Jackson's Row Development Ltd

ST MICHAEL'S, JACKSON'S ROW

Environmental Statement 2017

(To be read in conjunction with the Environmental Statement Addendum Volumes 1 and 2 (2019)



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WSP
The Victoria
150-182 The Quays
Salford
M50 3SP
Phone: +44 161 886 2400
Fax: +44 161 886 2401
WSP.com

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PREFACE

Jackson's Row Developments Ltd (hereinafter referred to as 'the Applicant') is seeking to construct a major development proposal known as St Michael's, Jackson's Row, Manchester, UK

The planning application for the development was originally registered in January 2017. Following feedback, the decision was taken to revise the scheme. Revised plans and documents were submitted in November 2017 and the development was granted planning permission in June 2018.

Through the detailed design process, a number of relatively minor improvements to the original scheme have been identified; these will also provide technical and functional improvements through the next stage design process. The Applicant wishes to progress these proposed changes, which are considered to require amendments to the original scheme, through a Section 73 application.

An Environmental Statement, produced in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011, was submitted in support of the Approved Development in 2017. The 2017 Environmental Statement comprised three volumes, as follows:

Volume 1: Main Text and Figures (this document);
Volume 2: Technical Appendices;
Volume 3: Non-Technical Summary

With reference to Volume 1 of the 2017 Environmental Statement, it has been decided that rather than updating and re-submitting the entire Volume in support the Section 73 application, an 'Addendum' to the 2017 Environmental Statement should be submitted. This is because the Proposed Amendments to the scheme are minor in nature and the potential to affect the environmental assessment is limited.

The Addendum matches the structure of Volume 1 of the 2017 Environmental Statement (this document). Following consultation with Manchester City Council, the following Volume 1 chapters have been updated and replaced, with new Environmental Statement chapters, in their entirety:

Chapter 1: Introduction (this chapter);
Chapter 3: Description of the Proposed Development; and
Chapter 4: Consideration of Alternatives.

All other chapters within Volume 1 of the 2017 Environmental Statement have been reviewed in the context of the Proposed Amendments. Following this review, the following chapters have been updated, but not replaced in their entirety:

Chapter 5: Approach to EIA;
Chapter 8: Townscape and Visual;
Chapter 9: Built Heritage
Chapter 11: Daylight, Sunlight and Overshadowing; and
Chapter 13: Cumulative Effects.

No updates are required to the following Volume 1 chapters:

Chapter 2: The Existing Site and Surroundings;
Chapter 6: Noise and Vibration;
Chapter 7: Socioeconomics
Chapter 10: Wind;
Chapter 12: Archaeology; and
Chapter 14: Summary of Environmental Statement.

As a result of the approach above, this Environmental Statement Volume 1 (2017) is intended to be read in conjunction with the Environmental Statement Addendum Volume 1 and 2 (2019).

1

INTRODUCTION

1 INTRODUCTION

1.1 BACKGROUND

1.1.1. Jackson's Row Development Ltd (hereinafter referred to as 'the Applicant') is seeking to obtain detailed planning permission for the construction of a major development proposal known as St Michael's, Jackson's Row, Manchester, UK (hereafter referred to as the 'Proposed Scheme'). The Site is identified **in Figure 1.1: Site Location Plan** and **Figure 1.2: Aerial View of the Site.**

1.1.2. WSP has been commissioned by the Applicant to carry out an Environmental Impact Assessment (EIA) to assess the planning application proposals. This has incorporated technical input from a number of consultants, as outlined in **Table 1.1**. The planning application boundary for the Proposed Scheme is presented in **Figure 1.3: Planning Application Boundary**.

1.1.3. The Environmental Statement (ES) is the output of the EIA process which has been undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 (**Ref. 1.1**) as amended 2015 (**Ref 1.2**) (hereafter referred to as the 'EIA Regulations'), as per the transitional arrangements set out in regulation 76(2) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (**Ref 1.3**) (see Chapter 5 for more information). The ES is one of the application documents submitted to the determining planning authority (Manchester City Council) in order that they can make an informed decision on the planning application.

1.1.4. The detailed planning application for the Proposed Scheme is for the partial or complete demolition of existing buildings and development of up to 10 storey building and a 40 storey tower (including the podium) comprising of residential dwellings (C3), hotel (C1), place of worship (D1), retail / leisure / food and drink uses (D2, A1, A3, A4 and A5) and office space (B1). Furthermore the Proposed Scheme comprises new areas of public realm at roof and street level. A new north-south route through the Site will be created together with the provision of basement car parking, highway alterations, landscaping and associated works. Further details on the Proposed Scheme are located in **Chapter 3: Description of the Proposed Scheme.**

1.1.5. This Chapter outlines the legal framework and structure of the ES and other core documents. A breakdown of the information required by the EIA Regulations is provided in **Table 1.2** alongside guidance on the location of this information within the ES.

1.2 DEFINITION OF ENVIRONMENTAL IMPACT ASSESSMENT

1.2.1. The term 'environmental impact assessment' describes a procedure that must be followed for certain types of projects before they can be given 'development consent'. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for reducing them are properly understood by the public and the relevant competent authority before it makes its decision.

1.2.2. EIA is a process for identifying the environmental effects (positive and negative) of proposed developments before development consent is granted.

1.2.3. The aim of EIA is to 'protect the environment by ensuring that a local planning authority, when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision-making process'. The aim of EIA is also 'to ensure that the public are given early and effective opportunities to participate in the decision making procedures' (**Ref 1.4**, Paragraph: 002 Reference ID: 4-002-20140306).

1.3 LEGAL FRAMEWORK FOR THE ENVIRONMENTAL STATEMENT

1.3.1. The EIA Regulations require that prior to consent being granted, for certain types of development, an EIA must be undertaken. The EIA Regulations set out the types of development which must always be subject to an EIA (Schedule 1 development) and other developments which may require an assessment if they give rise to potentially significant effects (Schedule 2 development).

TRANSITIONAL ARRANGEMENTS

This chapter has been replaced by Environmental Statement Addendum Volumes 1 and 2 (2019) - please refer to the Environmental Statement Addendum

1.3.2. The updated 2014 EU EIA Directive was transposed into English law on 16th May 2017 with the Town and Country (Environmental Impact Assessment) Regulations 2017. Under transitional provisions in regulation 76(2) of the 2017 Regulations, 'the 2011 Regulations continue to apply where before the commencement of these regulations… an applicant, appellant or qualifying body, as the case may be, has submitted an environmental statement or requested a scoping opinion'.

1.3.3. Although a Scoping Opinion was not issued in response to the EIA Scoping Report (February, 2016), an ES was submitted early 2017 prior to the commencement of the 2017 Regulations.

1.3.4. Therefore, the transitional arrangements apply to this ES, i.e. it has been prepared in accordance with the 2011 Regulations.

SCREENING (REGULATION 5)

1.3.5. The requirement for EIA in accordance with the EIA Regulations has been accepted by the Applicant and Manchester City Council (MCC) on the basis that the new development is of a 'significantly greater scale than the previous use' and that the number of residential units proposed exceeds the Schedule 2 (10b) Urban Developments threshold of 150.

SCOPING (REGULATION 13)

1.3.6. An EIA Scoping Report for an earlier iteration of the Proposed Scheme was submitted to Manchester City Council in February, 2016 (as presented in **Appendix 5.1**), together with a formal request for an EIA Scoping Opinion, in accordance with Regulation 13 of the EIA Regulations. A Scoping Note was prepared for the succeeding iteration of the Proposed Scheme in accordance with best practice. To date a Scoping Opinion has not been received from Manchester City Council. Further details are provided in **Chapter 5: Approach to EIA.**

1.3.7. A scope of the assessment for each technical component is set out in the respective Chapters throughout the remainder of this ES **(Chapters 6 - 14).**

ENVIRONMENTAL IMPACT ASSESSMENT

1.3.8. The findings of the EIA are presented in this ES which has been prepared in accordance with the EIA Regulations and the National Planning Practice Guidance (**Ref. 1.3**).

1.3.9. An overview of the methodology adopted throughout the ES and for each technical component of the ES is provided within the respective ES Chapters (**Chapters 6 – 14**). The ES contains information specified in Part 1 and Part 2 of Schedule 4 of the EIA Regulations.

1.3.10. WSP are responsible for the compilation of the ES in line with the requirements outlined by the Institute of Environmental Management & Assessment (IEMA). IEMA has awarded WSP the EIA Quality Mark for our holistic activity around EIA. We have continued to maintain this following ongoing, annual examination in relation to our ongoing products, staff, innovation and promotion of EIA within the industry. We have and continue to support and lead nationally recognised guidance for EIA in the UK.

1.4 THE PROJECT TEAM

1.4.1. **Table 1.1** presents the Project Team for the Proposed Scheme and their associated roles. The Project Team listed are responsible for the scope, content and assessment of effects of their respective technical Chapters (where relevant).

Table 1.1: The Project Team

Project Team	Role
Jackson's Row Developments Ltd	Applicant
Zerum Consult	Planning Consultant, Mechanical and Electrical Design

This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

Hodder + Partners	Architects
Gtech Surveys	TV Reception
Greater Manchester Police	Crime Impact Statement
Peter Connell Associates	Access Statement
WSP	Structural Engineers
Counter Context	Consultation
Deloitte	Regeneration Statement
Watergrove Ltd	Environmental Standards Statement
Planit-IE	Townscape and Visual, Landscaping
Stephen Levrant Heritage Architecture Ltd	Built Heritage
WSP	EIA Lead and consultants for flood risk, drainage, transport; noise and vibration; air quality; archaeology; wind; daylight, sunlight and overshadowing; biodiversity; waste; and socio-economics.

- please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019) This chapter has been replaced

1.5 PLANNING APPLICATION DOCUMENTS

1.5.1. The ES is one of a suite of documents submitted in respect of the application for the Proposed Scheme. The planning application submission comprises the following Core Documents:

- Application Fee and Covering Letter (Zerum);
- Application Forms, Certificates and Notices (Zerum);
- Planning and Tall Buildings Statement (Zerum);
- Consultation Statement (Counter Context);
- Design and Access Statement (Hodder + Partners and Planit-ie);
- Planning Application Drawings (Hodder + Partners and Planit-ie);
- Transport Statement (WSP);
- Framework Travel Plan (WSP);
- Flood Risk Assessment (WSP);
- Drainage Strategy (WSP);
- Waste Management Strategy (WSP);
- Regeneration Statement (Deloitte);
- Heritage Significance Statement (Heritage Architecture);
- Heritage Impact Statement (Heritage Architecture);
- Sustainability Statement (Zerum);
- Ventilation Strategy (Zerum);
- TV Reception Survey (Gtech Surveys);
- Crime Impact Statement (Greater Manchester Police);
- Environmental Standards Statement (Watergrove Ltd);
- Landscape Design and Access (Planit-IE);
- Landscape Drawings (Planit-IE); and
- Environmental Statement: Volume 1 Text and Figures, Volume 2 Technical Appendices and Volume 3 (WSP);
- Non-Technical Summary (WSP).

1.6 STRUCTURE OF THE ENVIRONMENTAL STATEMENT

1.6.1. This ES is provided in three parts:

- Volume 1: Main Text and Figures;
- Volume 2: Technical Appendices; and

- Volume 3: Non-Technical Summary.

1.6.2. **Table 1.2** outlines the structure and content of Volume 1: Main Text and Figures.

Table 1.2: Structure of Volume 1: Main Text and Figures

Chapter Number	Chapter Title	Content
1	Introduction	· Background; · Definition of EIA; · Legal Framework for the ES; · The Project Team; · Planning Application Documents; · Structure of the ES; and · References
2	The Existing Site and Surroundings	· Introduction; · Overview of: land use; site levels and topography; utilities, foul water drainage and supply; ecology and nature conservation; cultural heritage; access; hydrology and flood risk; ground conditions and other environmental considerations; and · Overview of Sensitive Receptors.
3	Description of the Proposed Scheme	· Introduction; · Overview of the Proposed Scheme (as assessed within the ES); · Aims of the Proposed Scheme; · Planning Context; · Plans and Supporting Description; · Proposed Strategies; · Construction Proposals; and · References.
4	Consideration of Alternatives	· Introduction; · Requirement for the Consideration of Alternatives; · The 'Do Nothing' Scenario; · Scheme Design Iterations; · Summary and Conclusions; and · References.
5	Approach to EIA	· Introduction; · Objectives of the EIA; · EIA Screening (Regulation 5); · EIA Scoping (Regulation 13); · Consultation; · Approach to the Assessment of the Proposed Scheme; · Cumulative Effects; and · References.
6	Noise and Vibration	

This chapter has been replaced
- please refer to the Environmental Statement Addendum
Volumes 1 and 2 (2019)

7	Socio-economics	· Introduction; · Legislation, Policy and Guidance; · Assessment Methodology and Significance Criteria; · Baseline Conditions; · Sensitive Receptors; · Assessment of Effects, Mitigation and Residual Effects · Limitations and Assumptions; · Summary; and · Summary of Effects Table (where relevant).
8	Townscape and Visual	
9	Built Heritage	
10	Wind	
11	Daylight, Sunlight and Overshadowing	
12	Archaeology	
12	Cumulative Effects	· Introduction; · Scope and Methodology for Assessment; · Assessment of Potential Cumulative Effects arising from Effect Interactions; · Assessment of Potential Cumulative Effects arising from In-Combination Effects; and · Limitations and Assumptions.
13	Summary of Environmental Statement	

1.6.3. **Volume 2: Technical Appendices** encompasses a range of technical reports which have informed the technical assessments presented in **Volume 1: Main Text and Figures**. The technical appendices are outlined below:

- Appendix 2.1: Phase 1 Preliminary Geo-environmental Risk Assessment;
- Appendix 2.2: Biodiversity Assessment (including bat surveys);
- Appendix 2.3: Preliminary Geotechnical and Environmental Assessment
- Appendix 2.4: Air Quality Assessment;
- Appendix 5.1: EIA Scoping Report;
- Appendix 5.2: Scoping Note;
- Appendix 6.1: Acoustic Terminology;
- Appendix 6.2: Noise and Vibration Policy Guidance;
- Appendix 6.3: Construction Calculations;
- Appendix 6.4: Noise Survey Data;
- Appendix 7.1: Glossary of Technical Terminology for Socio-Economics;
- Appendix 8.1: Townscape Baseline and Effects;
- Appendix 8.2: TVA Baseline and Effects;
- Appendix 8.3: Kinetic Tracks;
- Appendix 8.4: TVA Figures;
- Appendix 10.1: Site Terrain Adjustment;
- Appendix 10.2: Contour Plots for Individual Wind Directions;
- Appendix 10.3: Contour Wind Plots;
- Appendix 10.4: CFD Technical Assumptions;
- Appendix 11.1: External Daylight and Sunlight Receptors;
- Appendix 11.2: Detailed External Daylight and Sunlight Results;
- Appendix 11.3: Detailed Internal Daylight and Sunlight Results;
- Appendix 11.4: DSO Analysis within the Site;
- Appendix 11.5: Glossary;
- Appendix 11.6: External Overshadowing Analysis;
- Appendix 12.1: Archaeological Desk Based Assessment; and
- Appendix 12.2: Jackson's Row, Manchester: Archaeological Evaluation Written Scheme of Investigation.

