and Safety Management Meetings

Health and safety issues must be discussed as this is essential to the future of the business. This can be done at the individual business management meetings.

Including health and safety topics in meetings will provide the opportunity to monitor health and safety issues and to discuss current topics. The health and safety part of the meeting must be recorded using form SHE 9 A.

6.1.7 Business Unit/Department Meetings

BO-JRLG-SM-SHE-FM-Z-0009A Site Depot Monthly Health and Safety Meeting Agenda

Business unit/department meetings are held each month. Health and safety topics which must be discussed at these meetings include; accident reviews, risk assessments, health and safety inspection reports and/or audits and safety alerts.

6.1.8 Local Management/Team Monthly Health and Safety Meetings

BO-JRLG-SM-SHE-FM-Z-0009B Monthly H&S Meeting Agenda

Local management team meetings are held each month. At these meetings it is essential to discuss the health, safety and environment issues that directly affect and are of particular concern to the team. Appropriate topics for discussion include; risk assessments, personal protective equipment, health and safety training, accidents and near misses, safety alerts specific to the team, health and safety inspection reports.

6.1.9 Auditing

Audits will be carried out at regular intervals by Health, Safety and Environment team. Copies of audit reports should be retained locally.

Audit template is not included in this manual, if required a copy can be requested from the HS&E team.

6.1.10 Auditing Procedure – what managers have to do

Step 1 – co-operate with the audit

All managers are responsible for co-operating with auditors to ensure scheduled audits are completed as planned. As part of this process, it is essential to ensure that audit dates are confirmed, relevant personnel are available, access is provided to relevant documents and any corrective actions are implemented and closed out.

Step 2 – ensure opening and closing meetings are attended

All managers must attend the audit opening and/or close out meetings. Where this is not possible due to management commitments, a representative should be appointed.

Step 3 – provide necessary resources to the auditor/audit team on the scheduled audit

During the audit, managers must provide a guide or responsible person(s) to take the auditor(s) around the site. The manager must also make the auditor aware of the applicable site safety rules. Whenever possible a meeting room should be made available for the opening and closing meetings. Managers must also provide access to relevant documents requested by the auditor.

Step 4 – agree and assign recommendations

Managers are responsible for agreeing with the auditor. The assignment of corrective actions must be assigned a realistic timeframe and this should also be agreed with the manager.

Step 5 – implement/close out corrective actions

Managers must acknowledge who actually closes out and implements all agreed corrective actions and the close out date. All actions must be closed out with a note of what was done. A copy should be kept in the manager's/supervisor's H&S file.

Step 6 – communicate findings

Managers must ensure that all audit findings, are reviewed at the relevant health and safety meetings.

7.0 Site Set-up and Communication

7.1 Regular Liaison Between parties on site

There will be a daily site meeting between management and representatives from each sub-contractor to discuss the days planned activities while a weekly formal meeting to plan the fort coming weeks activities will also take place. All communication with the project team will be recorded and will be available for review at request by the design team, the client, and the trades on site.

Signage and / or communications shall also be placed advising the general public of any major events.

7.2 Consultation of the Workforce

All personnel are required to attend the project health and safety induction course prior to accessing the site.

Local management team meetings are held each month at which a minimum of one site operative is to attend to represent the workforce.

At these meetings it is essential to discuss the health, safety and environment issues that directly affect and are of particular concern to the team. Appropriate topics for discussion include; risk assessments, personal protective equipment, health and safety training, Accidents and near misses, safety alerts specific to the team and health and safety inspections reports.

Toolbox talks shall be conducted by:

- Toolbox talks shall be presented to site operatives as required by the JRL Group which will include all requirements in respect of the site wide Health & Safety requirements.
- Sub-contractors shall present toolbox talks to all their own operatives on any relevant Health & safety requirements.

All toolbox talks shall be recorded and all recipients of toolbox talks shall sign to confirm that they have received and understood the contents of such talks.

Any parties that could be affected by our works will be sent correspondence to inform them of the site progress and a forecast of any planned works that may cause them inconvenience.

A site health and safety notice board will display the F10 Notification of Construction Project, JRL Group health and safety policy, a valid insurance document and other relevant documents.

Information of the activities that are planned for the week commencing will be presented written in to the planning board which will be presented in an area for all site operatives to view

A site safety board will be displayed with the following information; fire plan, traffic management plan, site emergency plan, site management team and images and names of certain operatives with specialist training competencies including first aid, slinger/signaller and abrasive wheel.

Pictorial method statement boards will be displayed where relevant showing certain work activities broken down into visually explained simplified steps for operatives to refer to.

7.3 The Exchange of Design information between Parties

Local management team meetings are held each month.

A set agenda is worked through at each meeting and exchange of design information between parties is included as an item on the agenda.

7.4 Handling Design Changes through the Project

Any significant change to design, personnel or processes will be subject to the JRL Group Health and Safety Procedure 22 'Change Management'. Completion of this process is the responsibility of the Contracts Manager supported by the site manager and health and safety adviser.

8.0 The Selection and Control of Contractors

8.1 Step 1 – Scope work and select a contractor

In this step we are going to provide instruction and guidance to site managers and people who engage contractors on how to:

- Notify the HS&E Team of complex activities;
- Confirm the scope of work, level of risk, and skills required;
- Select a competent contractor.



Only competent contractors must be used by the JRL Group. Contractors should be selected from the approved list of competent contractors. It is essential that you select the right type of contractor both for the type of work being undertaken and for the risk category of the work to be done.

To complete this step you must: Notify the Health, Safety and Environment team

If you are engaging a contractor to undertake complex activities you must involve a HS&E team member at an early stage, so that they can provide advice and guidance which will assist you in managing the work correctly.

Examples of complex activities include:

- Working at height
- Tunnelling and headings (over 5 metres in length)
- Activities which involves the use of technology or equipment which is new to the JRL group.
- Confined space activities where permit to work is required
- Installation/maintenance of high voltage electrical equipment/services;
- Demolition/dismantling of significant structures;
- Activities which deviate from standard agreed procedures;
- Projects where an incident could result in adverse publicity and damage to the Company's reputation.

8.2 Step 2 – Confirm the scope of work

Before you select a contractor you must confirm the scope of the works to be carried out and determine the following:

- The specialist knowledge and skills required to undertake the work. These factors will help you decide which contractor to appoint;
- The complexity of the work to be undertaken (see example above)

8.3 Step 3 – Select a competent contractor

Having confirmed the project scope and associated contractor classification required, you now need to appoint a competent contractor to undertake the work. Please contact the HS&E team on 0208 953 7800. They will help you to assess the HS&E competence of your preferred contractor.

You must also ensure that the contractor has the available resources, including sufficient time, experience, personnel, materials and finance as this will affect whether or not the contractor will be able to take on and complete the work safely.

9.0 Contractors Risk Assessment & Safe System of Work Review

9.1 Gather and provide information on existing site hazards

You must provide all contractors with relevant site & hazard information. This information may be one or more of the following:

- Structural information –e.g. temporary works, previous modifications that may affect stability, fall arrest anchor points, damaged areas of the structure (e.g. by fire, flood);
- Access arrangements – e.g. narrow streets, access times, height limits (from overhead services), security;
- Restricted areas and their access requirements - e.g. due to confined spaces, hazardous material storage, services, height restrictions;
- Location of existing services - e.g. overhead, underground, electric, gas, data, process;
- Hazardous materials - e.g. asbestos, contaminated land;
- Health risks from our activities;
- Emergency arrangements e.g. fire, chemical release;
- Welfare arrangements – if there are any facilities which the contractor may use;
- Relevant information from the site health, safety & environment file.

You must pass this information, for the particular site or area of the site, to the contractor so that they can use the information to plan and manage the work appropriately. Managers who engage contractors must ensure that relevant information is provided to the contractor in a timely manner.

9.2 Reviewing risk assessments and safe systems of work

Before the contractor starts work you will need to review their risk assessments and any safe systems of work (only required for high-risk or complex work) relating to the task, to allow you to plan any additional control measures. This review must consider how the work will affect safety on site including the impact on:

- The JRL Group personnel;
- Other contractors, visitors and member of public;
- Operational processes.

The contractor must submit risk assessments and safe systems of work to you at least 10 working days before the work begins and may not start work within that period unless you have advised that you have no objections. If you reduce the required timescales you must ensure that sufficient time and resources are available to undertake a thorough and proper review. You must also ensure that you have given the contractor sufficient time to plan and mobilise the necessary equipment.

Written risk assessments will always be required for the work where there is a significant hazard (which has the potential to cause real harm) to health, safety and the environment. Properly prepared risk assessments are normally sufficient to manage risks however they may need to be supplemented by a safe system of work where the task is particularly complex, or the sequence of events is paramount to maintaining safety throughout the work.

As a manager within the JRL Group you should have already received training on risk assessments in relation to your work. If you have not, please contact the Health, Safety and Environment Team as soon as possible. Please find below further guidance to assist you on the information that should be contained in a risk assessment and safe system of work.

10.0 Site Security

A combination of Palisade fencing and timber hoarding will be erected around the construction area which will serve the purpose of defining the site boundary.

The fencing will be erected in such a way as to separate the site operations from those of the general public.

Pedestrian access to the site shall be controlled using a security man at the entrance to the site. Signage will also be placed on the hoarding restricting access to the site.

Vehicle access to the site is provided via secure gated access and this shall be maintained / re-located to suit construction works.

All visitors are required to report to site security on entrance to the site, they shall be directed to the site offices via the green route.

All plant and equipment shall be immobilised at the end of the working day. Certain items of plant and machinery will be 'disabled' at night to prevent theft and/or use

In addition to the outer boundary fencing, securing of the building openings (windows etc.) will be used to further secure the site and materials and storage areas.

Other procedures will be implemented as and when required.

Any Sub Contractor working along the hoarding boundary that will need to open up the hoarding will do so under a permit system that ensures security of the site is maintained and responsibility with the sub-contractor.

11.0 Site Induction

It is a mandatory requirement that all persons working on the project are inducted by management before commencing work. All staff shall confirm receipt of a site specific induction by confirming their details and completing an Induction checklist.

A log of Inductees shall be kept on the front of each induction folder.

Actual site induction agreement records are securely filled due to the information contained.

The person carrying out the induction shall sign each Induction checklist and confirm or not in the space provided on any issues raised by the inductee regarding the Induction or the individual's health and welfare surveillance form questionnaire completed on the rear of the Induction checklist

BO-JRLG-SM-SHE-FM-Z-0015 Induction checklist.

12.0 On-Site Training

During the construction phase site training will be given to all operatives to suit the current site activities all training will be carried out tailored to individual needs for this project from recognised training centres.

Onsite training to include but not limited to;

- Site induction

- Sub-Contractors site induction
- Toolbox talks and safety alert briefings.

12.1 Determining Training Needs

It is management responsibility to ensure that the JRL Group has a trained and competent workforce. This will not always involve classroom or site training. A toolbox talk may be enough for simple tasks or issuing instructions for the introduction of some types of new equipment. On the job training can be equally effective together with coaching to build experience. Whatever the case, your role is to ensure that the training that takes place is of the correct type and that records of this are kept.

The following section will provide step by step instructions on how to effectively manage training in your area of responsibility.

12.1.1 Step 1 – Identify Training Need

Health and safety training needs should be identified for all employees dependent on their roles. For a full list of health and safety training courses, you should refer to the JRL Group training database. Other health and safety training needs may be identified during the probation period for a new employee or, during performance development reviews for existing employees.

12.1.2 Step 2 – Booking Training and Appointing Persons

You are responsible for ensuring that health and safety training courses are booked via the Health, Safety and Environment team, available on 0208 953 7800.

You must also ensure that employees attend the training and ensure that the relevant training certificates are obtained and that these are placed on the workers training file.

12.1.3 Step 3 – Monitoring Training

You should regularly review employees' training to ensure that it remains current and keep all training records/certificates up to date.

12.1.4 Step 4 – Maintaining Training Records

It is essential that all employees training records are up to date. An employee who has attended training will have their record automatically updated on the JRL Group training database. You must also, at the conclusion of training, ensure you receive any necessary documents/certificates.



13.0 Welfare facilities and First Aid

13.1 Welfare facilities

The duty and provision of common welfare facilities lies with Midgard Ltd.

The facilities detailed below are provided for the use of all trade contract personnel, staff, visitors, and all other people employed directly or indirectly by Jrl Group.

The layout of these units will depend on site progress and site conditions and shall be phased to suit construction activities.

13.2 Washing Facilities

Welfare / washing facilities will be are provided and as required relocated.

General note – washing facilities will be provided with basins large enough to allow people to wash their faces, hands and forearms. All basins will have a clean supply of hot and cold water, soap and towels and/or hand dryers will be provided. The washing facility will be ventilated and well-lit and will be sufficient for the number of operatives on site.

13.3 Drinking Water

There will be an adequate supply of drinking water made available from the cold water mains or dispensers. This supply will be clearly marked, and cups will be provided. Cold water dispensers are also available in the site office. Drinking water is provided in the operative's canteen

13.4 Storing and Changing clothes

A purpose built drying room is built to accommodate the duration of the project. Heaters are situated around the perimeter of the room with benches Inc. hooks available for site operatives to use.

13.5 Rest Facilities

A purpose built canteen/rest area is built with seating capacity to accommodate the project when at its peak. A water point, kettle, fridge and microwave are located in the canteen area for operatives use. Operatives are to ensure the welfare facilities are not abused and kept free of waste at all times.

13.6 Toilets

An oasis unit will be provided during the early site operations e.g. piling and pile cap operations, for use as the toilet facilities a purpose built welfare block will be constructed within the existing building and as part of the site induction operatives will be advised where the toilets are positioned.

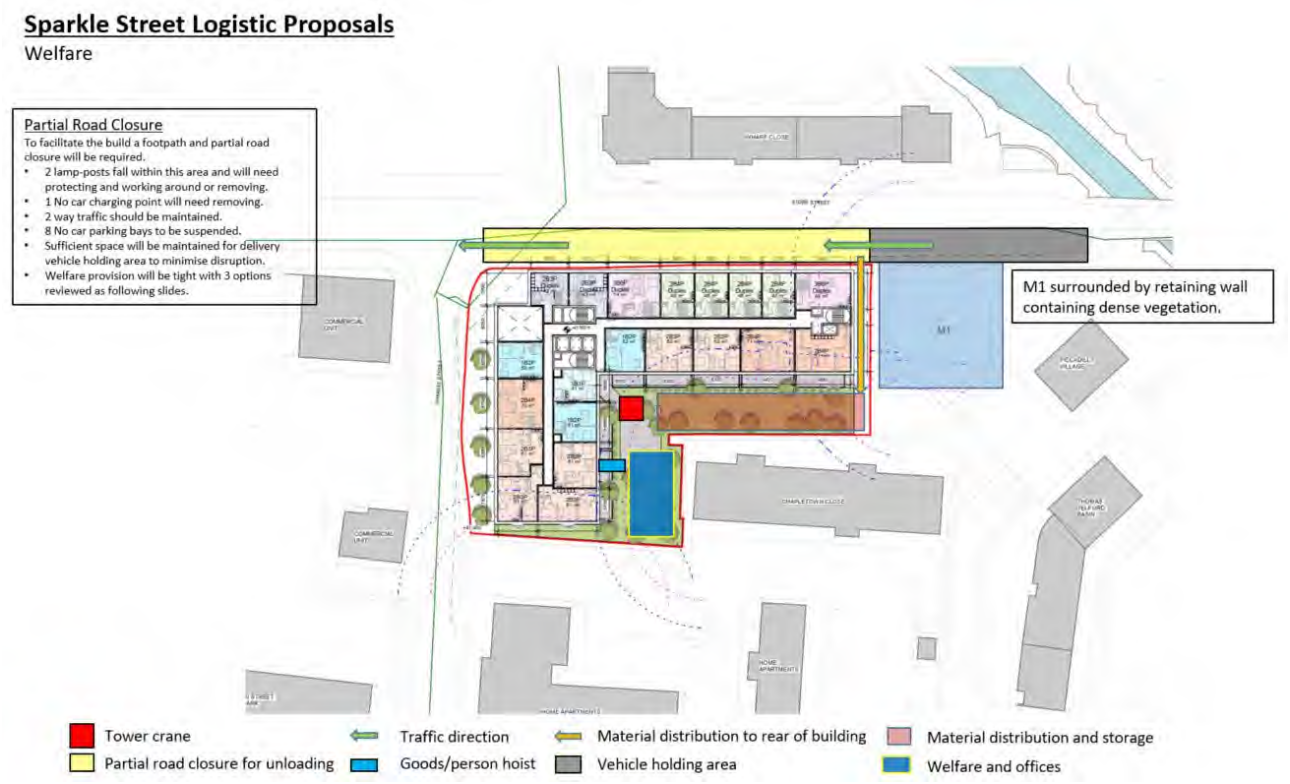
13.7 Location of welfare facilities

Any canteens, welfare facilities and offices etc. must, be located in safe positions, which minimise the risks to workers associated with major incidents, construction activities and operational activities.

There are a number of fundamental principles which must be applied when locating temporary buildings:

- Any temporary buildings must be delivered to site in good condition.
- All the buildings must have arrangements for safe electrical and other service connections and all require inspection reports.
- Temporary buildings must be located in a safe location on site which avoids where possible taking pedestrians adjacent to working areas.

The rest of the procedure sets out the steps for assessing the safest locations for temporary accommodation and recording the result of the assessment. The assessment must be carried out by the site manager before buildings are located on the site. The annex contains a checklist which must be used in this process to record and assess the suitability of a building's location.



13.8 First Aid

In order to fulfil the requirements of both company policy and legislation an assessment must be made by the manager to confirm the number of first aiders that are required for offices in their area of control. It will then be necessary to arrange the required training, available from the Health, Safety and Environment team for the role. The information detailing the requirements for first aid is within section 4 of the Health and Safety Manual 'Managing people'.

The persons named in the internal appointments section at the beginning of this plan, will be responsible for providing first aid arrangements on a day to day basis.

NB: all accidents and incidents must be recorded in the incident book and reported to the HS&E team , refer to section 10 of the Health and Safety Manual, 'Managing incidents'.

If you require any further information please contact your local Health, Safety and Environment team member

14.0 Incident Reporting and Investigation

14.1 Incident Reporting and Investigation Procedure

The following is written with reference to Section 10 – 'Managing Incidents' of the JRL Group Health, Safety and Environment Manual.

The 'process steps' after this diagram describe the steps that must be undertaken to ensure that incidents are communicated and recorded. The table below shows the timescale in which reporting must be undertaken to ensure that incidents are communicated and report.

Incidents are classified in the following categories and must be carefully recorded and reported* as follows:	Take pictures of incident scene	Record incident in site accident book	Complete immediate response form	Inform contracts manager	Inform health and safety and or environmental manager.	Injury Incident, Damage and Loss Report
Near miss: no injury	Immediately	1 hour	1 hour			
Near miss/accident: suspected dangerous occurrence	Immediately	1 hour	1 hour			
Minor injury accidents: non lost time	Immediately	1 hour	1 hour		Within 24 hours	
Injury accidents: a) working time lost up to 3 days	Immediately	30 mins	30 mins	15 mins	15 mins	
b) more than 3 working days lost	Immediately	30 mins	30 mins	15 mins	15 mins	1 hour
Major injury accident: A fatality or major injury	Immediately	30 mins	30 mins	Immediately	Immediately	1 hour
Environmental incident: a) No work time lost and no water course has been polluted	Immediately				Within 24 hours	
b) Work has to stop for an hour + or a water course was polluted.	Immediately	30 mins	30 mins	Immediately	Immediately	Within 24 hours

14.1.1 Step 1 – Familiarisation, Process, Training and Support

Managers are responsible for ensuring that all incidents occurring in the work place under their control must be reported and recorded. Please contact the Health, Safety and Environment team for further support and advice on incident reporting that you require.

14.1.2 Step 2 - Incident Notification

Serious incidents (dangerous occurrences, major injuries, fatalities or injury where the injured person could be off work for more than three days) must be reported to the Contracts, Group Health & Safety and or Group Environment managers as well as the Group Health & Safety Director. They in turn, must inform the business unit director of any potential incidents that are reportable under RIDDOR or EDR, see part 3 definitions.

All accidents will be reported to the project team in the monthly report

14.1.3 Step 3 - Incident Response by Managers and Supervisors

The first action by managers and supervisors is to ensure immediate treatment of any injury sustained and to ensure that the work area is safe before anyone enters. After that, ONLY IF the work area is safe to enter manager/supervisors should take photographs of the area/equipment involved in the incident. Any request

from the client or HSE inspector should be complied with and immediately notified to your manager and Health, Safety and Environment team.

Managers/ supervisors must complete an immediate response form following an incident.

14.1.4 Step 4 - Incident Investigation Closedown

Once the investigation and allocated actions have been completed, the Health, Safety and Environment team will contact the manager in order to verify that the investigation is accurate and any supporting documentation has been provided prior to them closing the incident. Injury accidents should be investigated and closed within 15 days of the accident and near misses must be investigated and closed within 10 days of the report.

Managers are responsible for assisting the HS&E department with carrying out any investigations into the cause of the reported incident.

14.1.5 Step 5 - Action Closure

All outstanding actions from incidents must be reviewed at appropriate health and safety management meetings as outlined in section 2 of the manual (managers' activities and forms).

The actions must remain on the agenda of the meeting until successful closure.

14.1.6 Step 6 - Learning Points

All learning points captured as a result of incidents in the workplace should be reviewed with your Health, Safety and Environment team and further awareness should be communicated throughout your teams via the various meetings and or a specific toolbox talk.

14.2 Incident Investigation

It is essential that all incidents are investigated by JRL Group staff with the appropriate skills and knowledge to conduct the investigation. However, managers and supervisors play a vital role in obtaining all the right information we need to ensure both that safety is maintained and to gather information for insurance and legal purposes. The managers' / supervisors' roles are;

1. **Information gathering** is the collection of basic information relating to the events leading up to the incident. At this stage the manager or supervisor will gather all the facts including the tasks, the environment, the equipment being used and the area where the work was taking place and any substances involved. Photographs and measurements are essential and should be taken as soon as safely possible to do so.
2. **Action plans** and implementation of remedial actions should be recorded, along with defined time scales and tracked to their conclusion.

Managers have the following key responsibilities:

- Reporting and recording of all incidents in line with the identified timescales.
- Verifying with the local Health, Safety and Environment team member that there is sufficient evidence gathered about the incident.
- Capturing and communicating any learning points resulting from the incident.

3. **Managers/supervisors** should complete the immediate response form in the time scale set out in the timeframe diagram following.

If you require any further information please contact the Health, Safety and Environment team on 0208 953 7800.

14.3 Definition of Incident Categories

TERM	DEFINITION
Injury Accident	Any work related unplanned event, behavior, condition or non-consensual physical violence that results in injury or ill health to people.
Dangerous Occurrence	An incident, from a specified list of incidents, given in Schedule 2 of RIDDOR that must be reported to the Health and Safety Executive & EA respectively.
Incident	The collective term for accidents and near misses
Specified injury	An injury as specified in Regulation 4(1) of RIDDOR 2013 that must be reported to the Health and Safety Executive.
Minor Injury	All other injuries other than those listed below, where the injured person is unfit for their work for less than 7 days.
Near Miss	Any work-related unplanned event, behavior, condition or non-consensual physical violence where there was the potential to cause an accident, or non-people related damage, harm or loss.
Reportable Occupational Disease	An ill health effect (as specified in Regulations 8 and 9 of RIDDOR 2013).
Over 7-day injury	Any injury where a person is unfit for work for more than 7 days but excluding major injuries that must be reported to the Health and Safety Executive.
RIDDOR	Reporting of Injuries Diseases and Dangerous Occurrences Regulations 2013
Environmental Damage	Any damage to a) protected species or natural habitats, or a site of special scientific interest, b) surface water or groundwater, or c) land.

14.4 Correspondence following accident or incident

14.4.1 Dealing with correspondence

Any accident/incident will normally result in further correspondence. So it is absolutely essential to inform both your Director/Contracts Manager and the Health Safety and Environment team when you have received correspondence from:

- An enforcing authority such as the Health & Safety Executive, the Fire Brigade etc.
- Solicitors for the injured person/employee or third party
- An injured person, employee or third party

Action by Manager - Arrange a copy to be sent to the HS&E team for distribution and for their files. It is essential to tell them who the correspondence is from and what it is about. Also attach/forward relevant information (e.g. accident book entry, investigation reports etc.). Original copies of correspondence should be retained on site in the local manager's 'Health and Safety' records file. Where there is no recorded/ filed information the manager is to provide and record an explanation as to why not.

14.4.2 Personal Injury Claims

Under our company insurance policy any incident/accident that may give rise to a claim under our policy must be given in a written notification to our insurer as soon as reasonably practical after the incident/accident and provide any additional information requested or required by them.

Action by Managers - Every 'Claim Form Letter, 'Claim Summons or Process' and all documents relating to the incident/accident and any written notification received of circumstances that may give rise to a claim must

be forwarded unanswered to the Health Safety and Environment team immediately once they have been received. Original copies of correspondence should be retained on site in the local manager's 'Health and Safety' records file.

Refer to Section 10 "Managing Incidents" of the Health and Safety Manual for further guidance.

15.0 Site Rules

1. All personnel must undergo company/site specific induction.
2. Do not enter the site if under the influence of alcohol or any illegal substances.
3. Comply with all instructions given and with the Company Safety Policy.
4. Do not interfere with or misuse fixtures, fittings or equipment provided in the interests of health, safety and welfare.
5. Take reasonable care at all times and ensure that you do not endanger yourself or others.
6. Report any safety hazards to your manager/supervisor.
7. Report all accidents, injuries and near miss occurrences to your manager/supervisor.
8. Wear appropriate PPE at all times when working within the construction area. The minimum PPE for this site is safety helmet, safety footwear and high visibility vest.
9. Use all tools and equipment safely and in accordance with instructions/training given.
10. Do not use any plant or equipment unless you have been fully instructed or trained in its use and been certificated as competent.
11. Report any defects in plant or equipment to your supervisor. Do not use until repaired/replaced.
12. Do not carry out temporary repairs to plant or work equipment.
13. Use the correct means of access to all areas and do not work if edge protection is not in place.
14. Ladders are only to be used as a means of access or for work of short duration.
15. Do not erect, alter or dismantle scaffolding unless trained and certificated as competent.
16. When working at height adequate precautions to prevent a fall must be in place at all times. Where no fall prevention is available, a safety harness secured to a suitable anchorage point must be worn at all times. You must be trained in safe use of harness.
17. Where places of work is noted as accessible to areas without adequate precautions to prevent a fall and pose a risk to all site personnel this hazard must be brought to the attention of the site management immediately.
18. Site fire and emergency alarms and equipment are provided to protect life, and all personnel must comply with the site emergency instruction.
19. All site personnel for their own safety and the safety of others are required to comply with their employers Method Statement and attend the daily 5 minute briefings given by their employer.

16.0 Fire and Emergency procedures

16.1 Fire Procedure

- A competent person will be responsible for the following:
- Inspecting their sites/ factories regularly, i.e., two site per month using the site observation checklist SHE 6C/ 6D see section 2 'Managers' activities and forms'.
- Ensuring that risk assessments and toolbox talk forms have been produced, reviewed, completed and communicated to all relevant staff. With a record of each retained locally (see section 3 managing risk part A companywide risk assessments).
  - BO-JRLG-SM-HSG-FM-Z-0001 Fire and Emergency Arrangements.
  - BO-JRLG-SM-HSG-FM-Z-0002 Fire and Emergency Arrangements - Electrical
  - BO-JRLG-SM-HSG-FM-Z-0003 Fire and Emergency – Temp Hot Works.

- Maintaining the fire log book for the site.
- Ensuring frequencies of checks and inspections in the table below are followed:

	Tested or Checked	Inspected / Maintained
Fire Alarm Test	Weekly operation of the fire alarm via an actuator e.g. fire alarm call point	Every 12 months. Inspected and tested by a competent person (service supplier)
Emergency Lighting	Monthly function test	Every 12 months. Inspected and tested by a competent person (service supplier)
Extinguishers	Weekly check to see that the extinguisher is fully charges and has not been tampered with	Every 12 months. Inspected and tested by a competent person (service supplier)
Fire Doors	Monthly check to see that they close properly and are undamaged	
Emergency Exits	Regularly dependent on Risk. Check to see that they open from the inside	Monthly
Fire Drills	Every six months	
Other fire Fighting Equipment	As per manufacturers recommendation	

16.2 Emergency Procedure

To support these procedures, managers have four key health and safety responsibilities to ensure emergency arrangements are in place for sites under their control:

- To carry out risk assessments as outlined within section 3 of the Health and Safety Manual to identify the major hazards on-site and ensure emergency arrangements are in place.
- To ensure that all persons on-site have been briefed on the emergency arrangements via toolbox talks, including the allocation of key roles (records of which must be retained locally).
- To ensure accurate site information is available for emergency services.
- To test emergency arrangements on a planned basis and capture learning points and any identified actions.

It is important that managers understand that, for any emergency arrangements to work well, it is vital that all staff are aware of the arrangements and have had an opportunity to participate in testing them.

16.3 Types of Emergency

Emergency Type	Description	Potential Consequence
Explosion	Explosion of gas or dust	Major health safety or process consequences
Liquid Chemical Spill	Spill of chemicals including fuel or oil	Significant environmental damage
Fire	A fire from any source or in any location at site	Major fires having consequences for health, safety and environment
Serious Injury or Death	Physical injury to staff, contractors visitors or trespassers that occurs on site and require more medical treatment than first aid	Significant health & safety consequences, no environmental consequences
Structure collapse	Structure collapse of any building or structure on site	Significant health, safety, environment or process consequences
Security Alert	Trespass, terrorism, petty theft, vandalism, bomb threat or security incident	Major incident that threatens site security and ongoing health and safety of the organisation

Flood	Water from external or internal sources that threatens the low lying installations on site	Widespread flooding could have major consequences to safety health environment or process

16.4 Planning for Emergencies

Managers of sites should ensure that all site staff and visitors are aware of the following:

- Methods for raising the alarm and calling the emergency services.
- The assembly points and designated safe havens.
- The importance of not putting themselves in danger.

In addition, site staff should also be aware of the following:

- How to provide the emergency services with necessary information to find the site (e.g. the grid reference and the access points from the main road).
- Any specific role they are required to perform in an emergency (e.g. fire marshal).

The above points should initially be covered within the site induction but it is important that this information is regularly refreshed via a toolbox talk.

In addition managers are responsible for ensuring their sites have:

- Arrangements for the emergency services to gain access to sites (especially where security gates are present).
- Roll call arrangements and means of reporting missing persons to emergency services.
- The provision of a suitable area for the emergency services to assemble (it is not uncommon for more than six vehicles to attend a major fire.)
- The provision of evacuation areas in the event of a fire or explosion. These must be clearly marked on the site and detailed on the emergency information-site plan. It is also advisable to identify an assembly point outside of the site premises for use in a security alert.
- An annual programme of planned exercises.
- The inspection and maintenance of equipment used in emergency response. Such equipment must also be kept readily available.

17.0 Permits to Work Procedure

A permit to work is a formal documented system that is used to provide additional safeguards to help the management and control of specific and identified types of work in specific situations. It predetermines a safe procedure which is a clear record that all foreseeable hazards have been considered in advance and that all appropriate precautions are defined and taken in the correct sequence. It does not in itself make the job safe but is dependent for its effectiveness on all the people involved being aware of their responsibilities and carrying them out in accordance with the terms of the permit.

17.1 Responsibilities

JRL Group Management hold the responsibility of ensuring that a permit to work system is in place to control specific operations, and further ensuring that the persons appointed to carry out specific roles within the permit system are fully aware of their responsibilities and are competent for the role in which they are assigned.

- The supervisor directly responsible for the works to be undertaken has the following duties:
- Ensuring that work requiring a permit to work does not commence without a permit in place.

Completion of stage 1 of the permit and ensuring the conditions or precautions shown on the permit is in place.

- Ensuring when the work has been completed the work area is checked and the permit is signed off at stage 4 to confirm that the area is now safe. Particular attention must be given in the case of the hot works due to the possible hazard of 'hot sparks'.

The site or location manager has the following duties:

- Counter-sign the permit at stage 2 "Authority to proceed".
- Close the permit at stage 3.

17.2 Issuing Permits to Work

17.2.1 Stage 1 - Precautions and Controls

Stage one must be completed by the supervisor directly responsible for the works to be undertaken. It involves the supervisor confirming that all the listed precautions and controls are in place prior to the work commencing. A safe system of work may be attached.

17.2.2 Stage 2 – Authority to Proceed

The JRL Group site/location manager, at the place of work, completes the authority to proceed section of the permit to work to confirm that he/she is satisfied that the necessary precautions/isolations are in place and that the agreed safe system of work will be adhered to.

17.2.3 Stage 3 – Completion of works

The supervisor directly in charge of the team conducting the work together with the JRL Group Manager, at the place of work, completes the clearance section of the permit to work to confirm that the work has been completed and that the site is left in a safe condition.

17.2.4 Stage 4 – Close down of permit

The JRL group site/location manager satisfies himself that the work has been completed, the site is safe, and then completes the close down section of the permit to work.

The detail regarding each type of permit is in the Company rules and codes mentioned above but the following principles generally apply;

- The work must not deviate from that covered by the permit. If unforeseen problems or complications arise the supervisor must suspend the work and refer back to the JRL group manager (or relevant site manager) who authorised the permit before proceeding further.
- Any time constraints imposed by the permit must be adhered to. It is company policy that no permit exceeds one day.

Further guidance is provided with the permit to work forms.

17.3 Clients permit to work system

On projects where it is a requirement of the Clients to use their permit to work system both the Clients and JRL Group's permit to work system must be used.

18.0 Health & Safety File

The Health and Safety File is drawn up by the Principal Designer. During the Construction Phase the Principal Contractor will provide any information relevant to the Health & safety file to the CDM Principal Designer.

The Principal designer shall ensure that the information for the Health & safety file shall be available in sufficient time to enable the Company to issue the file to the CDM Principal Designer to hand to the employer at practical completion.

The file will be created electronically on the Company server.

The following list, whilst not exhaustive, shall form the contents of the H&S File:

- Adequate information about any aspect of the project which might affect the health & safety of any person at work carrying out construction works or cleaning / maintenance work in or on the structure or of any person who may be affected by the work of such a person at work.
- A list of suppliers together with literature, test certificates, COSHH assessments and all maintenance details.
- Risk assessments for maintenance and future construction.
- Other information that would be of use to any maintenance, future construction or maintenance design on the structure.
- Details of the construction details and methods used
- O&M Manuals including risk assessments and H&S data sheets as appropriate

19.0 Arrangements for specific activities

Also refer to Schedule 3 of the CDM Regulations 2015

19.1 Waste Disposal /Waste Minimisation & Environmental Controls

This statement investigates measures that can be taken to limit waste of materials during demolition and construction with regards to recycling and sustainability.

Some waste will always occur in construction because of the nature of the operations, but much can be done to both reduce the problem and deal with the waste produced. To achieve these aims it is proposed to incorporate the following:

19.1.1 Demolition

The Principal Designer shall identify any area for demolition and the Principal Contractor should ensure a safe system of work is followed.

The existing structure on site will be demolished and as much material as possible will be salvaged for re use.

The demolition process will be undertaken with due care in order to salvage materials for re-use elsewhere. Timber that can be reused will be stored for reuse. Glass, timber and metals will be separated and collected by specialist contractors during the demolition phase.

19.1.2 Waste Minimisation during Construction:

- Excavated waste should be removed to a licensed landfill site.
- Specialist companies will be utilised to make regular collections from the site in order to keep the site clear of waste materials.
- Large bins are to be used for storing the following materials intended for regular collection: Polythene packaging, Cardboard packaging, Glass and Metal.
- Materials are to be ordered and delivered in quantities for immediate use avoiding damage during long periods of storage and for efficient use of the available site area.
- Waste will be minimised by ensuring only those quantities of materials to be used in the works are ordered and supplied or batched. The proposed works will be assessed by a competent person to ensure accurate assessment of the amount of materials that will be required.
- Selection of materials shall be made to reduce surplus materials/waste being produced in conjunction with removing hazards as required under the CDM Regulations 2015. In the rare instance where material is oversupplied, such material will be returned to the supplier (in effect material are bought on a sale or return basis).
- Specialist companies will be utilised to make regular collections from the site in order to keep the majority of the site clear.
- Labelled bins/bags will be used for storing the following materials intended for regular collection: Polythene packaging / cardboard packaging /Metal./cement bags.

- Internally, a space will be allocated specifically for larger plasterboard off-cuts. This will encourage the contractors to look for spare pieces rather than cutting from new sheets each time. Plasterboard waste will then go to a specific skip for collection by a specialist plasterboard-recycling contractor (i.e. http://www.pbruk.co.uk).

In addition, timber will also be stored in a set area so that any off cuts can also be reused in other areas of the construction. Once the off-cuts are considered waste, these will also be stored in a separated area for separate collection by a company. Untreated small timber off-cuts shall be taken to wood recycling depot.

Timber pallets will be stacked and stored for collection for re-use by a pallet company/materials supplier. Where the construction process creates any masonry waste that is no longer needed to be crushed for hard-core, this will be stored and collected by a company that supply hard-core and crushed aggregates to other construction sites.

Hazardous waste that cannot be removed from design materials selection, such as paint, glues and bitumen will be disposed of in accordance with the Environment Agency

New building materials will be generally sourced from local suppliers, using local brickworks, and local timber suppliers sourcing from sustainable forests.

It is considered that landscaping can be adequately dealt with but it is intended that it will be designed to ensure water retention and ease of maintenance as a priority.

19.1.3 Control of Waste

All waste material will be collected and disposed of using recognised waste disposal companies. Segregation and Re-cycling of waste shall be undertaken where appropriate.

ALL WASTE DESIGNATED AS HAZARDOUS SHALL BE DISPOSED OF USING THE APPROPRIATE SYSTEMS.

When the waste leaves the site, the site manager will file the controlled waste transfer note number, which states the following:

Section A - Description of Waste

- Description of waste.
- Quantity of waste (weight or m^3).

Section B - Waste Producer's Certificate

- Declaration stating that the material came from the specified site.
- Signature and date on behalf of the building contractor.

Section C - Carrier's Transfer Certificate

- Declaration from the skip owner stating that they are carrying the material as described in
- Signature and date (usually by wagon driver).

Section D - Disposal's Transfer Certificate

- Certification that the waste described has gone to a registered tip
- Waste disposal license no.
- Signature and date

Name And Address	Contact	Telephone
TBC		

20.0 Environmental/COSHH

20.1 COSHH Assessments

Health hazards from substances can be divided into the following categories:

- External contact (absorption) - corrosive, skin absorption, dermatitis etc. e.g. cements acids, resins, etc.
- Inhalation - gases, fumes, dusts, vapours.
- Ingestion - swallowing.

A general (generic) written assessment will be prepared for substances, processes, site health hazards etc. normally used or encountered on site and this information is supplied on site.

We shall endeavour to remove /replace or reduce to safe level any substance designated for use by design.

All measures necessary to protect workers and the general public from any substance hazardous to health will be provided and maintained.

The following general rules should always apply:

- Wear protective equipment/clothing. Always observe industrial hygiene practice.
- Do not swallow materials or use in areas where food is being consumed. Smoking is also prohibited during application and curing.
- Inhalation of chemical vapours or dust should be avoided. Adequate ventilation must be provided. Suitable respiratory protection will be provided if appropriate.
- Facilities for the washing and cleansing of the skin must be made available with the necessary cleansers and barrier creams.
- Store all products in ventilated areas away from extremes of temperatures and environment.
- Clean all spillages instantly and dispose of waste and used containers properly.
- If any person handling the materials shows symptoms which may possibly have been caused by exposure to chemical products, they should be removed from the area and medical advice sought without delay

21.0 Noise and Vibration Control

We have an obligation under the Health and Safety at Work Act to prevent damage to the hearing of workers from excessive noise at work. Furthermore, the Noise at Work Regulations requires all employers to carry out noise assessments.

Following a noise assessment exercise, where equipment is identified as above the first action level, warning signs must be erected in areas where dangerous levels of noise exist. Furthermore, PPE must be provided accordingly. At 80db (1st action level) it will be provided, at 85db (second action level) hearing protection shall be compulsory worn.

Where possible, the following reduction of exposure measures will be taken:

- Reduce the production of noise, approaching the noisiest jobs first.
- Move work away from resonant surfaces.
- Working patterns to be modified to reduce the amount of time spent on noisy tasks.
- Silencers and insulation should be renewed/upgraded on items of plant.

21.1 Vibration

It is an employer's duty to remove or reduce the risk of vibration and its damage to persons at source.

The company shall:-

- Assess the task- can it be done without the use of a large heavy manual tool?

- Assess max ‘exposure action value’. Control the exposure limit value to a max of 5.0m/s2 per eight hour day.
- Is it the correct tool for the job, is it sharp with correct blade, bit or attachment.
- Select correct gloves for use in vibration reduction, also to keep hands warm and dry
- Take frequent breaks, exercise hands and fingers.
- Do not hold tool in ‘vice’ grip let the tool do the work.
- Assess time the task will take and rotate staff as necessary

If any pain is felt- stop work and get advice.

22.0 Plant & Equipment

22.1 Plant Operators

The Company will take all aspects of the work into account to ensure that sufficient information is available to assist the specialist or hire company in enabling the correct type of plant to be provided/used.

All plant operators will be vetted to ensure that they carry the appropriate current operator’s certificate under the FCEC/CITB/CPCS Plant Operator’s Registration Scheme, that the item of plant has a full record of service/maintenance manuals to prove its safe working, and only then will they be permitted to work on site.

Anticipated Types of Plant and Vehicles to Be Used

Item Of Plant	Operator’s Name
Tower Crane 1	TBC
Hoist	TBC
Spider Crane	TBC
360 excavator	TBC

23.0 Housekeeping & Material Storage

- The Site Manager/Foreman will ensure that all contractors and operatives are made aware of the need to maintain the site in a tidy condition throughout the contract.
- The Site Manager/Foreman will ensure that all waste materials are cleared and disposed of safely as work proceeds. All materials delivered to site for use by this Company will be stored safely ensuring that accesses are not obstructed. All openings in floors must be securely covered or be clearly marked to show that there is an opening below.
- Debris and materials must not be thrown or dropped unless a chute is provided or other suitable safe method used.
- The Site Manager/Foreman will arrange for sufficient labour and plant to enable clearing up and maintenance of safe accesses and cleaning of welfare facilities etc., to be carried out in accordance with these standards.
- In particular, the Site Manager/Foreman will ensure that:
- Brick bundles will not be stacked more than 2 bundles high on a level base;
- Banded packs will not be stacked more than 2 high on a level base;
- All packaging material is removed promptly from site.