- please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)
This chapter has been replaced

1.6.4. **Volume 3: Non-Technical Summary** provides a summary of the ES in a question and answers format.

1.6.5. Part 1 of Schedule 4 of the EIA Regulations provides details of the information required for inclusion in the ES. **Table 1.3** below provides a breakdown of this information required and where this information can be located in this ES.

Table 1.3: Location of Required Information within the ES

	Required Information	Location within this ES
1	Description of the development, including in particular:	
	(a) Description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases.	Chapter 3: Description of the Proposed Scheme.
	(b) Description of the main characteristics of the production processes, for instance, nature and quantity of materials used.	Chapter 3: Description of the Proposed Scheme
	(c) An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.	Chapter 5: Approach to EIA and Technical Chapters 6 – 13
2	An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for the choice, taking into account the environmental effects.	Chapter 4: Consideration of Alternatives.
3	A description of the aspects of the environment likely to be significantly affected by the development, including in particular, population, fauna, flora, soil, water, air, climate factors, material assets including the architectural and archaeological heritage, landscape and inter-relationship between the above factors.	Technical Chapters 6 - 13
4	A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from: the existence of the development; the use of natural resources; and The emissions of pollutants, the creation of nuisances and the elimination of waste.	Technical Chapters 6 – 13
5	A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.	Technical Chapters 6 – 13
6	A non-technical summary of the information provided.	Non-Technical Summary (Volume 3)
7	An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.	Technical Chapters 6 – 13

This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

1.7 REFERENCES

- **Ref 1.1**: Statutory Instrument 2011 No.1824 Town and Country Planning 'The Town and Country Planning (Environmental Impact Assessment) Regulations 2011'.
- **Ref 1.2**: Statutory Instrument 2015 No.660 Town and Country Planning, England 'The Town and Country Planning (Environmental Impact Assessment) (Amendment) Regulations 2015'.
- **Ref 1.3**: Statutory Instrument 2017 No.571 Town and Country Planning, England 'The Town and Country Planning (Environmental Impact Assessment) Regulations 2017'.
- **Ref. 1.4**: Department for Communities and Local Government, National Planning Practice Guidance, (March 2014).

This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

2

THE EXISTING SITE AND SURROUNDINGS

2 THE EXISTING SITE AND SURROUNDINGS

2.1 INTRODUCTION

2.1.1. This Chapter provides an overview of both the Site defined by the planning application boundary (**Figure 1.3: Planning Application Boundary**) and the surrounding area in terms of: land use; site levels (**Figure 2.1**) and topography; utilities; foul water drainage and water supply; ecology and nature conservation; cultural heritage; access; hydrology and flood risk, ground conditions and other environmental considerations (key spatial boundaries are illustrated on **Figure 2.2: Environmental Constraints Plan**). In addition, an overview of sensitive receptors considered within **Chapters 6 to 13** and their location is provided in **Table 2.1**.

2.1.2. This Chapter aims to provide an overview of the existing Site and surrounding area. However, where necessary, a much greater level of technical baseline data has been provided within **Technical Chapters 6 – 13**.

2.1.3. The Site comprises an area of approximately 0.56 Hectares (ha), and is located within Manchester City Centre. The OS Grid Reference for the approximate centre of the Site is National Grid Reference SJ 83663 98054. The Site location is illustrated in **Figure 1.1: Site Location Plan** and **Figure 1.2: Aerial View of the Site**.

2.1.4. The Site is bound by existing buildings to the west, Southmill Street to the east, Jacksons Row to the north and Bootle Street to the south which provides both vehicular and pedestrian access. The Site is currently occupied by the former Bootle Street Police Station (which is no longer in use), the Sir Ralph Abercromby Inn, the Manchester Reform Synagogue and car parking facilities. It is located within an urban setting, and is surrounded by buildings which are being used either as office space or bar / restaurants. It is understood that there is one residential property above the Old Nag Head pub off Jackson's Row.

2.2 HISTORICAL LAND USE

2.2.1. Jackson's Row and Bootle Street are visible in early 18th Century mapping but the map is broad scale and so it is not possible to determine the use of the site at this time.

2.2.2. The road now known as Southmill Street is shown as South Street on the 1891 map. Numerous buildings are shown across the Site of different sizes. A small road separates a plot in the east of the Site which is split into three adjoining sections. By 1950 mapping, the road in the east of the site has been removed and the eastern section of the Site is occupied by a police station, and a public house is marked in the centre of the Site, which are thought to be those found on the Site today.

2.2.3. The Site is currently occupied by the former Bootle Street Police Station, the Sir Ralph Abercromby Inn, the Manchester Reform Synagogue and car parking facilities. The former Bootle Street Police Station building accommodated two primary uses as a headquarters of Manchester City Police, and also as a home for the Section "A" Division. The City Police headquarters were officially opened in July 1937, and closed fully in 2014.

2.2.4. The Sir Ralph Abercromby public house is thought to have been constructed (or at least remodelled) during the early decades of the 19th century. The public house has been used by the local public ever since. However, between 1940 – 1941 a high explosive bomb landed on the corner of Bootle Street and South Street damaging the building on the southeast corner of the Site, destroying a building on the northwest corner of the Site and also damaging the public house (see **Appendix 2.1: Phase 1 Preliminary Geo-environmental Risk Assessment**).

2.2.5. The Jackson's Row Reform Synagogue was opened in November 1953 and is currently still in use.

2.2.6. Further details of the Site history are provided in the **Heritage Significance Statement**, a Core Document.

2.3 SITE LEVELS AND TOPOGRAPHY

2.3.1. A former police station occupies the eastern half of the Site. The building is four storeys tall above ground and additionally includes a basement. The building surrounds a central courtyard area. The western half of the Site comprises a public house, the Manchester Reform Synagogue and car parking areas.

2.3.2. The topographical survey includes levels for external areas around the perimeter of the Site as shown on **Figure 2.1**. The survey indicates that Site levels fall from east to west. Site levels in the north eastern corner peak at 39.75 m AOD whereas in the south eastern corner the maximum level is 38.68m AOD. Levels on the western boundary of the Site vary between 35.34m AOD and 36.10m AOD.

2.4 FOUL WATER DRAINAGE AND WATER SUPPLY

2.4.1. The local water network in Manchester is owned and operated by United Utilities, within the terms of its statutory license.

2.4.2. There is evidence of separate foul and surface water drainage networks serving the Site.

2.4.3. Public sewer records from United Utilities indicate that there are no public sewers on Site. The following sewers are located within the vicinity of the Site:

- A combined sewer manhole is indicated in the north eastern corner of the Site and splits into two sewers:
  - A combined sewer of unknown size flows south down Southmill Street to a junction with a combined sewer flowing along Bootle Street; and
  - Another combined sewer of unknown size flows from the manhole west along Jackson's Row adjacent to the northern boundary of the Site;
- From the crossing of sewers at the junction of Southmill Street and Bootle Street a combined sewer flows west along Bootle Street past the southern boundary of the Site. At manhole 6906 to the south of the Site the sewer size is marked as 450mm; and
- A 2,400mm combined sewer flows south under Deansgate.

2.4.4. Further details of foul water and drainage are provided in the **Drainage Strategy**, a supporting Core Document.

2.5 ECOLOGY AND NATURE CONSERVATION

DESIGNATIONS

2.5.1. Rochdale Canal Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) is located approximately 6.06km north east from the Site boundary. The Joint Nature Conservation Committee (JNCC) qualifies the SAC and SSSI for protection due to the presence of a significant population of the European Protected Species (EPS) floating water-plantain *Luronium natans* in a botanically diverse waterplant community which also holds a wide range of pondweeds *Potamogeton spp*.

2.5.2. There are no other statutory designated sites located within 2km of the Site.

2.5.3. There are three Sites of Biological Interest (SBIs) located within 2km of the Site boundary. SBIs are areas designated for protection due to their significant wildlife value and are of country wide importance.

2.5.4. The Rochdale Canal (Stott's Lane Ducie Street Basin) and the Ashton Canal are both designated as SBIs and are located approximately 1.44km north east and 1.20km east respectively from the Site boundary. The Rochdale Canal is designated for protection for its floating water plantain population. It is also of note that certain stretches support white-clawed crayfish, which has some legal protection and American pondweed *Potamogeton epihydrus*, a Red Data Book species. In addition, certain stretches of the Ashton Canal also support floating water plantain and the nationally scarce grasswrack pondweed *Potamogeton compressus*; both are UK Biodiversity Priority Species and are designated as Species of Principal Importance under Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006. The River Irwell SBI is located 1.28km northwest from the Site boundary and is recognised for its distinctive aquatic species composition.

2.5.5. There are no connecting features between the described statutory or non-statutory sites and the Site.

2.5.6. Further details of designations within the vicinity of the Site are provided in **Appendix 2.2: Biodiversity Assessment**.

HABITATS

2.5.7. The Site is dominated by man-made habitats such as buildings and hard standing. There are limited areas of semi-natural habitat present including ornamental shrubs and scattered trees. Such habitats are considered to be common within the local context and unlikely to be of significant value for any protected or notable species.

2.5.8. Further details of existing habitats on the Site are provided in **Appendix 2.2: Biodiversity Assessment.**

PROTECTED SPECIES

BREEDING BIRDS

2.5.9. The Site contains a number of ornamental hawthorn *Crataegus orientalis* trees; however these have not been identified to have any significant potential to support breeding birds (see **Chapter 5 – Approach to the EIA**).

2.5.10. The nationally protected black redstart has been known to breed in central Manchester over recent years, and species records indicate this species has been recorded less than 1 km from the Site boundary. The Site contains a number of flat roofs but with little vegetation and foraging habitat and therefore of low potential for these birds.

BATS

2.5.11. Three buildings on Site have been considered to have potential to support roosting bats; The Manchester Reform Synagogue, The Sir Ralph Abercromby Inn and the Police Station. Bat surveys have been undertaken in 2016 and the results of these confirmed that there is low potential for bats within these buildings.

INVASIVE SPECIES

2.5.12. An established stand of small leaved cotoneaster *Cotoneaster microphyllus* has been identified in the centre of the Site.

2.5.13. Further details on ecology and nature conservation are provided in **Appendix 2.2: Biodiversity Assessment** and **Chapter 5: Approach to the EIA**.

2.6 CULTURAL HERITAGE

2.6.1. There are many buildings of architectural interest located close to the Site, a large portion of which are late Victorian and Edwardian buildings in the dense urban form. Overall, the area has not been built comprehensively, and consists of multi- phase streets with buildings of varied ages and architectural styles. The quality of these varies widely but does include some individual buildings of high quality.

2.6.2. The Site is within the Deansgate / Peter Street Conservation Area and adjacent to nine other conservation areas that provide comprehensive coverage of the City Centre (Parsonage Gardens, St Ann's Square, Upper King Street, George Street, St Peter's Square, Albert Square, Whitworth, St John Street and Castlefield).

2.6.3. The Site is within the settings of numerous listed buildings, including two internationally significant Grade I listed assets (namely the Town Hall and the Albert Memorial), and the Grade II* listed Central Library, Town Hall Extension and Memorial Hall.

2.6.4. The Site also contains three buildings of some local interest which are considered to be non-designated heritage assets. These are:

- The Sir Ralph Abercromby Inn Public House;
- The former Police Headquarters and Police Station; and
- The Manchester Reform Synagogue.

2.6.5. There are two scheduled monuments within 2km which include The Hanging Bridge Immediately South of Manchester Cathedral located approximately 690m northeast of the Site, and the Remains of the Eastern Wall of the Roman Fort is located approximately 548m southwest of the Site.

2.6.6. There are no World Heritage Sites, Registered Parks or Registered Battlefields within 1km of the Site.

2.6.7. Further details of cultural heritage are provided in **Chapter 9: Cultural Heritage** and **Appendix 9.1: Archaeological Desk Based Assessment.**

2.7 ACCESS

2.7.1. The Site is currently accessed by vehicles via Bootle Street which borders the Site to the south and extends in an east-west direction from two simple priority controlled junctions, one with Deansgate and the other with Mount Street.

2.7.2. Bootle Street is a two way road 270m in length with a carriageway width of approximately 4.2m within close proximity of the Site. Signage is currently provided upon entering Bootle Street from Deansgate which indicates that vehicles are entering the 20mph City Centre Zone. Bootle Street is currently partially lit with continuous footways present on both sides of the carriageway which vary between 0.5m and 2.5m in width. The road is currently subject to a 20mph speed limit. Vehicle access to the Site is also provided from Jacksons Row.

2.7.3. There are a number of local bus stops and services, the closest stop being on Peter Street. Manchester City Council runs a free Metroshuttle bus service, with all three routes stopping within 120m of the Site. These routes allow connection to Deansgate, Manchester Piccadilly Train Station and Castlefield, and connection to private bus routes which run throughout Greater Manchester. The nearest railway station, Deansgate Station, is approximately 400m south of the Site.