- All delivered materials are removed from the public highway upon delivery

24.0 Temporary Electrical Distribution/Management & Portable Electrical Equipment

- All electrical equipment on Company sites or other workplaces will be supplied, installed, maintained or used in accordance with the approved standards.
- The Site Manager will plan the temporary electricity supply and distribution on site in accordance with the above standards. All temporary supplies are to be installed by competent electricians and tested in accordance with the statutory regulations.
- The Site Manager will ensure that the temporary electrical supply is installed and tested as planned - records will be kept on site.
- The Site Manager will ensure that all power cables are installed clear of passageways and preferably above head height.
- The Site Manager will ensure that all power tools provided for use on site or other workplace are in accordance with the relevant British Standards.
- No power tools or electrical equipment of greater voltage than 110 volt (CTE) shall be used on site unless special arrangements are made and discussed with management. Lower voltage tools, lighting etc. may be required in damp or confined situations.
- •All sub-contractors will be informed of the Company Policy on the use of electricity on site and will be expected to comply with these requirements.
- The Site Manager will ensure that all sub-contractors' equipment is in good condition and in accordance with the relevant British Standards before permitted for use on site.
- Power tools must be maintained in good condition with casing intact and label fitted showing voltage and other information.
- Immediate action will be taken against any person or sub-contractor abusing or incorrectly using electrical equipment on site.
- The Site Manager will ensure that any portable generator or other electrical equipment fitted with an earth rod has the earth rod and connection maintained in good condition.
- Only authorised persons are permitted to repair or alter electrical equipment. Any defects noted in electrical equipment must be reported to the Supervisor so that immediate steps can be taken to have defects remedied by site electrician or Hire Company.
- All cable connections must be properly used. Under no circumstances is insulation tape to be used for any repair or joint in extension cables.
- On festoon lighting, all bulb sockets are live. Steps are therefore to be taken to protect open sockets when bulb is not fitted. As well as the fragments of glass of broken bulbs being a hazard it must be remembered that the protruding filament wires would still be live.
- Festoon lighting equipment will be secured above head height. Where festoon lighting equipment is installed, it must not be of the screw-on-pin contact type. Only properly constructed sets with moulded-on fittings will be used.

25.0 Personal Protective Equipment (PPE)

After eliminating or reducing risks as far as possible, it may still be necessary to protect the worker from further harm. In this case Personal Protective Equipment (PPE) may be considered necessary.

All safety equipment purchased for use on Company sites will be in accordance with the appropriate British Standard, Health and Safety Executive Approval,

Before work starts, the site Manager/ will establish what protective clothing and equipment will be necessary and will ensure that any special protective clothing or equipment required and any signs relating to the

wearing of helmets, eye protection, ear defenders etc. are available for use on site, and that sub-contractors are made aware of the site requirements for the wearing of safety helmets.

The Site Manager will ensure that adequate supplies of all necessary protective clothing and equipment are available on site for issue as required.

The Site Manager will ensure that before employees are set to work, that any necessary protective clothing is provided, issued and signed for, and that signs are erected.

Any person on site/workplace observed carrying out any process which requires the use of protective clothing or equipment will be informed of statutory and Company policy requirements and instructed not to continue working until protective clothing or equipment is obtained. This applies to any sub-contractors as well as direct employees.

All supervisory and management staff will set a good example in the wearing of safety helmets, protective footwear, high visibility garments etc. and will use all necessary protective clothing and equipment where required

26.0 Temporary Works Procedures: Working Platform

Scaffolding-These requirements shall be read in conjunction with the site specific scaffold specification. Scaffold contractors will be qualified to CISRS level 2. Scaffold labourers part one or working towards it.

In considering short-term or long-term scaffolding, the following regulations will be taken into consideration:

- Health and Safety at Work etc. Act 1974
- The CDM Regulations 2015
- Working at Height Regulations 2005
- TG20:08/SG4:10-+ TG20:13
- Other regulations may also apply.

Where employees and contractors use scaffolding or working platforms arranged by the principle contractor supplied and erected by others or themselves, the Company must ensure through its site supervision that such working platform is properly erected, maintained and safe for use.

A suitable recording system must be used to ensure that the scaffold is fully inspected within each period of seven days as to its material strength and stability.

Safety rails and toe boards must be in position around the exposed edges. The hirer is required to take express steps to satisfy himself that the scaffold is safe and of sound materials, and that others in position before any employee uses it or those employ safeguards required under regulations.

The stability of any scaffolding depends upon its basing. Consequently it is advised that the area where it is to be erected should be as level as possible.

All standards must be supported on metal base plates and suitable sole boards. Spacing of standards must be in accordance with recommendations related to the type of scaffolding in use and suitably spaced to withstand the load to be placed upon it. Standards must be lane braced for stability to prevent outward movement.

For all scaffolding platforms double guard rails and toe boards must also be provided.

Where there is a likelihood of any person below being struck by falling material, or materials above the toe board suitable protection, i.e. reinforced brick guards and debris netting, will be provided.

Safe access must be provided to the scaffolding and where ladders are used they must be secured and rise at least three feet six inches (1 metre) above the platform.

LADDERS SHALL BE USED FOR ACCESS & EGRESS ONLY. NO MATERIALS SHALL BE TRANSPORTED VIA LADDER

The platform will be fully boarded with no gaps or traps. Boards should be butted and not overlapped.

Unauthorised persons should not tamper with scaffolds.

The public shall be excluded.

Scaffold standards within the public highway/footway shall be protected/ highlighted with 'scaffoam' protective covering.

26.1 Particulars to Be Included In a Report of Scaffolding Inspection

- Name of inspector.
- Location of workplace inspected.
- Date and time of inspection.
- Details of any matter identified that could give rise to a risk to the health or safety of any person.
- Details of any action taken as a result of any matter identified in the above.
- Details of any further action considered necessary.
- Name and position of person making the report.
- Such reports will be retained on site.

27.0 Falls from Height

- Falls also include those into excavations; all excavations shall be protected from persons approaching the edge.
- A Secure barrier of min 970mm high with toe board and intermediate rail shall be erected to prevent access.
- Keep traffic away from the excavated edge, vibration from large Lorries, plant can cause edge collapse. Use brightly painted secured concrete/timber baulks as stop blocks.
- Exhaust fumes are dangerous. Do not sit petrol or diesel powered engine equipment such as generators, compressors or pumps in or near the edge of an excavation unless fumes/exhaust gases can be ducted away or the area can be ventilated.
- If using de-watering pump check to see that the pump is not removing soil from behind any supports, use of 'sump' pit is recommended.
- A competent person must inspect excavations
  - At the start of each shift before work begins
  - After any event likely to have affected the strength or stability of the excavation i.e. heavy rain.
  - After any accidental fall of material.
  - A written report should be made after most inspections. Stop work if the inspection shows the excavation to be unsafe.
  - Findings recorded in the inspection book & signed.

    Edge protection on the buildings will include
  - Screens
  - Tube and fitting scaffold and /or combi safe
  - Post Edge protection
  - The lifting of fragile materials such as glass for example will be carried out using purpose made stillages and would be included in the tower crane schedule of lifts, exclusion zones would be set up if working above others before carrying out any lifting operations.
  - Protection will be provided and installed to the surface of fragile materials e.g. fire rated corex and also barriers to protect the fragile materials if applicable

28.0 Health and Safety File

Relevant information which will be collated for the Health & Safety File, for the CDM Principal Designer to include in the File

Much of the material for the health & safety file comes from the information which designers are required to provide under CDM Regulations 2015.

The format for the Health & safety file shall be agreed with the client / client's representative and CDM Regulations 2015.

The information shall include but not be restricted to:

- 'Record' or 'as built' drawings and plans used and produced throughout the construction process.
- General details of the construction methods and materials used.
- Details of the equipment and its guarantees within the structure.
- Maintenance procedures and requirements for the structure.
- Manuals produced by specialist contractors and suppliers, which outline operating and maintenance procedures for plant and equipment as part of the structure.
- Details of the location and nature of utilities and services, including emergency and fire-fighting systems to be shown on drawings.
- Location of services isolation points

Designer and the principal contractor need to ensure that any features of the structure, which will involve significant risk to health & safety during the structure's lifetime, are also passed on to the CDM Principal Designer.

On completion of the project, the CDM Principal Designer is responsible for the handover of the health & safety file to the client. The client must keep the health & safety file, ideally on the premises to which it refers.

It should be available for future maintenance requirements.

29.0 CDM Regulations 2015 – Schedule 3 – Particular Risks

SCHEDULE 3 Regulation 12(2)

Work involving particular risks

1. Work which puts workers at risk of burial under earth falls, engulfment in swampland or falling from a height, where the risk is particularly aggravated by the nature of the work or processes used or by the environment at the place of work or site.
2. Work which puts workers at risk from chemical or biological substances constituting a particular danger to the health or safety of workers or involving a legal requirement for health monitoring.
3. Work with ionizing radiation requiring the designation of controlled or supervised areas under regulation 16 of the Ionising Radiations Regulations 1999(a).
4. Work near high voltage power lines.
5. Work exposing workers to the risk of drowning.
6. Work on wells, underground earthworks and tunnels.
7. Work carried out by divers having a system of air supply.
8. Work carried out by workers in caissons with a compressed air atmosphere.
9. Work involving the use of explosives.
10. Work involving the assembly or dismantling of heavy prefabricated components.

30.0 Appendices

- BO-JRLG-SM-SHE-FM-Z-0001 Work Safety Survey Checklist
- BO-JRLG-SM-SHE-FM-Z-0002 Key Health & Safety Procedures and Health & Safety Information Sheets
- BO-JRLG-SM-SHE-FM-Z-0003 Risk Assessment Guide and Briefing Template
- BO-JRLG-SM-SHE-FM-Z-0004 Safe System of Work Form

- BO-JRLG-SM-SHE-FM-Z-0005 Job Health and Safety Checklist
- BO-JRLG-SM-SHE-FM-Z-0006A Task Observation Checklist
- BO-JRLG-SM-SHE-FM-Z-0006B Office Observation Checklist
- BO-JRLG-SM-SHE-FM-Z-0006C Site Observation Checklist
- BO-JRLG-SM-SHE-FM-Z-0007 Senior Manager's/Executive's Site Visit Report & Guidance Notes
- BO-JRLG-SM-SHE-FM-Z-0009A Site Depot Monthly Health and Safety Meeting Agenda
- BO-JRLG-SM-SHE-FM-Z-0009B Monthly H&S Meeting Agenda
- BO-JRLG-SM-HSG-FM-HSG-Z-0069 Safety during excavation Works
- BO-JRLG-SM-HSG-FM-Z-0011 Safe Handling of Loose Materials
- BO-JRLG-SM-HSG-FM-Z0005 Manual handling of bagged materials
- BO-JRLG-SM-HSG-FM-Z004 Manual handling of packaged materials
- BO-JRLG-SM-HSG-FM-Z -0007Manual Handling during loading and securing equipment in vehicles

6. Climate Change

No appendices

7. Daylight, Sunlight and Overshadowing

Appendix 7.1 – Existing and Proposed Site Plan Modelling



SOURCES OF INFORMATION

IR02-20220812-Vertex
IR03-20220812-Research
IR05-20220914-Simpson Haugh
IR12-20230523-SimpsonHaugh

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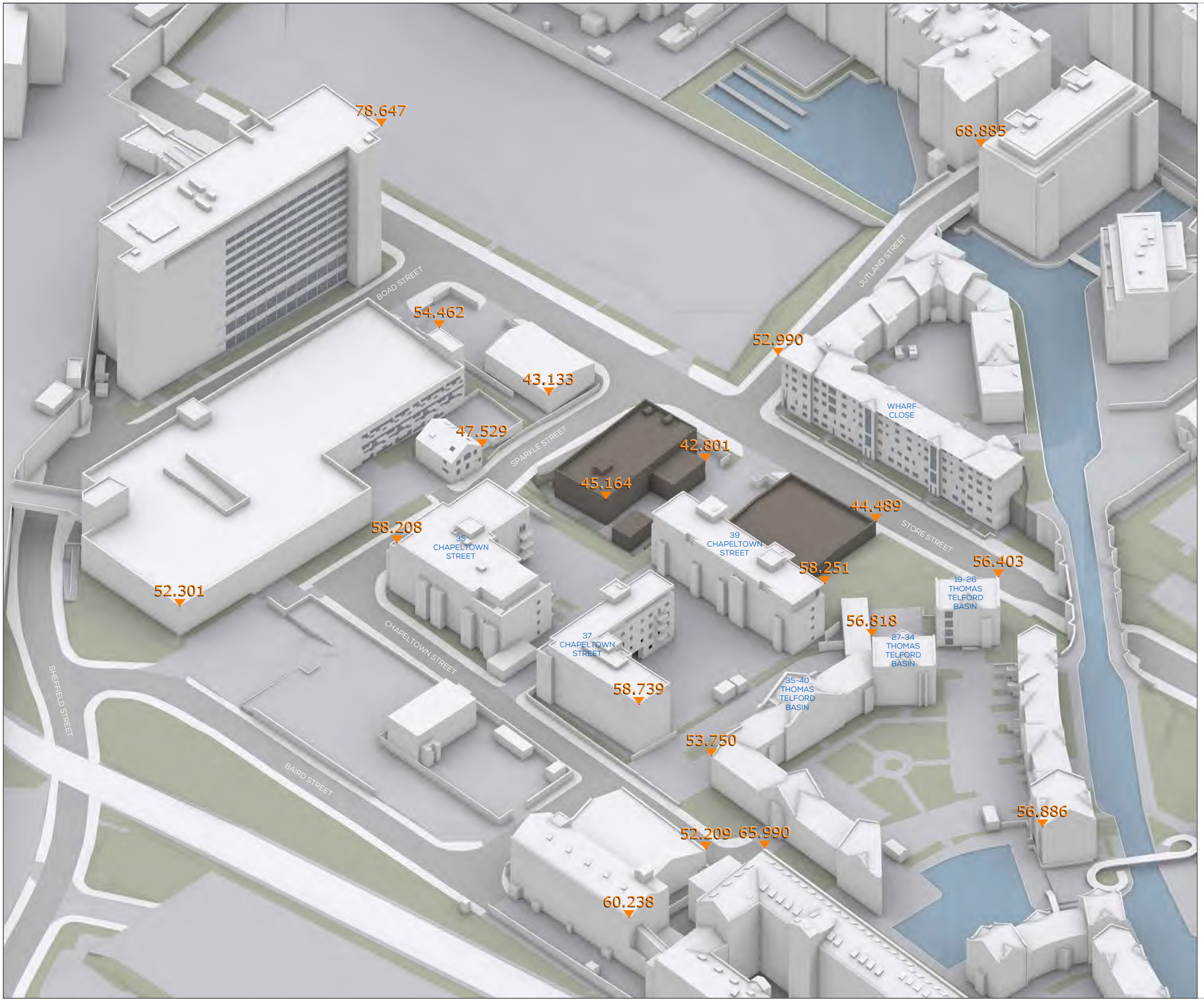
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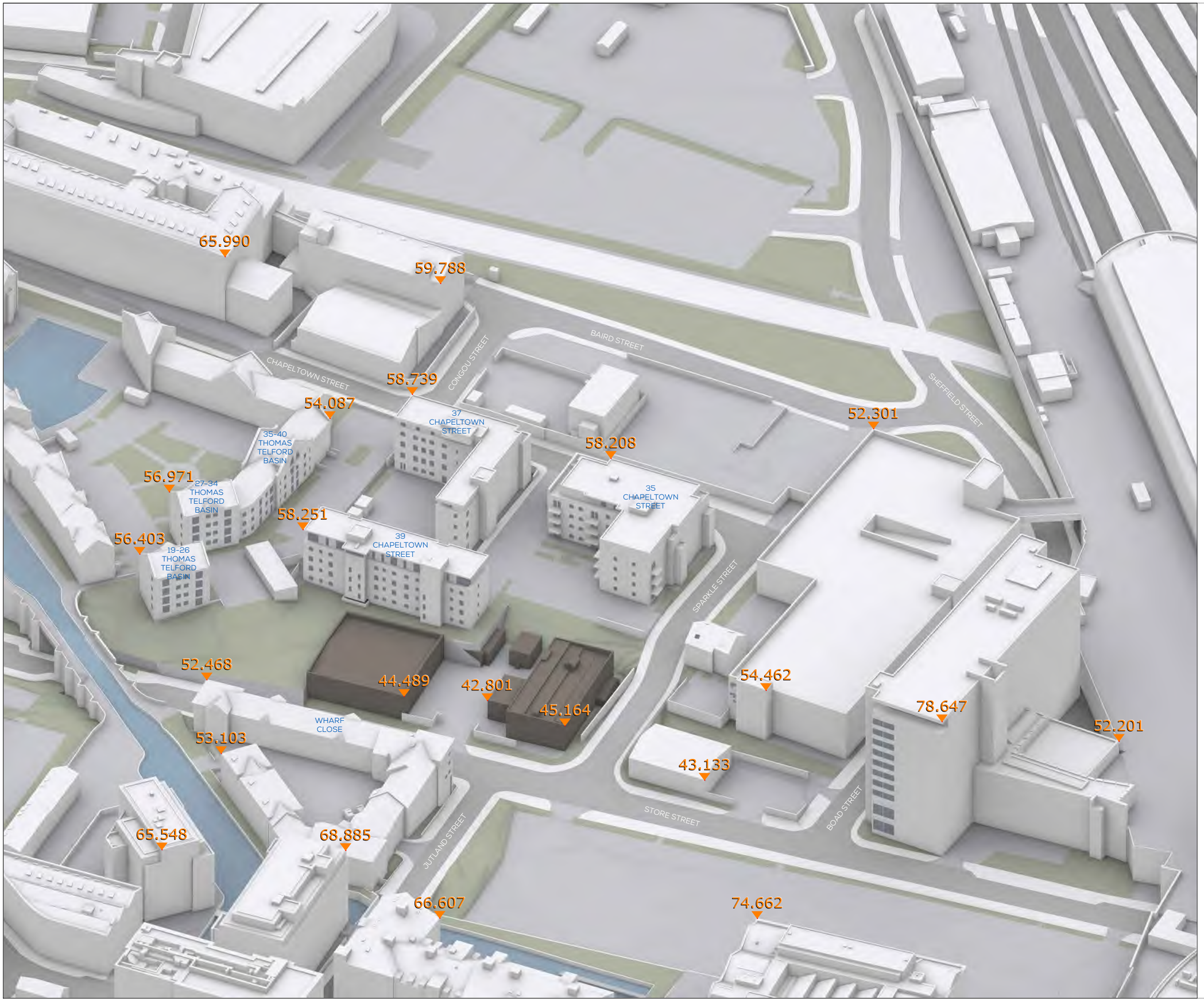
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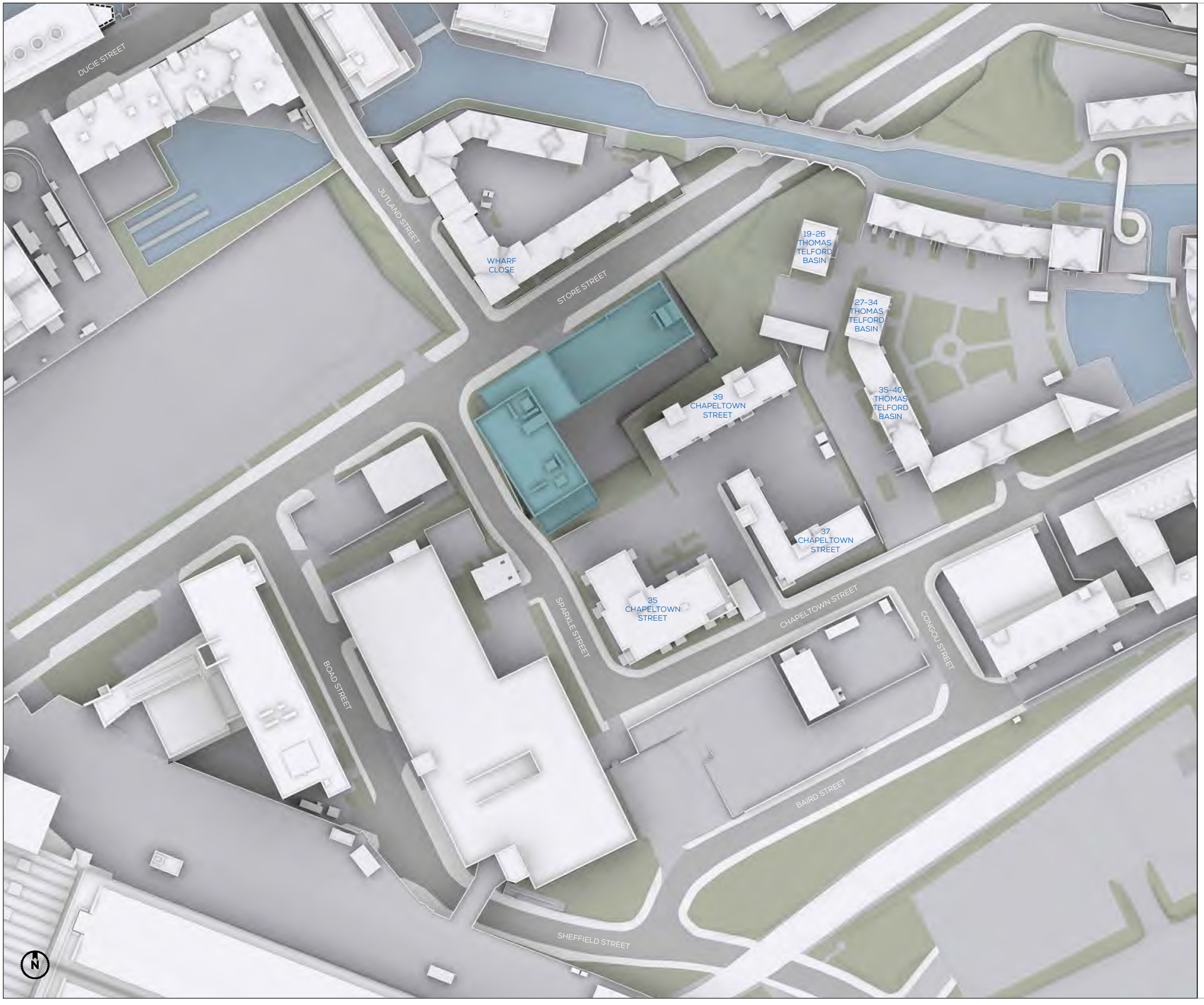
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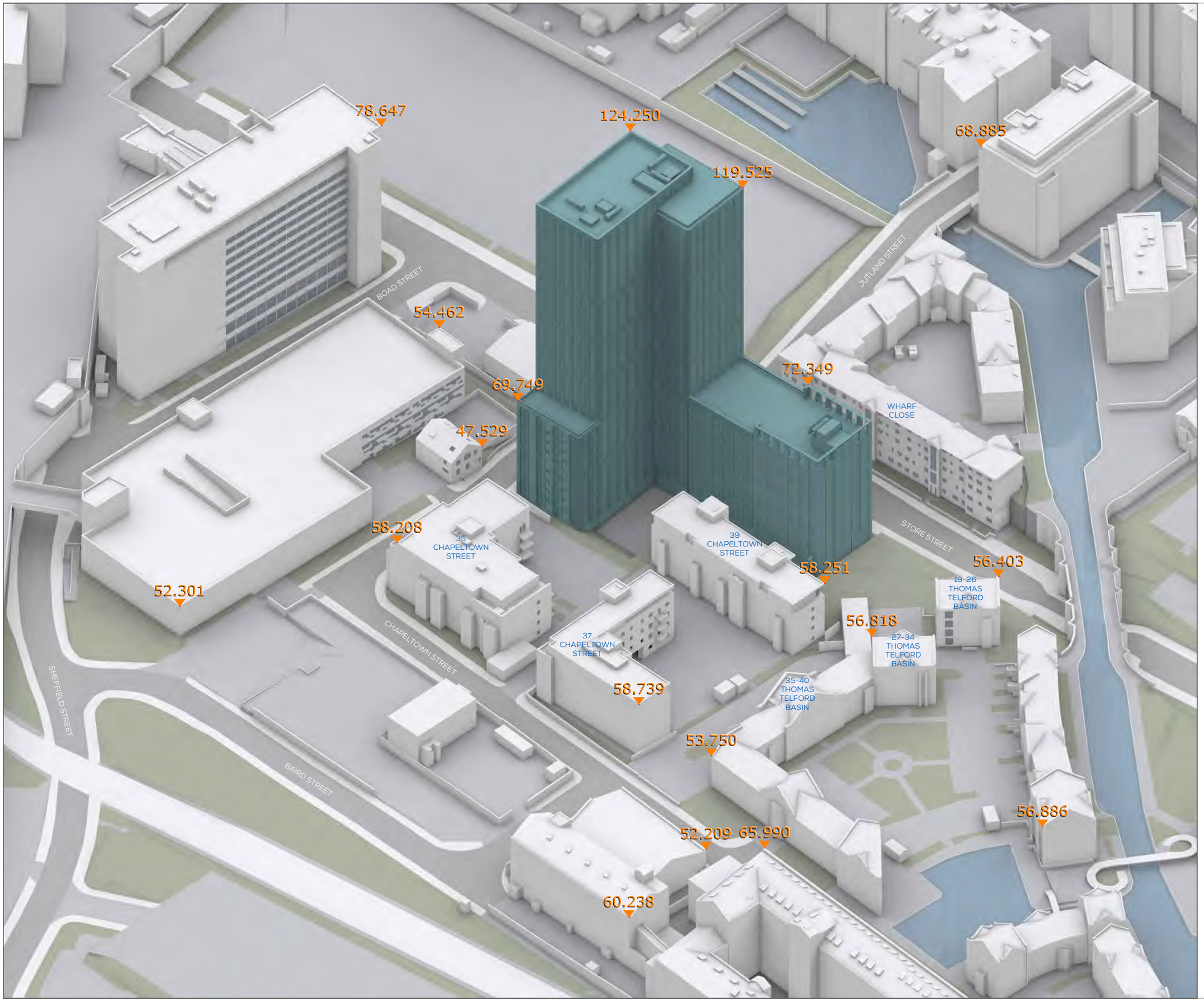
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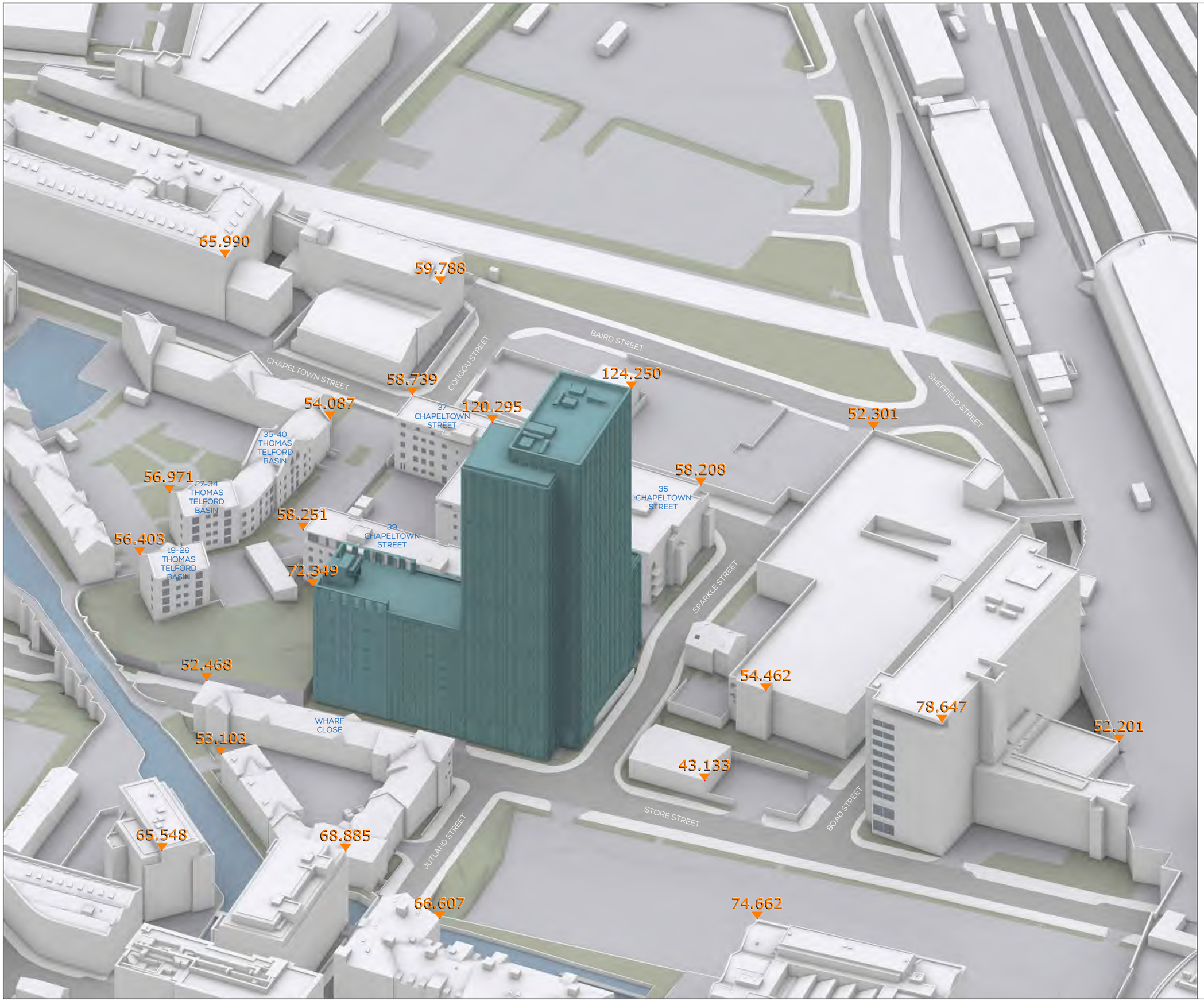
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Appendix 7.2 – Existing vs Proposed Daylight, Sunlight and Overshadowing results

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
WHARF CLOSE																												
F00	R1	RESIDENTIAL	LKD		W1/F00	30.3	23.9	6.4	21.1%	30.3	23.9	6.4	21.1%	97.1	97.1	0.0	0.0%	66	18	47	8	28.8%	55.6%	66	18	47	8	28.8%
	R2	RESIDENTIAL	LIVING ROOM		W2/F00	30.4	22.2	8.2	27.0%	30.4	22.2	8.2	27.0%	93.2	78.9	2.2	15.3%	68	18	43	7	36.8%	61.1%	68	18	43	7	36.8%
	R3	RESIDENTIAL	KITCHEN (1)		W3/F00	27.5	18.6	8.9	32.4%	27.5	18.6	8.9	32.4%	97.6	96	0.1	1.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	LKD		W4/F00	30.1	20.3	9.8	32.6%	30.1	20.3	9.8	32.6%	96.5	90.3	0.9	6.4%	65	19	34	5	47.7%	73.7%	65	19	34	5	47.7%
	R8	RESIDENTIAL	LKD		W9/F00	30.7	15.4	15.3	49.8%	30.7	15.4	15.3	49.8%	97.3	54.6	5.9	43.9%	66	19	27	3	59.1%	84.2%	66	19	27	3	59.1%
	R9	RESIDENTIAL	KITCHEN (1)		W10/F00	30.8	14.2	16.6	53.9%	30.8	14.2	16.6	53.9%	97.2	47.3	3.3	51.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R10	RESIDENTIAL	KITCHEN (1)		W11/F00	31	13.2	17.8	57.4%	31	13.2	17.8	57.4%	95.5	33.3	4.0	65.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R11	RESIDENTIAL	LKD		W12/F00	30.8	11.9	18.9	61.4%	30.8	11.9	18.9	61.4%	95.4	52.7	6.3	44.7%	62	18	17	2	72.6%	88.9%	62	18	17	2	72.6%
	R15	RESIDENTIAL	LD		W17/F00	31.1	8.9	22.2	71.4%	31.1	8.9	22.2	71.4%	91.7	21.6	10.5	76.4%	66	19	15	3	77.3%	84.2%	66	19	15	3	77.3%
	R16	RESIDENTIAL	KITCHEN (1)		W18/F00	31.2	8.8	22.4	71.8%	31.2	8.8	22.4	71.8%	89.1	19.8	6.7	77.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R18	RESIDENTIAL	LD		W20/F00	31.1	8.3	22.8	73.3%	31.1	8.3	22.8	73.3%	95.3	20.8	11.6	78.1%	63	17	15	3	76.2%	82.4%	63	17	15	3	76.2%
	R19	RESIDENTIAL	KITCHEN (1)		W21/F00	29.2	6.5	22.7	77.7%	29.2	6.5	22.7	77.7%	96.3	12.8	8.4	86.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R20	RESIDENTIAL	LKD		W22/F00	31.6	8.5	23.1	73.1%	31.6	8.7	22.9	72.5%	96.9	71.3	4.4	26.4%	70	19	22	5	68.6%	73.7%	70	19	23	5	67.1%
			LKD		W23/F00	31.6	8.9	22.7	71.8%									68	17	21	4	69.1%	76.5%					
F01	R1	RESIDENTIAL	BEDROOM		W1/F01	31.9	25.3	6.6	20.7%	31.9	25.3	6.6	20.7%	98.6	98.6	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3	RESIDENTIAL	BEDROOM		W3/F01	32	23.6	8.4	26.2%	32	23.6	8.4	26.2%	96	80.5	1.3	16.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM		W4/F01	28.9	19.8	9.1	31.5%	28.9	19.8	9.1	31.5%	96.1	96.1	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	BEDROOM		W6/F01	29.5	19.8	9.7	32.9%	29.5	19.8	9.7	32.9%	93.5	68.5	2.1	26.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	BEDROOM		W8/F01	29.9	16.1	13.8	46.2%	29.9	16.1	13.8	46.2%	94.8	79.6	1.3	16.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R10	RESIDENTIAL	BEDROOM		W10/F01	32.3	15.2	17.1	52.9%	32.3	15.2	17.1	52.9%	97.8	41.1	5.7	57.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R11	RESIDENTIAL	BEDROOM		W11/F01	32.4	14.2	18.2	56.2%	32.4	14.2	18.2	56.2%	96.3	50.1	4.3	48.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R13	RESIDENTIAL	BEDROOM		W13/F01	28.5	10.6	17.9	62.8%	28.5	10.6	17.9	62.8%	90.3	32.4	5.3	64.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R15	RESIDENTIAL	BEDROOM		W15/F01	29.1	7.1	22	75.6%	29.1	7.1	22	75.6%	72.7	17.6	5.1	75.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R17	RESIDENTIAL	BEDROOM		W17/F01	32.5	9.5	23	70.8%	32.5	9.5	23	70.8%	66.7	15.7	5.7	76.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R19	RESIDENTIAL	BEDROOM		W19/F01	32.5	9	23.5	72.3%	32.5	9	23.5	72.3%	78.9	16.1	5.2	79.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R20	RESIDENTIAL	BEDROOM		W20/F01	30.6	7.1	23.5	76.8%	30.6	7.1	23.5	76.8%	71.7	10.1	7.5	85.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R21	RESIDENTIAL	BEDROOM		W21/F01	32.9	9	23.9	72.6%	32.9	9	23.9	72.6%	77.4	15	7.9	80.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F02	R1	RESIDENTIAL	LD		W1/F02	0.2	0	0.2	100.0%	8.2	2.5	5.7	69.5%	64.7	6.6	7.9	89.9%	0	0	0	0	0.0%	0.0%	74	23	24	7	67.6%
			LD		W2/F02	0	0	0	-									0	0	0	0	0.0%	0.0%					
			LD		W23/F02	34.3	10.5	23.8	69.4%									74	23	24	7	67.6%	69.6%					
	R2	RESIDENTIAL	KITCHEN (1)		W3/F02	33.3	26.9	6.4	19.2%	33.3	26.9	6.4	19.2%	99.3	99.2	0.0	0.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
WHARF CLOSE (CONTINUED)																												
	R3	RESIDENTIAL	BEDROOM		W4/F02	33.3	26	7.3	21.9%	33.3	26	7.3	21.9%	99.1	98.7	0.0	0.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM		W5/F02	33.4	25.1	8.3	24.9%	33.4	25.1	8.3	24.9%	99.4	99.4	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	KITCHEN (1)		W6/F02	32.1	22.7	9.4	29.3%	32.1	22.7	9.4	29.3%	93.9	79.9	1.0	14.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	BEDROOM		W8/F02	30.6	21.1	9.5	31.0%	30.6	21.1	9.5	31.0%	98.5	89.5	0.6	9.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	BEDROOM		W9/F02	31.1	17.2	13.9	44.7%	31.1	17.2	13.9	44.7%	98.3	84.7	1.0	13.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R10	RESIDENTIAL	KITCHEN (1)		W11/F02	33.5	16.7	16.8	50.1%	33.5	16.7	16.8	50.1%	95.2	64.7	2.3	32.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R11	RESIDENTIAL	KITCHEN (1)		W12/F02	33.7	15.1	18.6	55.2%	33.7	15.1	18.6	55.2%	92.7	71.1	1.6	23.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R13	RESIDENTIAL	BEDROOM		W14/F02	29.6	11.7	17.9	60.5%	29.6	11.7	17.9	60.5%	94.8	44.1	3.6	53.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R14	RESIDENTIAL	BEDROOM		W15/F02	30.3	8.1	22.2	73.3%	30.3	8.1	22.2	73.3%	80.8	16.5	4.8	79.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R16	RESIDENTIAL	KITCHEN (1)		W17/F02	33.8	10.7	23.1	68.3%	33.8	10.7	23.1	68.3%	92.3	27.7	5.4	70.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R17 (3)	RESIDENTIAL	LD		W18/F02	33.8	10.3	23.5	69.5%	33.8	10.3	23.5	69.5%	64.3	15.7	8.2	75.6%	69	22	16	3	76.8%	86.4%	69	22	16	3	76.8%
	R18	RESIDENTIAL	KITCHEN (1)		W19/F02	33.7	10	23.7	70.3%	33.7	10	23.7	70.3%	87.1	17.3	5.7	80.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R19	RESIDENTIAL	BEDROOM		W20/F02	31.8	8.1	23.7	74.5%	31.8	8.1	23.7	74.5%	90.1	14.5	5.7	83.9%											
	R20	RESIDENTIAL	BEDROOM		W21/F02	34.2	10	24.2	70.8%	34.2	10	24.2	70.8%	93.7	25.1	4.3	73.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R21	RESIDENTIAL	KITCHEN (1)		W22/F02	34.2	10.2	24	70.2%	34.2	10.2	24	70.2%	99.1	26.5	4.2	73.2%											
	R22	RESIDENTIAL	BEDROOM		W24/F02	27.3	22.4	4.9	17.9%	27.3	22.4	4.9	17.9%	98	89.5	1.1	8.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F03	R1	RESIDENTIAL	LD		W1/F03	33.2	29.1	4.1	12.3%	33.9	22.2	11.7	34.5%	81.2	39.2	5.4	51.7%	64	19	42	8	34.4%	57.9%	93	24	48	8	48.4%
			LD		W24/F03	35	11.1	23.9	68.3%									74	23	27	7	63.5%	69.6%					
	R2	RESIDENTIAL	KITCHEN (1)		W2/F03	34.2	27.9	6.3	18.4%	34.2	27.9	6.3	18.4%	99.4	99.2	0.0	0.2%											
	R3	RESIDENTIAL	BEDROOM		W3/F03	34.2	27	7.2	21.1%	34.2	27	7.2	21.1%	99.2	98.6	0.1	0.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM		W4/F03	34.3	26.2	8.1	23.6%	34.3	26.2	8.1	23.6%	99.5	99.5	0.0	0.0%											
	R5	RESIDENTIAL	KITCHEN (1)		W5/F03	32.8	23.7	9.1	27.7%	32.8	23.7	9.1	27.7%	94	79.5	1.1	15.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	BEDROOM		W7/F03	31.3	21.9	9.4	30.0%	31.3	21.9	9.4	30.0%	98.6	89.2	0.6	9.5%											
	R9	RESIDENTIAL	BEDROOM		W9/F03	31.7	18	13.7	43.2%	31.7	18	13.7	43.2%	98.3	82.5	1.1	16.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R11	RESIDENTIAL	KITCHEN (1)		W11/F03	34.3	17.7	16.6	48.4%	34.3	17.7	16.6	48.4%	96	66.3	2.2	31.0%											
	R12	RESIDENTIAL	KITCHEN (1)		W12/F03	34.4	15.9	18.5	53.8%	34.4	15.9	18.5	53.8%	94.9	73.1	1.6	22.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R14	RESIDENTIAL	BEDROOM		W14/F03	30.2	12.6	17.6	58.3%	30.2	12.6	17.6	58.3%	96.3	49.7	3.3	48.4%											
	R16	RESIDENTIAL	BEDROOM		W16/F03	31.2	9.1	22.1	70.8%	31.2	9.1	22.1	70.8%	94.8	14.5	4.7	84.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R18	RESIDENTIAL	KITCHEN (1)		W18/F03	34.7	11.7	23	66.3%	34.7	11.7	23	66.3%	94.5	26.6	5.3	71.9%											
	R19 (3)	RESIDENTIAL	LD		W19/F03	34.7	11.3	23.4	67.4%	34.7	11.3	23.4	67.4%	78.4	15.3	10.4	80.5%	72	23	21	3	70.8%	87.0%	72	23	21	3	70.8%
	R20	RESIDENTIAL	KITCHEN (1)		W20/F03	34.5	10.9	23.6	68.4%	34.5	10.9	23.6	68.4%	96.1	19.5	5.7	79.7%											

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
WHARF CLOSE (CONTINUED)																												
	R21	RESIDENTIAL	BEDROOM		W21/F03	32.5	8.8	23.7	72.9%	32.5	8.8	23.7	72.9%	97.8	16.7	5.6	83.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R22	RESIDENTIAL	BEDROOM		W22/F03	34.9	10.8	24.1	69.1%	34.9	10.8	24.1	69.1%	97.5	30.4	4.1	68.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R23	RESIDENTIAL	KITCHEN (1)		W23/F03	35	11	24	68.6%	35	11	24	68.6%	98.9	26.6	4.4	73.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R24	RESIDENTIAL	BEDROOM		W25/F03	31.1	24.7	6.4	20.6%	31.1	24.7	6.4	20.6%	98.7	91.8	0.9	7.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F04	R1	RESIDENTIAL	KITCHEN (1)		W1/F04	27.4	21.9	5.5	20.1%	27.4	21.9	5.5	20.1%	99.3	99.1	0.0	0.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	BEDROOM		W2/F04	27.1	20.8	6.3	23.2%	27.1	20.8	6.3	23.2%	97.5	95.8	0.2	1.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3	RESIDENTIAL	BEDROOM		W3/F04	26.9	19.8	7.1	26.4%	26.9	19.8	7.1	26.4%	97.6	97.6	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	KITCHEN (1)		W4/F04	25.1	17	8.1	32.3%	25.1	17	8.1	32.3%	93.3	76.2	1.3	18.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	BEDROOM		W6/F04	24.4	17.2	7.2	29.5%	24.4	17.2	7.2	29.5%	96.8	85.8	0.7	11.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	BEDROOM		W7/F04	24.8	12.4	12.4	50.0%	24.8	12.4	12.4	50.0%	96.5	79.2	1.2	17.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R9	RESIDENTIAL	KITCHEN (1)		W9/F04	26.9	11.8	15.1	56.1%	26.9	11.8	15.1	56.1%	94.9	60	2.6	36.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R10	RESIDENTIAL	KITCHEN (1)		W10/F04	27	10.2	16.8	62.2%	27	10.2	16.8	62.2%	94.8	64.1	2.3	32.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R12	RESIDENTIAL	BEDROOM		W12/F04	24.6	8.5	16.1	65.4%	24.6	8.5	16.1	65.4%	96.7	38.3	4.1	60.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R15	RESIDENTIAL	BEDROOM		W13/F04	31.2	9.6	21.6	69.2%	31.2	9.6	21.6	69.2%	99.4	20	4.6	79.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R17	RESIDENTIAL	KITCHEN (1)		W15/F04	35	12.4	22.6	64.6%	35	12.4	22.6	64.6%	95	29.9	5.1	68.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R18 (3)	RESIDENTIAL	LD		W16/F04	35	11.9	23.1	66.0%	35	11.9	23.1	66.0%	98	17	13.4	82.7%	71	23	22	3	69.0%	87.0%	71	23	22	3	69.0%
	R19	RESIDENTIAL	KITCHEN (1)		W17/F04	34.6	11.3	23.3	67.3%	34.6	11.3	23.3	67.3%	98.7	19.7	5.8	80.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R20	RESIDENTIAL	BEDROOM		W18/F04	31.2	9.3	21.9	70.2%	31.2	9.3	21.9	70.2%	99	15.7	5.8	84.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R21	RESIDENTIAL	BEDROOM		W19/F04	33.6	9.9	23.7	70.5%	33.6	9.9	23.7	70.5%	97.6	33.8	3.9	65.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R22	RESIDENTIAL	KITCHEN (1)		W20/F04	33.6	9.9	23.7	70.5%	33.6	9.9	23.7	70.5%	99	27.7	4.4	72.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R23	RESIDENTIAL	LD		W21/F04	33.7	10	23.7	70.3%	31.5	20.5	11	34.9%	92.6	49.5	5.6	46.6%	70	24	24	8	65.7%	66.7%	95	25	51	9	46.3%
			LD		W22/F04	30.1	27	3.1	10.3%									57	20	43	9	24.6%	55.0%					
	R25	RESIDENTIAL	BEDROOM		W24/F04	34.6	26.7	7.9	22.8%	34.6	26.7	7.9	22.8%	98.7	94.9	0.5	3.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19-26 THOMAS TELFORD BASIN																												
F00	R1	RESIDENTIAL	BEDROOM		W1/F00	34.8	29.6	5.2	14.9%	33.6	28.4	5.2	15.5%	99.7	97.8	0.3	2.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W9/F00	30.4	25.3	5.1	16.8%									N/A	N/A	N/A	N/A	N/A	N/A					
	R4	RESIDENTIAL	BEDROOM		W4/F00	34.9	31.4	3.5	10.0%	34.9	32.3	2.6	7.4%	99.5	98.9	0.1	0.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W5/F00	34.8	34.8	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R5	RESIDENTIAL	LIVING ROOM		W6/F00	24.6	24.6	0	0.0%	25.8	24.5	1.3	5.0%	99.6	99.6	0.0	0.0%	36	7	36	7	0.0%	0.0%	76	16	65	14	14.5%
			LIVING ROOM		W7/F00	28.8	24.4	4.4	15.3%									67	16	56	14	16.4%	12.5%					

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
19-26 THOMAS TELFORD BASIN (CONTINUED)																												
	R6	RESIDENTIAL	KITCHEN (1)		W8/F00	29.9	25.2	4.7	15.7%	29.9	25.2	4.7	15.7%	96.8	96.5	0.0	0.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F01	R1	RESIDENTIAL	BEDROOM		W1/F01	35.5	30.3	5.2	14.6%	34.7	29.5	5.2	15.0%	99.7	99.7	0.0	0.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W9/F01	32.5	27.5	5	15.4%									N/A	N/A	N/A	N/A	N/A	N/A					
	R4	RESIDENTIAL	BEDROOM		W4/F01	35.6	32.1	3.5	9.8%	35.7	33.1	2.6	7.3%	99.5	99.1	0.1	0.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W5/F01	35.8	35.8	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R5	RESIDENTIAL	LIVING ROOM		W6/F01	27.5	27.5	0	0.0%	28.5	27.3	1.2	4.2%	99.7	99.6	0.0	0.1%	42	8	42	8	0.0%	0.0%	82	18	71	16	13.4%
			LIVING ROOM		W7/F01	31.1	26.8	4.3	13.8%									72	18	61	16	15.3%	11.1%					
	R6	RESIDENTIAL	KITCHEN (1)		W8/F01	32	27.4	4.6	14.4%	32	27.4	4.6	14.4%	97.9	97.3	0.1	0.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F02	R1	RESIDENTIAL	BEDROOM		W1/F02	36	31.1	4.9	13.6%	35.6	30.7	4.9	13.8%	99.7	99.7	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W9/F02	34.4	29.5	4.9	14.2%									N/A	N/A	N/A	N/A	N/A	N/A					
	R4	RESIDENTIAL	BEDROOM		W4/F02	36.1	32.7	3.4	9.4%	36.3	33.8	2.5	6.9%	99.6	99.4	0.0	0.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W5/F02	36.8	36.8	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R5	RESIDENTIAL	LIVING ROOM		W6/F02	30.6	30.6	0	0.0%	31.4	30.2	1.2	3.8%	99.7	99.7	0.0	0.0%	47	10	47	10	0.0%	0.0%	87	21	78	19	10.3%
			LIVING ROOM		W7/F02	33.4	29.2	4.2	12.6%									77	21	68	19	11.7%	9.5%					
	R6	RESIDENTIAL	KITCHEN (1)		W8/F02	34.1	29.5	4.6	13.5%	34.1	29.5	4.6	13.5%	97.9	97.5	0.0	0.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F03	R1	RESIDENTIAL	BEDROOM		W1/F03	36.5	31.8	4.7	12.9%	36.4	31.7	4.7	12.9%	99.7	99.7	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W9/F03	36.3	31.6	4.7	12.9%									N/A	N/A	N/A	N/A	N/A	N/A					
	R4	RESIDENTIAL	BEDROOM		W4/F03	36.6	33.4	3.2	8.7%	36.9	34.6	2.3	6.2%	99.5	99	0.1	0.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W5/F03	37.6	37.6	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R5	RESIDENTIAL	LIVING ROOM		W6/F03	33.6	33.6	0	0.0%	34.2	33.1	1.1	3.2%	99.6	99.6	0.0	0.0%	53	14	53	14	0.0%	0.0%	93	25	85	22	8.6%
			LIVING ROOM		W7/F03	35.8	31.8	4	11.2%									82	25	74	22	9.8%	12.0%					
	R6	RESIDENTIAL	KITCHEN (1)		W8/F03	36.2	31.8	4.4	12.2%	36.2	31.8	4.4	12.2%	95.2	95.2	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27-34 THOMAS TELFORD BASIN																												
F00	R1	RESIDENTIAL	BEDROOM		W1/F00	27.2	27.2	0	0.0%	27.3	23.4	3.9	14.3%	98.9	97.7	0.2	1.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W2/F00	27.4	22	5.4	19.7%									N/A	N/A	N/A	N/A	N/A	N/A					
	R4	RESIDENTIAL	BEDROOM		W5/F00	29.6	24.2	5.4	18.2%	29.6	24.2	5.4	18.2%	95.9	90.3	0.8	5.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F01	R1	RESIDENTIAL	BEDROOM		W1/F01	30.3	30.3	0	0.0%	29.9	26.2	3.7	12.4%	99.6	98.6	0.1	1.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W2/F01	29.7	24.6	5.1	17.2%									N/A	N/A	N/A	N/A	N/A	N/A					
	R4	RESIDENTIAL	BEDROOM		W5/F01	31.9	26.1	5.8	18.2%	31.9	26.1	5.8	18.2%	97	91.9	0.8	5.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F02	R1	RESIDENTIAL	BEDROOM		W1/F02	33.2	33.2	0	0.0%	32.5	28.9	3.6	11.1%	99.6	98.7	0.1	0.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
27-34 THOMAS TELFORD BASIN (CONTINUED)																												
			BEDROOM		W2/F02	32.2	27.2	5	15.5%									N/A	N/A	N/A	N/A	N/A	N/A					
	R4	RESIDENTIAL	BEDROOM		W5/F02	33.8	28.1	5.7	16.9%	33.8	28.1	5.7	16.9%	97.6	94.8	0.4	2.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F03	R1	RESIDENTIAL	BEDROOM		W1/F03	36.1	36.1	0	0.0%	35	31.6	3.4	9.7%	99.6	98.7	0.1	0.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			BEDROOM		W2/F03	34.6	29.9	4.7	13.6%									N/A	N/A	N/A	N/A	N/A	N/A					
	R4	RESIDENTIAL	BEDROOM		W5/F03	35.7	30	5.7	16.0%	35.7	30	5.7	16.0%	97.5	95.7	0.3	1.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
35-40 THOMAS TELFORD BASIN																												
F00	R1	RESIDENTIAL	KITCHEN (1)		W1/F00	29.5	25.4	4.1	13.9%	29.5	25.4	4.1	13.9%	94.4	83.2	0.8	11.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	LKD		W2/F00	29.5	25.5	4	13.6%	29.3	25.3	4	13.7%	97.5	92.9	0.9	4.7%	55	14	47	14	14.5%	0.0%	56	15	48	15	14.3%
			LKD		W3/F00	29.1	25.1	4	13.7%									54	13	45	13	16.7%	0.0%					
	R3	RESIDENTIAL	LKD		W4/F00	29.1	25.2	3.9	13.4%	29.3	25.4	3.9	13.3%	97.5	94.9	0.5	2.7%	53	13	45	13	15.1%	0.0%	54	14	46	14	14.8%
			LKD		W5/F00	29.6	25.7	3.9	13.2%									49	14	41	14	16.3%	0.0%					
	R4	RESIDENTIAL	KITCHEN (1)		W6/F00	29.6	25.9	3.7	12.5%	29.6	25.9	3.7	12.5%	94.4	79.2	1.1	16.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	LKD		W8/F00	29.3	25.9	3.4	11.6%	29.1	25.9	3.2	11.0%	98.5	97.2	0.3	1.3%	44	12	37	12	15.9%	0.0%	51	14	43	14	15.7%
			LKD		W9/F00	29	25.9	3.1	10.7%									50	14	43	14	14.0%	0.0%					
	R7	RESIDENTIAL	BEDROOM		W10/F00	28.8	25.2	3.6	12.5%	28.8	25.2	3.6	12.5%	97.4	66.2	3.4	32.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	BEDROOM		W11/F00	26.9	22.9	4	14.9%	26.9	22.9	4	14.9%	98.5	67.7	4.4	31.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F01	R1	RESIDENTIAL	KITCHEN (1)		W1/F01	31.8	27.4	4.4	13.8%	31.8	27.4	4.4	13.8%	94.5	83.5	0.8	11.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	LKD		W2/F01	31.6	27.2	4.4	13.9%	31	26.7	4.3	13.9%	97.5	96.7	0.2	0.8%	58	16	49	16	15.5%	0.0%	58	16	49	16	15.5%
			LKD		W3/F01	30.7	26.4	4.3	14.0%									57	16	48	16	15.8%	0.0%					
	R3	RESIDENTIAL	LKD		W4/F01	30.8	26.5	4.3	14.0%	31.1	26.8	4.3	13.8%	97.5	97.4	0.0	0.2%	55	15	46	15	16.4%	0.0%	57	16	48	16	15.8%
			LKD		W5/F01	31.7	27.3	4.4	13.9%									53	16	43	16	18.9%	0.0%					
	R4	RESIDENTIAL	KITCHEN (1)		W6/F01	31.8	27.5	4.3	13.5%	31.8	27.5	4.3	13.5%	94.4	80	1.1	15.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN		W7/F01	29.8	25.7	4.1	13.8%	29.8	25.7	4.1	13.8%	99.5	88.7	1.1	10.8%	40	10	33	10	17.5%	0.0%	40	10	33	10	17.5%
	R6	RESIDENTIAL	LKD		W8/F01	31.5	27.4	4.1	13.0%	31.4	27.4	4	12.7%	98.5	97.3	0.2	1.2%	50	14	40	14	20.0%	0.0%	57	18	47	18	17.5%
			LKD		W9/F01	31.3	27.4	3.9	12.5%									56	18	47	18	16.1%	0.0%					
	R7	RESIDENTIAL	BEDROOM		W10/F01	31.5	26.9	4.6	14.6%	31.5	26.9	4.6	14.6%	97.4	71	2.8	27.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	BEDROOM		W11/F01	30	24.5	5.5	18.3%	30	24.5	5.5	18.3%	98.7	71.3	3.9	27.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F02	R1	RESIDENTIAL	KITCHEN (1)		W1/F02	34	29.4	4.6	13.5%	34	29.4	4.6	13.5%	94.6	84	0.8	11.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	LKD		W2/F02	33.9	29.1	4.8	14.2%	30.6	25.8	4.8	15.7%	98.7	98.7	0.0	0.0%	60	17	50	17	16.7%	0.0%	61	18	51	18	16.4%
			LKD		W3/F02	30.6	25.8	4.8	15.7%									60	18	50	18	16.7%	0.0%					

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
35-40 THOMAS TELFORD BASIN (CONTINUED)																												
			LKD		W13/F02	28.7	23.9	4.8	16.7%									59	17	49	17	16.9%	0.0%					
	R3	RESIDENTIAL	LKD		W4/F02	30.6	25.7	4.9	16.0%	30.6	25.8	4.8	15.7%	98.7	98.6	0.0	0.1%	43	14	32	14	25.6%	0.0%	62	20	53	20	14.5%
			LKD		W5/F02	33.8	28.9	4.9	14.5%									57	16	47	16	17.5%	0.0%					
			LKD		W12/F02	28.7	23.9	4.8	16.7%									41	17	32	17	22.0%	0.0%					
	R4	RESIDENTIAL	KITCHEN (1)		W6/F02	34	29.1	4.9	14.4%	34	29.1	4.9	14.4%	94.4	80.1	1.1	15.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN		W7/F02	32	27.2	4.8	15.0%	32	27.2	4.8	15.0%	99.5	92.7	0.7	6.9%	48	13	37	13	22.9%	0.0%	48	13	37	13	22.9%
	R6	RESIDENTIAL	LKD		W8/F02	33.7	28.8	4.9	14.5%	33.6	28.7	4.9	14.6%	98.5	97.4	0.2	1.1%	58	16	46	16	20.7%	0.0%	61	18	50	18	18.0%
			LKD		W9/F02	33.5	28.7	4.8	14.3%									60	18	49	18	18.3%	0.0%					
	R7	RESIDENTIAL	BEDROOM		W10/F02	33.7	28.3	5.4	16.0%	33.7	28.3	5.4	16.0%	97.4	76.2	2.3	21.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	BEDROOM		W11/F02	31.9	26	5.9	18.5%	31.9	26	5.9	18.5%	98.7	75.1	3.4	23.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
F03	R1	RESIDENTIAL	LKD		W1/F03	36.1	30.9	5.2	14.4%	36.1	30.9	5.2	14.4%	74.7	61.2	2.6	18.0%	66	22	54	22	18.2%	0.0%	66	22	54	22	18.2%
	R2	RESIDENTIAL	LKD		W2/F03	36.1	30.8	5.3	14.7%	36.1	30.8	5.3	14.7%	73.5	71.2	0.4	3.1%	65	21	54	21	16.9%	0.0%	65	21	54	21	16.9%
37 CHAPELTOWN STREET																												
F00	R1	RESIDENTIAL	UNKNOWN		W1/F00	27.3	25	2.3	8.4%	27.2	25	2.2	8.1%	93.5	90.9	0.5	2.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W2/F00	27.2	25	2.2	8.1%									N/A	N/A	N/A	N/A	N/A	N/A					
	R2	RESIDENTIAL	UNKNOWN		W3/F00	27	25	2	7.4%	27	25	2	7.4%	97.6	96.6	0.1	1.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN		W7/F00	11.4	11.4	0	0.0%	11.4	11.4	0	0.0%	71	70.1	0.1	1.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN		W8/F00	18	13	5	27.8%	23.8	16.8	7	29.4%	93	77	2.2	17.2%	14	0	5	0	64.3%	0.0%	42	4	32	4	23.8%
			UNKNOWN		W9/F00 / INC (2)	27.1	19	8.1	29.9%									42	4	32	4	23.8%	0.0%					
			UNKNOWN		W10/F00 / INC (2)	27	18.9	8.1	30.0%									41	3	31	3	24.4%	0.0%					
F01	R1	RESIDENTIAL	UNKNOWN		W1/F01	30.4	27.4	3	9.9%	30.4	27.4	3	9.9%	93	86.8	1.2	6.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	UNKNOWN		W2/F01	29.9	27.1	2.8	9.4%	29.9	27.1	2.8	9.4%	93.9	91.4	0.3	2.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN		W7/F01	12.7	12.7	0	0.0%	12.7	12.7	0	0.0%	72.5	67.5	0.5	6.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN		W8/F01	22.4	16.7	5.7	25.4%	27.4	20	7.4	27.0%	96.9	80.1	2.3	17.4%	14	0	5	0	64.3%	0.0%	47	9	37	9	21.3%
			UNKNOWN		W9/F01	29.9	21.6	8.3	27.8%									47	9	37	9	21.3%	0.0%					
F02	R1	RESIDENTIAL	UNKNOWN		W1/F02	33.3	29.6	3.7	11.1%	33.3	29.6	3.7	11.1%	97.7	96.4	0.2	1.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	UNKNOWN		W2/F02	32.9	29.3	3.6	10.9%	32.9	29.3	3.6	10.9%	99.6	99.6	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN		W7/F02	14.6	14.6	0	0.0%	14.6	14.6	0	0.0%	77.1	76.8	0.0	0.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN		W8/F02	27.8	21	6.8	24.5%	31	23	8	25.8%	98.1	90.8	1.0	7.5%	14	0	5	0	64.3%	0.0%	52	12	42	12	19.2%
			UNKNOWN		W9/F02	32.6	24	8.6	26.4%									52	12	42	12	19.2%	0.0%					

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
37 CHAPELTOWN STREET (CONTINUED)																												
F03	R1	RESIDENTIAL	UNKNOWN		W1/F03	35.9	31.6	4.3	12.0%	35.9	31.6	4.3	12.0%	97.7	96.4	0.2	1.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	UNKNOWN		W2/F03	35.6	31.2	4.4	12.4%	35.6	31.2	4.4	12.4%	99.5	99.5	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN		W7/F03	16.4	16.1	0.3	1.8%	16.4	16.1	0.3	1.8%	81	80.9	0.0	0.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN		W8/F03	33.5	24.3	9.2	27.5%	34.6	25.5	9.1	26.3%	99.1	99.1	0.0	0.0%	16	0	5	0	68.8%	0.0%	58	15	47	15	19.0%
			UNKNOWN		W9/F03	35.1	26.1	9	25.6%									58	15	47	15	19.0%	0.0%					
F04	R1	RESIDENTIAL	UNKNOWN		W1/F04	34.3	29.9	4.4	12.8%	34.3	29.9	4.4	12.8%	96.9	95.8	0.2	1.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	UNKNOWN		W2/F04	34.2	29.5	4.7	13.7%	34.2	29.5	4.7	13.7%	98.4	94.9	0.5	3.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	LKD		W4/F04	14.8	14.7	0.1	0.7%	10.1	9.2	0.9	8.9%	99	97.7	0.3	1.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W5/F04	3.1	2.5	0.6	19.4%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W6/F04	5.2	5.2	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W7/F04	14	9.8	4.2	30.0%									N/A	N/A	N/A	N/A	N/A	N/A					
39 CHAPELTOWN STREET																												
F00	R1	RESIDENTIAL	UNKNOWN		W1/F00	27.4	20.7	6.7	24.5%	25.3	21.3	4	15.8%	94.6	87.6	0.8	7.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W14/F00	22.2	22.2	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R2	RESIDENTIAL	UNKNOWN		W2/F00	30.5	23	7.5	24.6%	30.5	23	7.5	24.6%	95.7	78.8	2.2	17.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3	RESIDENTIAL	UNKNOWN		W3/F00	32.1	23.9	8.2	25.5%	32.1	23.9	8.2	25.5%	79	77.7	0.2	1.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN		W6/F00	33.6	16.2	17.4	51.8%	33.7	15.1	18.6	55.2%	98.5	83.9	3.4	14.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W7/F00	33.8	14.4	19.4	57.4%									N/A	N/A	N/A	N/A	N/A	N/A					
	R7 (3)	RESIDENTIAL	UNKNOWN		W8/F00	33.1	12	21.1	63.7%	31.3	11.2	20.1	64.2%	95.1	61	11.4	35.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W9/F00	28.7	10	18.7	65.2%									N/A	N/A	N/A	N/A	N/A	N/A					
	R9	RESIDENTIAL	UNKNOWN		W11/F00	29.8	3.1	26.7	89.6%	31.9	6.4	25.5	79.9%	91.4	30.3	21.6	66.8%	16	0	0	0	100.0%	0.0%	55	11	32	9	41.8%
			UNKNOWN		W12/F00	33.4	5.3	28.1	84.1%									11	0	7	2	81.8%	18.2%					
			UNKNOWN		W13/F00	31.8	11.2	20.6	64.8%									55	11	32	9	41.8%	18.2%					
F01	R1	RESIDENTIAL	UNKNOWN		W1/F01	33.1	26.7	6.4	19.3%	31.3	27	4.3	13.7%	98.6	94.2	0.5	4.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W16/F01	27.6	27.6	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R2	RESIDENTIAL	UNKNOWN		W2/F01	34.2	27	7.2	21.1%	34.2	27	7.2	21.1%	94.4	81.5	1.7	13.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3	RESIDENTIAL	UNKNOWN		W3/F01	34	26.1	7.9	23.2%	34	26.1	7.9	23.2%	94.6	94.3	0.0	0.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN		W8/F01	34.5	17.3	17.2	49.9%	34.6	16	18.6	53.8%	98	85.4	2.9	12.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W9/F01	34.7	15.4	19.3	55.6%									N/A	N/A	N/A	N/A	N/A	N/A					
	R7 (3)	RESIDENTIAL	UNKNOWN		W10/F01	33.9	13	20.9	61.7%	32.4	12.4	20	61.7%	95.1	65.5	9.9	31.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
39 CHAPELTOWN STREET (CONTINUED)																												
			UNKNOWN		W11/F01	29.5	11.1	18.4	62.4%									N/A	N/A	N/A	N/A	N/A	N/A					
	R9	RESIDENTIAL	UNKNOWN		W13/F01	30.6	3.9	26.7	87.3%	33	7.2	25.8	78.2%	94.8	48.7	16.3	48.7%	16	0	0	0	100.0%	0.0%	58	14	36	12	37.9%
			UNKNOWN		W14/F01	34.2	6.2	28	81.9%									16	0	0	0	100.0%	0.0%					
			UNKNOWN		W15/F01	33	12.4	20.6	62.4%									58	14	36	12	37.9%	14.3%					
F02	R1	RESIDENTIAL	UNKNOWN		W1/F02	35.2	29.1	6.1	17.3%	33.8	29.8	4	11.8%	98.6	94.9	0.5	3.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W15/F02	31.1	31.1	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R2	RESIDENTIAL	UNKNOWN		W2/F02	35.3	28.5	6.8	19.3%	35.3	28.5	6.8	19.3%	95.2	81.4	1.8	14.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3	RESIDENTIAL	UNKNOWN		W3/F02	34.9	27.4	7.5	21.5%	34.9	27.4	7.5	21.5%	94.5	94.3	0.0	0.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN		W7/F02	35.2	18.4	16.8	47.7%	35.3	17.2	18.1	51.3%	98.4	85.9	2.9	12.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W8/F02	35.4	16.6	18.8	53.1%									N/A	N/A	N/A	N/A	N/A	N/A					
	R7 (3)	RESIDENTIAL	UNKNOWN		W9/F02	34.7	14.2	20.5	59.1%	33.2	13.6	19.6	59.0%	95.2	65.6	9.9	31.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W10/F02	30.2	12.3	17.9	59.3%									N/A	N/A	N/A	N/A	N/A	N/A					
	R9	RESIDENTIAL	UNKNOWN		W12/F02	31.2	5	26.2	84.0%	33.8	8.3	25.5	75.4%	94.5	50.5	15.6	46.5%	16	0	0	0	100.0%	0.0%	64	20	41	17	35.9%
			UNKNOWN		W13/F02	34.9	7.3	27.6	79.1%									16	0	0	0	100.0%	0.0%					
			UNKNOWN		W14/F02	34.1	13.4	20.7	60.7%									64	20	41	17	35.9%	15.0%					
F03	R1	RESIDENTIAL	UNKNOWN		W1/F03	36.2	30.5	5.7	15.7%	35.3	31.9	3.4	9.6%	98.5	93.2	0.6	5.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W12/F03	33.9	33.9	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R2	RESIDENTIAL	UNKNOWN		W2/F03	36.2	29.8	6.4	17.7%	36.2	29.8	6.4	17.7%	95.7	80.8	1.9	15.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3	RESIDENTIAL	UNKNOWN		W3/F03	35.7	28.9	6.8	19.0%	35.7	28.9	6.8	19.0%	94.4	94.1	0.1	0.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5	RESIDENTIAL	UNKNOWN		W5/F03	35.7	19.7	16	44.8%	36	18.8	17.2	47.8%	98.6	85.8	2.9	13.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W6/F03	36.2	18.1	18.1	50.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R6 (3)	RESIDENTIAL	UNKNOWN		W7/F03	35.5	15.8	19.7	55.5%	33.6	15	18.6	55.4%	95.3	65.3	10.0	31.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W8/F03	30.8	13.8	17	55.2%									N/A	N/A	N/A	N/A	N/A	N/A					
	R7	RESIDENTIAL	UNKNOWN		W9/F03	31.8	6.4	25.4	79.9%	34.4	9.8	24.6	71.5%	94	51.5	15.1	45.3%	16	0	0	0	100.0%	0.0%	64	20	41	17	35.9%
			UNKNOWN		W10/F03	35.6	8.9	26.7	75.0%									16	0	0	0	100.0%	0.0%					
			UNKNOWN		W11/F03	35.1	14.6	20.5	58.4%									64	20	41	17	35.9%	15.0%					
F04	R1	RESIDENTIAL	UNKNOWN		W1/F04	33.5	28.6	4.9	14.6%	32.7	29.4	3.3	10.1%	100	100	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			UNKNOWN		W15/F04	31	31	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R2	RESIDENTIAL	UNKNOWN		W2/F04	32.9	27.3	5.6	17.0%	32.9	27.3	5.6	17.0%	96.3	95.8	0.1	0.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3	RESIDENTIAL	UNKNOWN		W3/F04	29.5	25.6	3.9	13.2%	29.5	25.6	3.9	13.2%	98.8	98.5	0.1	0.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	UNKNOWN		W4/F04	17.9	17.9	0	0.0%	20	12.6	7.4	37.0%	100	99.9	0.0	0.1%	1	0	1	0	0.0%	0.0%	22	1	1	0	95.5%

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
39 CHAPELTOWN STREET (CONTINUED)																												
			UNKNOWN		W5/F04	23.5	15.2	8.3	35.3%									11	0	11	0	100.0%	100.0%					
			UNKNOWN		W6/F04	13.1	0.8	12.3	93.9%									21	1	0	0	100.0%	100.0%					
	R5	RESIDENTIAL	UNKNOWN		W7/F04	24.2	12.8	11.4	47.1%	24.2	12.8	11.4	47.1%	96.3	73.2	2.3	24.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R6	RESIDENTIAL	UNKNOWN		W8/F04	31.9	18.6	13.3	41.7%	31.9	18.6	13.3	41.7%	97.6	63.9	3.3	34.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	UNKNOWN		W9/F04	33	17.6	15.4	46.7%	33	17.6	15.4	46.7%	98.7	71	4.4	28.1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	UNKNOWN		W10/F04	32.5	15.8	16.7	51.4%	32.5	15.8	16.7	51.4%	97.6	50.7	4.8	48.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R9	RESIDENTIAL	UNKNOWN		W11/F04	28.6	14.1	14.5	50.7%	28.6	14.1	14.5	50.7%	97.2	57.3	6.3	41.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R11	RESIDENTIAL	UNKNOWN		W13/F04	32.4	9.1	23.3	71.9%	31.9	9.5	22.4	70.2%	100	67.8	3.5	32.2%	13	0	0	0	100.0%	0.0%	49	16	26	13	46.9%
			UNKNOWN		W14/F04	30.8	10.4	20.4	66.2%									49	16	26	13	46.9%	18.8%					
35 CHAPELTOWN STREET																												
F00	R1	RESIDENTIAL	LKD		W1/F00 / INC (2)	16.4	15.7	0.7	4.3%	20.5	15.3	5.2	25.4%	97.5	82.1	3.1	15.8%	24	9	24	9	0.0%	0.0%	32	10	32	10	0.0%
			LKD		W2/F00	33.8	14.5	19.3	57.1%									11	0	11	0	100.0%	100.0%					
			LKD		W15/F00 / INC (2)	15.8	15.4	0.4	2.5%									30	10	30	10	0.0%	0.0%					
	R2	RESIDENTIAL	LKD		W3/F00	33.5	14.2	19.3	57.6%	16.5	10.5	6	36.4%	92.6	89.4	0.7	3.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W4/F00 / INC (2)	11.7	10.1	1.6	13.7%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W5/F00 / INC (2)	9.8	8.4	1.4	14.3%									N/A	N/A	N/A	N/A	N/A	N/A					
	R3	RESIDENTIAL	BEDROOM		W6/F00	17.7	12.3	5.4	30.5%	17.7	12.3	5.4	30.5%	82.4	49.1	3.8	40.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM		W7/F00	19.6	11.7	7.9	40.3%	19.6	11.7	7.9	40.3%	70.4	47.3	2.1	32.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5 (3)	RESIDENTIAL	LKD		W8/F00 / INC (2)	11.7	4.7	7	59.8%	12.8	5.7	7.1	55.5%	97	25.2	14.6	74.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W9/F00 / INC (2)	14	6.7	7.3	52.1%									N/A	N/A	N/A	N/A	N/A	N/A					
	R6	RESIDENTIAL	BEDROOM		W10/F00	26.1	15	11.1	42.5%	26.1	15	11.1	42.5%	96.2	60.9	4.0	36.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	BEDROOM		W11/F00	26.5	15.4	11.1	41.9%	26.5	15.4	11.1	41.9%	91.1	64.5	2.5	29.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	LKD		W12/F00 / INC (2)	14.1	5.8	8.3	58.9%	14.2	8.3	5.9	41.5%	92.1	49.7	10.1	46.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W13/F00 / INC (2)	13.4	5.8	7.6	56.7%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W14/F00	15.7	15.7	0	0.0%									N/A	N/A	N/A	N/A	N/A	N/A					
F01	R1	RESIDENTIAL	LKD		W1/F01 / INC (2)	18.4	17.7	0.7	3.8%	22.3	17.1	5.2	23.3%	99.3	85.9	2.7	13.5%	28	11	28	11	0.0%	0.0%	37	12	37	12	0.0%
			LKD		W2/F01	34.7	15.4	19.3	55.6%									15	0	15	0	0.0%	0.0%					
			LKD		W15/F01 / INC (2)	18	17.6	0.4	2.2%									35	12	35	12	0.0%	0.0%					
	R2	RESIDENTIAL	LKD		W3/F01	34.5	15.2	19.3	55.9%	18.6	12.7	5.9	31.7%	94.5	93.6	0.2	0.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W4/F01 / INC (2)	13.9	12.3	1.6	11.5%									N/A	N/A	N/A	N/A	N/A	N/A					

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
35 CHAPELTOWN STREET (CONTINUED)																												
			LKD		W5/F01 / INC (2)	12.7	11.3	1.4	11.0%									N/A	N/A	N/A	N/A	N/A	N/A					
	R3	RESIDENTIAL	BEDROOM		W6/F01	19.5	13.5	6	30.8%	19.5	13.5	6	30.8%	82.9	54.3	3.3	34.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM		W7/F01	21.6	13	8.6	39.8%	21.6	13	8.6	39.8%	71.8	49.9	2.0	30.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5 (3)	RESIDENTIAL	LKD		W8/F01 / INC (2)	13	5.8	7.2	55.4%	14.2	6.8	7.4	52.1%	97	29.9	13.6	69.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W9/F01 / INC (2)	15.4	7.8	7.6	49.4%									N/A	N/A	N/A	N/A	N/A	N/A					
	R6	RESIDENTIAL	BEDROOM		W10/F01	28.4	17.2	11.2	39.4%	28.4	17.2	11.2	39.4%	97.1	70.6	3.0	27.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	BEDROOM		W11/F01	28.9	17.7	11.2	38.8%	28.9	17.7	11.2	38.8%	94.1	71.6	2.1	23.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	LKD		W12/F01 / INC (2)	15.9	7.5	8.4	52.8%	16.8	10.7	6.1	36.3%	94.2	60.4	8.0	35.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W13/F01 / INC (2)	15.6	7.8	7.8	50.0%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W14/F01	20	19.9	0.1	0.5%									N/A	N/A	N/A	N/A	N/A	N/A					
F02	R1	RESIDENTIAL	LKD		W1/F02 / INC (2)	19.9	19.3	0.6	3.0%	23.8	18.6	5.2	21.8%	99.6	89.4	2.1	10.2%	32	14	32	14	0.0%	0.0%	43	15	43	15	0.0%
			LKD		W2/F02	35.5	16.4	19.1	53.8%									15	0	15	0	0.0%	0.0%					
			LKD		W15/F02 / INC (2)	19.8	19.4	0.4	2.0%									41	14	41	14	0.0%	0.0%					
	R2	RESIDENTIAL	LKD		W3/F02	35.4	16.3	19.1	54.0%	21	15.1	5.9	28.1%	95.9	95.9	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W4/F02 / INC (2)	16.5	14.9	1.6	9.7%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W5/F02 / INC (2)	15.9	14.5	1.4	8.8%									N/A	N/A	N/A	N/A	N/A	N/A					
	R3	RESIDENTIAL	BEDROOM		W6/F02	21.5	14.7	6.8	31.6%	21.5	14.7	6.8	31.6%	84.4	60.4	2.7	28.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM		W7/F02	25	15.6	9.4	37.6%	25	15.6	9.4	37.6%	75.2	53.8	2.0	28.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5 (3)	RESIDENTIAL	LKD		W8/F02 / INC (2)	15.4	7.7	7.7	50.0%	16.2	8.4	7.8	48.1%	97.2	37.3	12.2	61.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W9/F02 / INC (2)	16.9	9	7.9	46.7%									N/A	N/A	N/A	N/A	N/A	N/A					
	R6	RESIDENTIAL	BEDROOM		W10/F02	31.9	20.6	11.3	35.4%	31.9	20.6	11.3	35.4%	97.8	81.1	1.9	17.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	BEDROOM		W11/F02	31.9	20.6	11.3	35.4%	31.9	20.6	11.3	35.4%	96	76.1	1.8	20.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	LKD		W12/F02 / INC (2)	18.1	9.5	8.6	47.5%	19.7	13.4	6.3	32.0%	98.1	79.6	4.4	18.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W13/F02 / INC (2)	18	9.9	8.1	45.0%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W14/F02	24.6	24.4	0.2	0.8%									N/A	N/A	N/A	N/A	N/A	N/A					
F03	R1	RESIDENTIAL	LKD		W1/F03 / INC (2)	34	33.3	0.7	2.1%	34.5	29.3	5.2	15.1%	99.7	93	1.4	6.7%	62	19	62	19	0.0%	0.0%	62	19	62	19	0.0%
			LKD		W2/F03	36.3	17.4	18.9	52.1%									15	0	15	0	0.0%	0.0%					
			LKD		W17/F03 / INC (2)	33.9	33.3	0.6	1.8%									61	18	61	18	0.0%	0.0%					
	R2	RESIDENTIAL	LKD		W3/F03	36.2	17.4	18.8	51.9%	34.1	28.2	5.9	17.3%	99.6	99.6	0.0	0.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W4/F03 / INC (2)	33.5	31.9	1.6	4.8%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W5/F03 / INC (2)	33.2	31.7	1.5	4.5%									N/A	N/A	N/A	N/A	N/A	N/A					

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

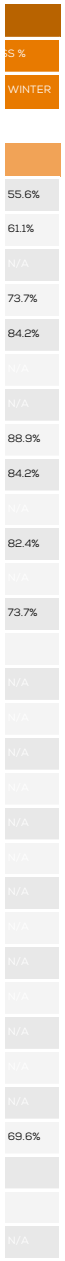
(3) SINGLE ASPECT ROOM DEEPER THAN 5m

						VSC (WINDOW)				VSC (ROOM)				NSL				APSH (WINDOW)						APSH (ROOM)				
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM NOTES	WINDOW	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS	LOSS %	EX. %	PR. %	LOSS SQM	LOSS %	EX.		PR.		LOSS %		EX.		PR.		LOS
																		ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL	WINTER	ANNUAL
35 CHAPELTOWN STREET (CONTINUED)																												
	R3	RESIDENTIAL	BEDROOM		W6/F03	22	15.4	6.6	30.0%	22	15.4	6.6	30.0%	89.2	62.6	3.0	29.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R4	RESIDENTIAL	BEDROOM		W8/F03	29.7	19.4	10.3	34.7%	29.7	19.4	10.3	34.7%	88.8	67.7	2.0	23.8%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R5 (3)	RESIDENTIAL	LKD		W9/F03 / INC (2)	32.2	21	11.2	34.8%	32.5	21.2	11.3	34.8%	99.6	55.7	8.9	44.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W10/F03 / INC (2)	32.8	21.5	11.3	34.5%									N/A	N/A	N/A	N/A	N/A	N/A					
	R6	RESIDENTIAL	BEDROOM		W11/F03	34.5	23.1	11.4	33.0%	34.5	23.1	11.4	33.0%	97.9	83.9	1.6	14.4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R7	RESIDENTIAL	BEDROOM		W13/F03	34.7	23.4	11.3	32.6%	34.7	23.4	11.3	32.6%	96.4	78.2	1.7	19.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R8	RESIDENTIAL	LKD		W14/F03 / INC (2)	34.1	23	11.1	32.6%	33	24.6	8.4	25.5%	99.5	92.3	1.7	7.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			LKD		W15/F03 / INC (2)	33.9	22.9	11	32.4%									N/A	N/A	N/A	N/A	N/A	N/A					
			LKD		W16/F03	29.9	29.7	0.2	0.7%									N/A	N/A	N/A	N/A	N/A	N/A					
F04	R1	RESIDENTIAL	UNKNOWN		W2/F04	24	13.7	10.3	42.9%	24	13.7	10.3	42.9%	98.7	85.9	1.7	13.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R2	RESIDENTIAL	UNKNOWN		W1/F04	17.5	10	7.5	42.9%	17.5	10	7.5	42.9%	97.3	81.5	3.0	16.3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m



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(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m



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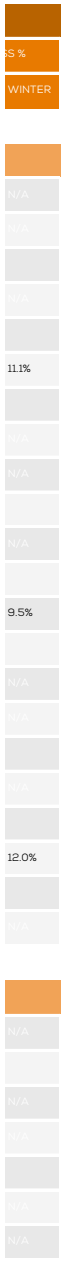
(3) SINGLE ASPECT ROOM DEEPER THAN 5m



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(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

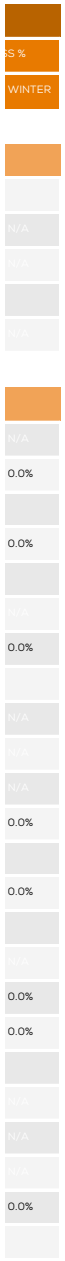
(3) SINGLE ASPECT ROOM DEEPER THAN 5m



(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m



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(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

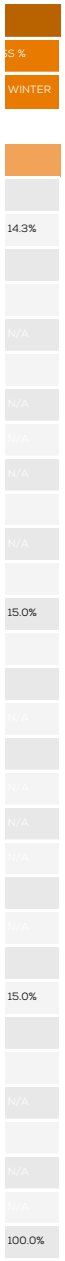
(3) SINGLE ASPECT ROOM DEEPER THAN 5m



(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m



(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m



(1) KITCHEN SMALLER THAN 13m2

(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m



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(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

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(2) INC\HZ = SKY COMPONENT (INCLINED\HORIZONTAL WINDOWS)

(3) SINGLE ASPECT ROOM DEEPER THAN 5m

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL1

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID





F00

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F00	R1	RESIDENTIAL	LKD	11.9	97.1	97.1	0.0	0
F00	R2	RESIDENTIAL	LIVING ROOM	15.7	93.2	78.9	2.2	15.3
F00	R3	RESIDENTIAL	KITCHEN	7.7	97.6	96	0.1	1.6
F00	R4	RESIDENTIAL	LKD	15.3	96.5	90.3	0.9	6.4
F00	R8	RESIDENTIAL	LKD	13.8	97.3	54.6	5.9	43.9

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL2

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F00

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F00	R9	RESIDENTIAL	KITCHEN	6.5	97.2	47.3	3.3	51.4
F00	R10	RESIDENTIAL	KITCHEN	6.4	95.5	33.3	4.0	65.1
F00	R11	RESIDENTIAL	LKD	14.7	95.4	52.7	6.3	44.7
F00	R15	RESIDENTIAL	LD	14.9	91.7	21.6	10.5	76.4
F00	R16	RESIDENTIAL	KITCHEN	9.7	89.1	19.8	6.7	77.8

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL3

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID



F00

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F00	R18	RESIDENTIAL	LD	15.6	95.3	20.8	11.6	78.1
F00	R19	RESIDENTIAL	KITCHEN	10.0	96.3	12.8	8.4	86.7
F00	R20	RESIDENTIAL	LKD	17.1	96.9	71.3	4.4	26.4