2.7.4. All of the roads adjacent to the Site are located within Flood Zone 1. Therefore, access and egress should not be affected during an extreme flooding event.

2.7.5. Further details are provided in the **Transport Statement**, a Core Document accompanying the planning application.

2.8 HYDROLOGY AND FLOOD RISK

2.8.1. The Hidden Rivers Map in the Greater Manchester Strategic Flood Risk Assessment (SFRA) (2008) does not show the route of any watercourse under the Site. However, two watercourses are shown in vicinity of the Site as detailed below.

2.8.2. An underground 'lost watercourse' flows northeast, although the direction of flow is not confirmed. The Manchester City Council response indicated that historically this watercourse was known as the River Tib and now the watercourse is incorporated into the combined sewer system in the vicinity of the Site. The closest point of the watercourse to the Site is 0.1km to the east as the watercourse flows under land near to Mount Street.

2.8.3. A second underground 'lost watercourse' confirmed by the Manchester City Council consultation response is the Manchester and Salford Junction Canal that connects the River Irwell (between Princess Bridge and New Quay Street) to the Rochdale Canal near to Bridgewater Hall on Great Bridgewater Street. The canal is 0.3km southwest of the Site at the closest point. It appears that the Canal and the other unnamed watercourse connect shortly before the southern end of the Canal.

2.8.4. The Rochdale Canal is located approximately 0.5km to the south of the Site.

2.8.5. Beyond the canal at approximately 0.6km south of the Site the River Medlock flows generally in an east to west direction. The River is partially in culvert around this location and the Manchester, Salford and Trafford (MST) Hybrid SFRA (2011) Flood Risk Management Map indicates that the 'Medlock Tunnels' flow northwest from under Deansgate before emerging at Potato Wharf at a distance of approximately 0.6km from the Site. The River is classified as a main river upstream of the entrance into the tunnel at Deansgate and as an ordinary watercourse from this point downstream.

2.8.6. According to the Environment Agency website, there are no main surface watercourses within the Site or the immediate surrounding area. A section of the River Irwell known as the Grey Irwell flows in the vicinity of the Site. The river which is classed as an ordinary watercourse in this section flows northeast to southwest approximately 0.5km northwest of the Site at the closest point.

2.8.7. According to the Environment Agency website, the Site is located within Flood Risk Zone 1 which indicates there is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year. The nearest area of Flood Zone 2 (1% to 0.1% / between a 1 in 100 and 1 in 1000 chance of river flooding and a 0.5% to 0.1% / between a 1 in 200 and 1 in 1000 chance of sea flooding) is approximately 500m to the northeast and the nearest area of Flood Zone 3 (>1% / 1 in 200 or greater chance of flooding) is approximately 420m to the northeast.

2.8.8. The MST Hybrid SFRA (2011) Flood Risk Management Map indicates that there are no flood storage areas or raised defences in the vicinity of the Site.

2.8.9. As the Site is covered in hardstanding, surface water runoff is not infiltrated. Instead the runoff is directed towards gullies and into the underground drainage system. Surface water runoff from external areas around the perimeter of the Site appears to flow into the surrounding highways. The Environment Agency Risk of Flooding from Surface Water Velocity Map indicates that during storm events with a low chance of occurring there is surface water flow along Jackson's Row and Bootle Street in an east to west direction.

2.8.10. Further details on flooding and drainage are provided in the **Flood Risk Assessment** and **Drainage Strategy**, Core Documents accompanying the planning application.

2.9 GROUND CONDITIONS

2.9.1. The British Geological Survey, 'Geology of Britain Viewer' shows that the Site is underlain by sandstone known as Chester Pebble Beds Formation and is encountered at 3m below ground level (bgl). There are superficial deposits of Devensian till on the west and centre of the Site. The east of the Site is shown to have no superficial deposits.

2.9.2. The Environment Agency website designates the bedrock under the Site as a principal aquifer. The designation is used for rocks which usually provide a high level of water storage and may support water supply and or river base flow on a strategic scale.

2.9.3. The superficial deposits are classed as a Secondary A Aquifer, meaning that the deposits are permeable layers capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers.

2.9.4. The Environment Agency website shows that the Site does not lie within a Groundwater Source Protection Zone.

2.9.5. A preliminary Site Investigation (**Appendix 2.1**) confirms that Made Ground is encountered to a depth of 4m across the Site which is likely to comprise of reworked natural ground and demolition derived materials. All samples of Made Ground complied with the relevant Residential Land Use (Without Plant Uptake) Human Health GAC values with the exception of arsenic, lead, benzo(a)anthracene and benzo(a)pyrene. In all cases except lead, it is considered that the exceedances are marginal.

2.9.6. Ground water has been encountered at a minimum depth of 25.49m AOD to a maximum depth of 25.08m AOD. No exceedances of the Controlled Waters screening criteria were recorded. Based on the current data available, the risks to Controlled Waters are considered low.

2.9.7. The ground gas monitoring data available confirms that no special gas protection measures are required.

2.9.8. Further details regarding ground conditions are provided in **Appendix 2.1: Phase I Preliminary Geo-Environmental Risk Assessment** and **Appendix 2.3: Preliminary Geotechnical and Environmental Assessment.**

2.10 OTHER ENVIRONMENTAL CONSIDERATIONS

2.10.1. The Site is located within the Urban Mersey Basin Natural Area. The Site is not located within a Greenbelt area.

2.10.2. The Site and surrounding area lies within the Greater Manchester Air Quality Management Area (AQMA), which covers large areas of Manchester City Council's land area. Further details regarding air quality are provided in **Appendix 2.4: Air Quality Report**.

2.10.3. In terms of noise, despite the development's urban setting, the Site is bounded by relatively minor roads and away from the main road traffic routes through Manchester. In addition to road traffic from the local road network, the Site is also exposed to building services noise from other developments and entertainment / patron noise from nearby night-clubs and entertainment venues. Further details regarding noise are provided in **Chapter 6: Noise and Vibration**.

2.11 OVERVIEW OF SENSITIVE RECEPTORS

2.11.1. There are a number of sensitive receptors that have been identified in the locality of the Site and these have been taken into consideration within the assessments presented in **Technical Chapters 6 – 13**. The key sensitive receptors are summarised in **Table 2.1** below.

Table 2.1: Sensitive Receptors

Technical Topic Area	Sensitive Receptor
Noise and Vibration	Construction and Operational Phases
	Existing residential property on the opposite side of Jacksons Row; The Radisson Blu Edwardian Hotel; Commercial premises / offices on Jacksons Row, Southmill Street, Bootle Street and 201 Deansgate; The Friends Meeting House, Mount Street; and Residential occupiers and hotel occupants of the Proposed Scheme.
Socio-economics	Construction and Operational Phases
	Local economic receptors, i.e. residents of working age and companies in the local area; and Local community receptors, i.e. users of the synagogue and public house and those travelling within and using the public realm.
Townscape and Visual	Construction and Operational Phases
	Site character; Townscape character – site, urban grain, land use, building heights, topography & flood risk, movement and linkages; Historic designations; Environmental designations / public realm and public open space; and Views from public receptors (including residential) to the north, south, east and west of the Site.
Cultural Heritage	Construction and Operational Phases
	Non-designated heritage assets (Abercromby Public House, Police Station, Synagogue); Listed buildings; and Conservation area.
Wind	Operational Phase
	Pedestrians along pedestrian routes within and in the vicinity of the Site on Quay Street, Windmill Street, Mount Street, Lloyd Street, Albert Square, Queen Street, Southmill Street, Jackson's Row, Bootle Street and Deansgate; Users of building entrances to adjacent buildings on the above routes; and Users of nearby existing public open spaces such as Albert Square.
Daylight, Sunlight and Overshadowing	Operational Phase
	Windows to habitable rooms where the occupants (including residential, office, commercial, religious and retail uses), have a reasonable expectation of natural light; and Public open spaces.
Archaeology	Construction Phases
	Potential buried archaeological remains from the industrial period.

3

DESCRIPTION OF PROPOSED DEVELOPMENT

3 DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 INTRODUCTION

3.1.1. This Chapter provides a description of the Proposed Scheme, including a description of how the Proposed Scheme would be constructed. This description aligns with that for which planning consent is sought, and, together with the supporting plans (as identified in Section 3.4 below), forms the basis of the technical assessments (Technical **Chapters 6 – 13**).

3.2 OVERVIEW OF THE PROPOSED SCHEME

3.2.1. The Proposed Scheme consists of two mixed use blocks, known as Blocks A and B, located around a new street level public square. This allows Block A to form the podium of a proposed tower whilst Block B will incorporate a new publicly accessible rooftop terrace. The podium of Block A will also incorporate roof top amenity garden space. The blocks will be linked with a feature landscape stair, connecting the roof garden at the base of the tower with the roof terrace above Block B. The street level public square will create a new public route through the north/south axis of the Site.

3.2.2. Block A is located to the west of the Site, it will be formed of 6 storeys which act as a podium for a new tower consisting of an additional 34 storeys. The block will include a mix of uses between levels 00 to 06; these will consist of retail/leisure space, a new Manchester Reform Synagogue and the conference and spa facilities for a 5* hotel. The tower will then provide a mix of rooms for the 5* hotel up to level 18 with the remaining levels providing a range of residential apartments. Level 06 of Block A will support the skylobby of the hotel and contain a roof garden.

3.2.3. The two ground floor retail/leisure units in Block A will face the new public square created between the two blocks, whilst the synagogue, hotel and residential apartments will each have a dedicated entrance opening onto Jacksons Row. The existing Sir Ralph Abercromby pub will be retained and will lie to the south east of the new block. Support spaces for the synagogue, hotel and residential use include car parking and bike storage provided with basement access on Bootle Street.

3.2.4. Block B is located to the east of the Site. It comprises the retention of the Portland Stone building of the former Police Station which fronts on to Southmill Street, and a new build development which will be 10 storeys high, with a partial 11th floor and plant level. The new block's principle use will be for commercial office, with dual aspect floor plates located from levels 02 through to 09. The entrance for the office space will open onto the new public square whilst the remainder of the ground floor will consist of retail/leisure units opening onto the street level public square, Jacksons Row and Bootle Street. The roof top terrace space at Level 10 will be accessed by lift via a dedicated, public entrance direct from Jackson's Row. The renovated police station building will be utilised as a boutique hotel from levels Basement 1 – 04 with a new glass extension to the roof forming a new hotel bar and lounge (Level 05-06). Access to the hotel bar and lounge will be via the Southmill Street entrance of the boutique hotel.

3.2.5. The feature stair will connect the level 06 roof garden on Block A, which will provide access to the hotel skylobby, with the level 10 roof terrace of Block B. A range of different activities can be held in this adaptable space.

3.2.6. Both blocks in the Proposed Scheme are to be serviced via Bootle Street. A loading bay will be integrated within Block A at street level. Block B will have service access via a lobby with an entrance on Bootle Street. A two way ramp at the south western end of Block A will provide access from Bootle Street to two levels of private basement car parking for all uses. There are a total of 136 car spaces proposed.

3.3 AIMS OF THE PROPOSED SCHEME

3.3.1. The ambition for the urban regeneration of the Jackson's Row area is to create a "sense of place" that is a lively, attractive and safe environment for the benefit of the future occupants and visitors.

3.3.2. The Proposed Scheme would deliver the full potential of the Site and location whilst retaining its historical relation to Manchester. This will be done by combining the retention of key historical landmarks with a new built form of the highest quality and public spaces which enhance the connectivity of the city. The Proposed Scheme would create a destination in what is currently an under-utilised part of an otherwise vibrant city centre.

This Chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

3.3.3. Connectivity will be significantly improved through the area by bisecting the two Blocks with a new south facing square which will facilitate a north/south connection between Deansgate and Manchester Central. This will enhance the area's permeability, creating new improved pedestrian routes, and building upon the Site's important relationship with other surrounding regeneration projects. The Proposed Scheme is well connected to neighbouring regeneration projects/areas, including Spinningfields, St John's, the Civic Quarter and Conference Quarter/ Manchester Central.

3.4 PLANNING CONTEXT

3.4.1. The Proposed Scheme is considered to fall under Use Classes C3 (Dwelling Houses); C1 (Hotel) with D2 (Assembly and Leisure); D1 (Non-residential Institutions); A1 (Retail); A3 (Restaurants and Cafes); A4 (Drinking Establishments); A5 (Hot Food Takeaway); and B1 (Business) of the Town and Country Planning (Use Classes) Order 1987 (as amended), **Ref. 3.1**.

Table 3.1: Quantum of Use

Type of Development	Class Use	Quantum 2017 (NIA m2)	Quantum 2017 (GIA m2)
Dwelling Houses (Apartments)	C3	14,884	18,710
Hotel (5*) Including Assembly and Leisure (Gym) and Boutique Hotel	C1 / D2	Total - 13,775 comprising 5* Hotel 10,375, Conference 1,804 Boutique Hotel 1,596	Total - 19,672 comprising 5* Hotel 15,541, Conference 2,067 Boutique Hotel 2,064
Retail / Restaurants and Cafes / Drinking Establishments / Hot Food Takeaways	A1 / A3 / A4 / A5	3,228	3,228
Non-residential Institutions (Synagogue)	D1	2,458	2,458
Business (Office Space)	B1	13,721	16,310

This chapter has been replaced
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Volumes 1 and 2 (2019)

RESIDENTIAL SUMMARY

3.4.2. In the Tower, 21 floors from Levels 19 to 39 will contain up to 189 residential apartments. The apartment mix is as follows:

- 28 Studios;
- 28 one bed apartments;
- 132 two bed apartments; and
- 1 four bed duplex penthouse apartment.

3.4.3. The residential entrance is located along Jackson's Row where there will be direct access to three passenger lifts.