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL4

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID





F01

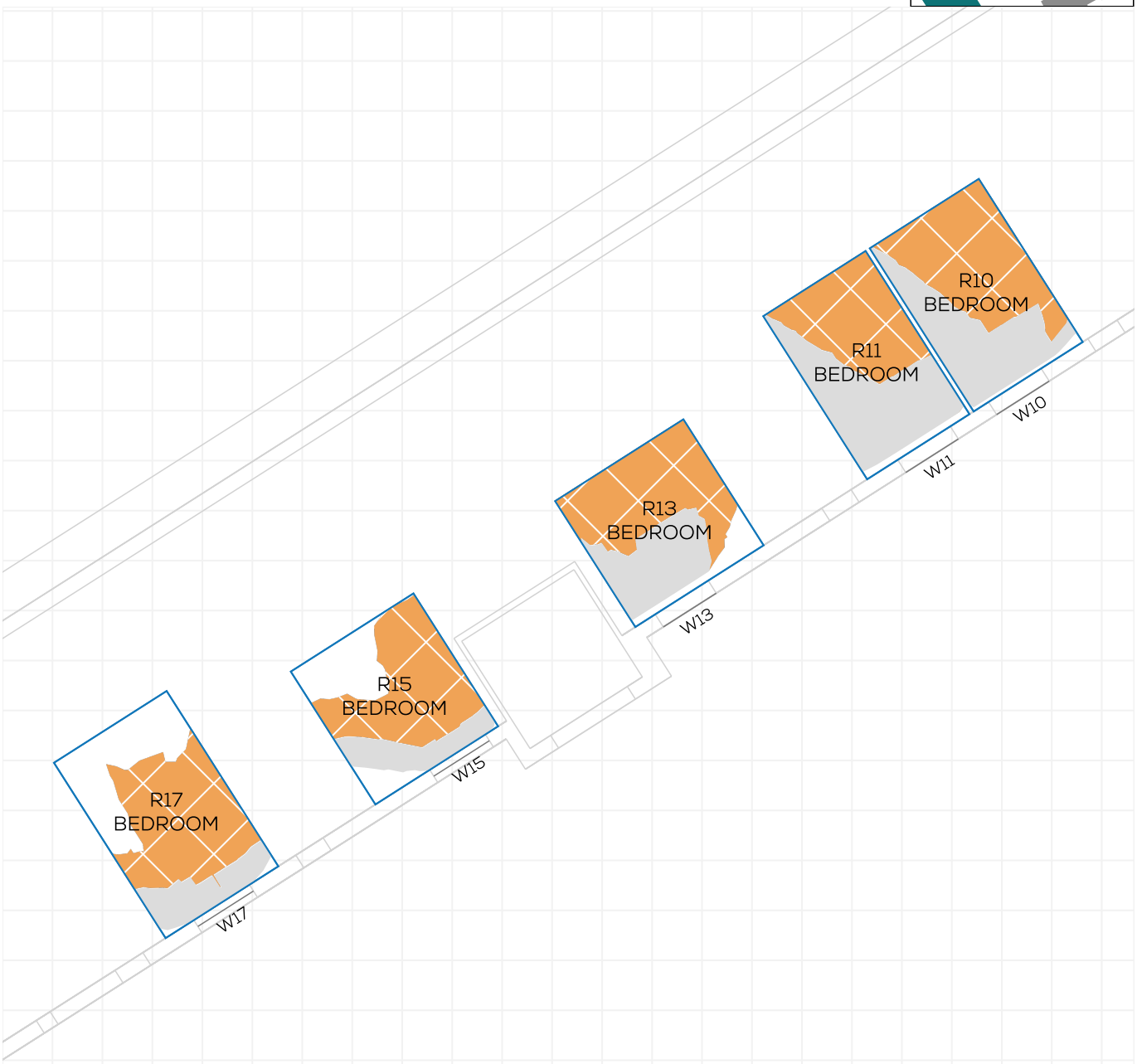
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F01	R1	RESIDENTIAL	BEDROOM	12.9	98.6	98.6	0.0	0
F01	R3	RESIDENTIAL	BEDROOM	8.7	96	80.5	1.3	16.1
F01	R4	RESIDENTIAL	BEDROOM	9.6	96.1	96.1	0.0	0
F01	R6	RESIDENTIAL	BEDROOM	8.6	93.5	68.5	2.1	26.7
F01	R8	RESIDENTIAL	BEDROOM	8.5	94.8	79.6	1.3	16.1

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL5

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID





F01

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F01	R10	RESIDENTIAL	BEDROOM	10.0	97.8	41.1	5.7	57.9
F01	R11	RESIDENTIAL	BEDROOM	9.4	96.3	50.1	4.3	48
F01	R13	RESIDENTIAL	BEDROOM	9.1	90.3	32.4	5.3	64.1
F01	R15	RESIDENTIAL	BEDROOM	9.2	72.7	17.6	5.1	75.8
F01	R17	RESIDENTIAL	BEDROOM	11.1	66.7	15.7	5.7	76.4

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL6

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID





F01

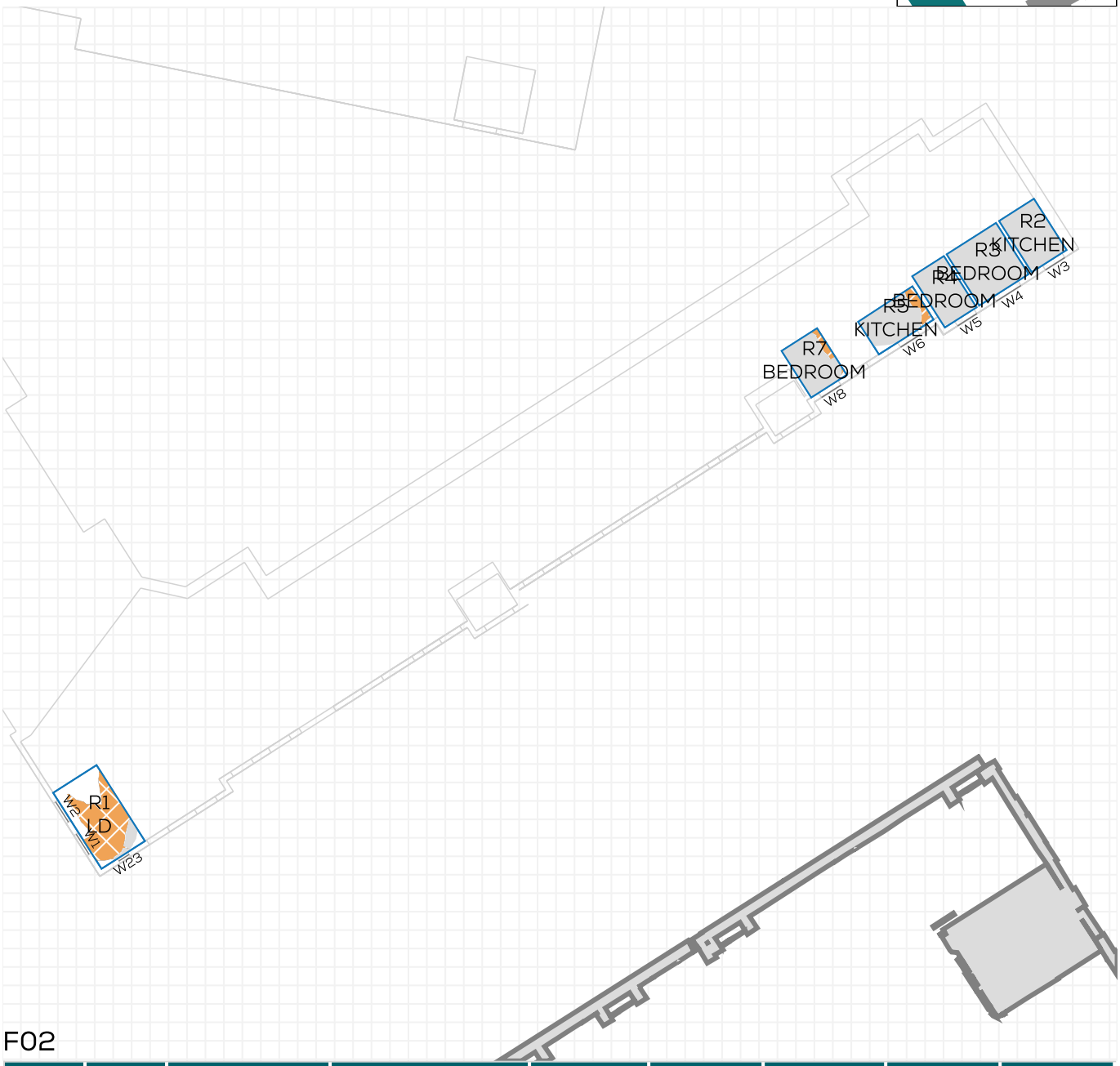
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F01	R19	RESIDENTIAL	BEDROOM	8.3	78.9	16.1	5.2	79.7
F01	R20	RESIDENTIAL	BEDROOM	12.2	71.7	10.1	7.5	85.8
F01	R21	RESIDENTIAL	BEDROOM	12.7	77.4	15	7.9	80.6

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL7

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID





F02

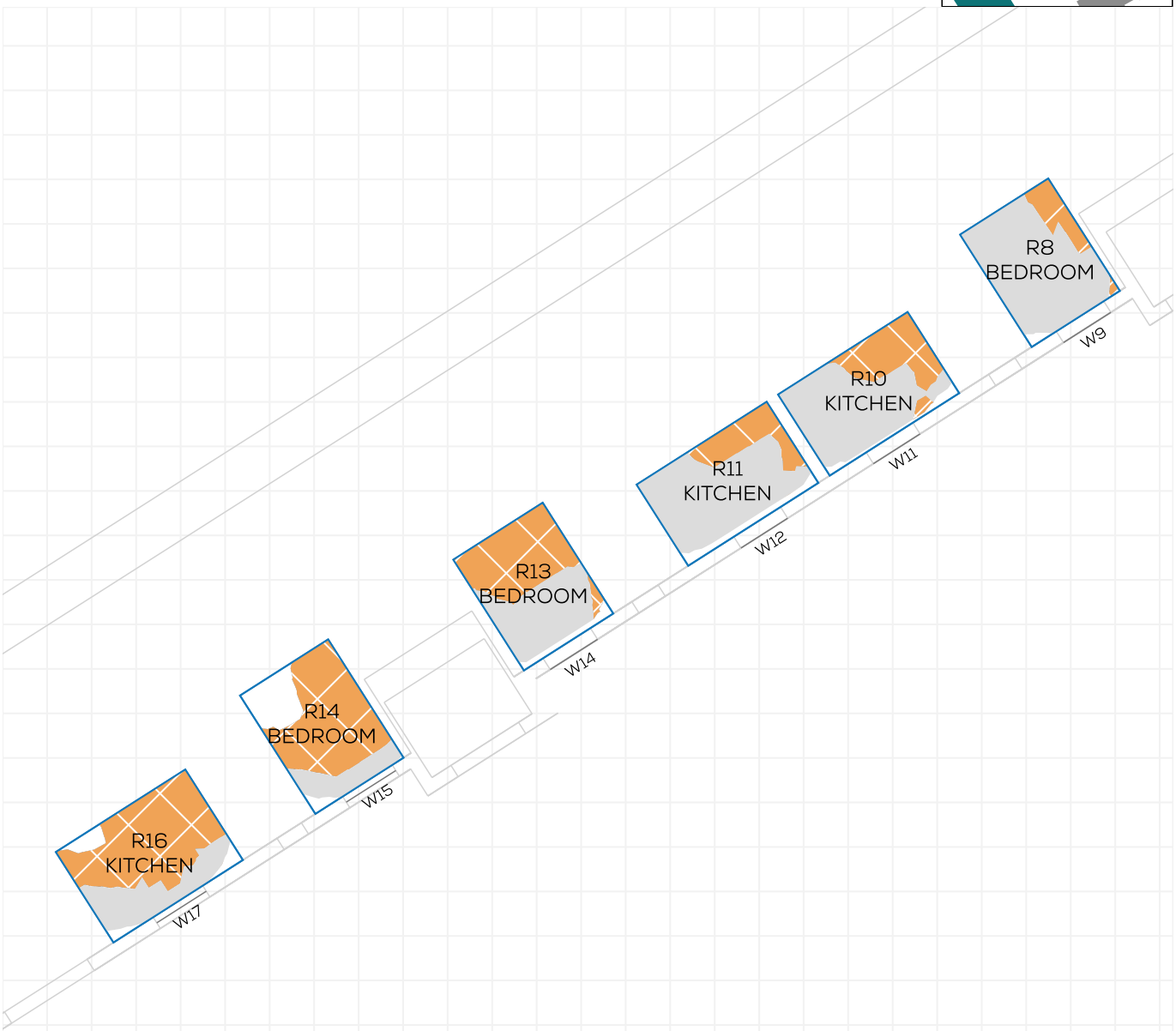
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F02	R1	RESIDENTIAL	LD	13.6	64.7	6.6	7.9	89.9
F02	R2	RESIDENTIAL	KITCHEN	7.3	99.3	99.2	0.0	0.1
F02	R3	RESIDENTIAL	BEDROOM	10.4	99.1	98.7	0.0	0.4
F02	R4	RESIDENTIAL	BEDROOM	6.7	99.4	99.4	0.0	0
F02	R5	RESIDENTIAL	KITCHEN	7.4	93.9	79.9	1.0	14.9
F02	R7	RESIDENTIAL	BEDROOM	6.8	98.5	89.5	0.6	9.2

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL8

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F02

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F02	R8	RESIDENTIAL	BEDROOM	7.0	98.3	84.7	1.0	13.8
F02	R10	RESIDENTIAL	KITCHEN	7.5	95.2	64.7	2.3	32
F02	R11	RESIDENTIAL	KITCHEN	7.5	92.7	71.1	1.6	23.3
F02	R13	RESIDENTIAL	BEDROOM	7.0	94.8	44.1	3.6	53.4
F02	R14	RESIDENTIAL	BEDROOM	7.4	80.8	16.5	4.8	79.6
F02	R16	RESIDENTIAL	KITCHEN	8.3	92.3	27.7	5.4	70

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL9

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F02

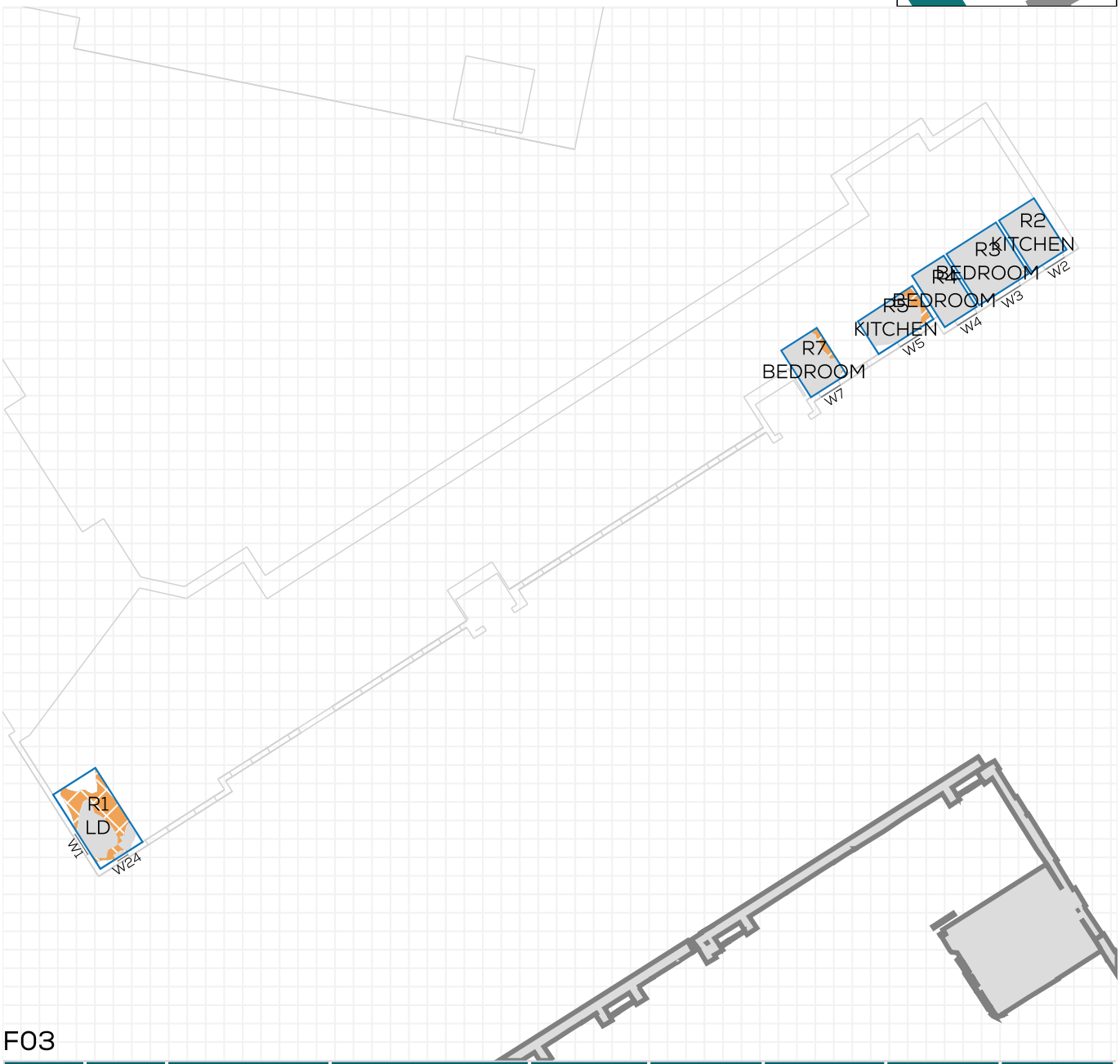
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F02	R17	RESIDENTIAL	LD	16.8	64.3	15.7	8.2	75.6
F02	R18	RESIDENTIAL	KITCHEN	8.1	87.1	17.3	5.7	80.1
F02	R19	RESIDENTIAL	BEDROOM	7.6	90.1	14.5	5.7	83.9
F02	R20	RESIDENTIAL	BEDROOM	6.2	93.7	25.1	4.3	73.2
F02	R21	RESIDENTIAL	KITCHEN	5.8	99.1	26.5	4.2	73.2
F02	R22	RESIDENTIAL	BEDROOM	13.3	98	89.5	1.1	8.7

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL10

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID





F03

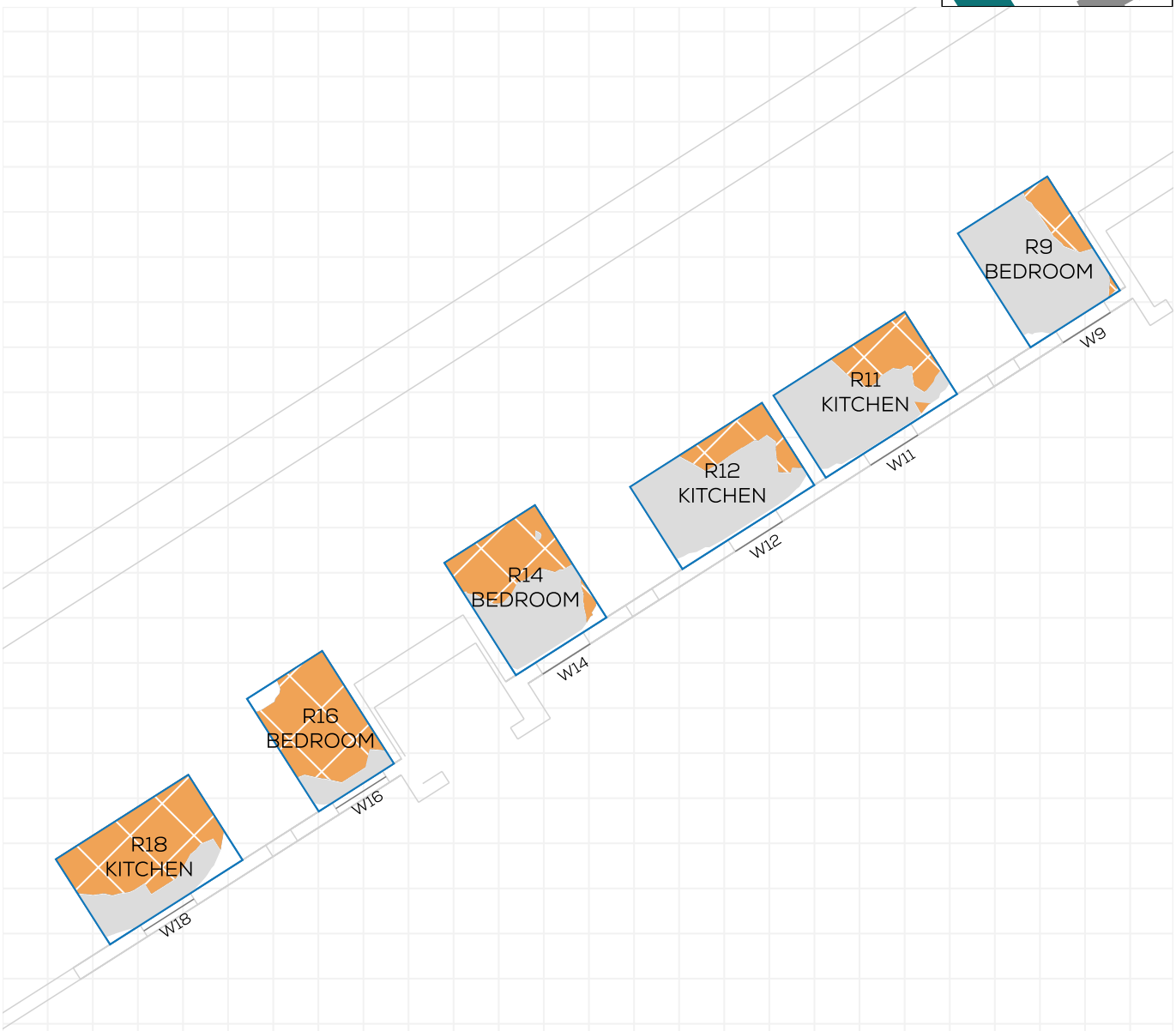
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F03	R1	RESIDENTIAL	LD	12.9	81.2	39.2	5.4	51.7
F03	R2	RESIDENTIAL	KITCHEN	7.3	99.4	99.2	0.0	0.2
F03	R3	RESIDENTIAL	BEDROOM	10.4	99.2	98.6	0.1	0.5
F03	R4	RESIDENTIAL	BEDROOM	6.7	99.5	99.5	0.0	0
F03	R5	RESIDENTIAL	KITCHEN	7.4	94	79.5	1.1	15.4
F03	R7	RESIDENTIAL	BEDROOM	6.8	98.6	89.2	0.6	9.5

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL11

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F03

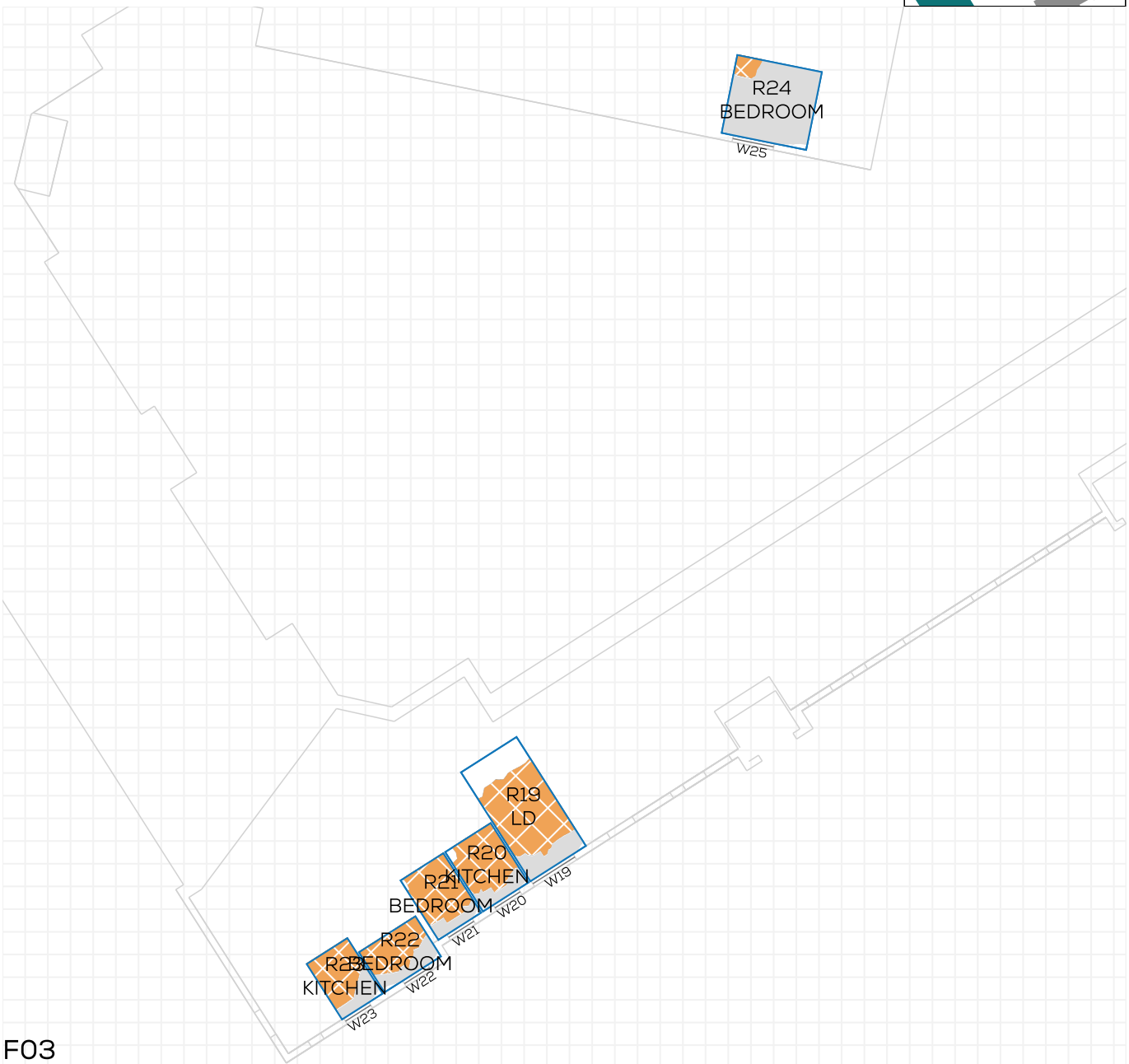
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F03	R9	RESIDENTIAL	BEDROOM	7.0	98.3	82.5	1.1	16.1
F03	R11	RESIDENTIAL	KITCHEN	7.5	96	66.3	2.2	31
F03	R12	RESIDENTIAL	KITCHEN	7.5	94.9	73.1	1.6	22.9
F03	R14	RESIDENTIAL	BEDROOM	7.0	96.3	49.7	3.3	48.4
F03	R16	RESIDENTIAL	BEDROOM	5.8	94.8	14.5	4.7	84.7
F03	R18	RESIDENTIAL	KITCHEN	7.8	94.5	26.6	5.3	71.9

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL12

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F03

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F03	R19	RESIDENTIAL	LD	16.5	78.4	15.3	10.4	80.5
F03	R20	RESIDENTIAL	KITCHEN	7.4	96.1	19.5	5.7	79.7
F03	R21	RESIDENTIAL	BEDROOM	6.9	97.8	16.7	5.6	83
F03	R22	RESIDENTIAL	BEDROOM	6.2	97.5	30.4	4.1	68.9
F03	R23	RESIDENTIAL	KITCHEN	6.1	98.9	26.6	4.4	73.1
F03	R24	RESIDENTIAL	BEDROOM	13.3	98.7	91.8	0.9	7

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL13

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F04

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F04	R1	RESIDENTIAL	KITCHEN	7.3	99.3	99.1	0.0	0.2
F04	R2	RESIDENTIAL	BEDROOM	10.4	97.5	95.8	0.2	1.8
F04	R3	RESIDENTIAL	BEDROOM	6.7	97.6	97.6	0.0	0
F04	R4	RESIDENTIAL	KITCHEN	7.4	93.3	76.2	1.3	18.3
F04	R6	RESIDENTIAL	BEDROOM	6.8	96.8	85.8	0.7	11.3
F04	R7	RESIDENTIAL	BEDROOM	7.0	96.5	79.2	1.2	17.9

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL14

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F04

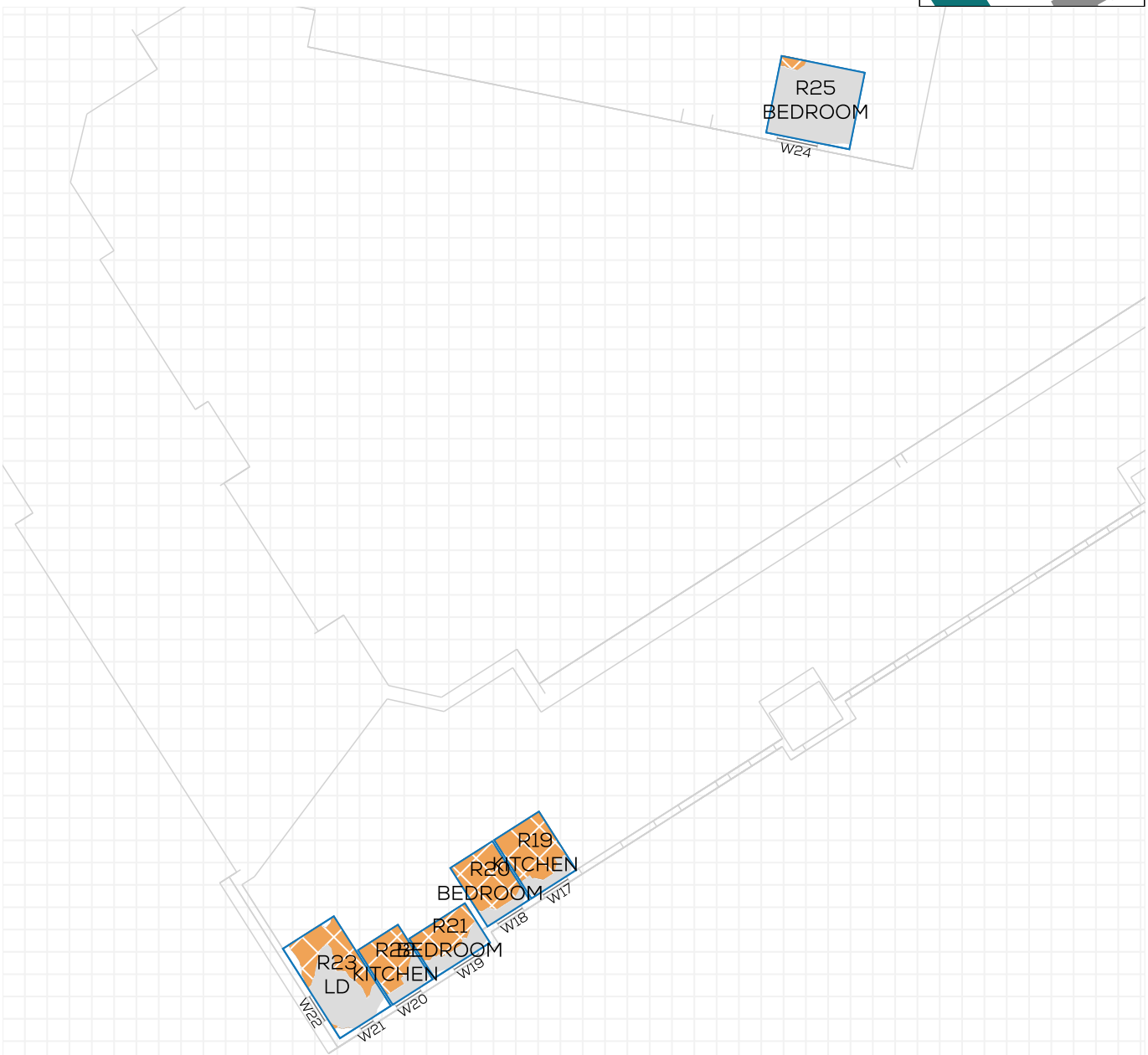
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F04	R9	RESIDENTIAL	KITCHEN	7.5	94.9	60	2.6	36.7
F04	R10	RESIDENTIAL	KITCHEN	7.5	94.8	64.1	2.3	32.4
F04	R12	RESIDENTIAL	BEDROOM	7.0	96.7	38.3	4.1	60.3
F04	R15	RESIDENTIAL	BEDROOM	5.8	99.4	20	4.6	79.9
F04	R17	RESIDENTIAL	KITCHEN	7.8	95	29.9	5.1	68.6
F04	R18	RESIDENTIAL	LD	16.5	98	17	13.4	82.7

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: WHARF CLOSE
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL15

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





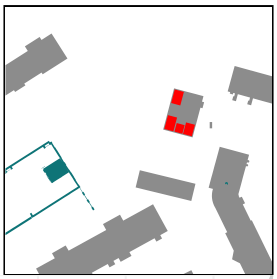
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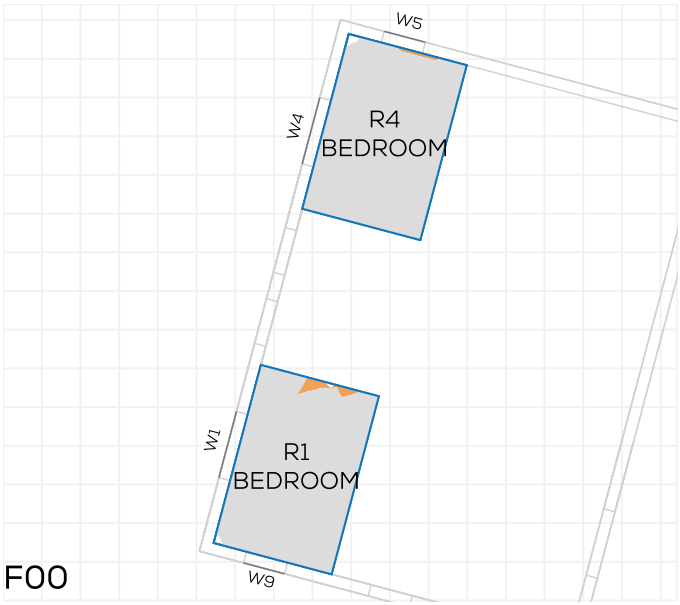
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
WHARF CLOSE								
F04	R19	RESIDENTIAL	KITCHEN	7.4	98.7	19.7	5.8	80
F04	R20	RESIDENTIAL	BEDROOM	6.9	99	15.7	5.8	84.2
F04	R21	RESIDENTIAL	BEDROOM	6.2	97.6	33.8	3.9	65.3
F04	R22	RESIDENTIAL	KITCHEN	6.1	99	27.7	4.4	72
F04	R23	RESIDENTIAL	LD	12.9	92.6	49.5	5.6	46.6
F04	R25	RESIDENTIAL	BEDROOM	13.3	98.7	94.9	0.5	3.8

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 19-26 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL16

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID

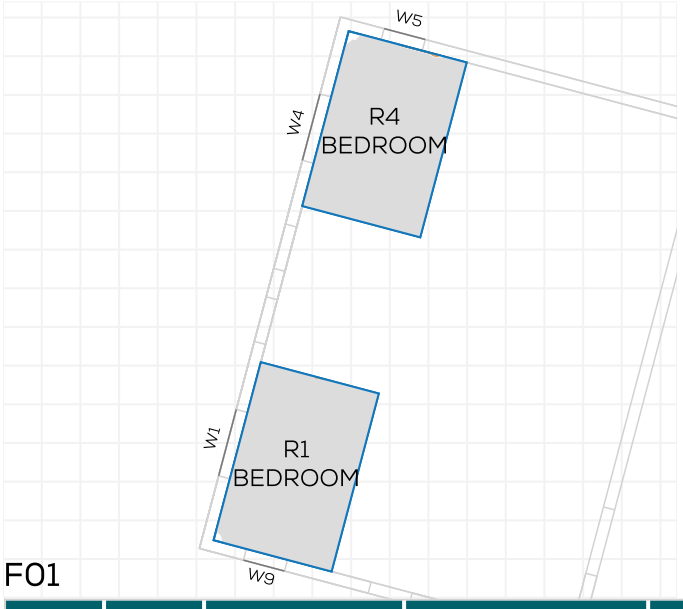




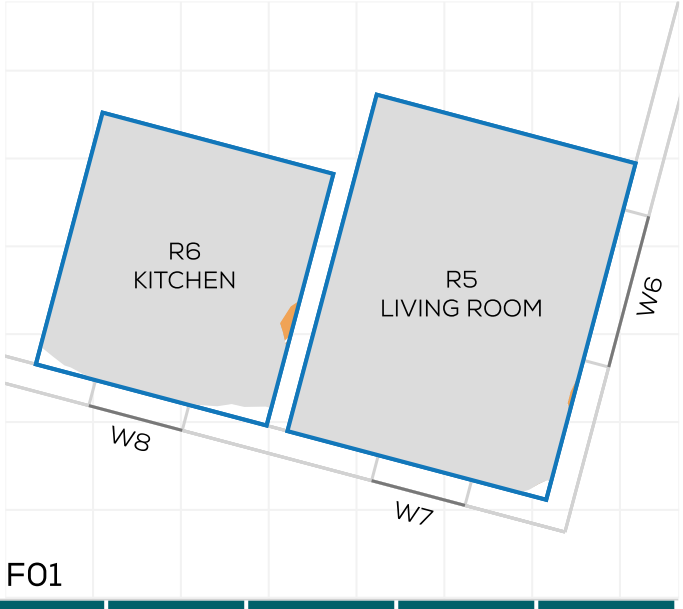
F00



F00



F01



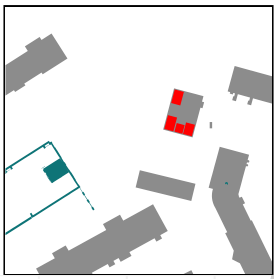
F01

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
19-26 THOMAS TELFORD BASIN								
F00	R1	RESIDENTIAL	BEDROOM	15.0	99.7	97.8	0.3	2
F00	R4	RESIDENTIAL	BEDROOM	14.8	99.5	98.9	0.1	0.7
F00	R5	RESIDENTIAL	LIVING ROOM	12.1	99.6	99.6	0.0	0
F00	R6	RESIDENTIAL	KITCHEN	8.1	96.8	96.5	0.0	0.4
F01	R1	RESIDENTIAL	BEDROOM	15.0	99.7	99.7	0.0	0.1
F01	R4	RESIDENTIAL	BEDROOM	14.8	99.5	99.1	0.1	0.4
F01	R5	RESIDENTIAL	LIVING ROOM	12.1	99.7	99.6	0.0	0.1
F01	R6	RESIDENTIAL	KITCHEN	8.1	97.9	97.3	0.1	0.6

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 19-26 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL17

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID

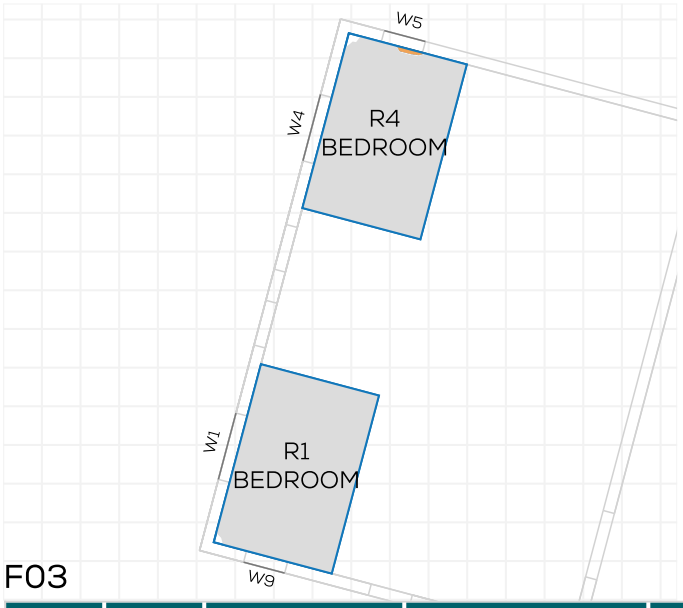




F02



F02



F03



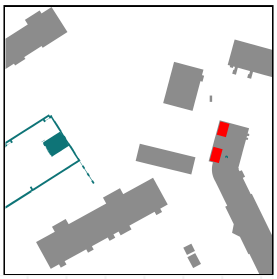
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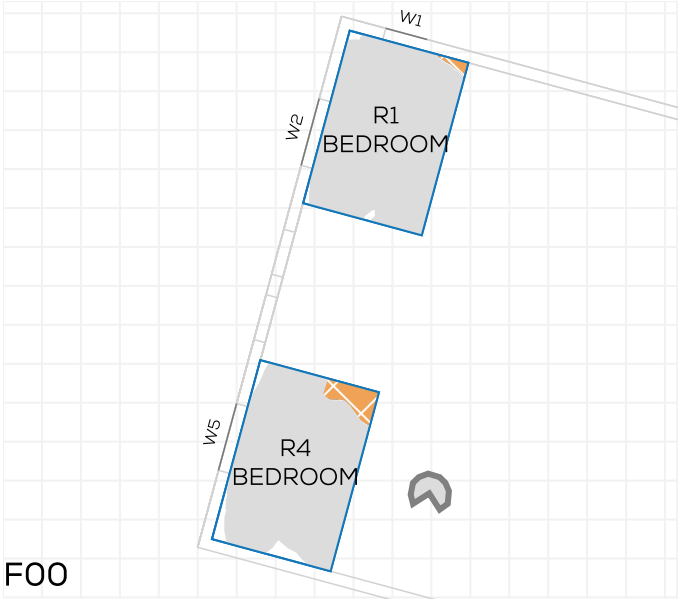
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
19-26 THOMAS TELFORD BASIN								
F02	R1	RESIDENTIAL	BEDROOM	15.0	99.7	99.7	0.0	0
F02	R4	RESIDENTIAL	BEDROOM	14.8	99.6	99.4	0.0	0.2
F02	R5	RESIDENTIAL	LIVING ROOM	12.1	99.7	99.7	0.0	0
F02	R6	RESIDENTIAL	KITCHEN	8.1	97.9	97.5	0.0	0.4
F03	R1	RESIDENTIAL	BEDROOM	15.0	99.7	99.7	0.0	0
F03	R4	RESIDENTIAL	BEDROOM	14.8	99.5	99	0.1	0.6
F03	R5	RESIDENTIAL	LIVING ROOM	12.1	99.6	99.6	0.0	0
F03	R6	RESIDENTIAL	KITCHEN	8.1	95.2	95.2	0.0	0