HOTEL SUMMARY

3.4.4. The hotel has a drop off located along Jackson's Row with direct level access from the same point in to the ground level of the hotel where the entrance lobby and reception are located. The hotel spa/gym facilities are located at Levels 02/03. The conference centre is located at Level 04 and includes a flexible ballroom/function space, pre-function support spaces and a range of meeting rooms.

3.4.5. Hotel back of house spaces are primarily located at Levels 04/05.

3.4.6. There will be 12 floors of guest rooms, with up to 18 rooms per floor. The skylobby will be located on Level 06. There will be a total of up to 216 hotel rooms.

3.4.7. Hotel guest drop off from Jackson's Row is accessed via Southmill Street, being as it is one-way. Cars then exit back onto Jackson's Row and through to Deansgate. There will be the opportunity to enter the hotel via the skylobby and level 06 roof garden via the public feature landscape stair.

BOUTIQUE HOTEL

3.4.8. The Portland Stone building of the former police station will be converted into a 30-bed boutique hotel. This will utilise the existing entrance from Southmill Street and will retain the current planform of much of the current building. Bedrooms will be provided on all 5 floors of the existing building (Levels 00 to 04). The basement (Level B01) includes space for a cold store and wine cellar along with meeting room for guests and back of house space for staff. Plant serving the boutique hotel is also located at this level. A new lift and stair core serving the hotel will be provided outwith the current building envelope within the proposed Block B, which will be constructed to the rear of the hotel. A two-storey glass, rooftop extension will be constructed on top of the hotel (Levels 05/06). This will accommodate a hotel restaurant, with a mezzanine bar and lounge and will allow views out over adjacent streets and Albert Square. Whilst the principle access to the restaurant will be via the lifts within the existing building, it will also be possible to access via the circulation core within Block B.

RETAIL/ LEISURE SUMMARY

3.4.9. Retail/leisure units have been located throughout the Proposed Scheme, summarised as follows:

- Two retail/leisure units will be provided at ground level within Block A to the east of the Block. They will be directly accessible from the new public square. It is possible that the northern unit may form part of the 5* hotel but at this stage it is assumed to be a separate unit;
- A further retail/leisure unit will be provided at Level 06 of Block A to the north east corner of the podium at the bottom of the feature stair;
- Retail/leisure use will also be provided at ground level within Block B at four locations. To the west of the block there will be two units, one at the north west of the block will be accessible via the new public square, and the other at the south west of the block will be accessible via the public square and Bootle Street. The north west unit will have the potential for an additional mezzanine level. The north of the block will provide a third retail space which will have direct access onto Jacksons Row. A fourth, smaller unit will be located to the south west of block and will be accessible from Bootle Street;
- In Block B, a top floor (Level 05/06) bar/restaurant will be provided as part of the boutique hotel above the existing Police Station. This location provides views over Manchester Town Hall and the city beyond. The guests will have a dedicated entrance from Jacksons Row;
- Retail/leisure use will be provided within the roof terrace of Block B at Level 10, typically in the form of kiosk-style outlets.

This chapter has been replaced - Please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

OFFICE SUMMARY

3.4.10. Within Block B, there will be a ground entrance accessible to the new public square with 8 levels of office space above (Levels 02 to 09). Each level will be capable of multi-tenancy splits. Each office floor will have WC and lift facilities for office users provided in accordance with British Council for Offices (BCO) guide to specification. The office reception space will be double height.

3.4.11. The office use comprises terraces at each of the first five floors, which will be exclusive use and of the following dimensions:

- Level 1 – 35 sq m;
- Level 2 – 35 sq m;
- Level 3 – 119 sq m;
- Level 4 - 63 sq m;
- Level 5 – 298 sq m;
- Level 6 – 22 sq m.;
- Level 7 – 22 sq. m; and
- Level 8 – 22 sq. m.

3.4.12. Offices may also have access to the external terraces adjacent to the feature landscape stair, either as exclusive use, or managed shared office/public use. These terraces are of the following dimensions:

- Level 6 – 135 sq m;
- Level 7 – 120 sq m; and

- Level 8 – 102 sq m.

SYNAGOGUE SUMMARY

3.4.13. The Synagogue is located at Ground Floor to Level 02. The main entrance is step free and accessed directly from Jackson's Row through the main entrance lobby space. A feature stair and lifts provide access from the lobby to the first and second floor levels where the double height sanctuary is located. Supporting spaces including meeting rooms, offices, function spaces etc. are located on both the first and second floor levels. Some of these spaces are double height. There is also an external terrace (78 sq.m) to the south west at first floor level.

3.4.14. The sanctuary will ensure that the Manchester Reform Synagogue congregation continue to enjoy their city centre location.

3.5 PLANS AND SUPPORTING DESCRIPTION

The Proposed Scheme is illustrated by a series of plans. The plans to be used for the purpose of the EIA, and which will be presented in the ES and therefore submitted for planning approval, are summarised below:

- Figure 1.3: Planning Application Boundary.

3.5.1. The following plans are all dated 17 November, 2017:

Proposed Basement GA Plan	(--)0B1	1:200@A1
Proposed GA Retail Basement Plan	(--)0RB	1:200@A1
Proposed Ground Floor GA Plan	(--)0UG	1:200@A1
Proposed GA Mezzanine Floor	(--)0M	1:200@A1
Proposed Level 01 GA Plan	(--)001	1:200@A1
Proposed Level 02 GA Plan	(--)002	1:200@A1
Proposed Level 03 GA Plan	(--)003	1:200@A1
Proposed Level 04 GA Plan	(--)004	1:200@A1
Proposed Level 05 GA Plan	(--)005	1:200@A1
Proposed Level 06 GA Plan	(--)006	1:200@A1
Proposed Level 06M GA Plan	(--)006M	1:200@A1
Proposed Level 07 GA Plan	(--)007	1:200@A1
Proposed Level 08 GA Plan	(--)008	1:200@A1
Proposed Level 09 GA Plan	(--)009	1:200@A1
Proposed Level 10 GA Plan	(--)010	1:200@A1
Proposed Level 11 GA Plan	(--)011	1:200@A1
Proposed Tower GA Plans	(--)020	1:200@A1
Proposed Upper Tower GA Plans	(--)021	1:200@A1
Typical Hotel Plans	(SK)007	1:100@A1
Typical Lower Residential Plans	(SK)019	1:100@A1
Typical Upper Residential Plans	(SK)038	1:100@A1
Residential Penthouse	(SK)039	1:100@A1
Site Demolition Plan	(-0)001	1:500@A1
Site Location Plan	(--)050	1:500@A1
Roof Context	(--)060	1:200@A1
Apartment Summary	(SK)40	1:75@A1
Refuse Strategy	(-0)002	1:250@A1
Access Strategy	(-0)003	1:200@A1

Elevations

Context Elevation – Southmill Street	(--)201	1:500@A1
Context Elevation – Bootle Street	(--)202	1:500@A1
Context Elevation – Jackson's Row	(--)203	1:500@A1
Context Elevation – Deansgate	(--)204	1:500@A1
Planning Elevation – Southmill Street	(--)211	1:300@A1
Planning Elevation – Bootle Street	(--)212	1:300@A1
Planning Elevation – Jackson's Row	(--)213	1:300@A1

This chapter has been replaced please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

- Planning Elevation – Deansgate (--)214 1:300@A1
- Planning Elevation – Tower Courtyard (--)215 1:300@A1
- Planning Elevation – Office Courtyard (--)216 1:300@A1

Sections

- Planning Section – Section AA (--)301 1:300@A1
- Planning Section – Section BB (--)302 1:300@A1
- Planning Section – Section CC (--)303 1:300@A1
- Planning Section – Section DD (--)304 1:300@A1

Façade Studies

- Façade Study – 1 Bed Studio (21)101 1:20@A1
- Façade Study – Office Corner (21)102 1:50@A1
- Façade Study – Hotel Entrance (21)103 1:50@A1
- Façade Study – Synagogue Terrace (21)104 1:50@A1
- Façade Study – Fire Escape (21)105 1:50@A1
- Façade Study – Office Balconies (21)106 1:50@A1
- Façade Study – Synagogue Entrance (21)109 1:50@A1

See also MAKE Architect's drawings previously submitted:

- P 1000 A1 Site location plan 1:1250
- P 1050 A1 Existing site plan 1:500
- P 1100 A0 Existing North Elevation 1:250
- P 1101 A0 Existing East Elevation 1:250
- P 1102 A0 Existing South Elevation 1:250
- P 1103 A0 Existing West Elevation 1:250

3.5.2. These plans are supported by a series of descriptions which aim to ensure that the plans can be interpreted consistently across the EIA. Where necessary assumptions have been made for the purposes of the EIA.

PLANNING APPLICATION BOUNDARY

3.5.3. All temporary and permanent activities relating to the demolition, construction and operational activities at the Proposed Scheme would be contained within the red line boundary as illustrated in **Figure 1.3: Planning Application Boundary**. The EIA is based upon this red line boundary.

PROPOSED SCHEME LAYOUT/ LAND USE

3.5.4. The section below outlines the descriptions associated with each floor plan and these should be read in conjunction with the plans.

FLOOR PLANS

LOWER BASEMENT B2 FLOOR LEVEL

3.5.5. The Lower Basement B2 Floor Level has parking spaces for an additional 39 vehicles connecting to the centre of Lower Basement B1 Floor Level via ramped access. It is a partial basement level which does not extend across the entire footprint of the development. It also houses plant room spaces.

LOWER BASEMENT B1 FLOOR LEVEL

3.5.6. The Lower Basement B1 Floor Level has ramped access to the Bootle Street exit on the south west of the site and extends below ground across the entirety of the site. The main body of the level houses 97 car parking spaces with ramped access to the Lower Basement B2 Floor Level. In the west of the floor are bins and cycle storage for the hotel and residential apartments. To the east are shower facilities and cycle storage for office users as well as a series of plant rooms. The basement level of the police station provides support spaces for the hotel and restaurant.

This chapter has been replaced please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

GROUND FLOOR LEVEL

3.5.7. Within this plan the ground level footprints of both blocks can be seen showing the circulation route from north to south through the Site. Open space with landscaping and seating will create the south facing square in the centre of the site, which will be an area of public open space.

3.5.8. Block A to the west of the site will contain, moving clockwise from the north west corner, entrances to the synagogue and residential apartments along Jacksons Row, both will lead to ground floor lobbies and connect with separate lift/stair access. The hotel entrance will be to the north east of the block connecting to the new public square, this will house a lobby and bar/restaurant for the hotel. The east of the block will house retail/leisure space also opening onto the new public square. The Sir Ralph Abercromby pub will remain at the south east corner of the block with substation/deliveries and car park having access routes from Bootle Street to the south of the block. The west of the block will contain a plant room.

3.5.9. Block B will be to the east of the site and will contain retail/leisure spaces opening onto Jackson's Row, Bootle Street and the public square, with the office lobby also opening onto the public square. The Block B rooftop terrace and retail/leisure uses will have an entrance to Jackson's Row at the north of the site whilst the lower ground level of the police station will contain six boutique hotel rooms connecting back into the main core of the building.

GROUND MEZZANINE FLOOR LEVEL

3.5.10. Block A contains a mezzanine to plant room. Block B has a mezzanine to the north west for a retail/leisure unit.

LEVEL 01 / FIRST FLOOR

3.5.11. Block A contains the upper lobby, hall, W.C facilities, external terrace and offices for the synagogue as well as the lower level to the synagogue sanctuary. To the south east is the upper floor to the Sir Ralph Abercromby pub. The former police station contains six boutique hotel rooms at Upper Ground Level with access into the main stair core and an entrance to Southmill Street.

LEVEL 02 / SECOND FLOOR LEVEL

3.5.12. Block A contains eight hotel spa treatment rooms with connection to the main hotel stair and lift core. It also contains the upper levels of the synagogue sanctuary, with an internal void to the synagogue hall and an external void to the synagogue terrace. Block B has office space across the entirety of the floor. The main stair and lift core is to the east of the level with W.C facilities. There is an additional escape stair to the west of the block. The former police station contains six boutique hotel rooms with access into the main stair core.

LEVEL 03 / THIRD FLOOR LEVEL

3.5.13. Block A contains the gym, pool and spa facilities for the hotel. It also contains the internal void to the synagogue sanctuary and an external void to the synagogue terrace. Block B is the same as the Second Floor Plan.

LEVEL 04 / FOURTH FLOOR LEVEL

3.5.14. Block A houses conference facilities, ball room and pre-function space as well as the back of house facilities for the hotel. Block B has office space across the entirety of the floor with the footprint extended to meet with the edge of Block A. The main stair and lift core is to the east of the level with W.C facilities. There is an additional escape stair to the west of the block. The former police station contains three hotels rooms and two hotel suites with terrace access.

LEVEL 05 / FIFTH FLOOR LEVEL

3.5.15. Block A contains entertainment space and back of house facilities to the hotel as well as a void to below ballroom space. Block B is as described in the Fourth Floor Plan with the exception that the roof of the former police station forms a restaurant/ bar connecting back into the main block core.

LEVEL 06 / SIXTH FLOOR LEVEL

This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

3.5.16. The podium roof of Block A provides the roof garden across the majority of this level with the base of the tower forming the hotel skylobby with associated stair and lift access. The rooftop garden to the west of the tower will be a private space for the benefit of residents, whereas the garden to the east will form spill-out space from the hotel and will be publicly accessible. The start of the feature landscape stair begins at the corner of the block, adjacent to which is a retail/leisure unit spilling out on to the roof top garden space. Block B has office space across the entirety of the floor with the footprint extended to meet with the edge of Block A. The main stair and lift core is to the east of the level with W.C facilities. There is an additional escape stair to the west of the block. The mezzanine for the boutique hotel accommodates the rooftop bar/ lounge.

LEVEL 06 / MEZZANINE LEVEL

3.5.17. Block A has space allocated for plant only.

LEVEL 07 / SEVENTH FLOOR LEVEL

3.5.18. The tower contains 18 hotel rooms on this floor. There are hotel lifts and stair access within tower, as well as service lifts and storage facilities. There is also stair access within tower, as well as service lifts and storage facilities. Block B has office space across the floor. The stair and lift core is to the east of the level with W.C facilities. There is an additional escape stair to the west of the block. Externally the feature stair continues with an area of roof garden and retail/leisure space. The police station is at roof level.

LEVEL 08 / EIGHTH FLOOR LEVEL

3.5.19. The tower and Block B are as described in the Proposed Seventh Floor Plan, although the office space has reduced to the north west as the feature stair rises to another open terrace level.

LEVEL 09 / NINTH FLOOR LEVEL

3.5.20. The tower is as described in the Proposed Seventh Floor Plan. Block B has office space across the majority of this level with a roof garden to the north west which connects to the feature landscape stair. The stair and lift core is to the east of the level with W.C facilities.

LEVEL 10 / TENTH FLOOR LEVEL

3.5.21. The tower is as described in the Proposed Seventh Floor Plan. Block B has a roof terrace across the majority of this level with the feature landscape stair finishing at the corner of the space.

The roof terrace will host an array of food and beverage stalls which will be outward looking centred around the core. The roof will be accessible from the 5* hotel/ apartments via the feature staircase, the offices via a lift and to the public from the ground floor lifts accessed from Jackson's Row. Other areas of the roof terrace will be available for events such as music, performance, and fitness classes.

LEVEL 11 / ELEVENTH FLOOR LEVEL

3.5.22. The tower is as described in the Proposed Seventh Floor Plan. Within Block B there is a plant room situated to the east of the level connecting to the stair and lift core. The lift access to the roof is contained within this area.

LEVEL / 12 / TWELFTH FLOOR LEVEL

3.5.23. The tower is as described in the Proposed Seventh Floor Plan.

LEVEL 13 / THIRTEENTH FLOOR LEVEL

3.5.24. The tower is as described in the Proposed Seventh Floor Plan.

LEVEL 13 / MEZZANINE THIRTEENTH FLOOR LEVEL

3.5.25. The tower is as described in the Proposed Seventh Floor Plan.

LEVEL 14 / FOURTEENTH FLOOR LEVEL

3.5.26. The tower is as described in the Proposed Seventh Floor Plan.

LEVEL 15 / FIFTEENTH FLOOR LEVEL

3.5.27. The tower is as described in the Proposed Seventh Floor Plan.

LEVEL 16 / SIXTEENTH FLOOR LEVEL

3.5.28. The tower is as described in the Proposed Seventh Floor Plan.

This chapter has been replaced - Please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

LEVEL 17 / SEVENTEENTH FLOOR LEVEL

3.5.29. The tower is as described in the Proposed Seventh Floor Plan.

LEVEL 18 / EIGHTEENTH FLOOR LEVEL

3.5.30. The tower is as described in the Proposed Seventh Floor Plan.

LEVEL 19 / NINETEENTH FLOOR LEVEL

3.5.31. The tower contains 4 studio apartments, 4 one bedroom apartments and 4 two bed apartments. The one and two bedroom apartments each contain an associated balcony. The area is serviced with associated stairs, lift and bin chute. There are lift overruns associated with the hotel lifts below.

LEVEL 20 / TWENTIETH FLOOR LEVEL

3.5.32. The tower is as described in Proposed Nineteenth Floor Plan except that the two bedroom apartments are slightly larger as the floorplate extends above the hotel lift shafts.

LEVEL 21 / TWENTY FIRST FLOOR LEVEL

3.5.33. The tower is as described in Proposed Nineteenth Floor Plan.

LEVEL 22 / TWENTY SECOND FLOOR LEVEL

3.5.34. The tower is as described in Proposed Nineteenth Floor Plan.

LEVEL 23 / TWENTY THIRD FLOOR LEVEL

3.5.35. The tower is as described in Proposed Nineteenth Floor Plan.

LEVEL 24 / TWENTY FOURTH FLOOR LEVEL

3.5.36. The tower is as described in Proposed Nineteenth Floor Plan.

LEVEL 25 / TWENTY FIFTH FLOOR LEVEL

3.5.37. The tower is as described in Proposed Nineteenth Floor Plan.

LEVEL 26 / TWENTY SIXTH FLOOR LEVEL

3.5.38. The tower has 8 two bedroom apartments, each providing a balcony space. The area is serviced with associated stairs, lift and bin chute.

LEVEL 27 / TWENTY SEVENTH FLOOR LEVEL

3.5.39. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 28 / TWENTY EIGHTH FLOOR LEVEL

3.5.40. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 29 / TWENTY NINTH FLOOR LEVEL

3.5.41. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 30 / THIRTIETH FLOOR LEVEL

3.5.42. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 31 / THIRTY FIRST FLOOR LEVEL

3.5.43. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 32 / THIRTY SECOND FLOOR LEVEL

3.5.44. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 33 / THIRTY THIRD FLOOR LEVEL

3.5.45. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 34 / THIRTY FOURTH FLOOR LEVEL

3.5.46. The tower is as described in Proposed Twenty Sixth Floor Plan.

This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

LEVEL 35 / THIRTY FIFTH FLOOR LEVEL

3.5.47. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 36 / THIRTY SIXTH FLOOR LEVEL

3.5.48. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 37 / THIRTY SEVENTH FLOOR LEVEL

3.5.49. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 38 / THIRTY EIGHTH FLOOR LEVEL

3.5.50. The tower is as described in Proposed Twenty Sixth Floor Plan.

LEVEL 39 / THIRTY NINTH FLOOR LEVEL

3.5.51. The tower contains the penthouse apartment across the entire floor, with associated stair and lift access. It has terraces to the north and the south of the apartment, as well as stair access to a glazed terrace. This is the extent of the apartments in the Tower. The Tower has a height of 171.6m AOD to the top of the flat roof, exclusive of any glass upstand.

OPERATIONAL ACCESS AND MOVEMENT

3.5.52. The Proposed Scheme would be accessed by vehicles via Bootle Street which borders the Site to the south and extends in an east-west direction from two simple priority controlled junctions, one with Deansgate and the other with Mount Street. Vehicles accessing the hotel for drop off/pick up would be accessed by Jackson's Row.

3.5.53. Parking is split into residential/office use and synagogue use and together there are 136 car parking spaces. The synagogue parking is located on the lower basement floor level (Basement Level 02) and consists of 39 parking spaces. There are 50 spaces allocated for Synagogue use in total, 11 of which are located on the Basement Level 01. The remainder of the parking across Basement Level 01 is for residential or office use, consisting of 97 spaces in total across this level, of the 97 spaces, 7 of these are disabled parking spaces.

3.5.54. It is currently assumed that the entrance will have barrier access. The dedicated entrance will have a 2.6m clear height, allowing for accessible vehicles as well as a loading bay area and a cycle storage area.

3.5.55. 292 cycle bays will be provided as part of the Proposed Scheme across Basement Levels 01 and 02. In addition, each residential apartment will have the option of a folding bike storage space, within the utility cupboard.

3.5.56. Access to all cycle stores is via Bootle Street on the Lower Ground Floor.

3.5.57. There will be 7 motorcycle spaces provided.

3.5.58. The main pedestrian accesses are proposed from Jacksons Row, Southmill Street and the new ground level public square, where access is provided to the two hotels, apartments, office, synagogue and the rooftop public realm area as outlined above.

PROPOSED ELEVATIONS

3.5.59. The podium building of Block A is the lower of the two blocks within the Proposed Scheme, at 6 storeys and 58.1m AOD to finished floor level (as opposed to the structural floor level, which does not take account of any flooring materials) in height. Block A includes the tower, which consists of an additional 34 storeys at 171.6m AOD in height exclusive of any glass upstand. Block B is 10 storeys, with a partial 11th storey and plant level, and 79.1m AOD in height to top of plant. This is detailed in **(--)211 – Planning Elevation – Southmill Street, (--)212 Planning Elevation – Bootle Street, (--)213 – Planning Elevation – Jackson's Row, (--)214 Planning Elevation – Deansgate, (--)215 – Planning Elevation – Tower Courtyard, (--)216 – Planning Elevation – Office Courtyard.**

This chapter has been replaced please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

3.5.60. **(--)301 - Planning Section - Section AA** shows that both blocks share Basement Level 01 and the Ground Floor Level (Level 00). There is access to Basement Level 02 from Basement Level 01 and Block B. Block A will include a mix of uses between levels 01 to 06; these will consist of retail/leisure space, a new Manchester Reform Synagogue and the conference and spa facilities for a 5 star hotel. The tower will then provide a mix of rooms for the 5 star hotel up to level 18 with the remaining levels up to Level 39 providing a range of residential apartments. Level 06 of Block A will support the skylobby of the hotel and contain a roof garden. The retained Sir Ralph Abercromby pub will sit alongside Block A, between Basement Level 01 and Level 01.

3.5.61. Block B contains the office entrance and lobby on the Ground Floor, followed by office space on Level 02 to 09. This block's principal use will be for commercial office, with dual aspect floor plates located from levels 02 through to 09. The renovated police station building will be utilised as a boutique hotel from levels B01 – 04 with the roof of the former police station forming a new restaurant/bar at levels 05 and 06. An entrance on Jackson's Row will provide lift access to the roof terrace which will be integrated at Level 10. There is a partial 11th storey which houses the arrival lifts from Jackson's Row, back of house support spaces for the rooftop vendors and a mezzanine plant level.

PROPOSED BUILDING FAÇADE

3.5.62. The building facade is to be constructed from a thermally broken, high-performance unitised cladding system that spans from floor to floor. The solid areas of the cladding are to be aluminium rainscreen panels.

3.5.63. The tower is to be comprised of fixed double glazed windows within a bronze metal curtain wall system. The system will alternate between sculpted fins and silicone joins between the fixed glazing panels, with the crosspieces being either a triangular profile or back sprayed glass spandrels. This façade will be replicated from the tower across different parts of the Proposed Scheme, such as parts of the tower podium and the office building, to create a cohesive visual impression.

3.5.64. The use of an anodised finish will give the bronze tone a warm and reflective visual appearance that is responsive to natural light.

PROPOSED PUBLIC SPACES AND USES

3.5.65. The Proposed Scheme will include major public realm areas and soft landscaped areas at both ground and podium level.

3.5.66. There will be two new public squares, a lower street level square which will be accessible immediately off Bootle Street and from Jacksons Row via the archway. It will incorporate a mix of permanent and temporary canopies allowing for it to be utilised throughout the year. This square will enjoy active frontages with food and beverage uses spilling out from the surrounding units including the Sir Ralph Abercromby Inn Public House. The second square will sit on top of Block B, forming a rooftop terrace. It will have four accessible public lifts from Jacksons Row. Office users will have direct access via a lift; 5* hotel and residential users will have access from the podium on level 6 via a feature staircase. The rooftop terrace will host an array of food and beverage stalls; it too will benefit from a mix of permanent and temporary canopies allowing for it to be utilised throughout the year.

3.5.67. The lower street level square will be the arrival space from Bootle Street. Trees and benches will animate the space. The mix of permanent and temporary canopies will allow flexibility for the configuration of shelter and cover to be adaptable for different events being held at different times of the year.

3.5.68. The rooftop terrace will be a vibrant space programmable for activities that is to be used to its full potential all year round. This space will include food and beverage stalls; ornamental planting will be featured throughout. There will be a mix of seating and standing areas taking advantage of the rooftop views. There will be accessible WC's and baby changing facilities at this level, and four public lifts to Jacksons Row. Again the mix of permanent and temporary canopies will allow flexibility for the configuration of shelter and cover to be adaptable for different events being held at different times of the year.

3.5.69. The public spaces have been designed to be flexible spaces that can be easily overlaid. These could include pop-up kiosks for craft, art and jewellery fairs, food festivals, live music, sporting and cultural events, for example. It is proposed that these activities will be part of a rolling programme that can also incorporate seasonal and cultural activities for people of all ages.

- Please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019) This chapter has been replaced

3.5.70. From the upper rooftop terrace there will be a set of feature stairs connecting the terrace to the hotel podium at Level 06. These stairs contain terraces which may be used for further food and beverage stalls providing a lively walkway between the two levels.

WASTES AND EFFLUENTS

3.5.71. Waste streams associated with the Proposed Scheme during operation, will include both household and commercial due to the nature of the Scheme. The Proposed Scheme will include measures for the storage, handling and collection for both household and commercial waste. A **Waste Management Strategy** has been produced to support the planning application. The Strategy includes forecasting of likely waste arisings during the operational phase and outlines how waste would be managed in accordance with the **Waste Management Strategy.**

3.5.72. It assumed that commercial waste will be collected every other day by a private contractor and therefore space bins will be provided within the Scheme for the required bin storage, comprising a number of 1,100 litre Eurobins and 240 litre bins (approximately 60 and 10 respectively).

3.5.73. The household waste will be deposited by residents, via the refuse chutes, to the household refuse store located in the basement. These will be transferred to the presentation area by the management representative for collection. It is assumed that these will be collected weekly by MCC and therefore space will be provided within the Scheme for the required bin storage, comprising a number of 1,100 litre Eurobins and 240 litre bins (approximately 36 and 4 respectively).

3.6 PROPOSED STRATEGIES

3.6.1. A number of strategies are being prepared to support the E as discussed in the paragraphs below.

PHASING STRATEGY

3.6.2. It is assumed that demolition and construction phases would be implemented in a single phase commencing in 2018 and extending for approximately 3 years and 7 months. The first operational year is therefore anticipated to be 2022, assuming demolition works commence in June 2018 with completion of construction by the end of December 2021.

3.6.3. It is assumed that demolition works will take approximately 6 months between June and November 2018. Earthworks are likely to take an additional 8 months between August 2018 and March 2019.

FLOODING STRATEGY

3.6.4. The majority of the Site is considered to be at a low or negligible risk of flooding from all sources. However, the Environment Agency Risk of Flooding from Surface Water Velocity Map indicates that during storm events with a low chance of occurring, there is surface water flow along Jackson's Row and Bootle Street in an east to west direction. Site levels on the northern and southern boundary of the Site will be engineered to ensure that any flow would not be directed onto the Site and cause flooding.