NSL CONTOURS

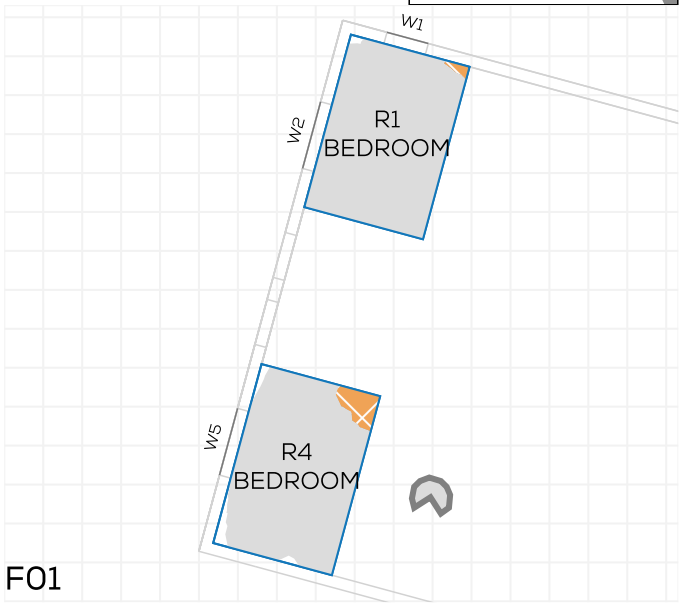
PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 27-34 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL18

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID

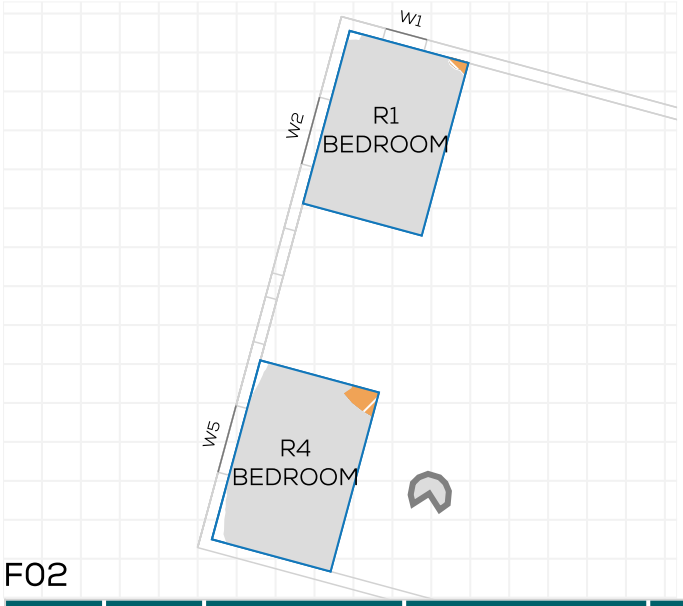




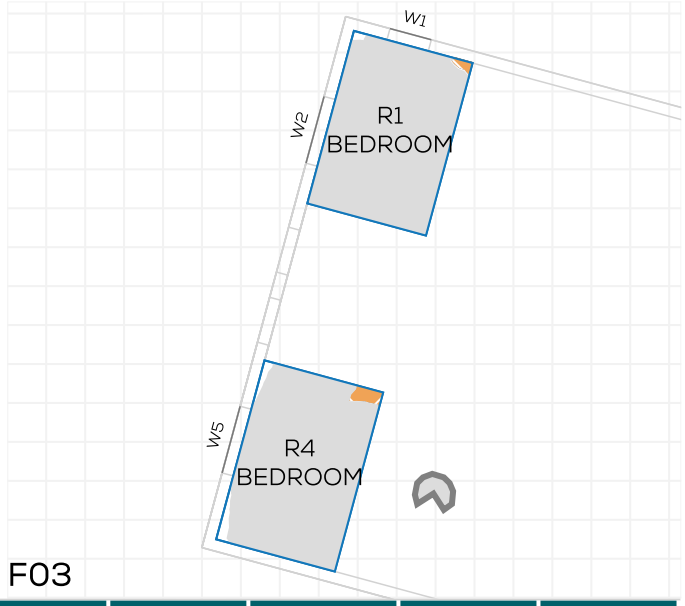
F00



F01



F02



F03

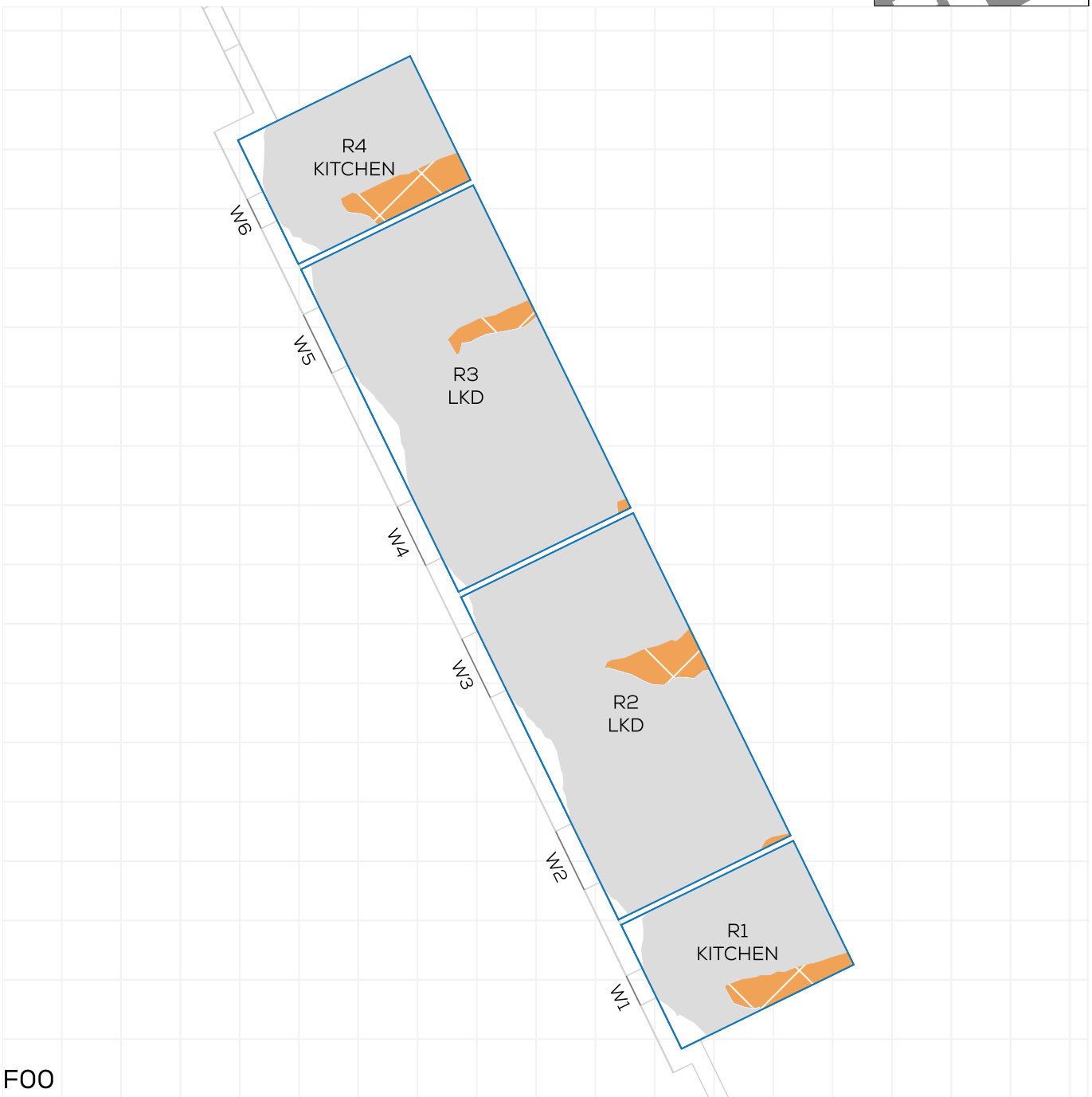
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
27-34 THOMAS TELFORD BASIN								
F00	R1	RESIDENTIAL	BEDROOM	14.5	98.9	97.7	0.2	1.2
F00	R4	RESIDENTIAL	BEDROOM	15.0	95.9	90.3	0.8	5.8
F01	R1	RESIDENTIAL	BEDROOM	14.5	99.6	98.6	0.1	1
F01	R4	RESIDENTIAL	BEDROOM	15.0	97	91.9	0.8	5.3
F02	R1	RESIDENTIAL	BEDROOM	14.5	99.6	98.7	0.1	0.8
F02	R4	RESIDENTIAL	BEDROOM	15.0	97.6	94.8	0.4	2.8
F03	R1	RESIDENTIAL	BEDROOM	14.5	99.6	98.7	0.1	0.9
F03	R4	RESIDENTIAL	BEDROOM	15.0	97.5	95.7	0.3	1.9

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35-40 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL19

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





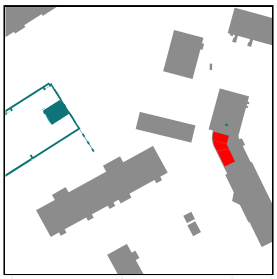
F00

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35-40 THOMAS TELFORD BASIN								
F00	R1	RESIDENTIAL	KITCHEN	7.5	94.4	83.2	0.8	11.9
F00	R2	RESIDENTIAL	LKD	19.5	97.5	92.9	0.9	4.7
F00	R3	RESIDENTIAL	LKD	19.5	97.5	94.9	0.5	2.7
F00	R4	RESIDENTIAL	KITCHEN	7.5	94.4	79.2	1.1	16

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35-40 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL20

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F00

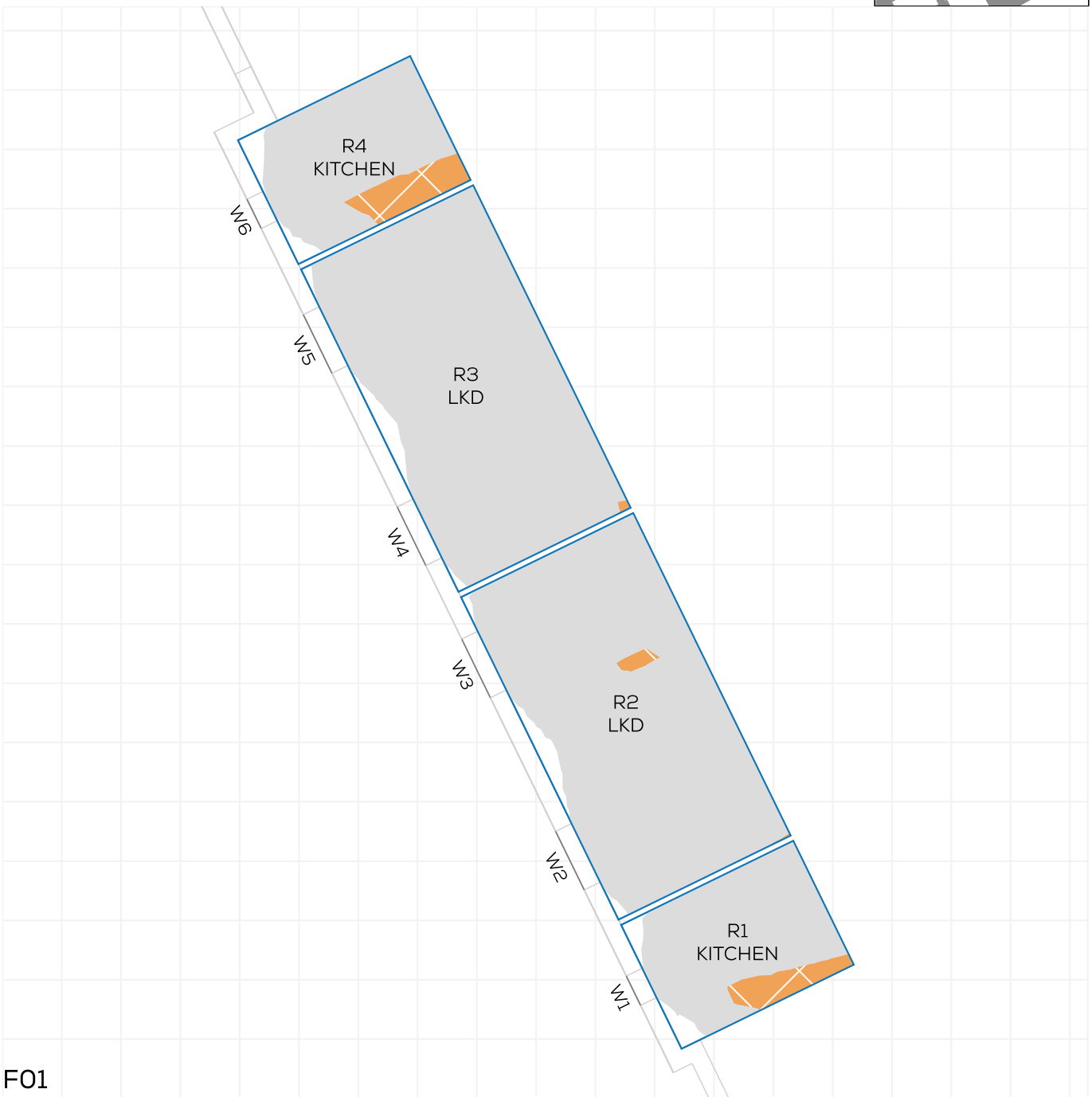
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35-40 THOMAS TELFORD BASIN								
F00	R6	RESIDENTIAL	LKD	19.8	98.5	97.2	0.3	1.3
F00	R7	RESIDENTIAL	BEDROOM	10.8	97.4	66.2	3.4	32
F00	R8	RESIDENTIAL	BEDROOM	14.4	98.5	67.7	4.4	31.2

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35-40 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL21

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F01

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35-40 THOMAS TELFORD BASIN								
F01	R1	RESIDENTIAL	KITCHEN	7.5	94.5	83.5	0.8	11.6
F01	R2	RESIDENTIAL	LKD	19.5	97.5	96.7	0.2	0.8
F01	R3	RESIDENTIAL	LKD	19.5	97.5	97.4	0.0	0.2
F01	R4	RESIDENTIAL	KITCHEN	7.5	94.4	80	1.1	15.3

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35-40 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL22

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F01

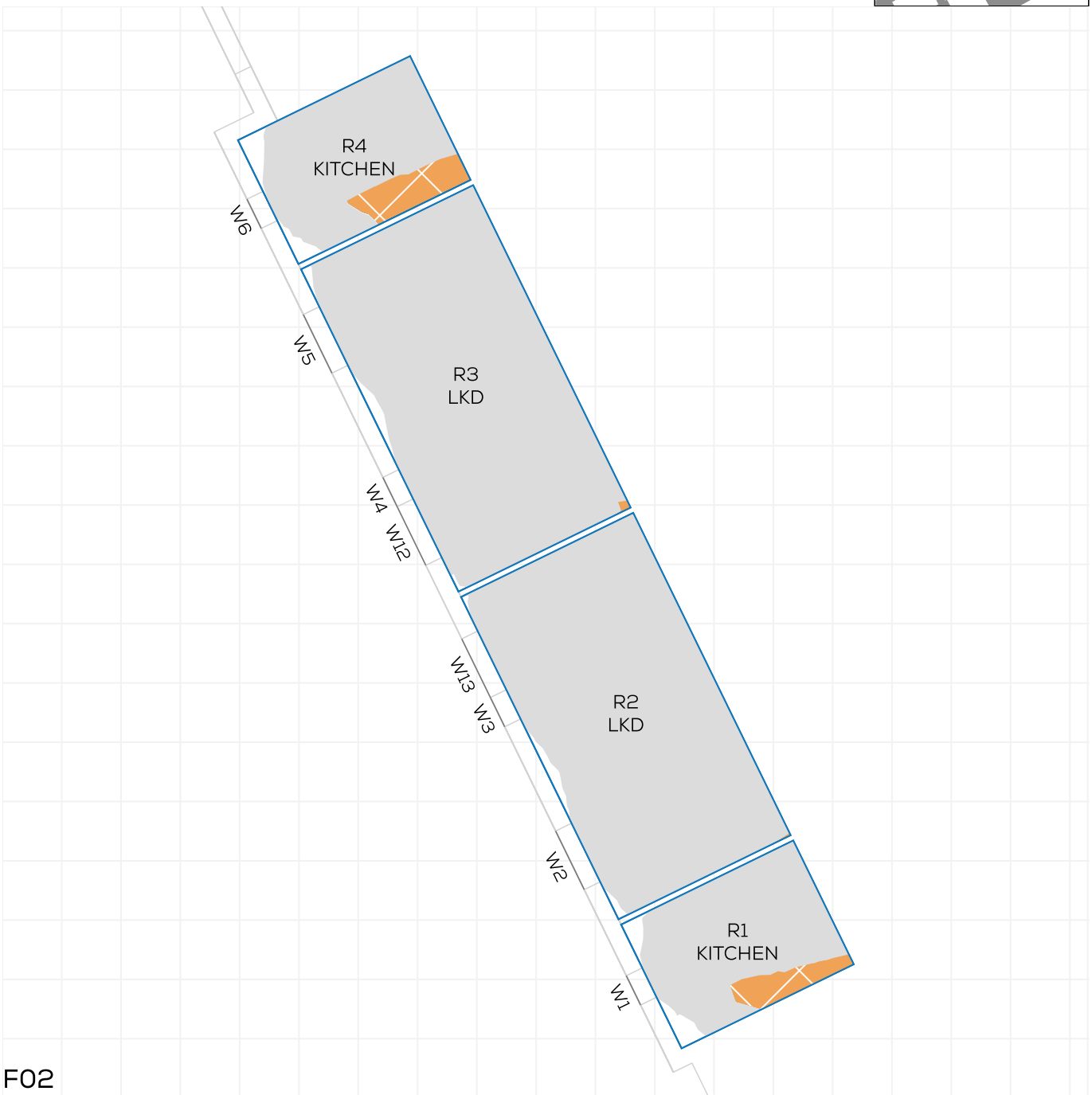
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35-40 THOMAS TELFORD BASIN								
F01	R5	RESIDENTIAL	UNKNOWN	10.3	99.5	88.7	1.1	10.8
F01	R6	RESIDENTIAL	LKD	19.8	98.5	97.3	0.2	1.2
F01	R7	RESIDENTIAL	BEDROOM	10.8	97.4	71	2.8	27.1
F01	R8	RESIDENTIAL	BEDROOM	14.4	98.7	71.3	3.9	27.7

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35-40 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL23

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





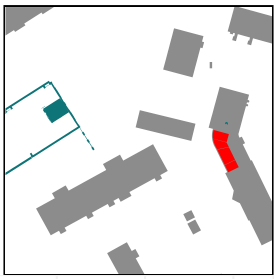
F02

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35-40 THOMAS TELFORD BASIN								
F02	R1	RESIDENTIAL	KITCHEN	7.5	94.6	84	0.8	11.2
F02	R2	RESIDENTIAL	LKD	19.5	98.7	98.7	0.0	0
F02	R3	RESIDENTIAL	LKD	19.5	98.7	98.6	0.0	0.1
F02	R4	RESIDENTIAL	KITCHEN	7.5	94.4	80.1	1.1	15.2

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35-40 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL24

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F02

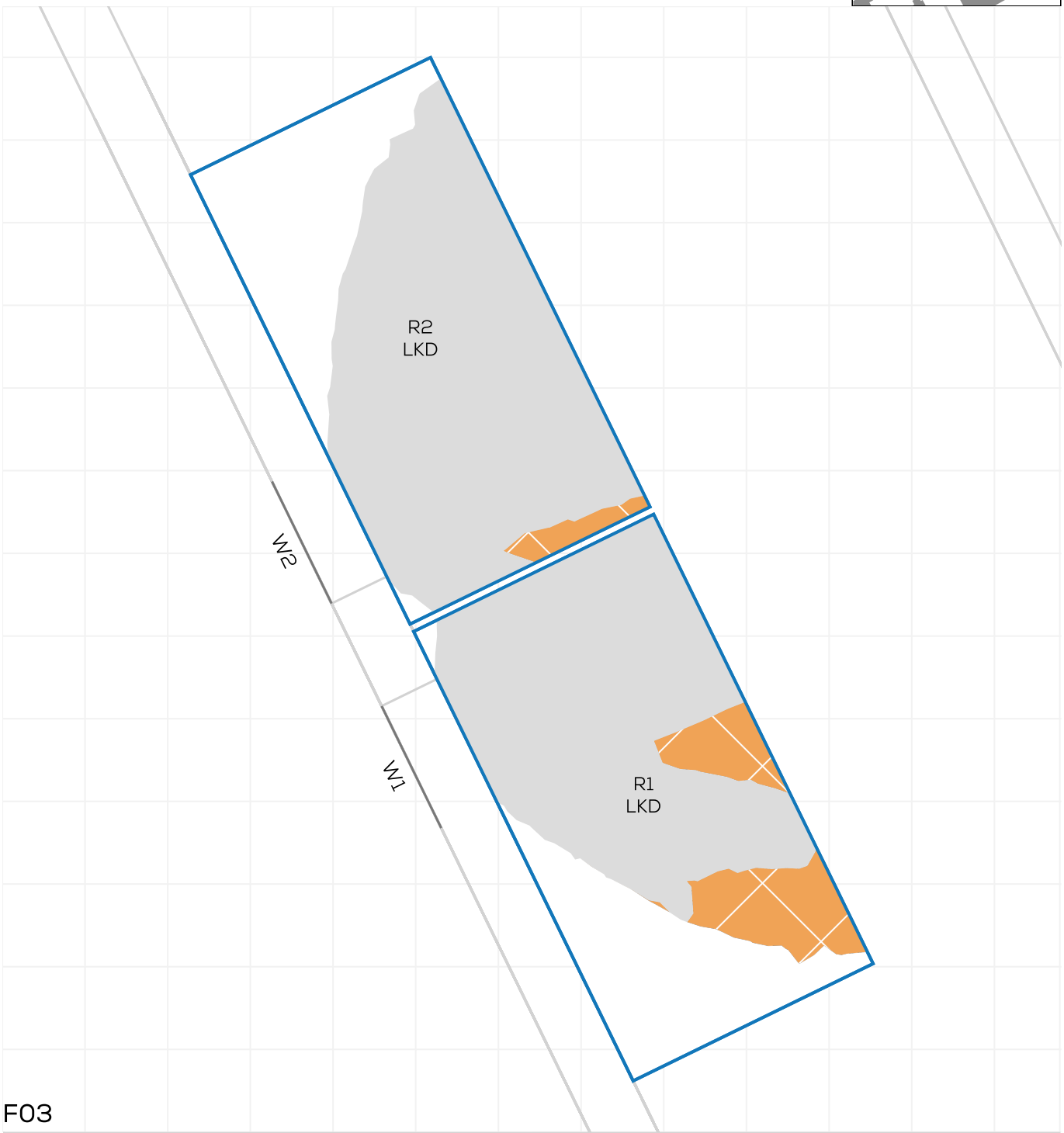
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35-40 THOMAS TELFORD BASIN								
F02	R5	RESIDENTIAL	UNKNOWN	10.3	99.5	92.7	0.7	6.9
F02	R6	RESIDENTIAL	LKD	19.8	98.5	97.4	0.2	1.1
F02	R7	RESIDENTIAL	BEDROOM	10.8	97.4	76.2	2.3	21.7
F02	R8	RESIDENTIAL	BEDROOM	14.4	98.7	75.1	3.4	23.9

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35-40 THOMAS TELFORD BASIN
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL25

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





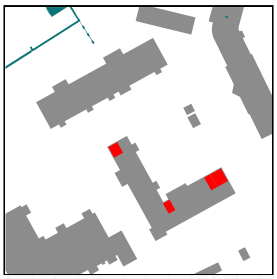
F03

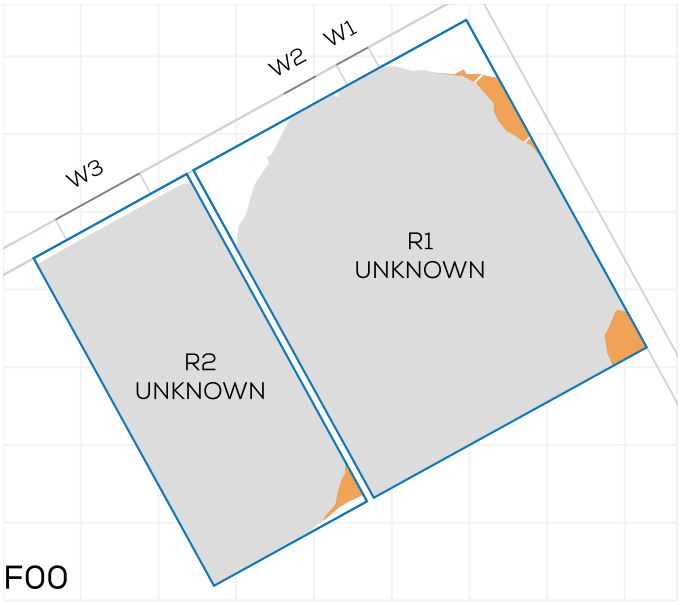
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35-40 THOMAS TELFORD BASIN								
F03	R1	RESIDENTIAL	LKD	19.5	74.7	61.2	2.6	18
F03	R2	RESIDENTIAL	LKD	19.5	73.5	71.2	0.4	3.1

NSL CONTOURS

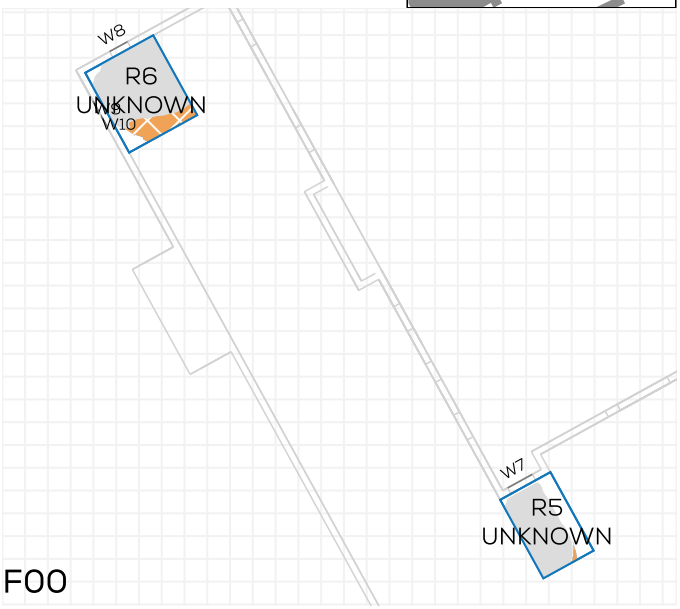
PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 37 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL26

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID

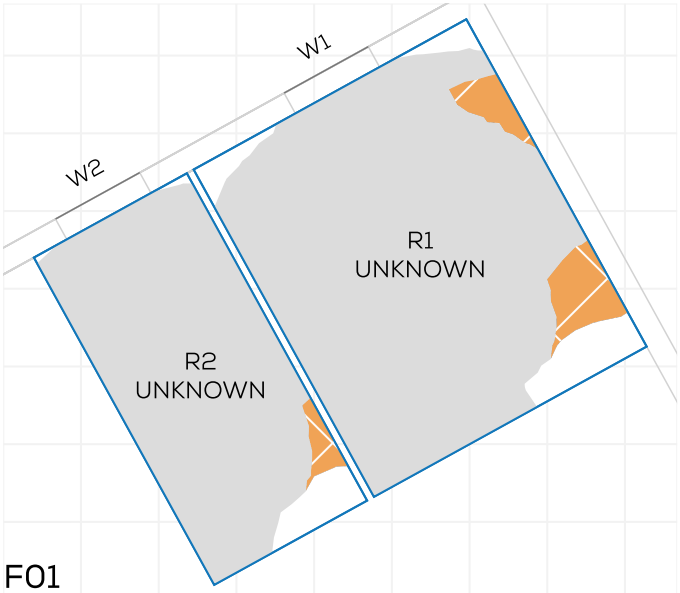




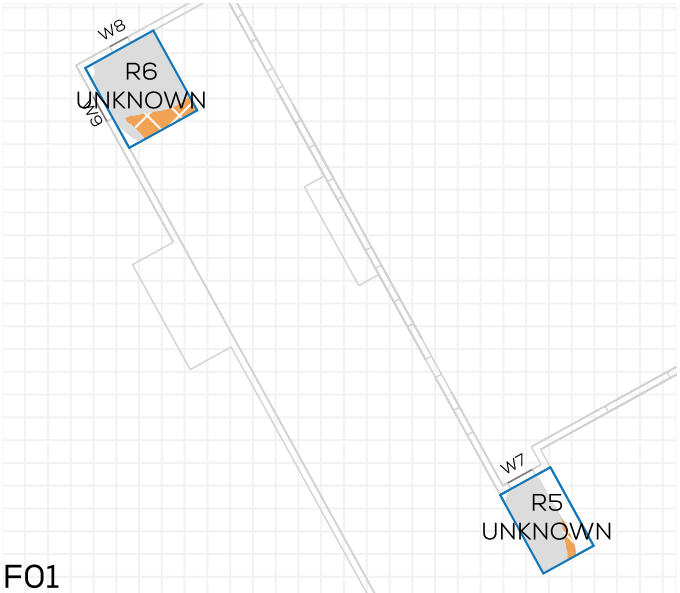
F00



F00



F01



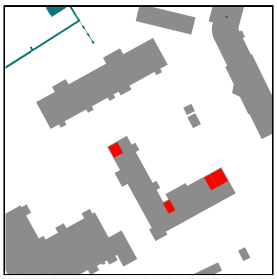
F01

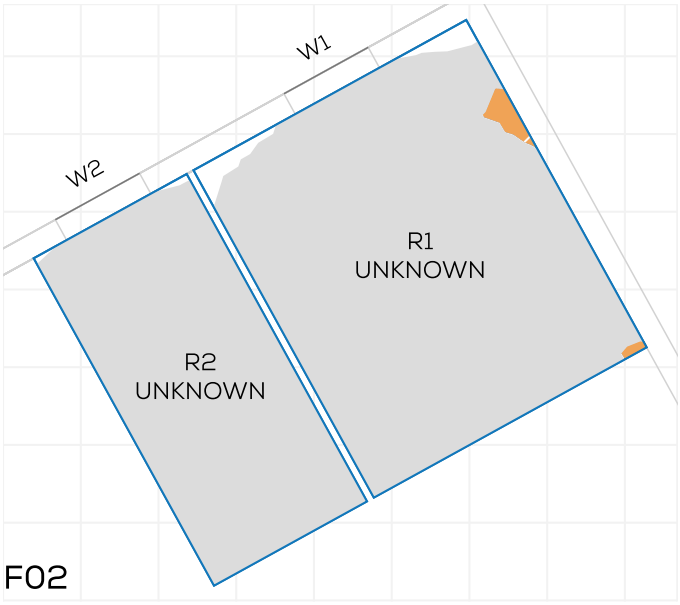
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
37 CHAPELTOWN STREET								
F00	R1	RESIDENTIAL	UNKNOWN	19.3	93.5	90.9	0.5	2.8
F00	R2	RESIDENTIAL	UNKNOWN	10.8	97.6	96.6	0.1	1
F00	R5	RESIDENTIAL	UNKNOWN	9.9	71	70.1	0.1	1.2
F00	R6	RESIDENTIAL	UNKNOWN	13.6	93	77	2.2	17.2
F01	R1	RESIDENTIAL	UNKNOWN	19.3	93	86.8	1.2	6.7
F01	R2	RESIDENTIAL	UNKNOWN	10.8	93.9	91.4	0.3	2.6
F01	R5	RESIDENTIAL	UNKNOWN	9.9	72.5	67.5	0.5	6.9
F01	R6	RESIDENTIAL	UNKNOWN	13.6	96.9	80.1	2.3	17.4

NSL CONTOURS

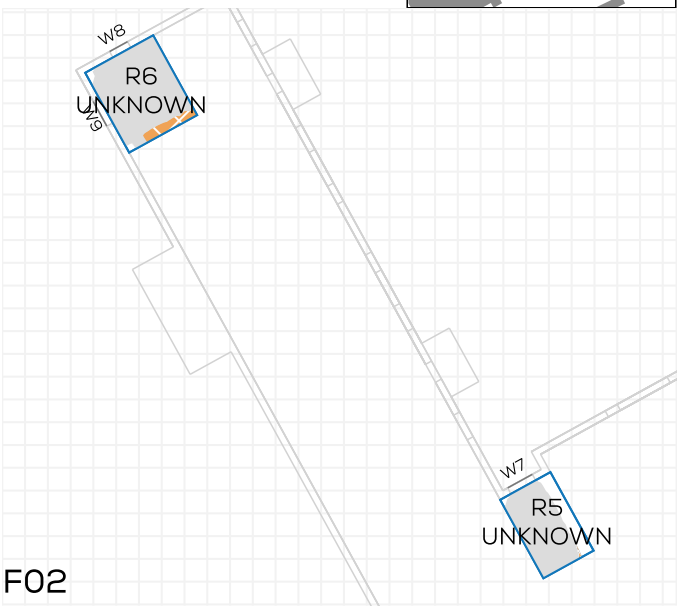
PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 37 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL27

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID

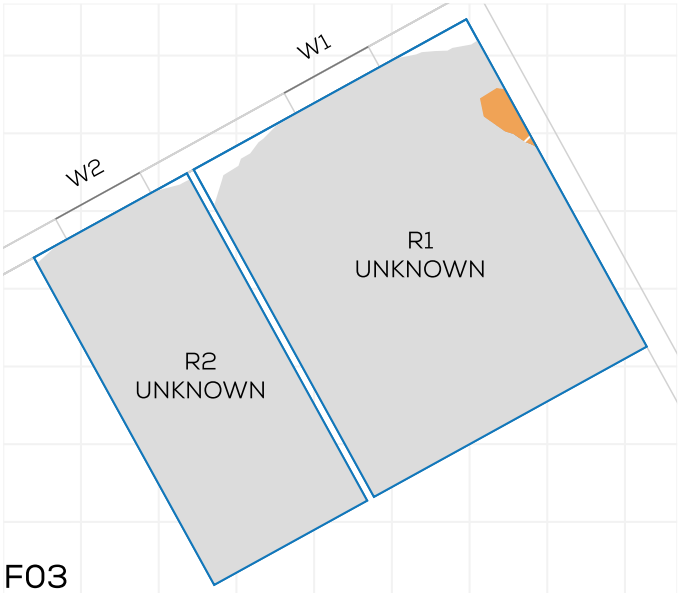




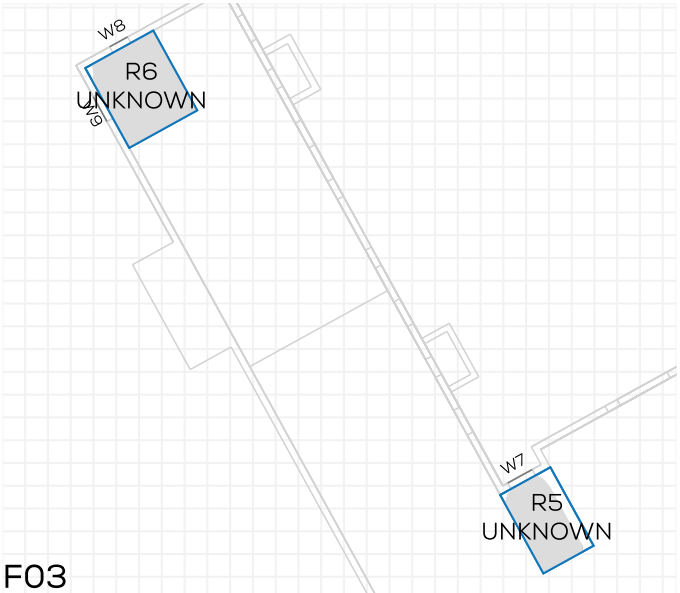
F02



F02



F03



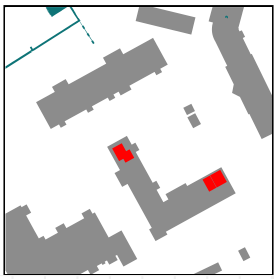
F03

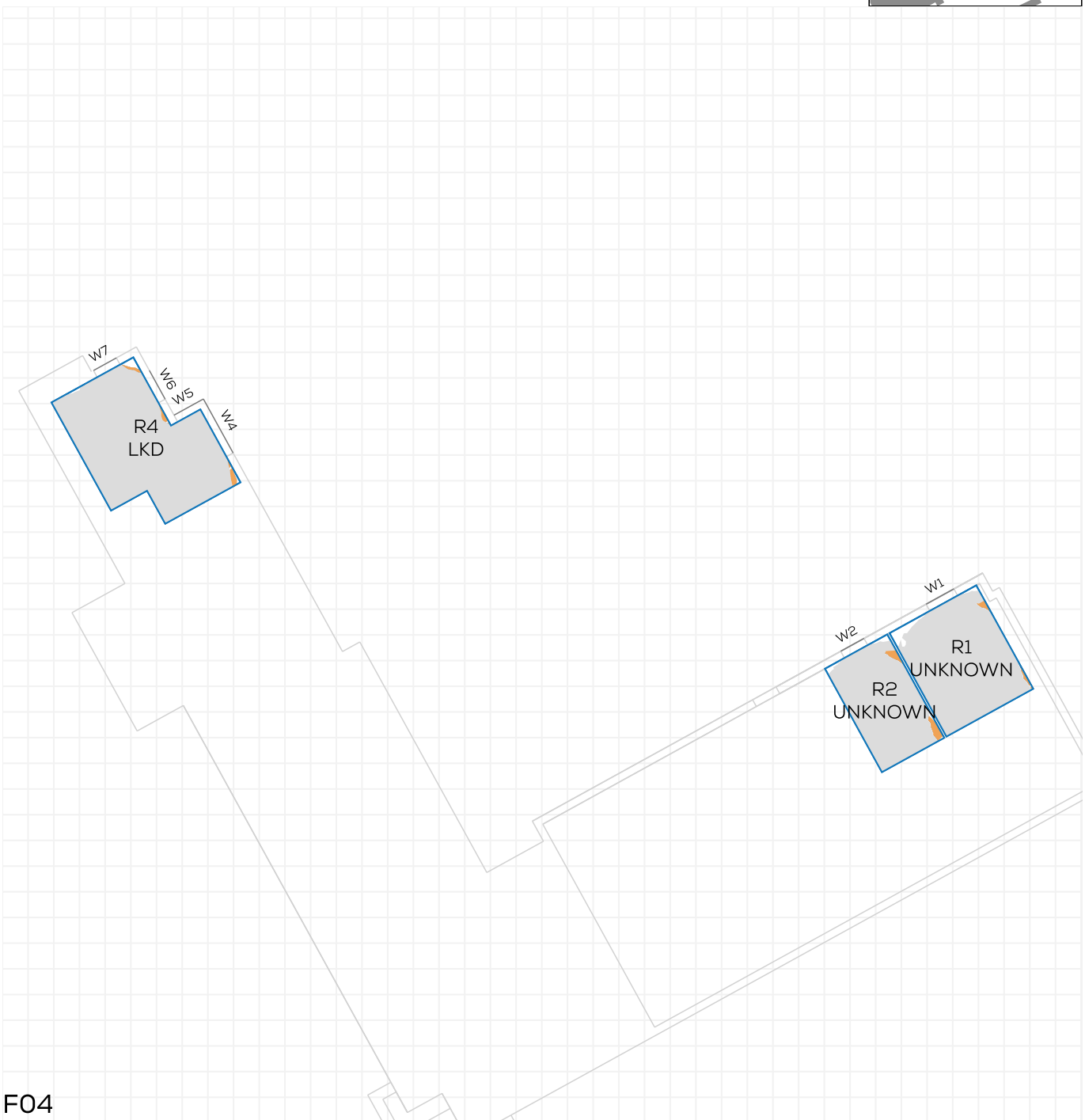
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
37 CHAPELTOWN STREET								
F02	R1	RESIDENTIAL	UNKNOWN	19.3	97.7	96.4	0.2	1.3
F02	R2	RESIDENTIAL	UNKNOWN	10.8	99.6	99.6	0.0	0
F02	R5	RESIDENTIAL	UNKNOWN	9.9	77.1	76.8	0.0	0.4
F02	R6	RESIDENTIAL	UNKNOWN	13.6	98.1	90.8	1.0	7.5
F03	R1	RESIDENTIAL	UNKNOWN	19.3	97.7	96.4	0.2	1.3
F03	R2	RESIDENTIAL	UNKNOWN	10.8	99.5	99.5	0.0	0
F03	R5	RESIDENTIAL	UNKNOWN	9.9	81	80.9	0.0	0.1
F03	R6	RESIDENTIAL	UNKNOWN	13.6	99.1	99.1	0.0	0

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 37 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL28

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F04

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
37 CHAPELTOWN STREET								
F04	R1	RESIDENTIAL	UNKNOWN	17.7	96.9	95.8	0.2	1.2
F04	R2	RESIDENTIAL	UNKNOWN	12.7	98.4	94.9	0.5	3.6
F04	R4	RESIDENTIAL	LKD	24.7	99	97.7	0.3	1.3

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 39 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL29

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID



F00

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
39 CHAPELTOWN STREET								
F00	R1	RESIDENTIAL	UNKNOWN	12.1	94.6	87.6	0.8	7.3
F00	R2	RESIDENTIAL	UNKNOWN	12.8	95.7	78.8	2.2	17.6
F00	R3	RESIDENTIAL	UNKNOWN	16.4	79	77.7	0.2	1.6
F00	R6	RESIDENTIAL	UNKNOWN	23.0	98.5	83.9	3.4	14.8
F00	R7	RESIDENTIAL	UNKNOWN	33.4	95.1	61	11.4	35.8
F00	R9	RESIDENTIAL	UNKNOWN	35.4	91.4	30.3	21.6	66.8

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 39 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL30

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F01

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
39 CHAPELTOWN STREET								
F01	R1	RESIDENTIAL	UNKNOWN	12.1	98.6	94.2	0.5	4.4
F01	R2	RESIDENTIAL	UNKNOWN	12.8	94.4	81.5	1.7	13.7
F01	R3	RESIDENTIAL	UNKNOWN	16.4	94.6	94.3	0.0	0.2
F01	R6	RESIDENTIAL	UNKNOWN	23.0	98	85.4	2.9	12.8
F01	R7	RESIDENTIAL	UNKNOWN	33.4	95.1	65.5	9.9	31.1
F01	R9	RESIDENTIAL	UNKNOWN	35.4	94.8	48.7	16.3	48.7

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 39 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL31

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F02

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
39 CHAPELTOWN STREET								
F02	R1	RESIDENTIAL	UNKNOWN	12.1	98.6	94.9	0.5	3.8
F02	R2	RESIDENTIAL	UNKNOWN	12.8	95.2	81.4	1.8	14.5
F02	R3	RESIDENTIAL	UNKNOWN	16.4	94.5	94.3	0.0	0.3
F02	R6	RESIDENTIAL	UNKNOWN	23.0	98.4	85.9	2.9	12.7
F02	R7	RESIDENTIAL	UNKNOWN	33.4	95.2	65.6	9.9	31.1
F02	R9	RESIDENTIAL	UNKNOWN	35.4	94.5	50.5	15.6	46.5