3.6.5. Since all roads adjacent to the Site are located within Flood Zone 1, access and egress should not be affected during an extreme flooding event.

3.6.6. Surface water run-off will be directed away into attenuation storage structures that have been sized to retain all excess surface water run off generated beyond the proposed discharge rate. This design has been based on providing storage up to and including the critical 1 in 100 year event (plus a 40% allowance for climate change) within the confines of the Proposed Scheme.

DRAINAGE STRATEGY

FOUL WATER DRAINAGE

3.6.7. It is proposed to discharge the foul water flows from the Proposed Scheme into the existing public combined sewer network surrounding the Site. Consultation with United Utilities indicates that foul water drainage from the Site may discharge into the public combined sewer network at a convenient connection point or points at an unrestricted rate. The total foul water flow of 56.0 l/s is assumed at this stage as calculations are likely to be refined during further design.

- This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

3.6.8. Each block would require dedicated foul drainage systems. Subject to approval and the submission of formal applications, the foul drainage would discharge to the public sewer network un-restricted via a gravity drainage installation. Typically this will be for all levels above Ground Level via gravity. Where foul drainage is required below the level of the public sewer network foul pumping stations would be incorporated.

3.6.9. The basement foul drainage system(s) will be designed to convey foul water from the following areas:

- Back of house areas;
- Refuse areas; and
- Plant areas.

3.6.10. All foul water from the basement will be pumped up to the gravity outfalls via dedicated rising mains. The location of access chambers will be coordinated with the architectural and structural layouts and the above ground drainage proposals to ensure that these are located in positions that provide sufficient access for maintenance.

3.6.11. The majority of the Site drainage infrastructure is located within the basement and so will be privately maintained.

SURFACE WATER DRAINAGE

3.6.12. United Utilities have indicated that an unrestricted surface water discharge would be allowed to connect to the public combined sewer network at a convenient connection point or points. However, the MCC consultation response indicated flows from the Site should be restricted to 50% of the existing flow rate. In line with the requirements of MCC Planning Department, the existing peak rate of run-off will be reduced by 50% resulting in an allowable flow of 39.8l/s.

3.6.13. Attenuation storage has been included within the design, with a total volume of 149m³ required in order to achieve the discharge rate of 39.8 l/s during the critical 1 in 100 year storm event (plus a 40% allowance for climate change), whilst ensuring there was no flooding of the Proposed Scheme during the storm event (in accordance with the requirements within Sewers for Adoption).

3.6.14. Proposals may include multiple connections for surface water between the Site and the public combined sewer network which will be confirmed following receipt of CCTV results of the public sewer network. If multiple connection points are used the sum of the flows leaving the site will not exceed 39.8 l/s and attenuation storage may be increased to facilitate this.

3.6.15. A dedicated below ground car park drainage system will be installed within the basement. This will collect above ground surface water which enters the basement levels via cars and will direct the water to drainage connections and car park gullies installed within the lowest slab. A heavy duty drainage channel will be installed at the base of the car park access ramp. The car park drainage will consist of a reinforced concrete access chamber complete with cast iron pipework and bolted access covers.

3.6.16. As the basement level is below drainage connections, all surface water will be collected and pumped up to ground level and exit the Site via the foul flow system. The pumping station will have a dedicated rising main which will discharge to the gravity combined lateral sewer connection via a dedicated connection. All drainage from car park levels will discharge to a dedicated Glass Reinforced Plastic (GRP) car park pumping station via a catchpit, and will pass through a Class 2 oil separator before being discharged into the sewer system.

3.6.17. The majority of the sewers as well as the pumping station and attenuation storage are located within or below the basement and so will be privately maintained.

FIREFIGHTING LIFT SHAFT DRAINAGE

3.6.18. Dedicated drainage sumps and submersible pumps will be installed within each fire-fighting lift shaft. Each fire-fighting pump set will be located in a recessed sump chamber in an accessible area adjacent to the lift pit. Each lift pit will have a sump and floor gully installed to minimise the need to access the lift shaft for maintenance.

PUBLIC REALM STRATEGY

3.6.19. The vision for Jackson's Row is a coherent, high-quality urban environment focused around an exemplary public realm that enhances its City centre setting. The opportunity for a series of high-quality public spaces integrated with the surrounding network of streets will bring activity and vibrancy to this part of the City centre.

This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

3.6.20. The Proposed Scheme is located within the centre of the Civic Quarter of Manchester City Centre and will form a key component of the emerging public realm network that sits alongside Albert Square – Manchester's primary civic square. Alongside Brazenose and Lincoln Squares to the north (both of which are currently subject to substantial regeneration proposals), and Great Northern to the south, the street level public spaces will enhance connectivity north-south through the neighbourhood and echo their scale and quality – all being subservient to Albert Square and St Peter's Square to the east. The new square and associated streets will be predominantly hard in character, with accent tree planting to define routes and external dwelling/gathering areas.

3.6.21. The Proposed Scheme will also provide a network of publicly accessible roof gardens and terraces, verdant in character and contrasting with those spaces found at ground level. Substantial areas of covered outdoor space will be created to ensure year-round use and activation.

LIGHTING STRATEGY

3.6.22. Lighting installations associated with the Proposed Development will be designed to best practice guidance, including British Standard (BS) 5489-1:2013 (**Ref 3.2**). Adherence to these standards will ensure that any nuisance or disturbance to residents associated with operational lighting installations will be minimised as far as is practicable. No floodlighting is proposed.

3.6.23. Large amounts of light on surfaces will increase glare and reflection, which in turn reduces contrast. This is the reason why fluorescent lighting will be avoided whenever possible. Approved Document M and BS 8300 suggest a minimum lux level of 100 lux for public buildings, which should consist of a combination of natural day lighting and artificial lighting sources. The nature of the surface finish will affect how the light is reflected from it, but it will also be affected by the ways the surface is lit. The combination of light and shade will be effective in enhancing the appearance of the surface texture but it will reduce the average luminance, which can be interpreted as a reduction in its average reflectance.

BIODIVERSITY STRATEGY

3.6.24. The design of the Proposed Scheme includes roof gardens and a tall tower; there is opportunity to support the Manchester Biodiversity Action Plan (BAP) for black redstart, through the provision of ledges on the tower.

ENERGY STRATEGY

3.6.25. The energy strategy is formulated around a collective approach to implement environmentally sound methods of construction, low or zero carbon emissions and passive design techniques.

3.6.26. A keystone of the design concept for the Proposed Scheme is to create diversity in the requirement of energy supplies and in particular reliance on mains grid supplied electricity. The design aspiration is to incorporate such technologies that meet and exceed local authority requirement for Renewable Technology, and create diversity in demand that provides a shift in maximum energy requirements. Of the renewable energy and low carbon technologies available, the following will be considered for inclusion within the Proposed Scheme:

- Combined Heat and Power;
- Air source heat pumps;
- Water Source Heat Pumps; and
- Passive measures for thermal performance in the construction of the Towers.

OPERATIONAL EMPLOYMENT

3.6.27. Once operational, the Proposed Scheme is assumed to provide accommodation for 1,800 jobs (direct).

3.7 CONSTRUCTION PROPOSALS

TEMPORARY TENANT DISPLACEMENT

3.7.1. The Synagogue will be temporarily relocated during the construction period and is assumed to be available prior to demolition of the existing facilities and will be available until the permanent new Synagogue is operational. It is assumed that the current Synagogue facilities and capacity will be provided within the temporary Synagogue which will also be located within the City Centre.

3.7.2. It is intended that the Sir Ralph Abercromby Inn will remain open and operational throughout the construction works.

This chapter has been replaced please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

PROPOSED KEY CONSTRUCTION ACTIVITIES

3.7.3. The Applicant will employ a principal contractor who will manage the site logistics for the duration of the construction phase and will be responsible for coordinating all deliveries on and off Site as well as waste management and security.

3.7.4. The key construction activities are summarised sequentially below (although there is likely to be some overlap between each stage/individual processes):

- Securing of the Site and the implementation of temporary fencing;
- Creation of internal access, haulage routes; parking and traffic measures;
- Creation of construction compounds;
- Site clearance, including vegetation and tree removal and removal of existing below ground services and structures;
- Demolition of existing synagogue and rear portion of Police Station buildings;
- Earthworks and surface re-profiling/sub-base works to obtain required finished floor levels;
- Foundation construction (at this stage it is assumed that raft foundations would be required);
- Construction of the office block and the hotel and synagogue building;
- Construction of the tower;
- Installation of plant; and
- Implementation of public realm, landscape, lighting; strategies and external and internal finishing.

3.7.5. Where appropriate, these activities are discussed in further detail within the paragraphs below.

3.7.6. A series of assumptions have been made in relation to the proposed site preparation, earthworks and construction activities following discussions with the Project Team. Where assumptions have been made, this has been clearly stated.

SECURITY AND FENCING

3.7.7. Access to the Site to the general public during construction will be prohibited through the installation of hoarding around the Site. Regular inspections and maintenance will be undertaken on the hoarding, with daily checks on the condition undertaken.

3.7.8. There will be a security presence on Site during the construction phase. All staff, visitors and construction personnel will access the Site via one entry point on each section and will adhere to a biometric security system, thereby preventing any unauthorised access during the Project.

3.7.9. The Site will be lit to accommodate safe access and egress for the works, particularly during the winter months. A construction lighting strategy will be developed prior to the commencement of the construction phase. This will ensure that nuisance to residents and businesses are prevented. The construction statement will be subject to consultation and agreements from MCC.

PEDESTRIAN ACCESS

3.7.10. Pedestrian access along Bootle Street, Jackson Row and Southmill Street will be maintained where possible. It may be required to close footpaths for some periods of the construction and if this is the case relevant bodies will be contacted, and the best solution for the Proposed Scheme and the local environment will be developed.

CONSTRUCTION ACCESS/ HAULAGE ROUTES, PARKING AND TRAFFIC MEASURES

3.7.11. Deliveries will be made to the Site on a 'just in time' basis at set times which will be agreed on weekly basis in consultation with neighbouring businesses to ensure that congestion is kept to a minimum and disruption to neighbouring businesses is kept to a minimum.

3.7.12. Access for construction vehicles will be via main transport routes into the City Centre. Where possible site vehicles will adopt a left turn only policy to minimise the need to hold up traffic whilst turning. Access to the Site will be via John Dalton Street, Southmill Street and Bootle Street. Site egress will be from the opposite side of the Site, onto Jackson Row and back onto Deansgate thus eliminating reversing of vehicles on Site.

3.7.13. There will be no parking on Site for construction vehicles. All staff will park in local public car parks. However, suspension of car parking on Jackson's Row, Bootle Street and Southmill Street may be required during construction.

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3.7.14. Vehicle movement during the construction phase of the Proposed Scheme would be approximately 25 HDV's Annual Average Daily Traffic flow in any one day.

3.7.15. Existing access along Jacksons Row, Bootle Street and Southmill Street will be maintained so that the roads remain useable at all times.

CONSTRUCTION HOURS

3.7.16. Standard working hours will be 7.30am to 6.00pm Monday to Friday, 8.30am to 2.00pm Saturdays with no work on Sundays and Bank Holidays. It is possible that exceptions to this may arise as working beyond 6.00pm (possibly during the night-time) will be required for some periods of the construction phase e.g. during the frame construction to apply finishes to concrete slabs. Construction Compounds

3.7.17. There will be no permanent compound; deliveries will be "just in sequence". Any storage areas on Site will fluctuate to suit the construction programme.

SERVICE DIVERSION

3.7.18. All underground services and structures would be identified, diverted or removed (potentially disposed to land fill as the last resort following the implementation of the waste hierarchy) as part of the demolition works.

DEMOLITION

3.7.19. The rear portion of the Greater Manchester Police station (which is no longer in use) and the Manchester Reform Synagogue will require complete demolition. Demolition is anticipated to commence with the Synagogue and progress towards Southmill Street.

3.7.20. Based on information provided by Frank Joyce at BCEGI, demolition material will be stone and brick and this material will eventually be recycled off-site. Estimated demolition waste has been quantified using a methodology previously devised and used by WSP. The assumptions made are as follows:

- kg per 44cm x 21cm x 10cm block;
- 0.00946m³ per block;
- 105.7 block per m³;
- 528.5 kg per m³; and
- 0.5 tonne per m³.

3.7.21. Based on a total building volume of upto 50,000m³ will be demolished. It is estimated that 25,000 tonnes of demolition waste will be generated as a result of the proposed demolition activities.

3.7.22. The demolition and site clearance works will likely take place by reducing any buildings' and/or structures' heights from the top down. It is most likely that the demolition works will be carried out in the following sequence, comprising:

- Removal of any Asbestos Containing Material (ACM) and other hazardous materials from the area, if applicable;
- Soft strip;
- Demolition of structures; and
- Removal of ground slabs.

3.7.23. The demolition will be subject to Building Regulations' approval and a demolition method statement. Waste arising from site clearance, primary infrastructure and earthworks is expected to comprise topsoil, rubble, tarmac from former hard standing/s, gravel and clay material.

TREE REMOVAL

3.7.24. The Site currently contains a number of ornamental hawthorn Crataegus orientalis trees and ornamental shrub. There are no hedgerows on the Site. All existing shrubs and trees are to be removed as part of the Proposed Scheme.

EARTHWORKS / BASEMENT EXCAVATION / FOUNDATION PREPARATION

3.7.25. The majority of the basement excavation will be undertaken through bedrock, which based on past experience, may range between very weak and moderately strong. Discontinuities are typically closely to medium spaced. Rock coring and laboratory strength testing is required to assess the excavation methodology required, but at this stage it is assumed that hard digging, possibly with the use of hydraulic breakers and ripping techniques may be required to reach formation level.

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3.7.26. The presence of any deep foundations within the existing structures may impact upon the location of the foundations for the proposed structure.

3.7.27. The presence of the West Manchester Fault presents the possibility that rock strength may locally be reduced and the need for some additional remedial works at formation level cannot be discounted. A propped contiguous or secant bored pile wall will likely be required to support the basement excavation, with the rock providing hard digging conditions. Piling will be required to support foundations. Piling works are likely to take place for 9 months between September 2018 and May 2019.