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 39 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL32

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





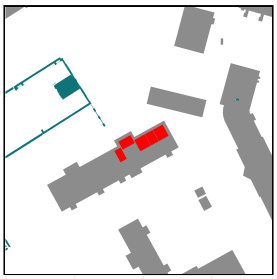
F03

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
39 CHAPELTOWN STREET								
F03	R1	RESIDENTIAL	UNKNOWN	12.1	98.5	93.2	0.6	5.4
F03	R2	RESIDENTIAL	UNKNOWN	12.8	95.7	80.8	1.9	15.6
F03	R3	RESIDENTIAL	UNKNOWN	16.4	94.4	94.1	0.1	0.3
F03	R5	RESIDENTIAL	UNKNOWN	23.0	98.6	85.8	2.9	13
F03	R6	RESIDENTIAL	UNKNOWN	33.4	95.3	65.3	10.0	31.5
F03	R7	RESIDENTIAL	UNKNOWN	35.4	94	51.5	15.1	45.3

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 39 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL33

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





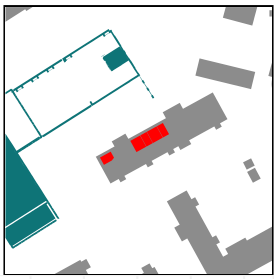
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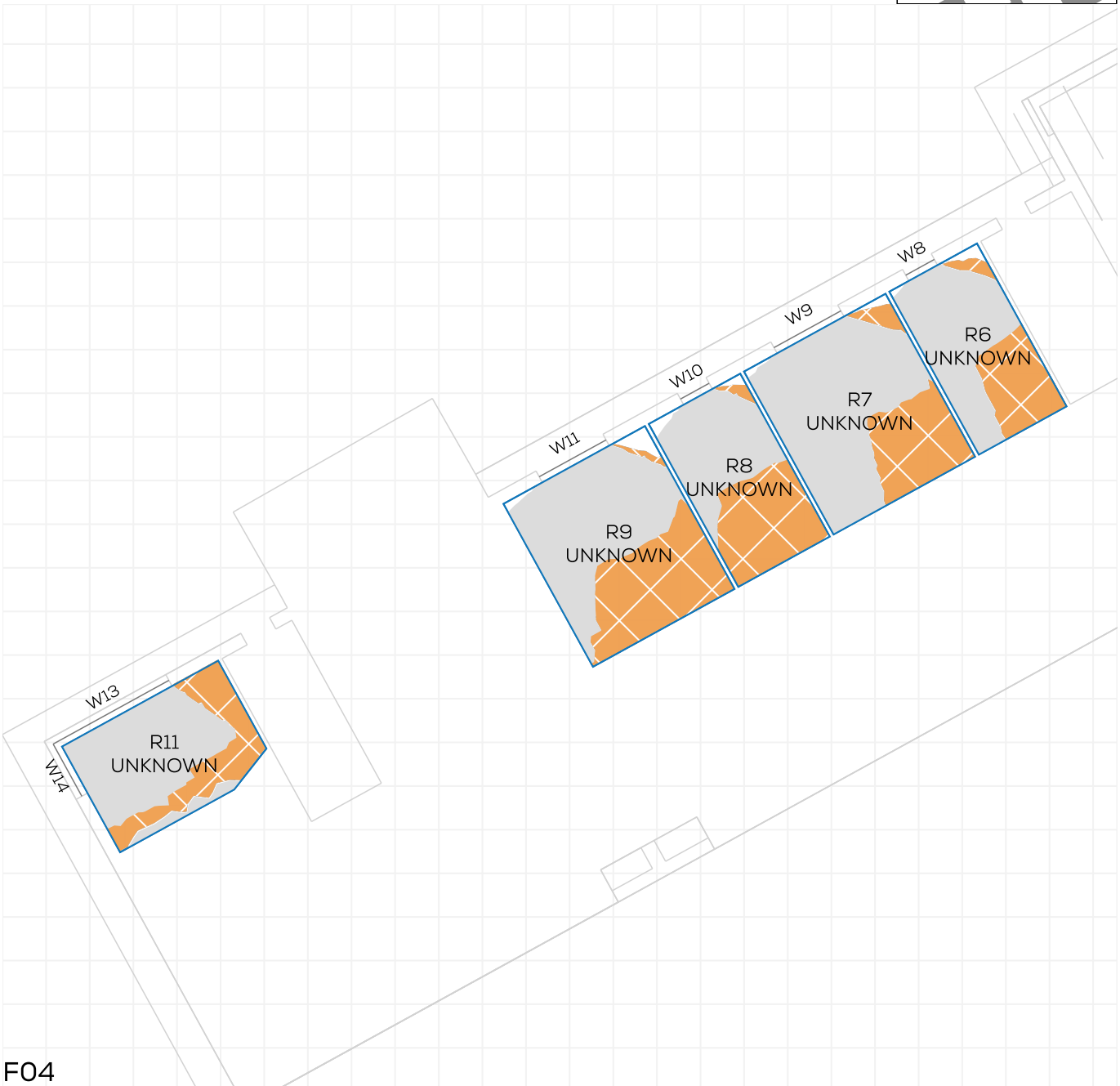
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
39 CHAPELTOWN STREET								
F04	R1	RESIDENTIAL	UNKNOWN	15.7	100	100	0.0	0
F04	R2	RESIDENTIAL	UNKNOWN	12.2	96.3	95.8	0.1	0.5
F04	R3	RESIDENTIAL	UNKNOWN	17.0	98.8	98.5	0.1	0.3
F04	R4	RESIDENTIAL	UNKNOWN	13.7	100	99.9	0.0	0.1
F04	R5	RESIDENTIAL	UNKNOWN	10.1	96.3	73.2	2.3	24

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 39 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL34

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F04

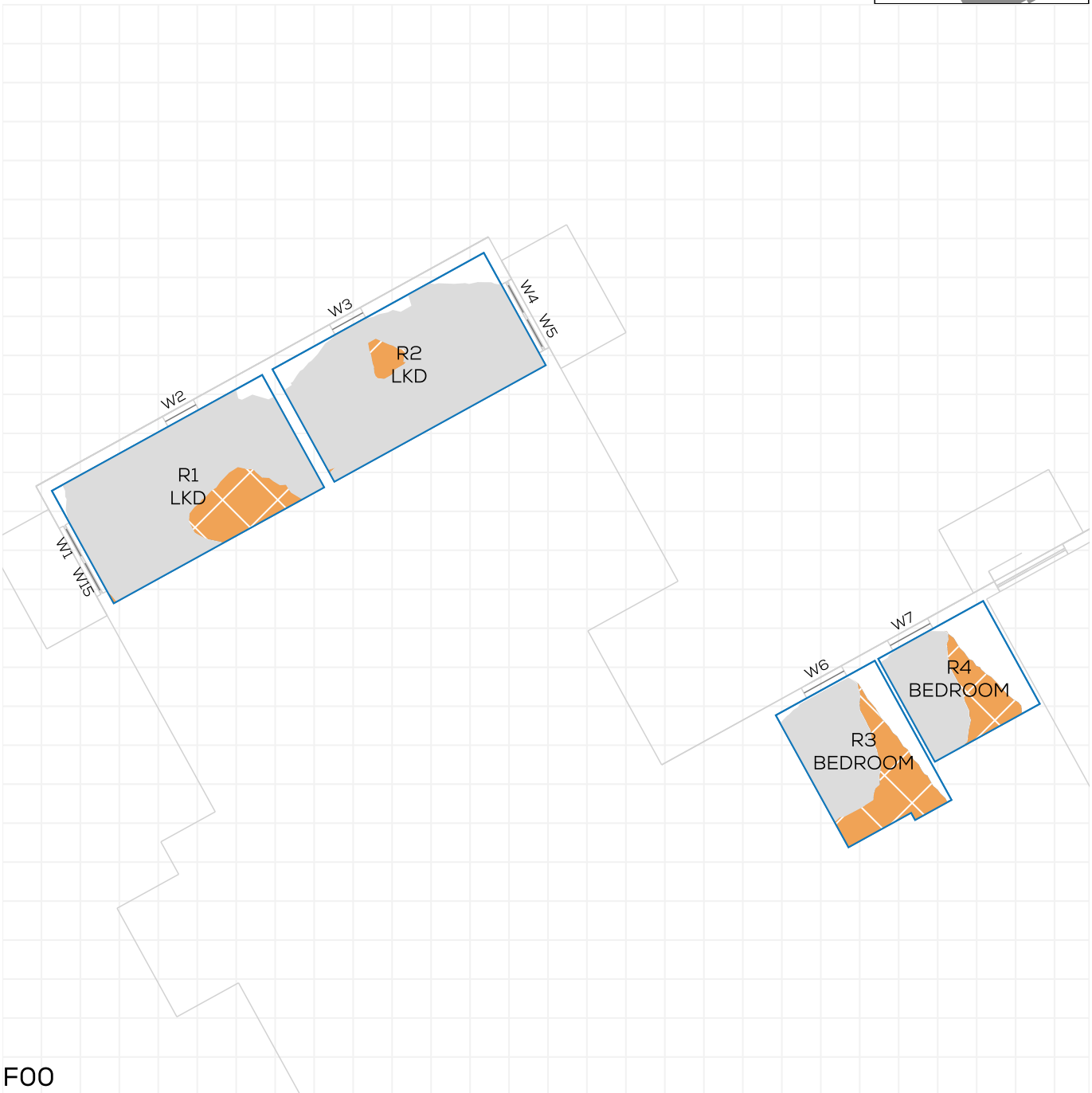
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
39 CHAPELTOWN STREET								
F04	R6	RESIDENTIAL	UNKNOWN	9.8	97.6	63.9	3.3	34.5
F04	R7	RESIDENTIAL	UNKNOWN	15.8	98.7	71	4.4	28.1
F04	R8	RESIDENTIAL	UNKNOWN	10.2	97.6	50.7	4.8	48
F04	R9	RESIDENTIAL	UNKNOWN	15.8	97.2	57.3	6.3	41
F04	R11	RESIDENTIAL	UNKNOWN	11.0	100	67.8	3.5	32.2

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL35

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





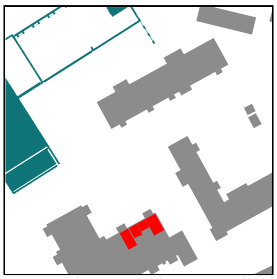
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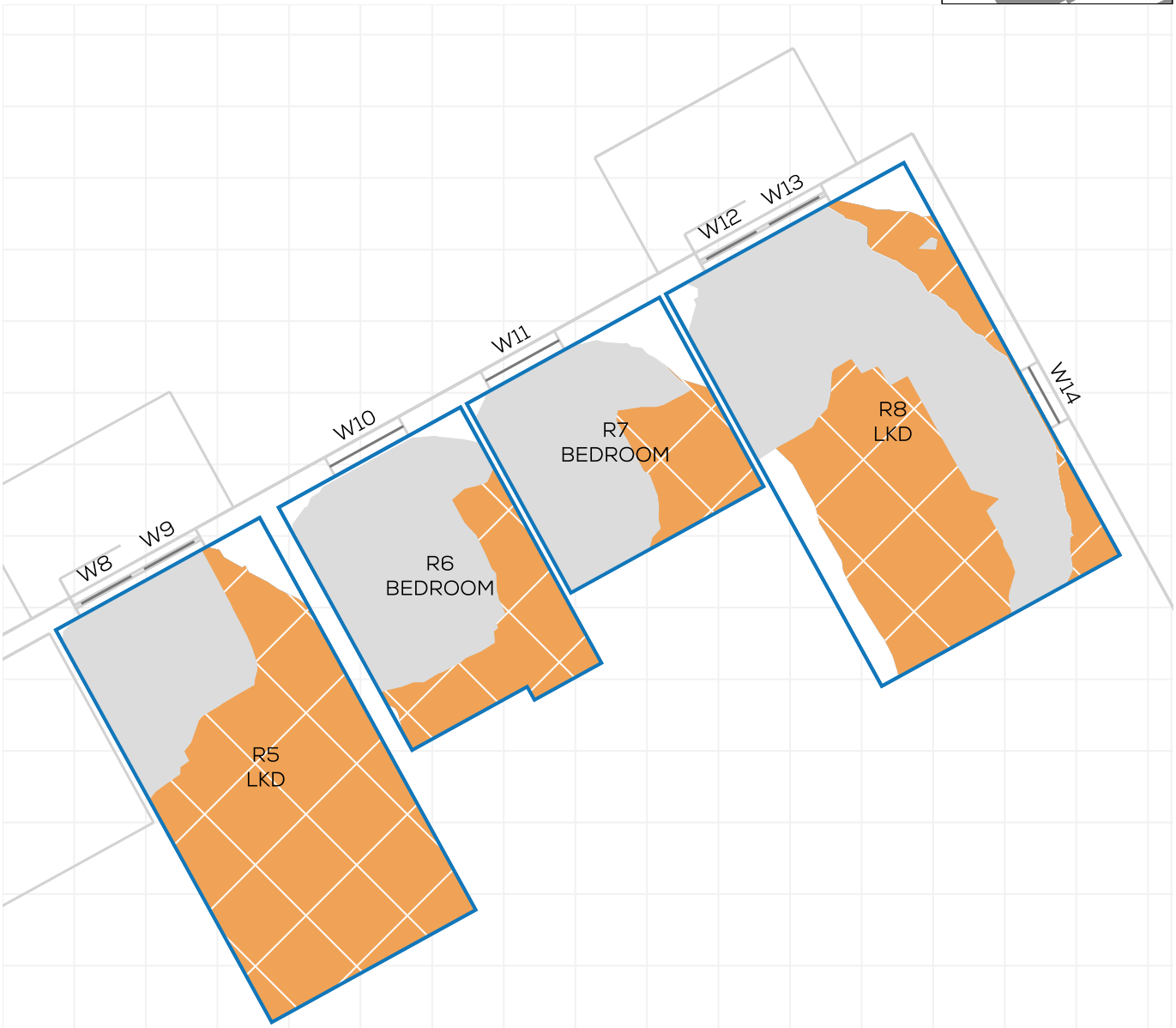
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F00	R1	RESIDENTIAL	LKD	20.3	97.5	82.1	3.1	15.8
F00	R2	RESIDENTIAL	LKD	20.4	92.6	89.4	0.7	3.5
F00	R3	RESIDENTIAL	BEDROOM	11.4	82.4	49.1	3.8	40.4
F00	R4	RESIDENTIAL	BEDROOM	9.3	70.4	47.3	2.1	32.8

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL36

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F00

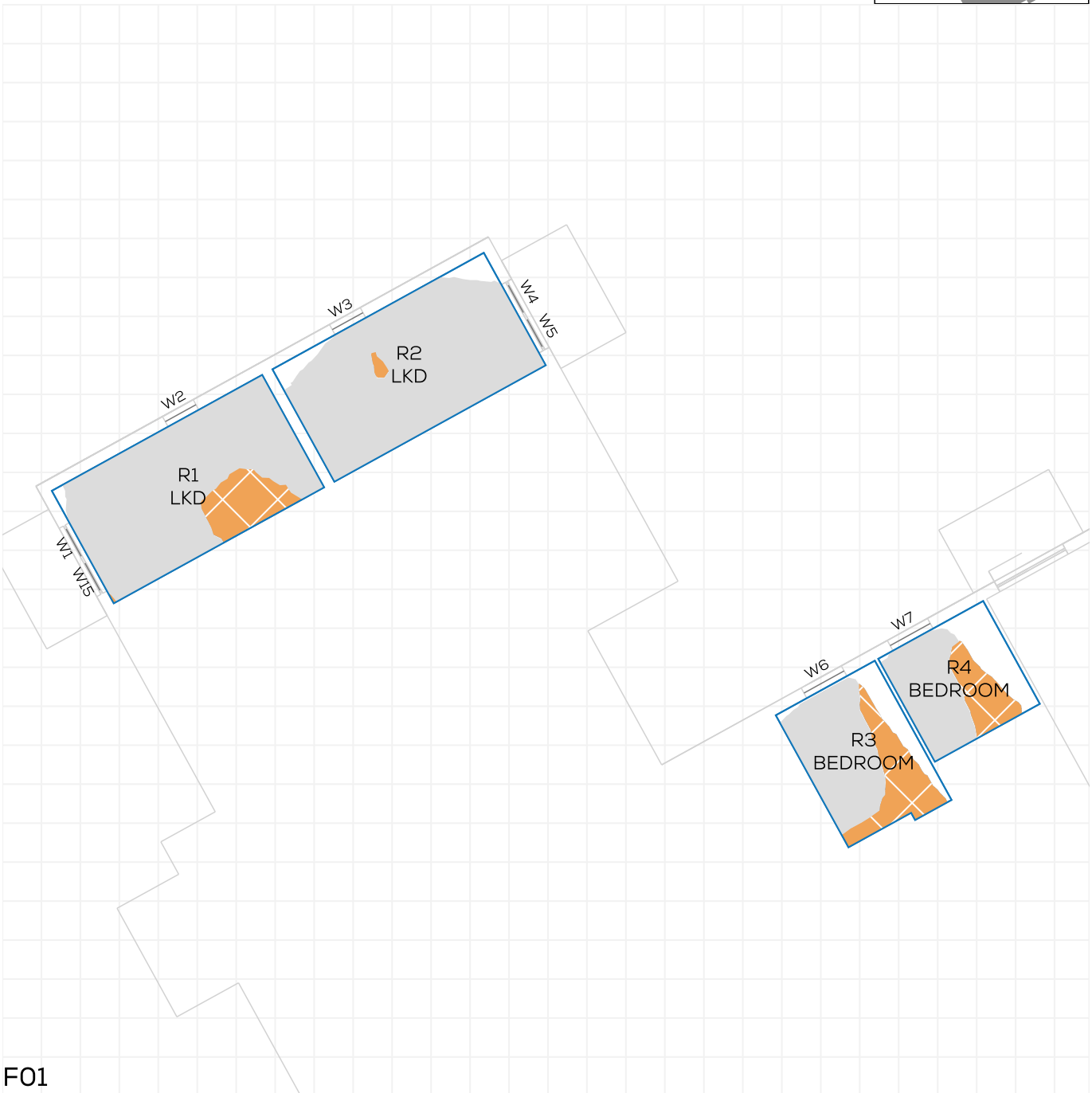
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F00	R5	RESIDENTIAL	LKD	20.3	97	25.2	14.6	74
F00	R6	RESIDENTIAL	BEDROOM	11.4	96.2	60.9	4.0	36.7
F00	R7	RESIDENTIAL	BEDROOM	9.3	91.1	64.5	2.5	29.3
F00	R8	RESIDENTIAL	LKD	23.7	92.1	49.7	10.1	46

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL37

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





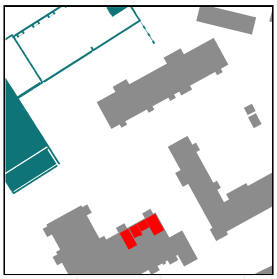
F01

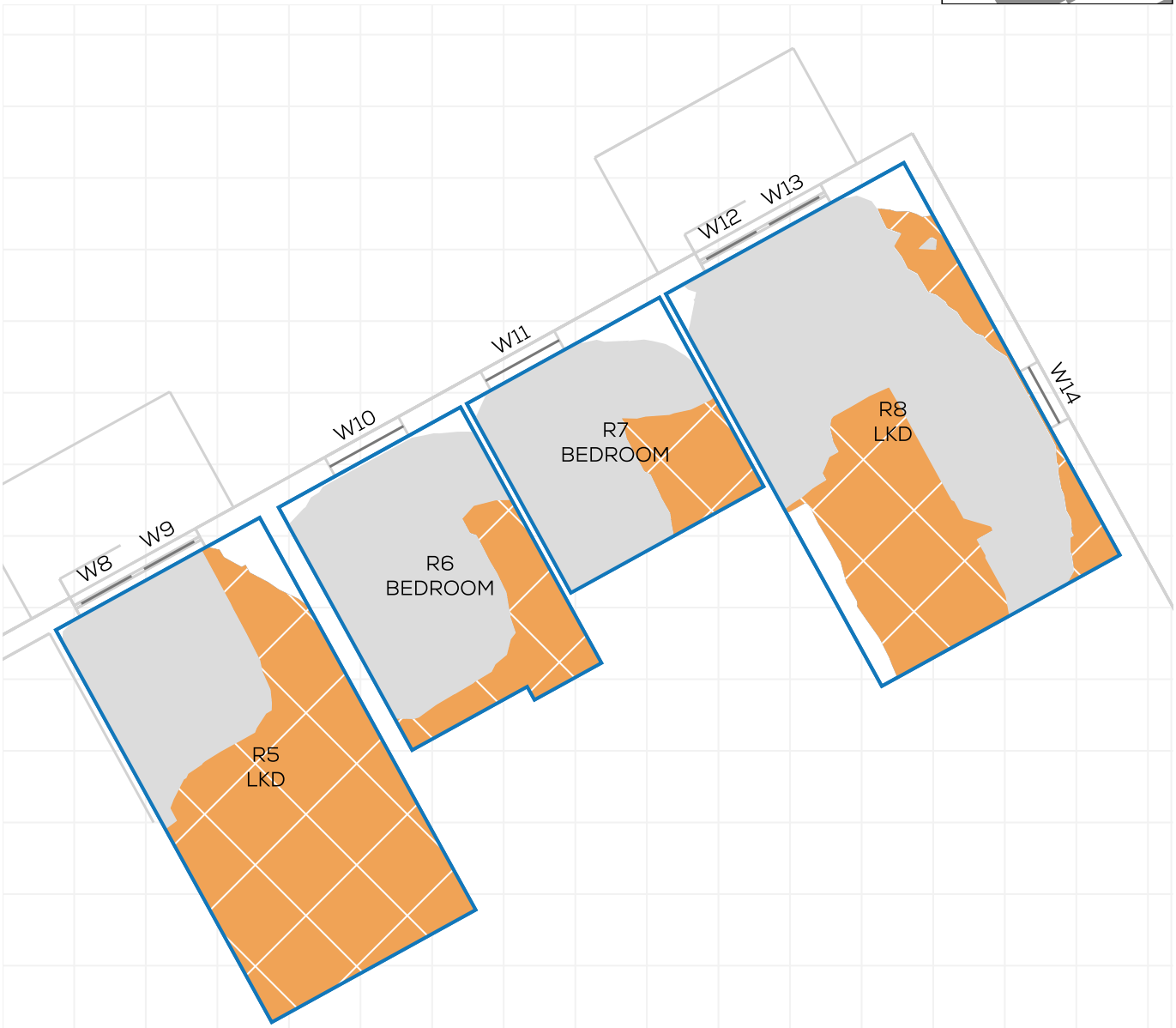
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F01	R1	RESIDENTIAL	LKD	20.3	99.3	85.9	2.7	13.5
F01	R2	RESIDENTIAL	LKD	20.4	94.5	93.6	0.2	0.9
F01	R3	RESIDENTIAL	BEDROOM	11.4	82.9	54.3	3.3	34.5
F01	R4	RESIDENTIAL	BEDROOM	9.3	71.8	49.9	2.0	30.4

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL38

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





F01

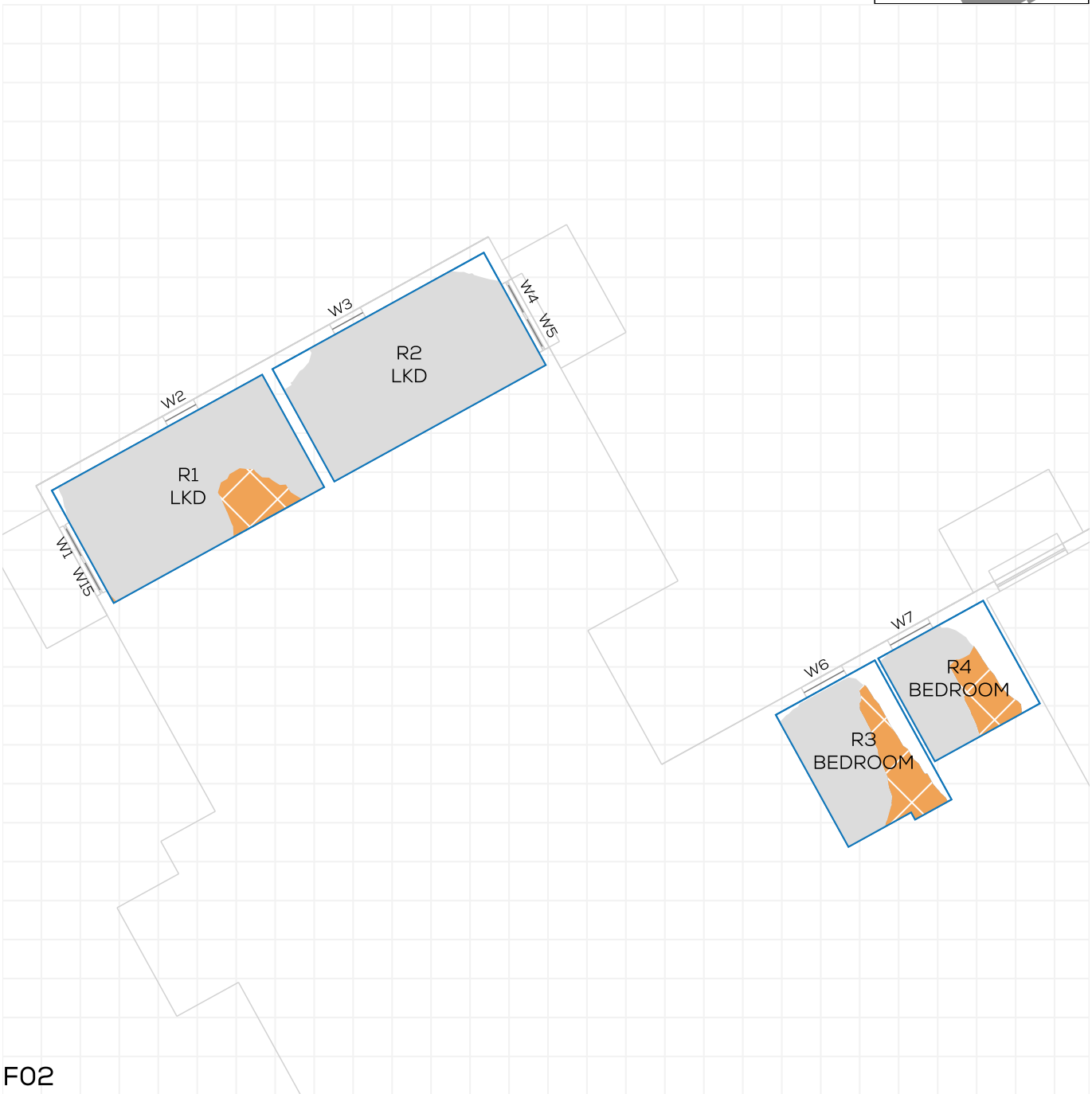
FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F01	R5	RESIDENTIAL	LKD	20.3	97	29.9	13.6	69.2
F01	R6	RESIDENTIAL	BEDROOM	11.4	97.1	70.6	3.0	27.2
F01	R7	RESIDENTIAL	BEDROOM	9.3	94.1	71.6	2.1	23.9
F01	R8	RESIDENTIAL	LKD	23.7	94.2	60.4	8.0	35.9

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL39

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





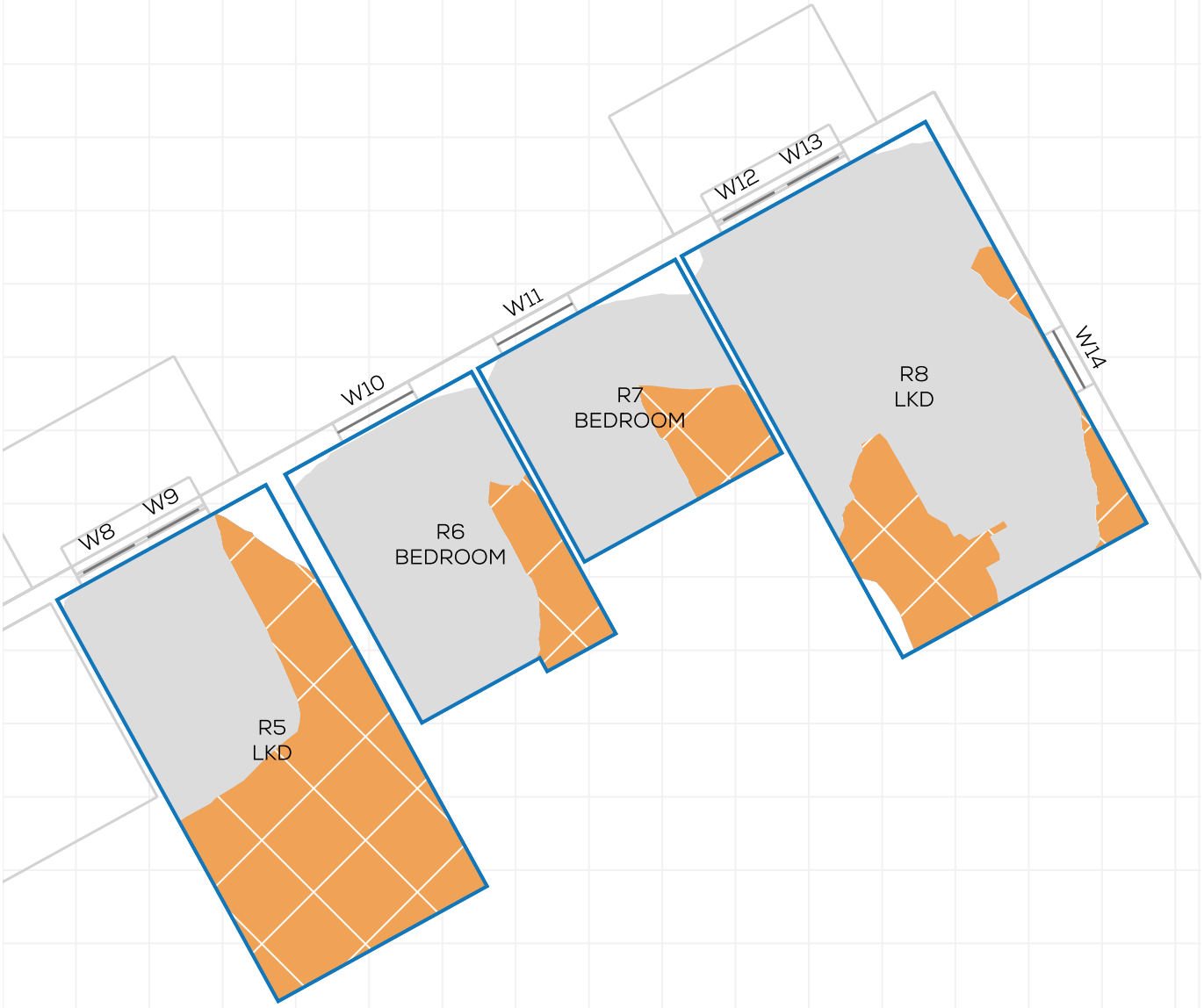
F02

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F02	R1	RESIDENTIAL	LKD	20.3	99.6	89.4	2.1	10.2
F02	R2	RESIDENTIAL	LKD	20.4	95.9	95.9	0.0	0
F02	R3	RESIDENTIAL	BEDROOM	11.4	84.4	60.4	2.7	28.4
F02	R4	RESIDENTIAL	BEDROOM	9.3	75.2	53.8	2.0	28.4

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL40

KEY:
- GAIN
- LOSS
- MAINTAINED LIT AREA
- 1 METRE GRID



F02

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F02	R5	RESIDENTIAL	LKD	20.3	97.2	37.3	12.2	61.6
F02	R6	RESIDENTIAL	BEDROOM	11.4	97.8	81.1	1.9	17
F02	R7	RESIDENTIAL	BEDROOM	9.3	96	76.1	1.8	20.7
F02	R8	RESIDENTIAL	LKD	23.7	98.1	79.6	4.4	18.9

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL41

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID





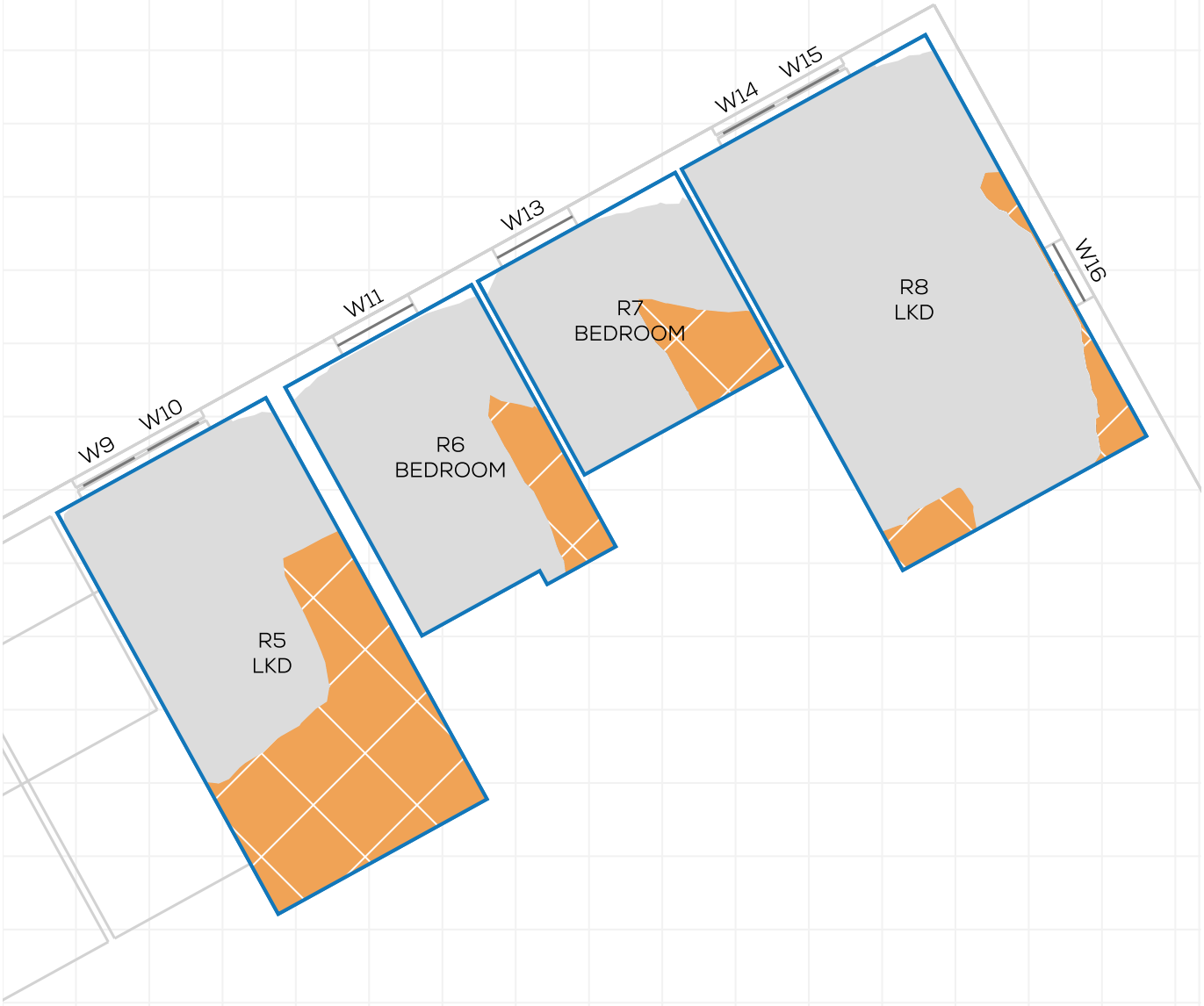
F03

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F03	R1	RESIDENTIAL	LKD	20.3	99.7	93	1.4	6.7
F03	R2	RESIDENTIAL	LKD	20.4	99.6	99.6	0.0	0
F03	R3	RESIDENTIAL	BEDROOM	11.4	89.2	62.6	3.0	29.8
F03	R4	RESIDENTIAL	BEDROOM	9.3	88.8	67.7	2.0	23.8

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL42

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID



F03

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F03	R5	RESIDENTIAL	LKD	20.3	99.6	55.7	8.9	44
F03	R6	RESIDENTIAL	BEDROOM	11.4	97.9	83.9	1.6	14.4
F03	R7	RESIDENTIAL	BEDROOM	9.3	96.4	78.2	1.7	19
F03	R8	RESIDENTIAL	LKD	23.7	99.5	92.3	1.7	7.3

NSL CONTOURS

PROJECT: 2188 - SPARKLE STREET, MANCHESTER
REPORT TITLE: EXISTING VS. PROPOSED
ADDRESS: 35 CHAPELTOWN STREET
DATE: 29/06/2023
SCHEME IR: IR12
DRAWING No.: 2188-REL07-IS01-NSL43

KEY:
GAIN
LOSS
MAINTAINED LIT AREA
1 METRE GRID



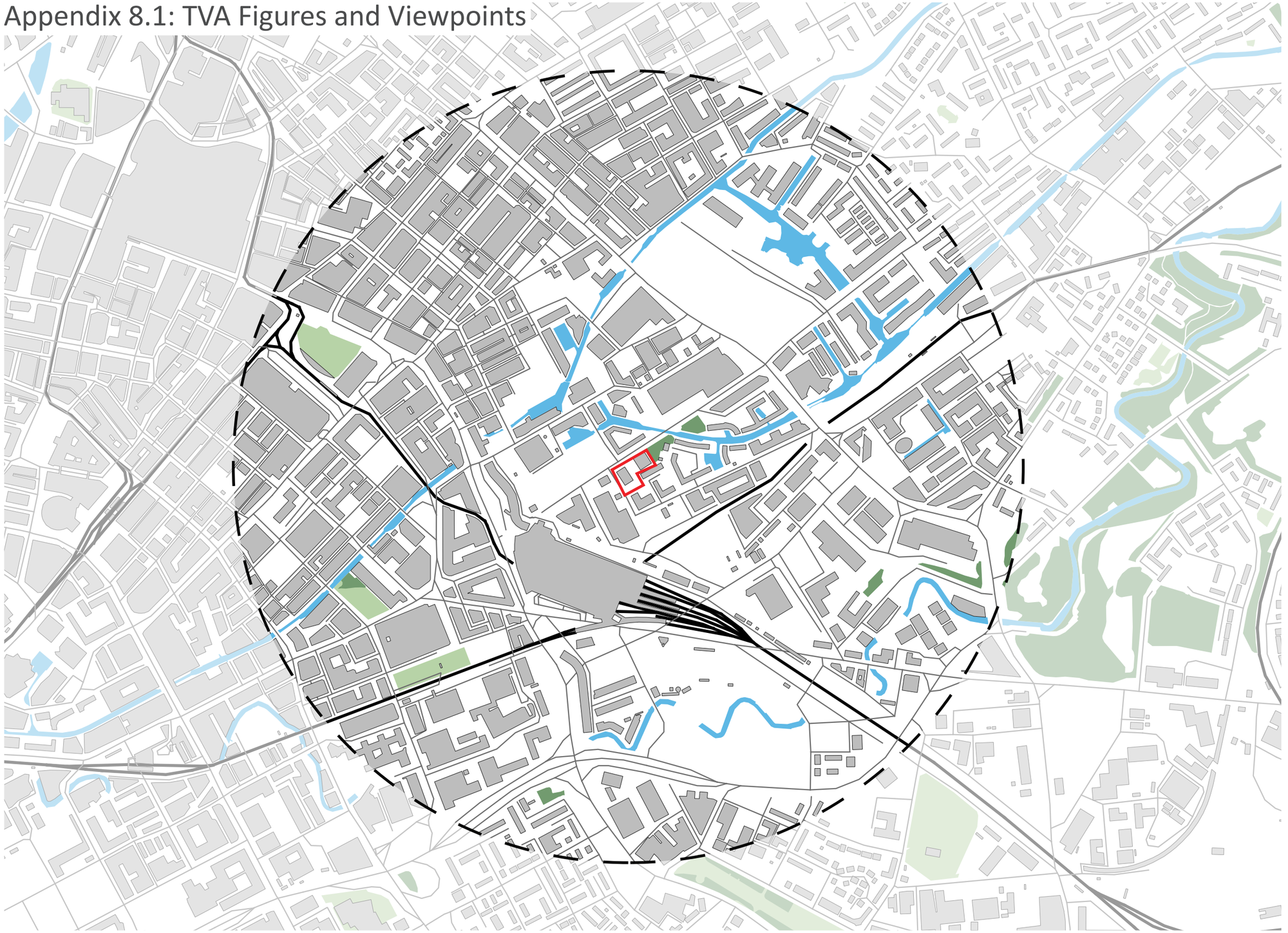
F04

FLOOR	ROOM	PROPERTY TYPE	ROOM USE	ROOM AREA-sqm	EXISTING %	PROPOSED %	LOSS-sqm	LOSS %
35 CHAPELTOWN STREET								
F04	R1	RESIDENTIAL	UNKNOWN	13.4	98.7	85.9	1.7	13
F04	R2	RESIDENTIAL	UNKNOWN	19.2	97.3	81.5	3.0	16.3