3.7.28. Sherwood Sandstone is frequently used in the local area as a general fill material and it is assumed that a ready market could be found for any arisings from the basement excavation.

3.7.29. The depth of excavation below ground level will be an average of 4.0m across the sloping Site. The maximum depth of excavation is anticipated to be 26.8m AOD for the lift pits with the majority of foundations at 28.3m AOD. Further investigations with regards to the design of the piling work will be undertaken at the post planning design stage; for the purposes of this assessment it is assumed that the maximum depth of excavations will be 26.8m AOD which, based on the maximum existing site levels (see section 2.3 of **Chapter 2**), is approximately 13m bgl at the highest point of the Site.

3.7.30. Based on information provided by BCEGI, it is understood that the total volume of excavation will be 3,000m³. Using a conversion factor of 0.43m3 = 1 metric tonne, it is estimated that 6,977 tonnes of earthworks will be generated as a result of proposed earthwork activities.

3.7.31. Any clean excavated material that cannot be reused on-site would be removed by licensed waste carriers and sent for reuse at another development site.

REMEDIATION

3.7.32. Based on the Proposed Scheme and the assumption that Made Ground will be removed for the basement excavation, widespread remediation of soils is considered to be unlikely to be required. However, localised areas of impacted soils (e.g. sites of former garage and paint works and sunken fuel tanks) may exist that require treatment prior to removal from Site.

3.7.33. The presence of Made Ground, which may contain construction and demolition fill and be potentially associated with asbestos containing materials (ACMs), will require suitable control measures to be in place during construction activities involving earthworks to mitigate the risks to construction workers and the local residents.

3.7.34. Significant widespread groundwater contamination is not anticipated, however localised contamination associated with on/off-site fuel storage cannot be ruled out. This may have an impact on future dewatering works.

3.7.35. No significant sources of natural (e.g. organic soil deposits) or anthropogenic (e.g. landfill) hazardous ground gases have been identified. However, given the likely presence of Made Ground and the potential that this may contain some materials capable of generating ground gas, ground gas protection measures will be considered. Intrusive site investigation works will include scope for ground gas monitoring to enable the assessment of the ground gas risk.

3.7.36. An intrusive Ground Investigation (GI) will be completed to determine the contamination status of the Site and provide geotechnical data to facilitate economic design of foundations and basement retention. The GI of the Proposed Scheme would be undertaken prior to the construction phase. A remediation strategy will subsequently be developed for any ground contamination identified during the GI. Any necessary remediation work would be undertaken prior to the commencement of the main construction for the Proposed Scheme.

3.7.37. The top of the lowest basement slab is currently anticipated to be 31m AOD. Based on groundwater standing at approximately 25m AOD, the excavation should be above the groundwater table. However, groundwater level may vary seasonally and additional monitoring is required.

3.7.38. The presence of shallow bedrock and a deep basement excavation suggest that a raft foundation may be utilised for the proposed blocks. For the purposes of the EIA, we have assumed that this will be the foundation solution.

TEMPORARY DRAINAGE SOLUTION

3.7.39. The temporary strategy would comply with the permanent surface and foul water drainage strategies.

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CRANES

3.7.40. It is anticipated that one, 48m jib crane, one 40m jib crane and two 35m jib cranes will be required for the construction of the Proposed Scheme.

PROPOSED SITE LEVELS

3.7.41. The Finished Floor Level at the lower Basement Level is 31m AOD with the Ground Floor Level between 35.5 and 39.3m AOD.

CONSTRUCTION PLANT AND EQUIPMENT

3.7.42. The construction phase of the Proposed Scheme would involve a variety of different plant and equipment to undertake relevant works. The exact plant and equipment to be utilised would be sourced by the appointed Contractor. For the purposes of the EIA, the assumed plant and equipment to be used is indicated within **Table 3.2** below, together with associated noise levels.

Table 3.2: Plant and Equipment (and Associated Noise Levels) Associated with the Construction Phase

Plant/Equipment	Number of Plant	Sound Power Level, LWA (dB) and Data Source Reference (Ref 3.1)	Assumed Percentage Time On Site
Stage 1 demolition, pre-enabling and enabling works			
48m jib crane	1	105 (BS 5228-1 Table C4:49)	40
40m jib crane and	1	105 (BS 5228-1 Table C4:49)	40
35m jib cranes	2	105 (BS 5228-1 Table C4:49)	40
Tracked excavator	1	110 (BS 5228-1Table C1: 12)	60
Tracked crusher	1	110 (BS 5228-1 Table C1:14)	80
Articulated dump truck	1	106 (BS 5228-1 Table C4:2)	60
Pulverisor mounted on excavator	1	104 (BS 5228-1 Table C1:4)	30
Breaker mounted on excavator	1	114 (BS 5228-1 Table C1:13)	30
Scaffold access platform	1	95 (BS 5228-1 Table C4:57)	20
Road sweeper	1	104 (BS 5228-1 Table C4:90)	25
Skip wagon	1	106 (BS 5228-1 Table C8:21)	10
Diesel generator	1	94 (BS 5228-1 Table C4:78)	100
Stage 2 Main Construction Phase - Foundation Construction			
48m jib cranes	1	105 (BS 5228-1 Table C4:49)	40
40m jib crane and	1	105 (BS 5228-1 Table C4:49)	40
35m jib cranes	2	105 (BS 5228-1 Table C4:49)	40

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Tracked excavator	1	110 (BS 5228-1 Table C1:12)	60
Articulated dump truck	1	106 (BS 5228-1 Table C4:2)	60
Concrete mixer truck	2	108 (BS 5228-1 Table C4:20)	40
Concrete pump + concrete mixer truck idling	1	103 (BS 5228-1 Table C4:26)	60
Delivery wagon	25	107 (BS 5228-1 Table 11.14)	-
Poker vibrator	2	97 (BS 5228-1 Table C4:34)	50
Vibratory roller	1	105 (BS 5228-1 Table C5:26)	20
Road sweeper	1	104 (BS 5228-1 Table C4:90)	25
Diesel generator	2	94 (BS 5228-1 Table C4:78)	100
Stage 3 Main Construction Phase – Block and Tower Construction			
48m jib crane	1	105 (BS 5228-1 Table C4:49)	40
40m jib crane and	1	105 (BS 5228-1 Table C4:49)	40
35m jib cranes	2	105 (BS 5228-1 Table C4:49)	40
Telescopic handler	1	99 (BS 5228 Table C2:35)	80
Mobile telescopic crane	1	105 (BS 5228 Table C4:39)	40
Concrete mixer truck	2	108 (BS 5228-1 Table C4:20)	40
Concrete pump + concrete mixer truck idling	1	103 (BS 5228-1 Table C4:26)	60
Delivery wagon	25	107 (BS 5228 Table 11.14)	-
Poker vibrator	2	97 (BS 5228-1 Table C4:34)	50
Angle grinder	1	108 (BS 5228-1 Table C4-93)	50
Road sweeper	1	104 (BS 5228-1 Table C4:90)	25
Diesel generator	2	94 (BS 5228 Table C4:78)	100

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CONSTRUCTION WASTE

3.7.43. Waste would be generated during the construction phase of the Proposed Scheme, for example, packaging from deliveries and materials that become surplus to requirements. Therefore, a Waste Management Strategy has been produced to support the planning application for the Proposed Scheme. The Strategy includes forecasting of likely waste arisings during the construction phase of the Proposed Scheme, and outlines how waste would be managed in accordance with the Waste Management Strategy.

The Applicant will seek to reuse materials wherever possible on Site. For example, demolition material will be crushed and used as a piling matt. Where reuse is not possible, material would be disposed to a suitably permitted facility.

Construction of the Proposed Scheme would be undertaken in accordance with the Waste and Resource Action Programme (WRAP) with the aim of undertaking resources and material efficient construction, reuse and recycling.

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KEY CONSTRUCTION PRACTICES

3.7.44. All works on the Site will be undertaken in accordance with the UK's 'Considerate Constructors Scheme' to help ensure that contractors carry out their operations in a safe and considerate manner, and actively minimise environmental risks.

3.7.45. The mission of this scheme is as follows: "*The Considerate Constructors Scheme aims to achieve better site management and presentation of sites, with the emphasis on improving relationships with the local community. Its objective is to minimise any disturbance or negative impact (in terms of noise, dirt and inconvenience) sometimes caused by construction sites to the immediate neighbourhood".*

3.7.46. All construction works would be undertaken with suitable temporary drainage and pollution prevention measures in place, in accordance with the Environment Agency's Pollution Prevention Guidance Notes (**Ref 3.3 to 3.10**).

3.7.47. Earthworks and construction activities would be undertaken in accordance with CIRIA guidance 'C532 – Control of Pollution from Construction Sites' (**Ref 3.11**).

3.7.48. The CEMP would outline mitigation measures presented within the IAQM 'Guidance on the assessment of dust from demolition and construction' (**Ref. 3.12**) (see **Appendix 2.4**) and online CIRIA guidance (**Ref 3.13**) which provides measures for the minimisation of lighting in accordance with current best practice standards.

3.7.49. The following measures will be adopted during the construction of the Proposed Scheme and will be incorporated and managed through a Construction Environmental Management Plan (CEMP):

- Control over activities with a potential to cause contamination to prevent discharges to the groundwater and sandstone;
- Detailed measures implemented to minimise light spill and glare to nearby sensitive receptors;
- Screening stockpiles of material for dust suppression;
- Deployment of windbreak netting for dust suppression; and
- Dampening of exposed soils as appropriate for dust suppression.

LIAISON WITH THE COMMUNITY AND MCC

3.7.50. A Corporate Social Responsibility document will be produced and agreed prior to works commencing on Site.

3.7.51. As part of the Applicant's 'Good neighbours' policy under the Considerate Constructors Scheme stakeholders will be fully conversant with the development of the Proposed Scheme. The following information will be provided:

- Updated Site Information boards highlighting progress to date including emergency contact numbers;
- Regular newsletters on particular aspects of the project;
- Letter drops to businesses and adjacent sites with advance notice of any specific operations likely to cause disruption;
- Conduct site visits with authorised site visitors as required; and
- Provide details of the Project Manager to whom stakeholders can address complaints.

CONSTRUCTION EMPLOYMENT

3.7.52. During the construction phase it is estimated that the Site will provide direct employment for 456 people, with a further 329 employed indirectly or through the supply chain.

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REFERENCES

- **Ref 3.1**: BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites
- **Ref 3.2**: BS 5489-1: 2013 'Code of practice for the design of road lighting: Lighting of roads and public amenity areas'
- **Ref. 3.3**: Environment Agency (2013) PPG 1 'Understanding Your Environmental Responsibilities - Good Environmental Practices'
- **Ref. 3.4**: Environment Agency (2011) PPG 2 'Above Ground Oil Storage Tanks'
- **Ref. 3.5**: Environment Agency (2006) PPG 3 'Use and Design of Oil Separators in Surface Water Drainage Systems'
- **Ref. 3.6**: Environment Agency (2007) PPG 5 'Works and Maintenance in or Near Water'
- **Ref. 3.7**: Environment Agency (2012) PPG 6 'Working at Construction and Demolition Sites'
- **Ref. 3.8**: Environment Agency (2004) PPG 8 'Safe Storage and Disposal of Used Oils'
- **Ref. 3.9**: Environment Agency (2009) PPG 21 'Incident Response Planning'
- **Ref. 3.10**: Environment Agency (2011) PPG 22 'Dealing with Spills'
- **Ref 3.11**: CIRIA C532 Control of Water Pollution from Construction Site: Guidance for Consultant and Contractors
- **Ref. 3.12**: IAQM (2014) 'Guidance on the assessment of dust from demolition and construction'
- **Ref. 3.13**: Construction Industry Research and Information Association (CIRIA) – Compliance Plus - Lighting: www.ciria.com/complianceplus/

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4

CONSIDERATION OF ALTERNATIVES

4 CONSIDERATION OF ALTERNATIVES

4.1 INTRODUCTION

4.1.1. This Chapter outlines the main alternatives to the Proposed Scheme that have been considered by the Applicant, together with the principal reasons for proceeding with the current planning application.

4.2 REQUIREMENT FOR THE CONSIDERATION OF ALTERNATIVES

4.2.1. Schedule 4, Part 1 of the EIA Regulations 2011 (**Ref. 4.1**) (as amended 2015) (**Ref 4.2**) states that an ES should include;

4.2.2. “An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for the choice made, taking into account the environmental effects”.

4.2.3. To accord with the EIA Regulations 2011 (as amended 2015), the following alternatives have been considered:

- The ‘Do Nothing’ Scenario; and
- Scheme Design Iterations.

4.2.4. Potential alternative sites for the Proposed Scheme have not been considered by the Applicant, as the current location within this part of the City and its relationship to existing business, cultural and leisure facilities is unique. The need for and the range of mixed uses proposed and reasoning for the location of the Proposed Scheme are detailed within the Jackson’s Row Strategic Regeneration Framework (**Ref 4.3**), the **Regeneration Statement and Design and Access Statement**, which are Core Documents submitted to support the planning application. In summary, alternative sites are not considered suitable for the following reasons:

- The requirement for a premium 5 star hotel is needed within the heart of the city rather than on the periphery of the city centre. The proximity of the Site to the conference district and existing higher end hotels on Peter Street make it a unique location able to attract and accommodate a 5 star hotel operator;
- High end living accommodation within the heart of the city is currently in short supply. The central location of the Site facilitates the raising of the quality above and beyond anything currently available in the city;
- There is a shortage of ‘A’ grade office space. The location of the Site adjacent to the Central Business District makes the Site a desirable address for premium office space;
- The congregation of the Manchester Reform Synagogue want the facility to stay in its current city centre location to retain its existing membership and build on it for the future; and
- There is a need for public spaces in the heart of the city centre. The creation of new public spaces within the Site enables activation of an underused part of the city and allows connection to existing public spaces. It also draws people to the area to allow proper place-making.