8. Townscape and Visual Impact

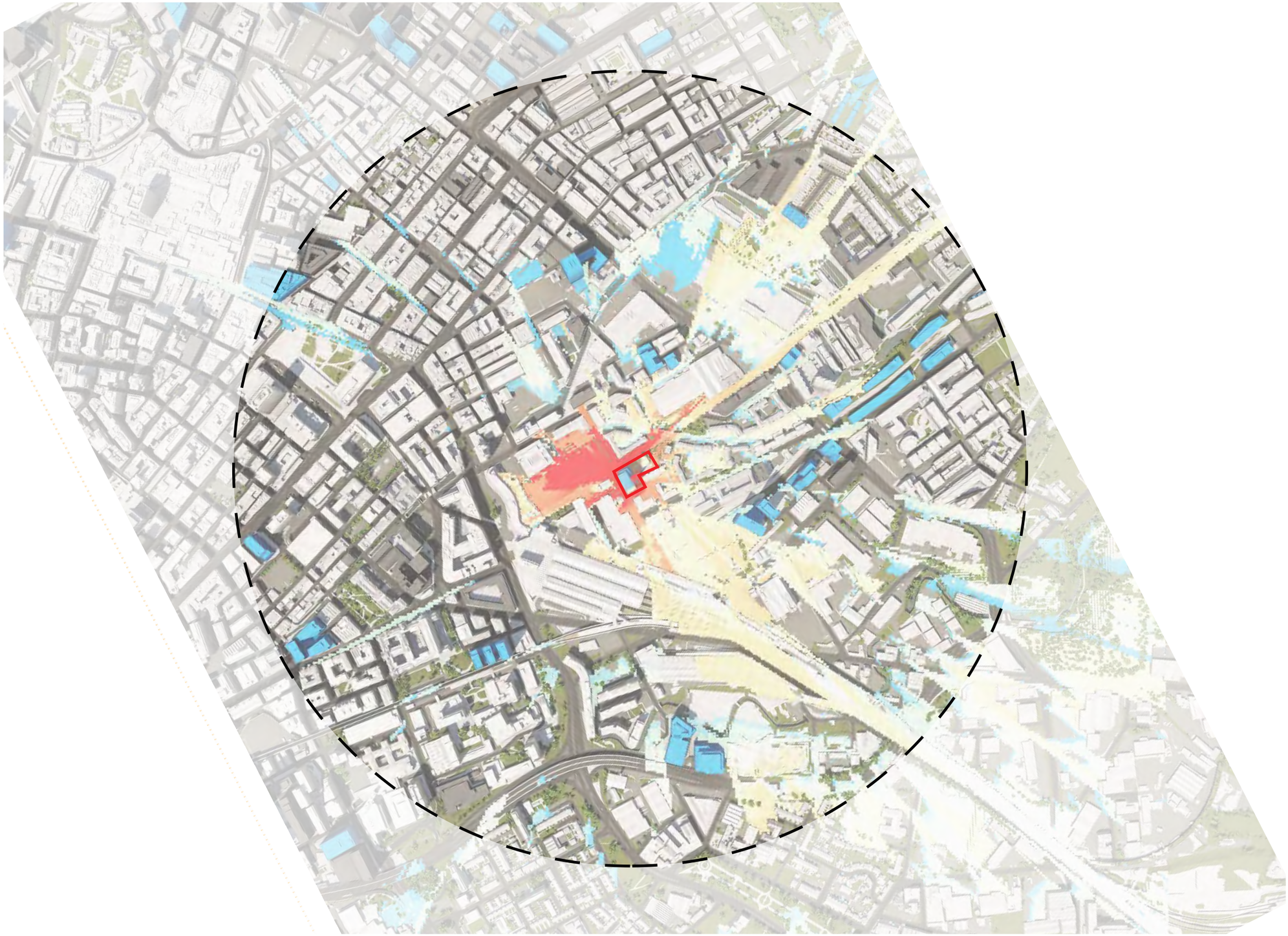
Appendix 8.1 – TVIA Plans and Views

Appendix 8.1: TVA Figures and Viewpoints



Basemap data: OS OpenMap Local

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.1: Study Area	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS	Scale: 0 100m 200m 1:7500 N



Basemap data: OS OpenMap Local
ZTV data: Provided by Simpson Haugh Architects

re-form landscape architecture

Project: Sparkle Street, Manchester Figure 8.2: Zone of Theoretical Visibility	Sheet size: A3	Date: 28.07.2023	Drawn by: JR Approved by: MS	Checked by: MS

Scale:
0 100m 200m
1:7500

N



Basemap data: OS OpenMap Local

re-form landscape architecture

Project: Sparkle Street, Manchester Figure 8.3: Urban Grain	Sheet size: A3	Date: 28.07.2023	Drawn by: JR Approved by: MS	Checked by: MS

Scale:
0 100m 200m
1:7500

N

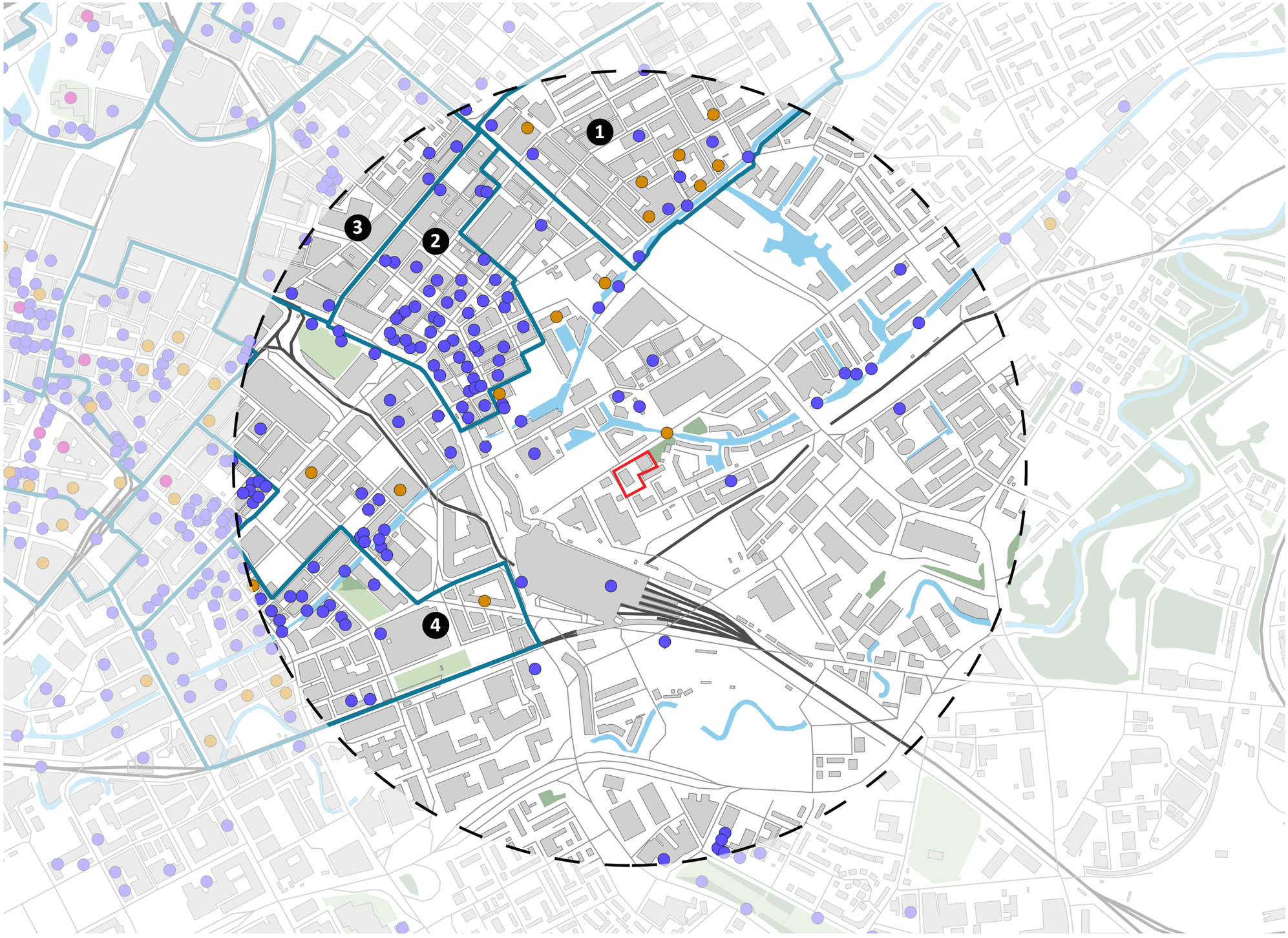
Key:

- Site boundary
- 750m radius from site
- Buildings outside of study area
- 1 to 5 storey
- 6-10 storey
- 11-15 storey
- 16-20 storey
- 21+ storey
- Baseline developments

Basemap data: OS OpenMap Local

re-form landscape architecture

Project: Sparkle Street, Manchester Figure 8.4: Existing Building Heights	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS	Scale: 0 100m 200m 1:7500	N



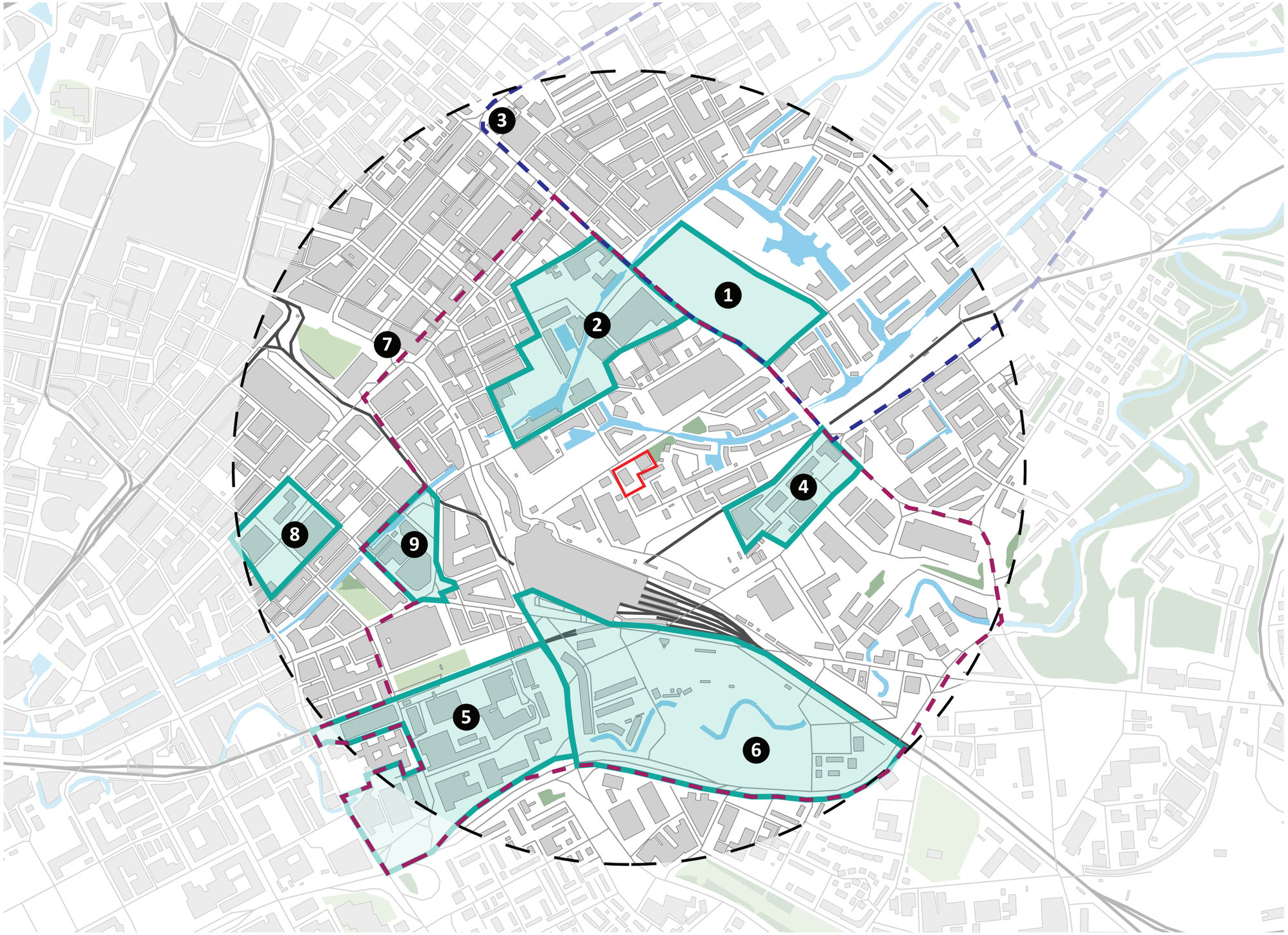
Key:

- Site boundary
- 750m radius from site
- Buildings
- Green space
- Woodland
- Watercourse
- Grade I Listed Building or Structure
- Grade II* Listed Building or Structure
- Grade II Listed Building or Structure
- 1 Ancoats
- 2 Stevenson Square
- 3 Smithfield
- 4 Whitworth Street and Princess Street

Basemap data: OS OpenMap Local
Heritage data: Historic England

re-form landscape architecture

Project: Sparkle Street, Manchester Figure 8.5: Heritage Designations	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS	Scale: 0 100m 200m 1:7500 N



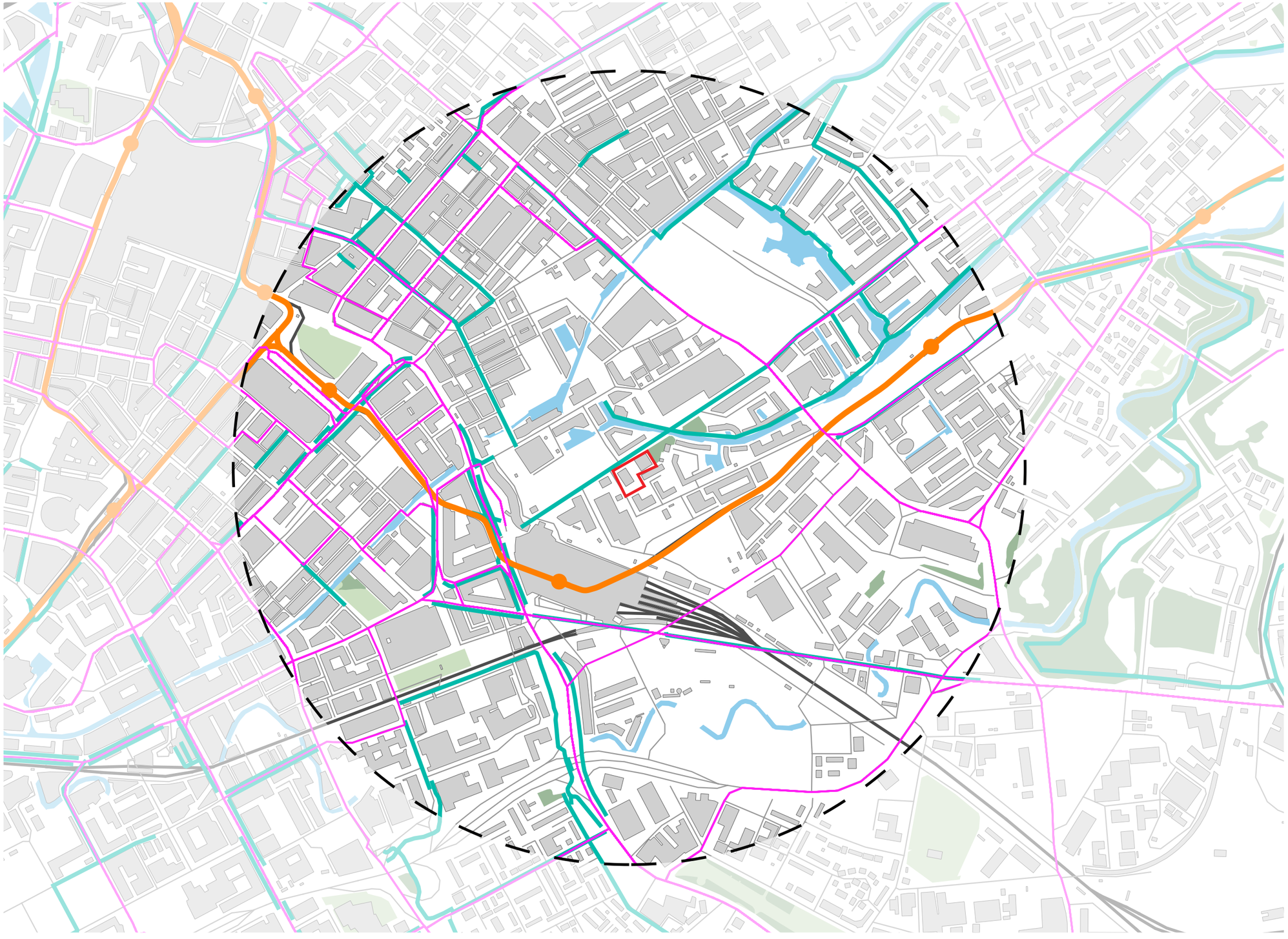
Key:

- Site boundary
- 750m radius from site
- Buildings
- Green space
- Woodland
- Watercourse
- 1 Former Central Retail Park - Manchester *Strategic Regeneration Framework*
- 2 Piccadilly Basin *Strategic Regeneration Framework*
- 3 Ancoats and New Islington *Neighbourhood Development Framework*
- 4 Portugal Street East *Strategic Regeneration Framework*
- 5 North Campus *Strategic Regeneration Framework*
- 6 Mayfield *Strategic Regeneration Framework*
- 7 Manchester Piccadilly *Strategic Regeneration Framework*
- 8 Portland Street *Strategic Regeneration Framework*
- 9 Aytoun Street *Strategic Regeneration Framework*

Basemap data: OS OpenMap Local

re-form landscape architecture

Project: Sparkle Street, Manchester Figure 8.6: Strategic Regeneration Frameworks	Sheet size: A3	Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS	Scale: 0 100m 200m 1:7500 N



Basemap data: OS OpenMap Local
Movement data: Transport for Greater Manchester

re-form landscape architecture

Project:
Sparkle Street, Manchester

Figure 8.7:
Movement Typologies

Sheet size: A3
Date: 28.07.2023

Drawn by: JR
Checked by: MS

Approved by: MS

Scale:
0 100m 200m
1:7500

N



Basemap data: OS OpenMap Local
Topography data: Environment Agency National LIDAR Programme

re-form landscape architecture

Project:
Sparkle Street, Manchester

Figure 8.8:
Topography

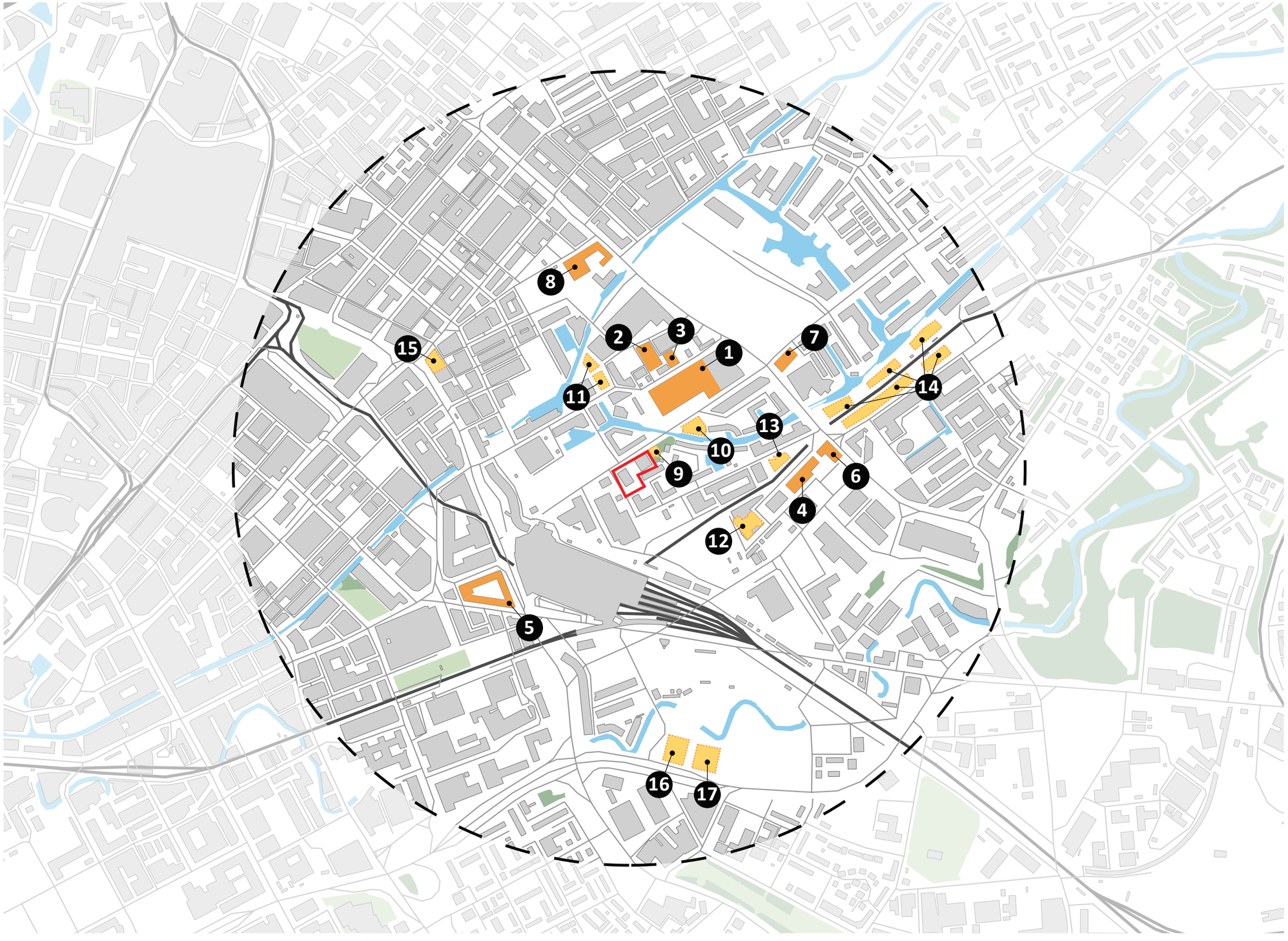
Sheet size: A3
Date: 28.07.2023

Drawn by: JR
Checked by: MS

Approved by: MS

Scale:
0 100m 200m
1:7500

N



Key:

- Site boundary
- 750m radius from site
- Buildings
- Green space
- Woodland
- Watercourse
- Baseline developments

1. The Foundry/Presbar/Dyecast 133523/FO/2022
2. 32-34 Laystall Street 128911/FO/2020
3. Lomax 120149/FO/2018
4. The Castings 127317/FO/2020
5. London Road Fire Station 125712/FO/2019
6. Victoria House 122000/FO/2018
7. New Islington Wharf (Phase 4) 126669/FO/2020
8. One Port Street 132489/FO/2021

Cumulative Developments

9. M1 Picadilly, Store Street 132626/FO/2022
10. Store Street 126608/FO/2020
11. Eider House 115178/FO/2017
12. The Fairfax 121099/FO/2018
13. Ferrous 132214/FO/2021
14. Electric Park 128191/FO/2020
15. 67 Piccadilly 127538/FO/2020
16. Mayfield Phase 1 (Plot O, N and Park), Office Development, Baring Street 132255/JO/2021
17. The Republic 125248/FO/2019

Basemap data: OS OpenMap Local

re-form landscape architecture

Project:
Sparkle Street, Manchester

Figure 8.9:
Committed Developments

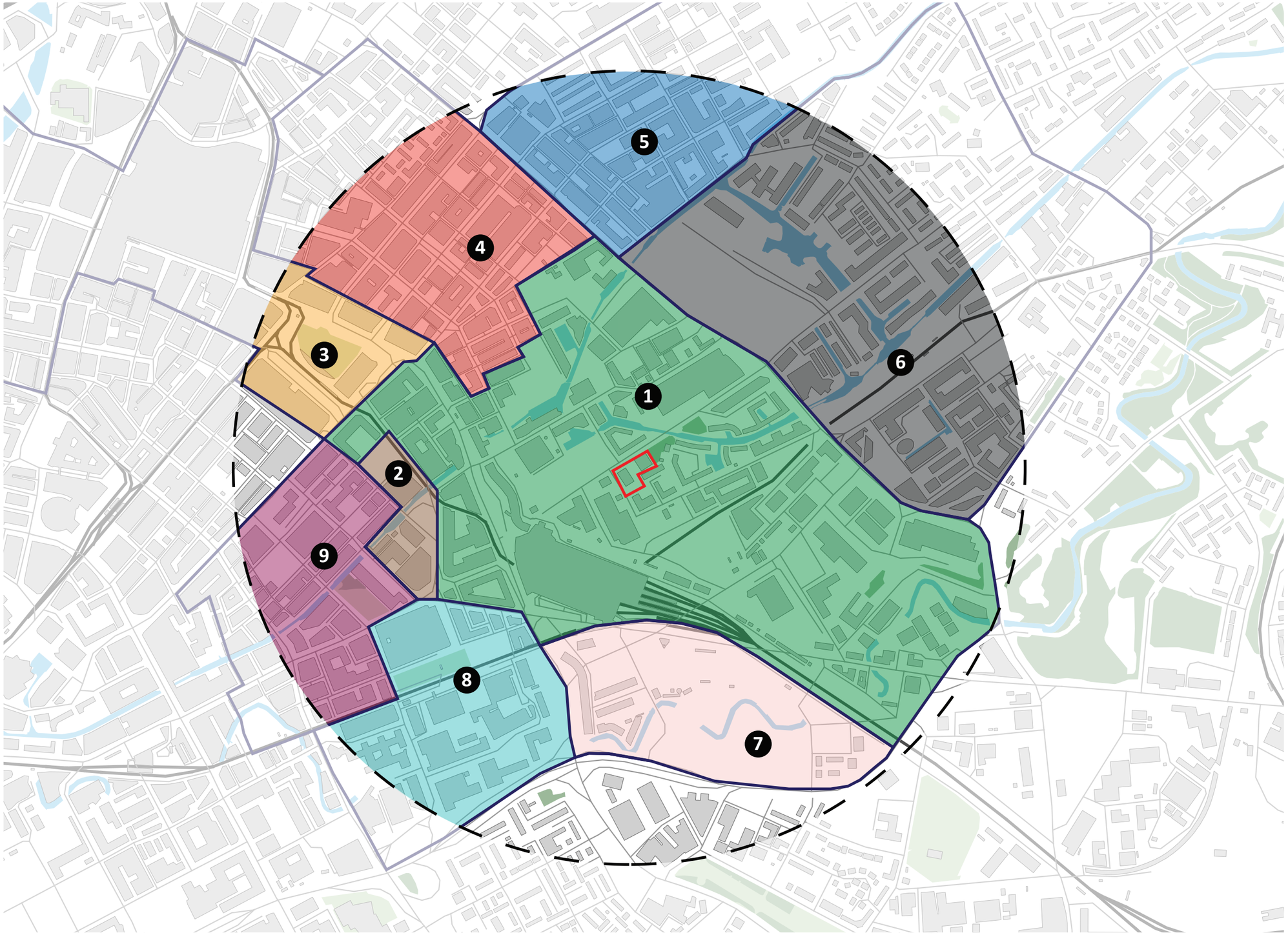
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Date: 28.07.2023

Drawn by: JR
Checked by: MS

Approved by: MS

Scale:
0 100m 200m
1:7500

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Key:

- Site boundary
- 750m radius from site
- Buildings
- Green space
- Woodland
- Watercourse
- 1 Piccadilly
- 2 Kampus
- 3 Retail Core
- 4 Northern Quarter
- 5 Ancoats
- 6 New Islington
- 7 Mayfield
- 8 North Campus
- 9 The Village

Character areas as defined in: Manchester City Council, City Centre Strategic Plan 2015-2018, (Manchester: Manchester City Council, 2016) < https://secure.manchester.gov.uk/downloads/file/24745/city_centre_strategic_plan > accessed 8 June 2023].

Basemap data: OS OpenMap Local

re-form landscape architecture

Project:
Sparkle Street, Manchester

Figure 8.10:
Townscape Character Areas

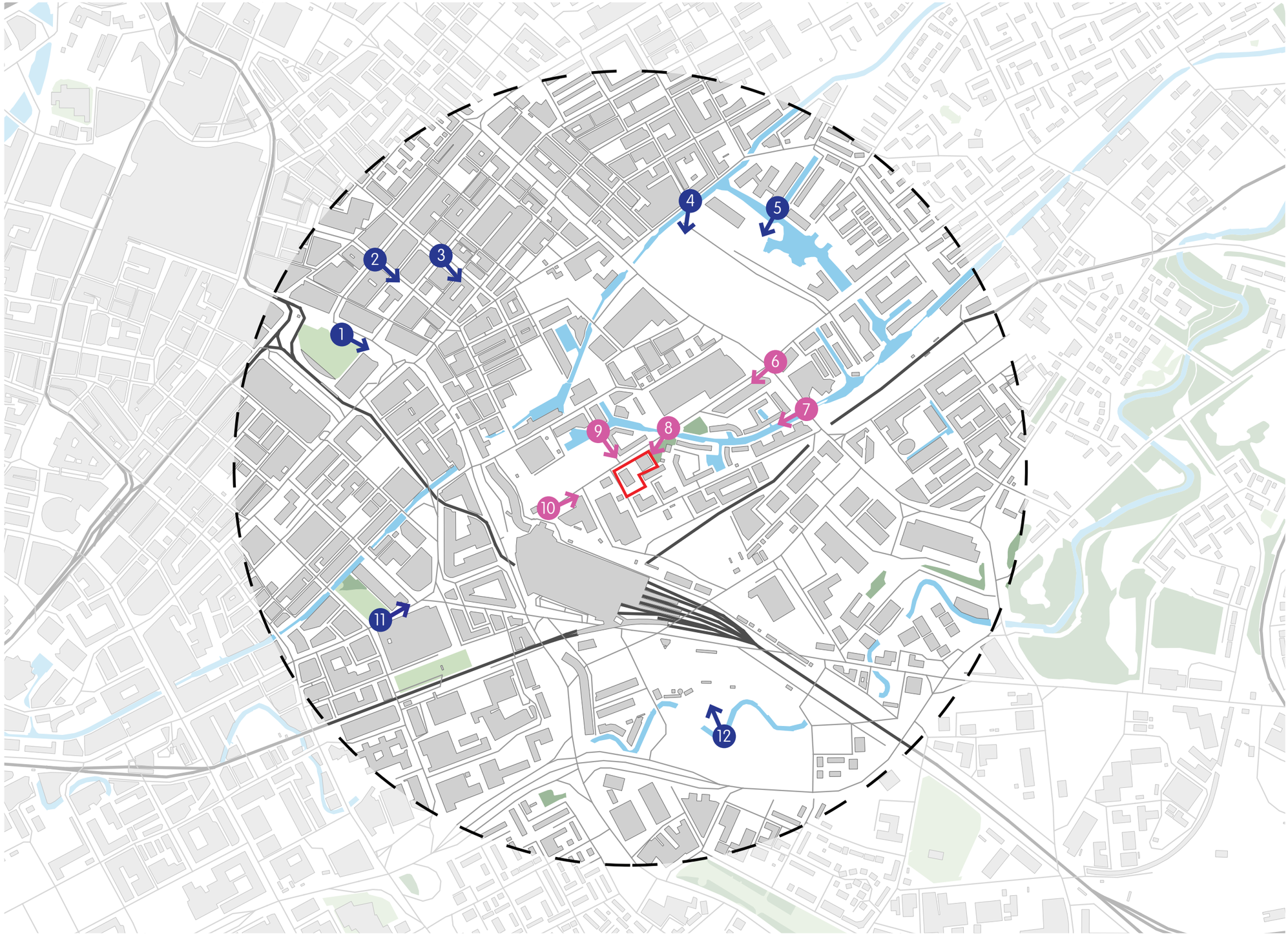
Sheet size: A3
Date: 28.07.2023

Drawn by: JR
Checked by: MS

Approved by: MS

Scale:
0 100m 200m
1:7500

N



- 750m radius from site
- Green space
- Woodland
- Watercourse
- Viewpoints (full render)
- Viewpoints (wireframe)

1. Piccadilly Gardens
2. Junction of Dale Street and Oldham Street
3. Stevenson Square
4. Junction of Redhill Street and Murray Street
5. New Islington Marina
6. Junction of Old Mill Street and Great Ancoats Street
7. Great Ancoats Street bridge over Ashton Canal
8. Ashton Canal tow path
9. Jutland Street
10. Store Street
11. Whitworth Street
12. Mayfield Park

Basemap data: OS OpenMap Local

re-form landscape architecture

Project:
Sparkle Street, Manchester

Figure 8.11:
Viewpoints

Sheet size: A3
Date: 28.07.2023

Drawn by: JR
Checked by: MS
Approved by: MS

Scale:
0 100m 200m
1:7500

N



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.12: Viewpoint 01	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS



Existing View



Proposed View

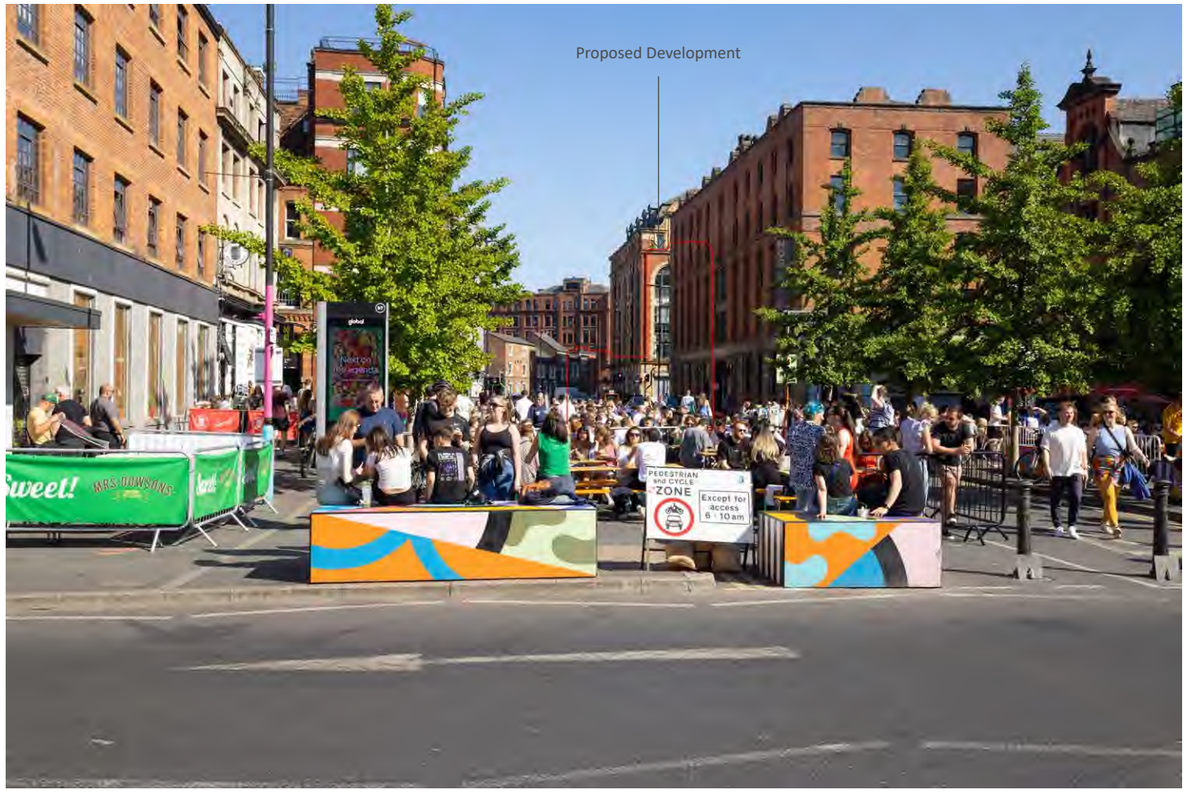


Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.13: Viewpoint 02	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture

Project: Sparkle Street, Manchester Figure 8.14: Viewpoint 03	Sheet size: A3	Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.15: Viewpoint 04	Sheet size: A3 / Date: 28.07.2023	Drawn by: JR / Checked by: MS Approved by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture

Project: Sparkle Street, Manchester Figure 8.16: Viewpoint 05	Sheet size: A3	Date: 28.07.2023	Drawn by: JR Approved by: MS
			Checked by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.17: Viewpoint 06	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.18: Viewpoint 07	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.19: Viewpoint 08	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.20: Viewpoint 09	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS



Existing View



Proposed View



Proposed Cumulative View

Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.21: Viewpoint 10	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture

Project: Sparkle Street, Manchester Figure 8.22: Viewpoint 11	Sheet size: A3	Date: 28.07.2023	Drawn by: JR Approved by: MS
			Checked by: MS



Existing View



Proposed View



Proposed Cumulative View

re-form landscape architecture	Project: Sparkle Street, Manchester Figure 8.23: Viewpoint 12	Sheet size: A3 Date: 28.07.2023	Drawn by: JR Checked by: MS Approved by: MS

Appendix 8.2 - TVIA Methodology

Appendix 8.2
TVA Assessment Methodology

Introduction

1. This Appendix sets out the methodology adopted within this Townscape and Visual Assessment (TVA) to assess the townscape and visual effects of the proposed intervention. The methodology is informed by guidance contained within;

    i **Guidelines for Landscape and Visual Impact Assessment** (The Landscape Institute and Institute of Environmental Assessment, 3rd Edition, 2013), often referred to as 'GLVIA 3'. Note: Terminology within GLVIA 3 (e.g. susceptibility) that is referred to within this methodology is recognised as being interchangeable between 'landscape' and 'townscape' assessment.

    ii **Townscape Character Assessment Technical Information Note 05/2017** - Revised April 2018 (The Landscape Institute).

2. As defined within GLVIA 3 'Townscape' refers to areas where the built environment is dominant and includes buildings, the relationship between them, different types of urban spaces and relationship between buildings and space. Townscape also reflects the relationship between people and place.

3. Townscape and visual matters are separate, although closely related and interlinked issues, and are dealt with as such throughout the TVA. The methodologies for assessing both are outlined separately below.

Baseline Study

4. The initial step of the TVA is to review the existing townscape and visual resource in the vicinity of the proposed intervention, known as the 'baseline' townscape and visual conditions. This is a process of gathering information, as part of a desk study and subsequent field survey work, to understand features and characteristics of the townscape, the way it is experienced, it's quality and value or importance of the visual resources in the vicinity of the proposed intervention. The data collected forms the basis from which the townscape and visual effects of the intervention are identified and assessed.

5. The baseline study records the existing elements that make up the townscape in the study area, including:

    - Urban structure and built form, including urban grain, scale, massing, density and building height;
    - Heritage assets, including listed buildings, scheduled monuments, Conservation Areas and registered parks and gardens;
    - Green infrastructure and public realm;
    - Movement and connectivity, including legibility and permeability, public rights of way and classifications (motorways, A roads, B roads etc);
    - The aesthetic and perceptual aspects of the townscape: Scale, complexity, openness, enclosure and activity;

- The condition of the townscape, i.e. the state of an individual area; and
- Reference to policy or designations as an indicator of recognised value, including specific features or characteristics that justify the designation of the area.

This informs a concise description of the existing character of the intervention site and its surrounding townscape context and enables the classification of the townscape into distinct character areas or types, which share common features and characteristics.

6. The visual baseline study records and establishes the following:

- The area in which the intervention may be visible. This is identified by a process of map interpretation and / or digital mapping to construct a map showing the area from which the proposed intervention may theoretically be visible, or its Zone of Theoretical Visibility (ZTV)
- The different types of people or townscape settings (receptors) which may experience views of the proposed intervention and the viewpoints where they will be affected
- The nature of the views at the viewpoint

Assessment of Townscape Effects

General

7. The townscape assessment considers the potential effects of the proposed intervention on the components of the townscape (as identified within the Baseline Study). Physical change to the intervention site may result in changes to the distinctive character of the townscape and it's context and how it is perceived.

8. Depending on the scale, complexity and location of the proposed intervention, the effects of demolition and/or construction on Site may also form part of the assessment process. The process of assessing the effects is the same as for the proposed intervention.

9. Townscape receptors which could be affected by a proposed intervention may include:

- Individual constituent elements and features;
- Specific aesthetic and perceptual qualities; and
- The overall character and key characteristics as experienced in different areas (e.g. townscape character areas or types).

10. The Significance of the Townscape Effects identified is determined by a consideration of the **Sensitivity** of the townscape receptors and the **Magnitude of Change** to the townscape;

- The **Sensitivity** of a townscape receptor combines judgements of their **Susceptibility** to the type of intervention proposed and the **Value** attached to the townscape receptor.

  Sensitivity = Susceptibility + Value

- The **Magnitude of Change** to the townscape receptor depends upon the size or scale of the intervention, the geographical extent of the area experiencing change and its duration and reversibility.

  Magnitude of Change = Size/scale of intervention + geographical extent of change + duration / reversibility of change

(Refer to Figure A: Townscape Assessment Process and Table 6: Significance Townscape Effects)

Townscape Susceptibility

11. Susceptibility is defined as the ability of the townscape receptor (whether it be the overall character or quality of a particular townscape type or area, or an individual element and/or feature, or particular aesthetic and perceptual aspects) to accommodate the proposed intervention without change to the underlying baseline situation and/or the achievement of townscape planning policies and strategies. The susceptibility of a townscape to change is dependent on the characteristics of the receiving townscape and the type and nature of the intervention proposed. (see paragraph 5.40 of GLVIA 3).

(Refer to Table 1: Townscape Susceptibility)

Townscape Value

12. This is defined as the relative value that is attached to different townscapes by society. Townscapes can be valued by different people for different reasons, connected to a range of factors including townscape quality, rarity, representativeness, conservation interests, recreation value, perceptual aspects and associations. This consensus can be recognised at a local, regional or national or international scale. (see paragraph 5.44 and 5.45 of GLVIA 3).

(Refer to Table 2: Townscape Value)

Townscape Quality

13. Quality is defined as a measure of the physical state of the townscape. It may include the extent to which typical character is represented in individual areas, the intactness of the townscape and the condition of individual elements.

14. A judgement of the townscape quality is considered an important consideration in determining townscape value.

(Refer to Table 3: Townscape Quality)

Townscape Sensitivity

15. The sensitivity of a townscape receptor combines judgements of their Susceptibility to the type of intervention proposed and the Value attached to the townscape. (see paragraph 5.39 of GLVIA 3).

(Refer to Table 4: Townscape Sensitivity)

Magnitude of Change (Townscape)

16. Is defined as the degree of change to the townscape receptor in terms of the following:

- Size and scale of intervention that is proposed. This relates to both physical scale of the intervention and the degree of aesthetic / perceptual qualities that are altered.

- Geographical extent over which the townscape effects will be experienced. This is distinct from size or scale, as for example there may be large scale addition to a very localised area or small-scale addition to a large geographical area. In summary, the geographical extent may be a site level or the immediate setting of the site, or to a larger extent that effects the wider townscape character area or several townscape character areas.

- Duration and reversibility of the intervention. Duration is judged as either short term, medium term or long term. Duration and reversibility are considered together and relates to permanence. E.g. construction work on Site is short term, whereas the completed intervention may be long term.

(Refer to Table 5: Magnitude of Change [Townscape])

Embedded Mitigation

17. Embedded Mitigation refers to primary measures, which have been developed through the iterative design process and have been 'embedded' into the masterplan and detailed design. This process seeks to ensure that, wherever possible, adverse effects on townscape character are designed out, and the opportunity for beneficial effects is maximised

18. Embedded mitigation should be a consideration in determining the effects of the proposed intervention on Site.

Figure A: Townscape Assessment Process

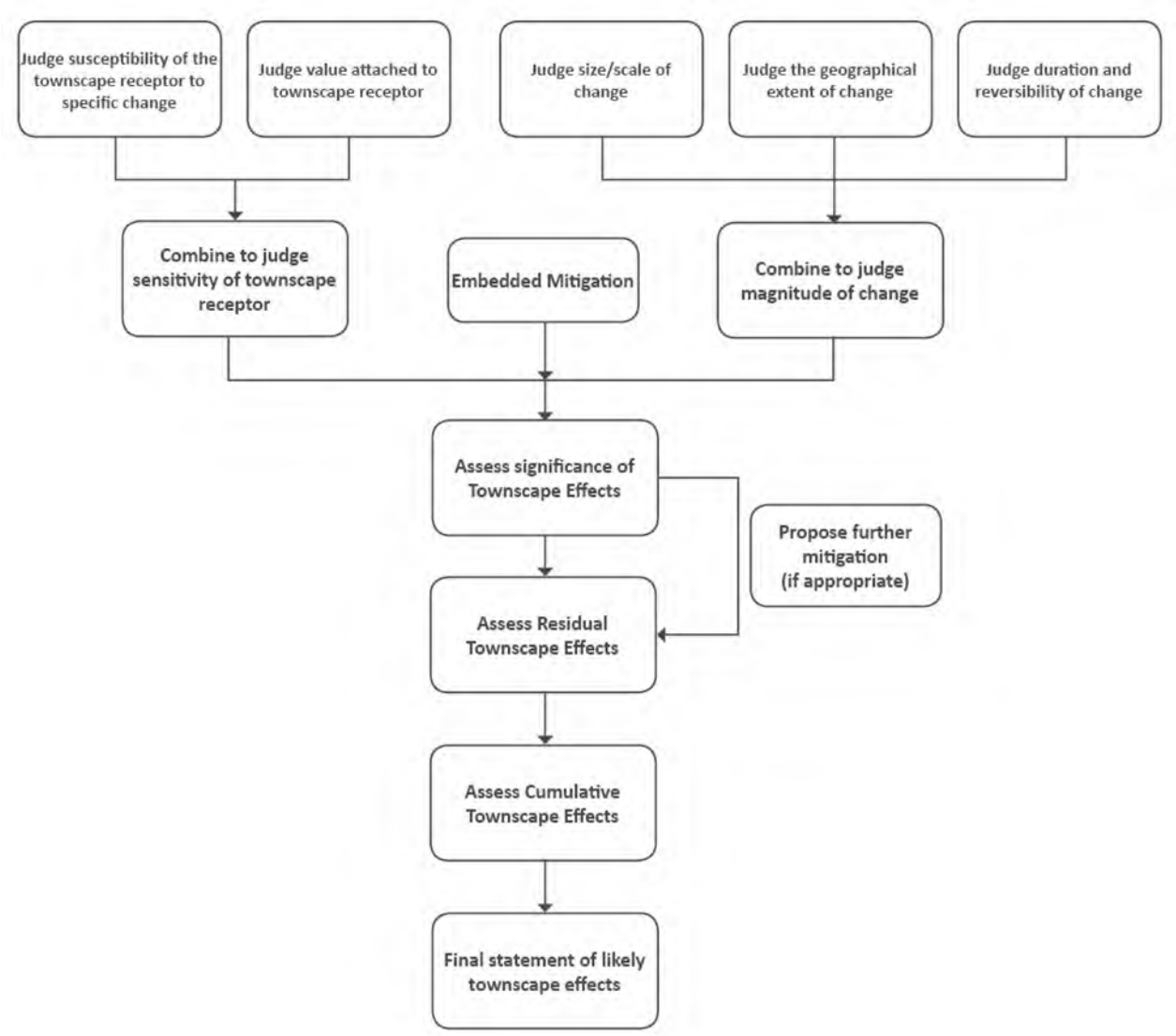


Table 1: Townscape Susceptibility

Level	Description
High	Little or no ability to accommodate the proposed intervention without considerable consequences (either adverse or beneficial) for the retention of the existing townscape baseline, or the delivery of townscape planning policies or strategies
Medium	Some ability to accommodate the proposed intervention without considerable consequences (either adverse or beneficial) for the retention of the existing townscape baseline, or the delivery of townscape planning policies and strategies
Low	An ability to accommodate the proposed intervention without considerable consequences (either adverse or beneficial) for the retention of the existing townscape baseline, or the delivery of townscape planning policies and strategies.

Table 2: Townscape Value

Level	Description	Level	Typical Examples
Exceptional	Exceptional importance and / or rarity. High / Very High Quality No or very limited potential for substitution	International, National	World Heritage Site
High	High importance and / or rarity. Good / High Quality Limited potential for substitution.	National, Regional, Local	National Park, Areas of Outstanding Natural Beauty (AONB), Conservation Area
Moderate	Medium importance and / or rarity. Medium / Good Quality Limited / some potential for substitution	Regional, Local	Undesignated but value perhaps expressed through non-official publications or demonstrable use.
Low	Low importance. Poor / Medium Quality with degradation Frequent and common with scope for substitution	Local	Areas identified as having some redeeming feature or features and possibly identified for improvement.
Very Low	No notable importance. Poor / Very Poor Quality and widely degraded / damaged Frequent and common with scope for substitution	Local	Areas identified for recovery.

(Also see Table 3 for Quality criteria)

Table 3: Townscape Quality

Level	Description
Very High	Very strong and distinctive urban structure, with characteristic urban grain and architectural qualities, creating an overall strong sense of place Distinct and widespread features worthy of conservation Presence of large scale, high quality and widespread planned green infrastructure and public spaces, that is evidently well maintained and has a positive contribution to the character of the townscape as a whole. Very good conditions with no detracting features.
High	Strong urban structure, with characteristic urban grain and architectural qualities creating a notable sense of place. Distinct features worthy of conservation with some limited scope to improve Presence of several instances of managed green infrastructure and public spaces, that is evidently well maintained and positively contributes to the character of the townscape in most cases. Good condition with very occasional / limited detracting features
Good	Distinguishable urban structure, with some characteristic urban grain and architectural qualities Some features worthy of conservation with scope to improve Presence of some green infrastructure and public space, with instances of well-maintained elements and areas requiring improvement, that overall positively contribute to the townscape. Good condition with some detracting features
Medium	Relatively distinguishable urban structure, with an urban grain and architectural qualities that are imbalanced or considered uncharacteristic in places Limited presence of managed green infrastructure and public space, with a number of instances that require improvement. Limited features worthy of conservation with scope to improve Moderate condition with some detracting features
Poor	Weak urban structure, with mixed urban grain and no notably distinguishable architectural qualities Very isolated elements of managed greenery and lack of public space. Lack of management and intervention has resulted in degradation Limited features worthy of conservation Poor condition with frequent detracting features
Very poor	Degraded and damaged urban structure with no distinguishable urban grain or architectural qualities No managed greener or public open space. Lack of management and intervention has resulted in significant degradation Isolated / no features worthy of conservation. Degraded and damaged condition with widespread and frequent detracting features

Table 4: Townscape Sensitivity

		Townscape Susceptibility		
		Low	Medium	High
Landscape Value	Exceptional	**High Medium**	**High**	**High**
	High	**Medium**	**High Medium**	**High**
	Moderate	**Medium Low**	**Medium**	**High Medium**
	Low	**Low**	**Medium Low**	**Medium**
	Very Low	**Low**	**Low**	**Medium Low**

Note: In this TVA Townscape Sensitivity is primarily expressed on a three-point scale of High, Medium or Low. Where appropriate and in certain circumstances, intermediate levels such as High Medium is used. In this instance the higher of the two levels is adopted to provide a robust judgment of Townscape Effects. For example, where the Townscape Sensitivity is High Medium, 'High' will be taken forward to assess Townscape Effects (see Table 6).

In exceptional circumstances a reasoned narrative is set out in the TVA in order to justify instances where intermediate levels are considered appropriate for taking forward to assess Townscape Effects so that it is clear how each judgement has been made.

Table 5: Magnitude of change (Townscape)

Level	Description
High	***Total loss or substantial alteration*** *to key elements / features / characteristics of the baseline or introduction of elements considered to be* ***totally uncharacteristic*** *when set within the attributes of the receiving townscape.* The intervention is of **large physical scale that is uncharacteristic of the receiving townscape** and would impose a **totally different aesthetic and perceptual quality** to the site in comparison to the baseline conditions. The change brought about by the proposed intervention **would influence several townscape character types / areas**
Medium	***Partial loss or alteration*** *to one or more key elements/ features/ characteristics of the baseline or introduction of elements that* ***may be prominent*** *but may* ***not necessarily be considered to be substantially uncharacteristic*** *when set within the attributes of the receiving townscape.* The intervention is of a **moderate to large physical scale** and would introduce **a number of different aesthetic and perceptual qualities** to the site in comparison to the baseline conditions. The change brought about by the proposed intervention **would only influence the townscape character type/area within which the proposal lies**.
Low	***Minor loss or alteration*** *to one or more key elements/ features/ characteristics of the baseline or introduction of elements that* ***may not be uncharacteristic*** *when set within the attributes of the receiving townscape.* The intervention is of a **small or moderate scale** and would **only introduce a minor difference in aesthetic and perceptual quality** to the site in comparison to the baseline conditions. The change brought about by the proposed intervention **would be localised and at the level of the immediate townscape** setting of the site.
Negligible	***Very minor loss or alteration*** *to one or more to key elements/ features/ characteristics of the baseline or introduction of elements that are* ***not uncharacteristic*** *when set within the attributes of the receiving townscape.* The intervention is of a **small scale** and would **not introduce any discernible difference in aesthetic and perceptual quality** to the site in comparison to the baseline conditions The change brought about by the proposed intervention **would be at site level and within the intervention site itself.**

Table 6: Significance of Townscape Effects

		Townscape Sensitivity		
		Low	Medium	High
Magnitude of Change	High	**Moderate**	**Moderate - Major**	**Major effect**
	Medium	**Minor - Moderate**	**Moderate**	**Moderate - Major**
	Low	**Minor**	**Minor - Moderate**	**Moderate**
	Negligible	**Negligible**	**Negligible**	**Negligible**

19. In accordance with the methodology suggested by the GLVIA 3, the nature of effect in this assessment are classified as follows:

Major Adverse Effect: Where the proposed intervention would result in a complete variance from the scale, pattern and character of the townscape, and cause a very high quality townscape to be permanently changed and its quality diminished.

Moderate Adverse Effect: Where the proposed intervention would be out of scale with the townscape, or conflict with the local pattern and character, and cause an adverse effect on a townscape of recognised quality.

Minor Adverse Effect: Where the proposed intervention would not quite fit into the local scale and pattern of the townscape, and affect an area of recognised character.

Minor Beneficial Effect: Where the proposed intervention would fit in well with the scale, character and pattern of the area, and has the potential to improve the existing townscape quality.

Moderate Beneficial Effect: Where the proposed intervention would fit in well with the townscape character of the area, and improve the quality of the townscape.

Major Beneficial Effect: Where the proposed intervention would fit in very well with the townscape character of the area, and greatly improve the quality of the townscape.

The above levels of significance (Minor, Moderate, Major etc.) may, in some circumstances, result in neither 'beneficial' or 'adverse' nature of change. This will result in a **Neutral** outcome (e.g. Moderate Neutral Effect). This is determined where the proposed intervention would complement the scale, pattern and character of the existing townscape, and no distinctly discernible positive or negative character change is apparent.

20. Townscape effects that are Moderate and above (i.e. Moderate, Moderate – Major and Major) are considered to be 'Significant'. All other effects are considered to be 'not significant'.

Assessment of Visual Effects

General

21. The townscape assessment considers the potential effects of the proposed intervention on views from within the townscape and if necessary, from individual or isolated components, such as small grouping of, or singular properties. It also considers more distant views across a townscape.

22. When assessing the visual effect of the proposed intervention, the area from which the proposed intervention is theoretically visible is established on plan through desktop surveys (or using digital software if available). Once this Zone of Theoretical Visibility (ZTV) is established, then the true visibility of the intervention site is checked on site in order to understand the screening effect of existing buildings, vegetation and other features and the effect of distance on a receptor's perception of the site. A number of key views are then selected within these areas which are most representative of the available views of the site.

23. Viewpoints are selected in order to demonstrate representative scenarios. It is not required that the assessment describe every effect of the proposed intervention, but only the main or likely level visual effects which are required to inform the decision-making authority. If possible, the viewpoints are agreed in advance with the local authority.

24. Depending on the scale, complexity and location of the proposed intervention, the effects of demolition and/or construction on Site may also form part of the assessment process. The process of assessing the effects is the same as for the proposed intervention.

25. The Significance of the Visual Effects identified is determined by a consideration of the **Sensitivity** of the visual receptors and the **Magnitude of Change** to the view;

- The **Sensitivity** of a visual receptor combines judgements of their **Susceptibility** to the type of intervention proposed and the **Value** attached to the particular view.

  Sensitivity = Susceptibility + Value

- The **Magnitude of Change** to the view depends upon the size or scale of the intervention, the geographical extent of the area experiencing change and its duration and reversibility.

  Magnitude of Change = Size/scale of intervention + geographical extent of change + duration / reversibility of change

(Refer to Figure B: Visual Assessment Process and Table 11: Significance of Visual Effects)

Visual Susceptibility

26. As defined within GLVIA 3, the susceptibility of different visual receptors to change in views and visual amenity is mainly a function of:

- The occupation or activity of people experiencing the view at particular locations; and
- The extent to which their attention or interest may there be focused on the view and the visual amenity they experience at particular locations

(Refer to Table 7: Visual Susceptibility)

Value attached to Views

27. Judgements made about the value attached to views consider

- Recognition of the importance of the particular view, for example in relation to heritage or cultural assets, or through planning designations;
- Recognition of the quality of the townscape that is in view and the extent of visibility, for example wide panoramic views or restricted, narrow views;
- Indicators of the value attached to views by visitors, for example through appearance in guidebooks, provision of facilities for enjoyment of the view (including seating, parking, interpretive material) and references to them in literature or art.

(Refer to Table 8: Value attached to View)

Visual Sensitivity

28. The sensitivity of a visual receptor combines judgements of their susceptibility to the type of intervention proposed and the value attached to the view. (see paragraph 6.31 of GLVIA 3).

(Refer to Table 9: Visual Sensitivity)

Magnitude of Change (Visual)

29. As defined within GLVIA 3, the Magnitude of Change is the degree of change to the view in terms of;

Size or scale

- Size and scale of the proposed intervention in the view with respect to the loss or addition of features in the view and changes in it's composition, including the proportion of the view occupied by the proposed intervention;
- The degree of contrast or integration of any new features or changes in the townscape with the existing or remaining townscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture;
- The nature of the view of the proposed intervention, in terms of the relative amount of time over which it will be experienced and whether views will be full, partial or glimpsed.

Geographical extent

- The angle of view in relation to the main activity of the receptor;
- The distance of the viewpoint from the proposed intervention;
- The extent of the area over which the change would be visible.

Duration and reversibility of the visual effect

Duration is judged as either short term, medium term or long term. Duration and reversibility are considered together and relates to permanence.

Embedded Mitigation

30. Embedded Mitigation refers to primary measures, which have been developed through the iterative design process and have been 'embedded' into the masterplan and detailed design. This process seeks to ensure that, wherever possible, adverse effects on visual amenity are designed out, and the opportunity for beneficial effects is maximised

31. Embedded mitigation should be a consideration in determining the effects of the proposed intervention on Site

Figure B: Visual Assessment Process

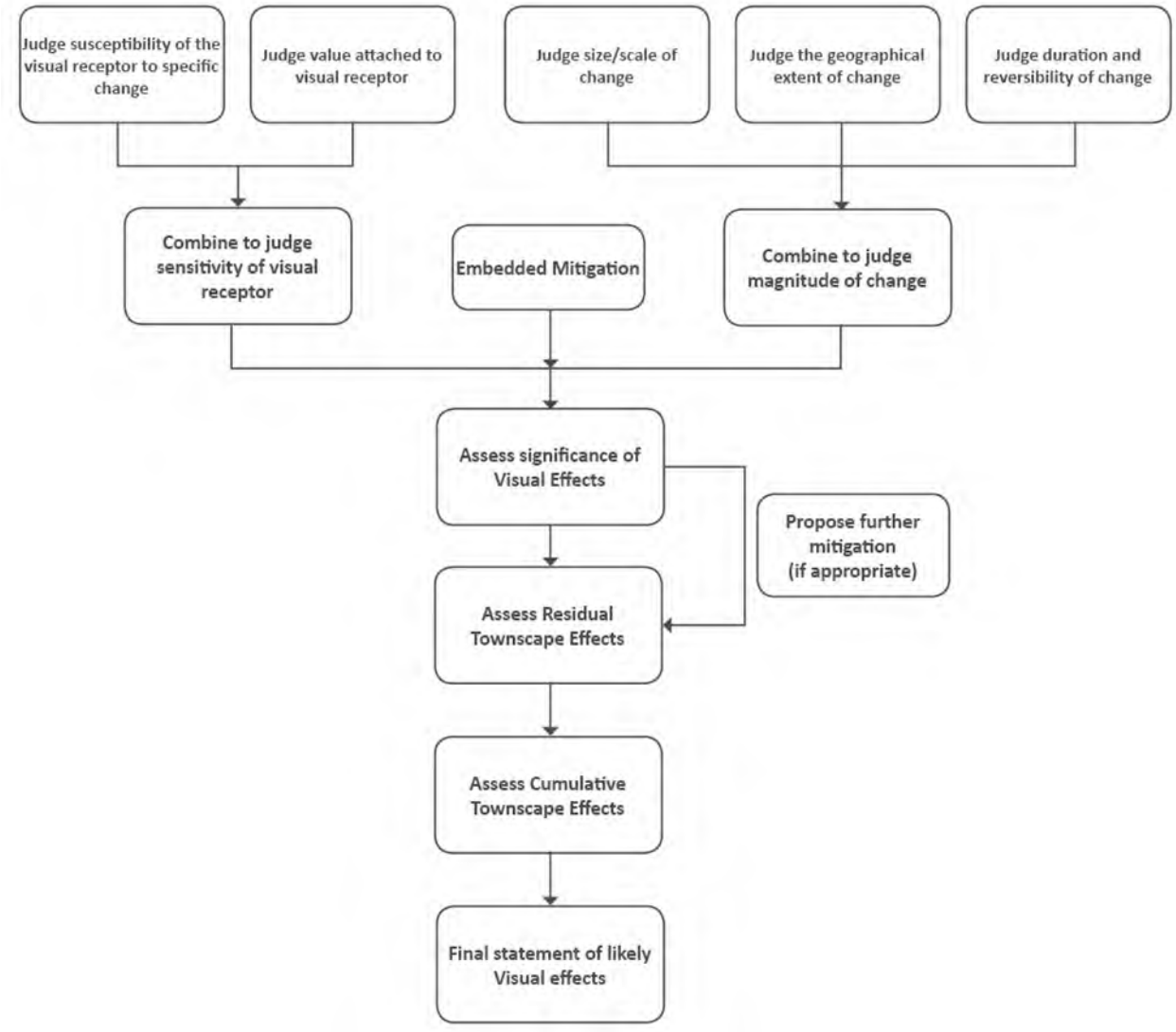


Table 7: Visual Susceptibility

Level	Description
High	Residents at home, or people who are engaged in outdoor recreation whose experience is likely to be focused on, or strongly influenced by a townscape or view with special scenic or heritage value with no, or very little, visible detracting elements. Visitors to heritage assets, or to other attractions and public spaces, where wider views of the surroundings are an important contributor to the experience. Communities where views contribute to the setting enjoyed by residents in the area.
Medium	Residents at home, or users of streets and public spaces whose experience may be influenced by a townscape or view, but the view contains some visible detracting elements and degradation. Travellers on road or rail, where the views are transient and sporadic, but have some significance in either the journey or the expression of the place being visited.
Low	Users of streets where the enjoyment of the townscape incidental rather than the main interest, and where views contain notably detracting elements and degradation. People at their place or work, whose attention may be focused on their work or activity and not their surroundings, or where the setting is not important to the quality of working life. Travellers on road or rail, where the speed of travel and nature of the views involved are short lived and have no special significance.

Table 8: Value attached to Views

Level	Description
High	Iconic, recognised or protected views through Supplementary Planning Guidance or development framework. View mentioned in the listing for a conservation area or literature / art. Largely uninterrupted, elevated, panoramic or distant views of a valued townscape(s). Views that are acknowledged or recorded in guide books or other publications and/or with references in culture such as literature or art.
Moderate	Views with distinctive features, or over a townscape of recognised character and quality, but relatively typical of the locality. Generally uninterrupted view / some minor obstruction Generally attractive with some detracting features
Low	Views of a degraded / damaged townscape or features with a low value and quality

	Restricted views with interruptions to the extent of view

Table 9: Visual Sensitivity

		Visual Susceptibility		
		Low	Medium	High
Value attached to view	High	**Medium**	**High Medium**	**High**
	Moderate	**Medium Low**	**Medium**	**High Medium**
	Low	**Low**	**Medium Low**	**Medium**

Note: In this TVA Visual Sensitivity is primarily expressed on a three-point scale of High, Medium or Low. Where appropriate and in certain circumstances, intermediate levels such as High Medium is used. In this instance the higher of the two levels is adopted to provide a robust judgment of Visual Effects. For example, where the Townscape Sensitivity is High Medium, 'High' will be taken forward to assess Visual Effects (see Table 11).

In exceptional circumstances a reasoned narrative is set out in the TVA in order to justify instances where intermediate levels are considered appropriate for taking forward to assess Visual Effects so that it is clear how each judgement has been made

Table 10: Magnitude of change (Visual)

Level	Description
High	***Total loss or substantial alteration*** *to the baseline view or introduction of* ***elements considered to be totally uncharacteristi****c to view.* The proposed intervention would **occupy a large and extensive proportion of the view** and would be **easily noticed** by the observer. The angle of the view and distance from the proposed intervention would result in **an obvious change to the existing view** and would **significantly change the character or quality** of the view. The proposed intervention **significantly breaks the skyline / roofscape** and is likely to be **visible across an extensive area.**
Medium	***Partial loss or alteration*** *to the baseline view or introduction of* ***elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic*** *of the view* The proposed intervention would **occupy a partial proportion of the view** and would **likely be noticed** by the observer. The angle of the view and distance from the proposed intervention would result in **a perceivable change to the existing view** that **will change the character or quality** of the view. A small proportion of the proposed **intervention breaks the skyline / roofscape** and is likely to be **visible across a relatively localised area.**
Low	***Minor loss or alteration*** *to the baseline view or introduction of* ***elements that may not be uncharacteristic*** *when set within the view.* The proposed intervention would **occupy only a small proportion of the view / may only be glimpsed** in part and would **unlikely to be clearly noticeable** by the observer. The angle of the view and distance from the proposed intervention would result in **a slightly perceptible change in the existing view** but this would **not affect the character or quality** of the view. The proposed intervention **does not break the skyline / roofscape** and is likely to be **visible within a confined to a very limited area**.
Negligible	***Very minor loss or alteration*** *to the baseline view or introduction of* ***elements that may not be uncharacteristic*** *when set within the view.* The proposed intervention would **not be visible / would occupy only a slight proportion of the view** and **not likely be noticed** by the observer. The angle of the view and distance from the proposed intervention **would result in no perceptible change in the existing view** and the **will not result in a change in character or quality of the view.** The proposed intervention **does not break the skyline / roofscape** and is likely to **be visible within the site extents only**

Table 11: Significance of Visual Effects

		Visual Sensitivity		
		Low	Medium	High
Magnitude of Change	High	**Moderate**	**Moderate - Major**	**Major effect**
	Medium	**Minor - Moderate**	**Moderate**	**Moderate - Major**
	Low	**Minor**	**Minor - Moderate**	**Moderate**
	Negligible	**Negligible**	**Negligible**	**Negligible**

32. The nature of effect in this assessment is classified as follows:

Major Adverse Effect: Where the proposed intervention would cause a significant deterioration in the existing view.

Moderate Adverse Effect: Where the proposed intervention would cause a noticeable deterioration in the existing view.

Minor Adverse Effect: Where the proposed intervention would cause a slight deterioration in the existing view.

Minor Beneficial Effect: Where the proposed intervention would cause a slight improvement in the existing view.

Moderate Beneficial Effect: Where the proposed intervention would cause a noticeable improvement in the existing view.

Major Beneficial Effect: Where the proposed intervention would cause a significant improvement in the existing view.

The above levels of significance (Minor, Moderate, Major etc.) may, in some circumstances, result in neither beneficial or adverse change. This will result in a **Neutral** outcome (e.g. Moderate Neutral Effect). This is determined where the proposed intervention would complement the scale, pattern and character of the existing components within view, and no distinctly discernible positive or negative change to visual amenity is apparent.

33. Visual effects that are Moderate and above (i.e. Moderate, Moderate – Major and Major) are considered to be 'Significant'. All other effects are considered to be 'not significant'.

Assessment of Cumulative Effects

34. The purpose of cumulative townscape and visual effects is to identify additional changes caused by the proposed intervention in addition to other similar developments, or as the combined effect of a set of developments taken together.

35. The assessment of cumulative effects in this report focuses specifically on the effects of the proposed intervention in addition to other developments of a similar scale and type within a distance radius defined and justified within the main report. This is based upon a ZTV (Zone of Theoretical Visibility) exercise. Beyond the extent of the defined radius, it is considered that there will be no likely perceivable change to views of the proposed intervention on Site, and no likely cumulative townscape effects in relation to the proposed intervention on Site.

36. Cumulative townscape effects are defined as effects that can impact on either the physical fabric or character of the townscape or any special values attached to it. (GLVIA 3 Chapter 7.3)

37. Cumulative visual effects are defined as effects that can be caused by combined visibility, which occurs where the observer is able to see two more developments from one viewpoint and / or sequential effects which over when the observer has to move another viewpoint to see different developments. (GLVIA 3 Chapter 7.3). Sequential effects may be assessed for travel along regularly used routes such as major roads or popular paths.

38. The approach to assessing cumulative effects is guided by the same principles as to the approach to the initial project assessment and considers a combination of susceptibility and value (sensitivity) and magnitude of change to determine the combined effects.

9. Wind Microclimate

Appendix 9.1 – Wind Methodology

11. Detailed Wind Microclimate Methodology

CFD Methodology

11.1 The CFD was performed using OpenFOAM.

11.2 Meshed using a hybrid mesh of hexahedral, polyhedral, tetrahedral and prismatic elements:

- On site building edge length: 0.05m - 0.25m
- Surrounding context edge length: 0.25m - 1m

11.3 Prismatic cells were used in the boundary layer region, with 4 layers of cells growing with an expansion ratio of 1.15 and aspect ratios between 0.1 and 0.4.

11.4 The total mesh size was between 100 and 125 million cells. Mesh detail is shown in FigureA11.1 and Figure A11.2.

11.5 Buildings within 500m of the site were included.

11.6 The domain was 5000mx5000m, with a blockage ratio of 0.5%

11.7 The blockage ratio uses a “test section” of 600mx200m (within which detail is captured).

11.8 Run using the SST turbulence model with high Re wall functions to ensure mesh suitability.

11.9 The simulations were steady state and isothermal.

11.10 2nd order discretisation schemes were used.

11.11 Convergence was measured as the residuals of the continuity, x-velocity, y-velocity, z-velocity, k and omega equations all falling by at least 2 orders of magnitude, and by measured static pressure on the site buildings varying by less than 1% over the final 100 iterations.

11.12 The wind speed is corrected into a “gust-equivalent” mean. The gust-equivalent mean is calculated using an empirical relationship between the gust and mean ratios recorded at over 13,000 data points from wind tunnel tests. This method is found to give a significant correlation improvement over the more traditional methods based on the CFD turbulent kinetic energy field.

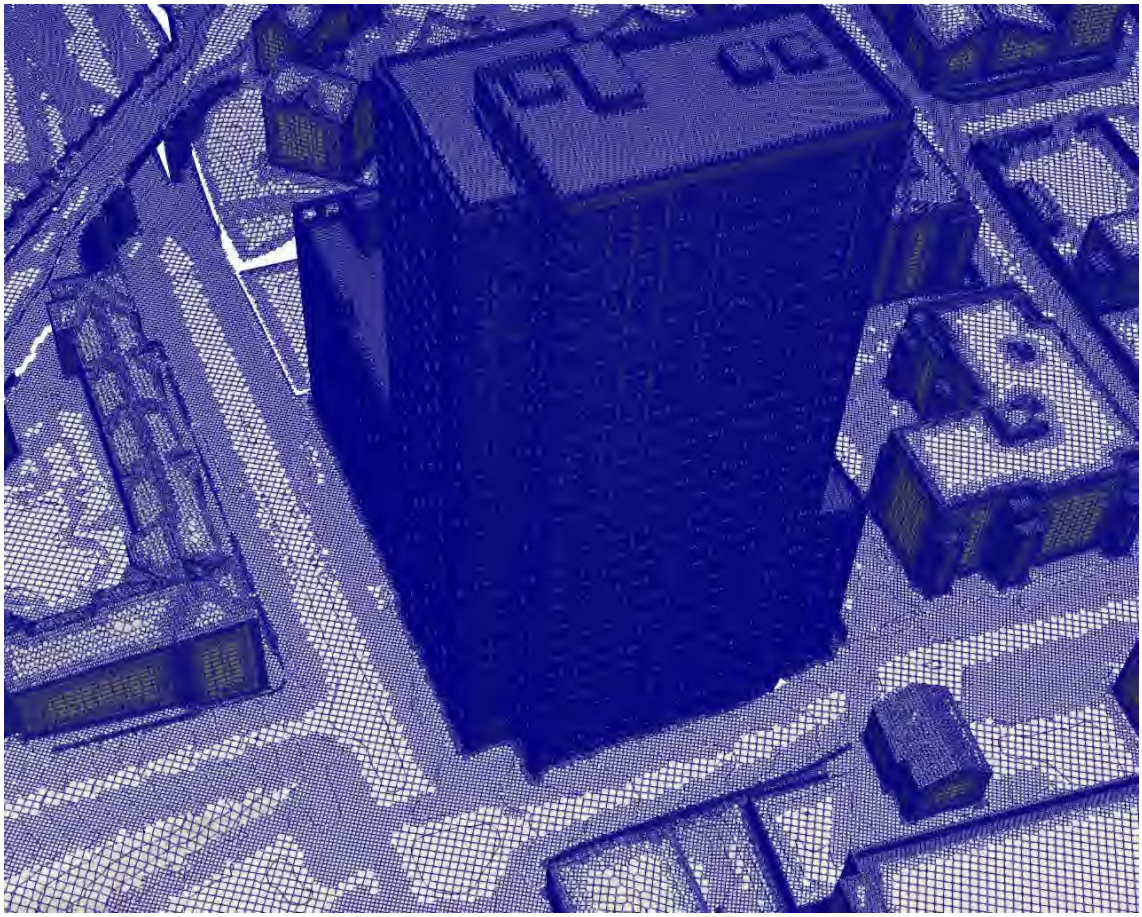


Figure A11.1 Mesh Detail on Site Buildings

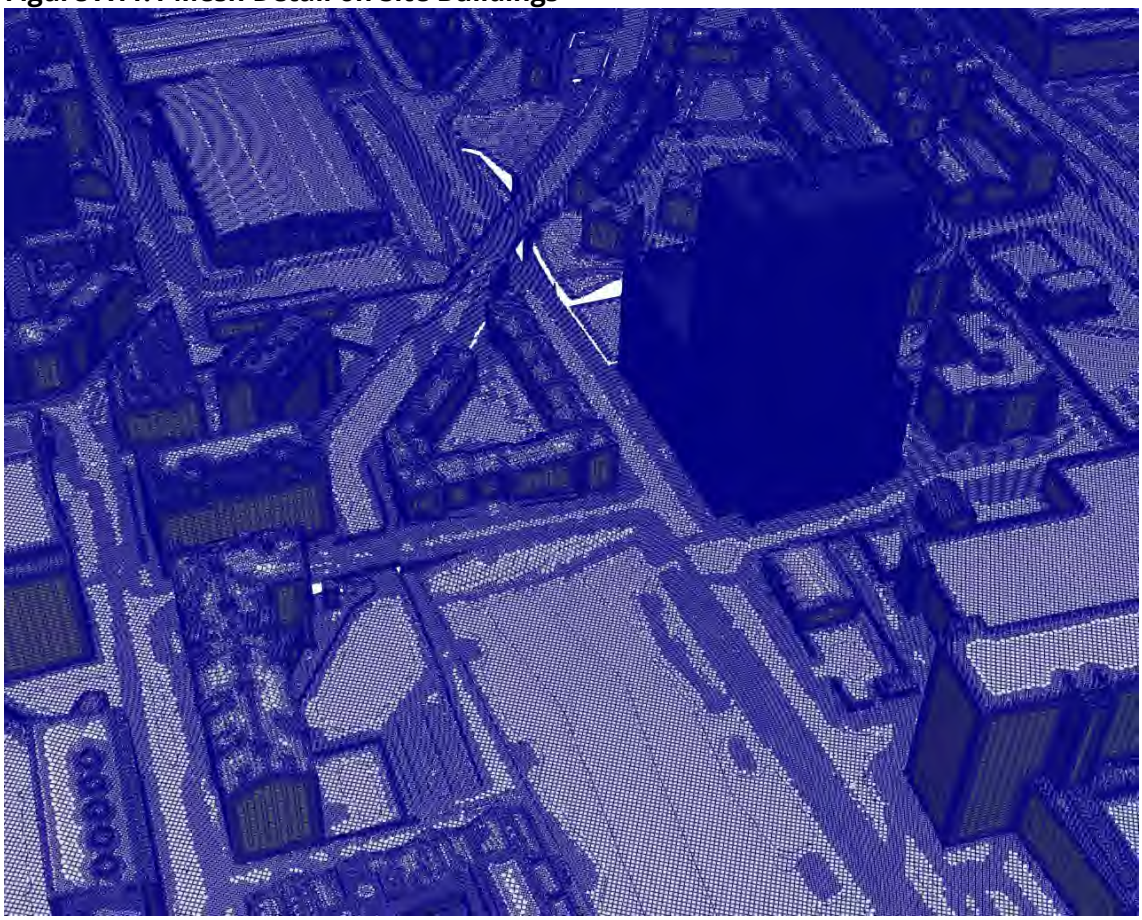


Figure A11.2 Mesh Detail on Surrounds

Wind Climate Methodology

11.13 The simulations were performed form 18 wind directions, spaced such that no single direction contributed more than 10% of the annual winds.

11.14 The directions simulated were 0°,30°,60°,90°,120°,150°,170°,180°,190°,200°,210°,220°, 240°, 260°, 270°, 280°, 300°, 330°.

11.15 Seasonal wind roses for Manchester International Airport are shown in Figure A11.3.

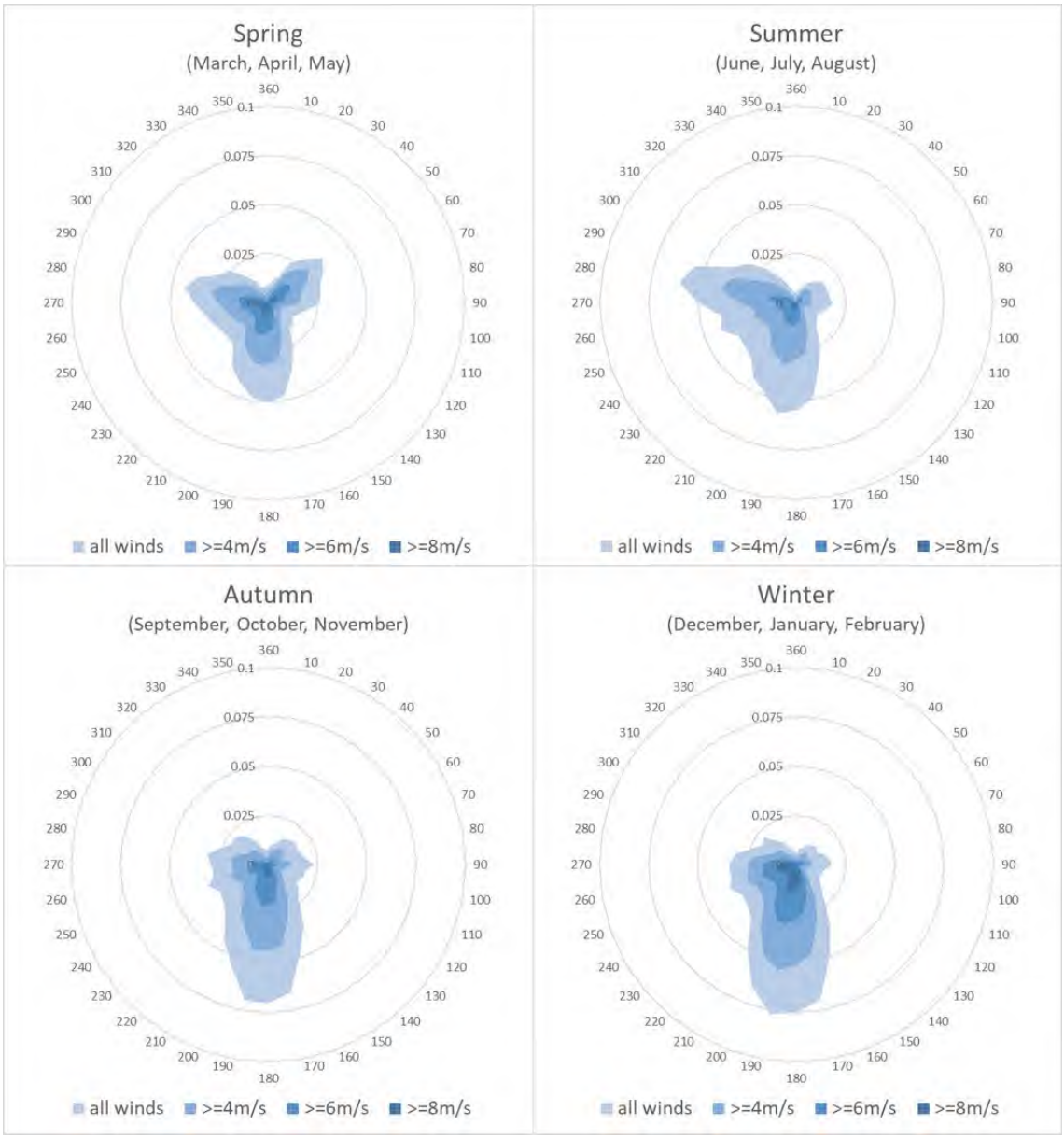


Figure A11.3 Seasonal Wind Roses for Manchester International Airport (1990-2020)

11.16 Target wind profiles for the site, from each wind direction, were generated using sectoral analysis of the terrain surrounding the site and the local weather stations with ESDU 2010 Item01008 'Computer program for wind speeds and turbulent properties: flat or hilly sites in terrain with roughness changes'. The target wind

profiles, compared to the wind speeds measured from the CFD model are shown in Figure A11.4.

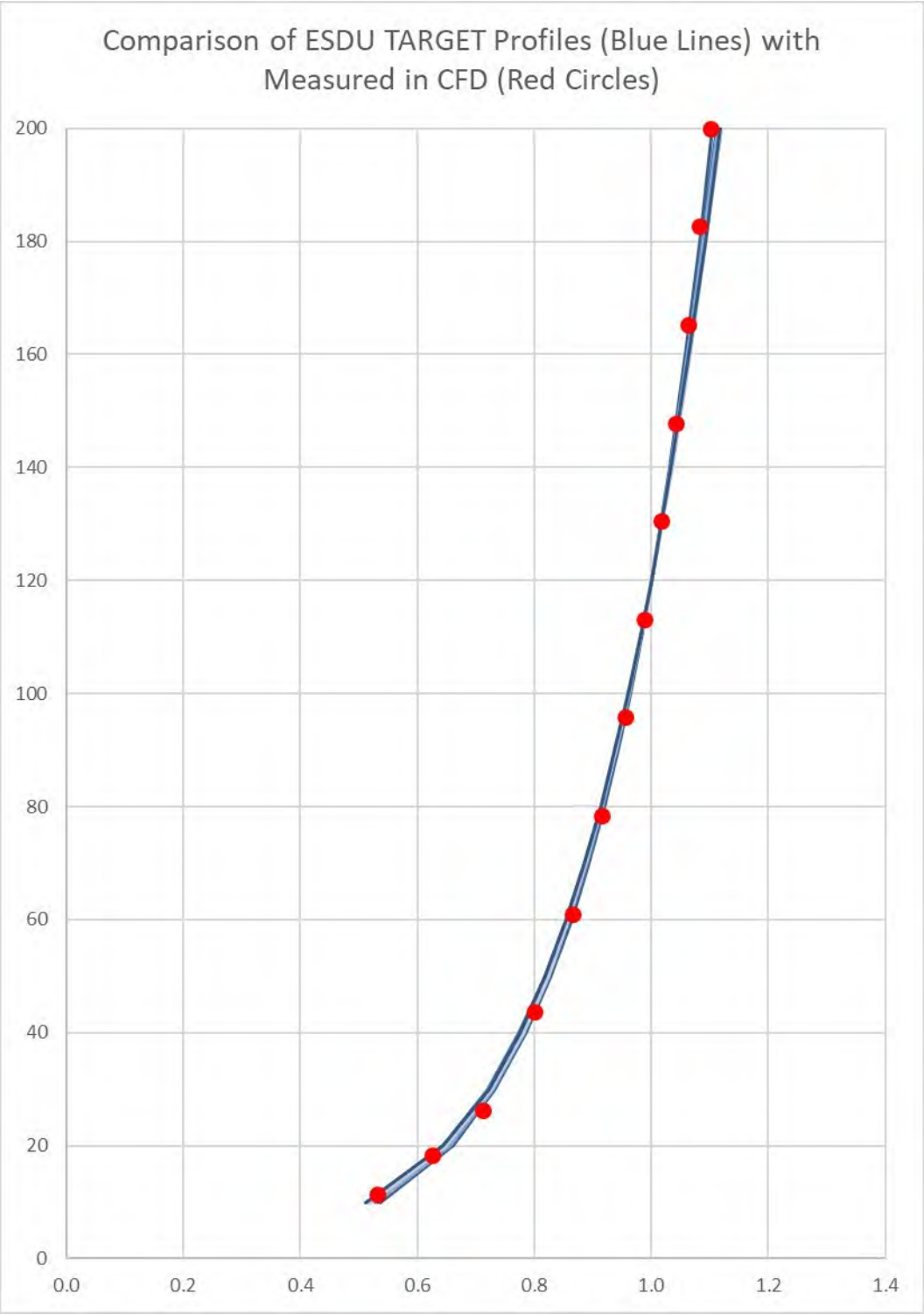


Figure A11.4 Wind Profile for Sparkle Street

10. Human Health

No appendices

11. Socio-Economic

No appendices

12. Residual Impacts

No appendices

13. Type 1 Cumulative Effects

No appendices

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