- Please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019) This chapter has been replaced

4.3 THE ‘DO NOTHING’ SCENARIO

4.3.1. The ‘do nothing’ scenario would mean that the Site would continue to remain as part used, part disused brownfield land within Manchester City Centre. A number of important effects would derive from this ‘do nothing’ scenario and largely relate to lost opportunities for improvement / enhancement. These include:

- A missed opportunity to utilise existing brownfield land to further develop the City’s growing economy;
- The congregation of the Manchester Reform Synagogue would continue to use a dilapidated building. The Synagogue has been looking to develop / redevelop the building for some time without success prior to the Proposed Scheme emerging. Without a safe and adequate building the longevity of use of this building by the existing congregation would be uncertain;
- The loss of construction and operational employment opportunities;
- Loss of economic gain for the local area due to direct, indirect and induced spending in the local economy;
- Loss of the provision of a premium 5 star hotel, high end residential and ‘A’ grade office space which are currently lacking within Manchester City Centre; and
- Loss of additional significant public realm and improved access and connectivity to the City Centre.

4.3.2. There would be, however, the following positive effects resulting from the 'do nothing' scenario:

- The Manchester Reform Synagogue would continue its public service without temporary relocation,. As set out above, this assumes that the facility can remain in its present building, which without significant investment is unlikely;
- Any increase in noise associated with the construction phase would be avoided;
- The loss of daylight and sunlight at some receptors would be avoided;
- The whole loss of one and partial loss of one non-designated heritage assets would be avoided;
- The wind environment around the Site would remain unchanged, forgoing potential benefits from new development breaking up air flows; and
- The views of and the historic setting of the Site would not be affected.

4.4 SCHEME DESIGN ITERATIONS

4.4.1. The project team (refer to **Table 1.1** in **Chapter 1: Introduction**) were brought together in 2015, with the exception of Hodder + Partners who were appointed in 2017, and have worked cohesively as a design team over the last two years. During this time, environmental issues and opportunities have been considered and design options informed by iterative environmental assessment.

A number of environmental considerations have influenced the design of the Proposed Scheme during the identification of constraints and opportunities. The design of the Proposed Scheme has taken account of feedback from the public consultation and statutory consultees in particular in relation to cultural heritage, landscape, overshadowing, wind and access. The key design reiterations that have been considered are described in **Table 4.1**.

Table 4.1: Environmental Considerations in the Evolution of the Proposed Design

Technical Topic	Alternative Options Considered
Transport and Access	Access to the Site is one of the key design philosophies for the Proposed Scheme and has been a consideration throughout the design process. Previous iterations of the Proposed Scheme also included substantial public access, including pedestrian areas comprising of a lower square, an intermediate square and an upper square. The current design provides public access north to south through the centre of the development, with a public square off Bootle Street, linked to Jacksons Row via a walk. A rooftop garden space is also provided behind the police station, with public access provided via lifts off Jacksons Row. The previous design iteration has included step free access to the Site from Jackson's Row and Southmill Street and a stepped access from Bootle Street as requested by the Conservation Officer. Previous iterations of the design had less active and accessible street level engagement with the public. The current design provides step free access from Jacksons Row, Bootle Street and Southmill Street. The design also provides disabled parking with internal step free access to the development.
Noise and Vibration	Acoustic design has been key in the development of the physical detail of the Proposed Scheme to ensure that the appropriate noise standards are met both internally for each of the proposed uses and also at existing uses in the surrounding area. Different combinations of layouts and uses have also been considered which influence the acoustic performance of the Proposed Scheme.
Air Quality	. Previous iterations of the scheme have proposed cycle bays, but the Proposed Scheme provides a greater number, thereby encouraging non-motorised journeys to the Site. Additionally the Proposed Scheme includes for 136 car parking spaces which, although a higher provision than previous iterations of the design, limits the number of vehicle trips that are

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	generated by the Proposed Scheme. Electric car charging points will also be accommodated within this iteration of the Scheme. As a result the Proposed Scheme will have a negligible effect on surrounding sensitive receptors.
Townscape and Visual	The design of the Proposed Scheme has taken the landscape and visual effects into consideration from the outset of the design process. The design of the Proposed Scheme has undertaken an assessment of massing and heights. Eleven different scale and massing types ranging from extruded, U-shaped, donut, stepped and tower massing were considered. A number of key city views were explored during the design process to review the effect of incorporating the different scales and massing. The assessment (as detailed within the **Design and Access Statement**) initially concluded that two towers, as opposed to a single block design would be the preferred option. Following public consultation, and re-evaluation of the design, the current Proposed Scheme proposes a single tower alongside a 10 storey mixed use, but predominantly office, building. The single tower is located at the lower end of the Site and is orientated on a different axis, compared to the previous two tower iteration of the design. Given the uses to be accommodated, the scale and massing of any design will be one of significant scale; however, the proposed massing in the form of one tower, orientated north-south, allows areas of generous public space whilst reducing the visual presence of the tower from certain areas. Additionally, the shape and finishing of the tower presents a dynamic visual feature when viewed from different locations and is therefore likely to have less of a visual effect, compared to that presented by a static, solid presence.
Built Heritage	The design team has considered the existing buildings on Site and undertaken assessments to inform the consideration of their significance. The studies concluded that the Site does not contain any Listed Buildings and that the buildings on Site, whilst recognised as being non-designated heritage assets, are of low importance (see **Chapter 9 - Built Heritage** and **Heritage Significance Statement** (a core document submitted to support the planning application). However, options for the retention of the buildings on Site have been assessed and are detailed in the **Design and Access Statement** and the **Demolition Justification Statement**. The assessment concluded that: · The full retention of the police station and conversion to 5* hotel use was not appropriate as it is not considered feasible to achieve the requirements of a five-star hotel and is heavily constrained to provide the quantity and quality of residential use or A grade office space; · The retention of the Synagogue is considered to be unsustainable due to the nature of the dilapidated building which is no longer fit for purpose and which cannot be viably refurbished; · The retention of all buildings on Site would not allow for the activation of street edges or provision for public realm and permeability of the Site. New public space is vital to the success of the scheme and to it becoming a 'place' within the City as without it the development would comprise private buildings on streets. The design therefore involves the demolition of the majority of existing buildings on the Site in order to achieve the suitable uses and urban design requirements in this city centre location. The Sir Ralph Abercromby

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	Public House and the Portland Stone frontage of the Police Station are to be retained and incorporated into the Proposed Scheme.
Wind	Wind CFD (computational fluid dynamics) modelling has been undertaken for many iterations of the Proposed Scheme. An initial wind CFD analysis identified two areas as having potential safety concerns for pedestrian safety. These include: · The lower podium and terrace areas which had problems with windspeeds, particularly at the southern corners; and · The alleyway between Block A of the Proposed Scheme and the existing Onward Buildings to the west of the Site, connecting Bootle Street and Jackson's Row. The issue with high windspeeds on the podium can be addressed by taking into account the landscaping and public realm aspects of the Scheme, which will bring significant improvements to the podium area. The alleyway between the Proposed Scheme and the Onward Buildings site will be for maintenance and servicing only, and therefore will not be publicly accessible. The issue will therefore be resolved by closing off this alleyway with screens and/or gates. There is a narrow strip of land between the edge of the building on the Onward Buildings site and the Site, which is currently gated, and therefore is assumed not to be publically accessible. Previous iterations of the Scheme led to a different combination of off-site impacts, due to differences in orientation and layout, with some exceedances created at certain points. The latest iteration of the Proposed Scheme has a lower impact on the wind environment. In addition, the wind modelling demonstrates that there are areas where the existing baseline exceeds current safety criteria and that these have been reduced and brought within the safety criteria as a result of the Proposed Scheme. This is a positive effect of the proposed design iteration.
Daylight, Sunlight and Overshadowing	Further to the external impact assessment on surrounding properties, an assessment of the daylight, sunlight and overshadowing within the Proposed Scheme has been conducted for benchmarking against good practice guidelines. The daylight and sunlight assessments within the Proposed Scheme have followed an iterative process where the results of interim design phase assessments have been fed back to the architects' team for incorporation in the design. The final design leads to a lower level of overshadowing at a greater number of receptors than previous iterations of the design achieved. This approach has been adopted in order to ensure maximum compliance with the BRE Guidelines and optimise the design as far as possible.
Biodiversity	The Proposed Scheme has been designed to provide for planting throughout the Site. This will be achieved through the integration of trees and other planting through the areas of public realm across the Site. This iteration of the Scheme provides a greater amount of public realm through changes in layout and orientation, leading to more opportunities for planting than previous iterations achieved. The design of the towers themselves also includes ridges which have the potential to provide additional habitat for Black redstarts.

This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

Socio-economics	Market needs assessments were undertaken in tandem with financial development appraisals by the client team to determine a number of complementary users specific for the Site and location within the city centre. The assessments concluded the need for: · A premium five-star hotel, as there is currently a shortage of their provision within the city centre and which is required to provide competitiveness in the city's tourism and leisure markets; · Premium apartments to provide accommodation in larger sized units required to attract and retain the leaders, entrepreneurs and captains of industry which are integral to the ongoing growth of the city; · 'A' grade office space to contribute to the 3,000,000sqft of office space required within Manchester over the next 10 years (**Ref 4.4**); · Retail / leisure use to enable Manchester to retain its status as having the strongest offering in the North of England and to meet increasing demand; · A new Synagogue to replace the existing dilapidated building which is no longer fit for purpose. The new Synagogue will provide a bespoke facility required to retain the congregation within the city centre for future generations; and · Public realm to provide permeability to the Site and create a new destination within the City. The design has therefore been reviewed, appraised and amended since 2015, considering various options for provision as part of this process, in relation to both layout and proportion of uses to be provided within the Scheme.

4.5 SUMMARY AND CONCLUSIONS

4.5.1. A number of alternatives have been studied by the Project Team, an overview of which has been provided above and detailed within the Design and Access Statement, a core document to support the planning application. The Proposed Scheme will ensure the aspirations of the City Council, as presented in numerous strategic policy documents described in the Regeneration Statement and as documented in the Jackson's Row Strategic Regeneration Framework (**Ref 4.3**), are implemented.

4.5.2. The design of the Proposed Scheme has been influenced by environmental considerations. By doing so a number of potentially significant negative effects have been removed or reduced in severity and positive effects have been created.

- please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019) this chapter has been replaced

4.6 REFERENCES

- **Ref 4.1**: Statutory Instrument 2011 No.1824 Town and Country Planning 'The Town and Country Planning (Environmental Impact Assessment) Regulations 2011'.
- **Ref 4.2**: Statutory Instrument 2015 No.660 Town and Country Planning, England 'The Town and Country Planning (Environmental Impact Assessment) (Amendment) Regulations 2015'.
- **Ref 4.3**: Make / Zerum / Heritage Architecture / Manchester City Council (December 2015) 'Jackson's Row Strategic Regeneration Framework'.
- **Ref 4.4**: Savills (December 2015) 'Spotlight: The Future of Manchester'

This chapter has been replaced - please refer to the Environmental Statement Addendum Volumes 1 and 2 (2019)

5

APPROACH TO EIA

5 APPROACH TO EIA

5.1 INTRODUCTION

5.1.1. This Chapter outlines the approach to the Environmental Impact Assessment (EIA), in particular, the objectives and the EIA strategy which was developed by WSP and the wider Project Team between September 2015 and the drafting of this ES. Scoping has been an ongoing process, and is documented within this Chapter alongside the evidence base associated with the insignificant topics.

5.1.2. The approach to technical consultation has also been clearly outlined in this Chapter, together with the approach to the assessment including the assessment criteria and the methodology for assessing cumulative effects.

5.1.3. The EIA has been undertaken in accordance with the EIA Regulations 2011 (as amended 2015) (**Ref 5.1** and **Ref. 5.2**) and the National Planning Practice Guidance (**Ref. 5.3**). For further information with regards to the legal framework for the ES, including transitional arrangements, refer to Section 1.3 of **Chapter 1 - Introduction**.

5.1.4. An overview of the Site's status in relation to relevant planning policy is discussed within the Planning and Tall Building Statement, a supporting Core Document.

5.2 OBJECTIVES OF THE EIA

5.2.1. The key objectives of the EIA are as follows:

- Set the legal framework;
- Document the consultation process;
- Consider the alternatives to the Proposed Scheme;
- Establish baseline environmental conditions at the Site and within the surrounding area;
- Identify potentially significant effects during the design process so that some effects can be prevented or reduced prior to the assessments within the Environmental Statement (ES) (i.e. demonstrating an iterative approach to EIA) through the application of primary and tertiary mitigation;
- Provide an evidence base as to why some subject areas have not been assessed within the ES;
- Establish the sensitive receptors that will be assessed within the ES;
- Identify, predict and assess the significance of environmental effects associated with the Proposed Scheme and whether they are:
  - Positive or negative;
  - Permanent or temporary;
  - Direct or indirect; and
  - Short, medium or long term.

5.2.2. These include environmental effects associated with the following topic areas: Noise and Vibration; Socio-economics; Townscape and Visual; Built Heritage; Wind; and Daylight and Sunlight.

- Identify suitable secondary mitigation, enhancement and monitoring measures to prevent, reduce or offset significant negative environmental effects and identify the residual effects following the implementation of these measures;
- Identify, predict and qualitatively assess the cumulative effects of the Proposed Scheme including those associated with the other identified committed developments; and
- Outline any limitations that have been experienced.

5.3 EIA SCREENING (REGULATION 5)

5.3.1. Manchester City Council (MCC) has confirmed the requirement for EIA in accordance with the EIA Regulations 2011 (as amended 2015). The Proposed Scheme exceeds the relevant exclusion thresholds and criteria for Schedule 2 (10b) Urban Developments, (i.e. the Proposed Scheme is more than 150 dwellings). Based upon MCC's advice and in the knowledge that the Proposed Scheme may incur some potentially significant environmental effects, a decision was made to omit the EIA Screening stage and proceed to the EIA Scoping stage.

5.4 EIA SCOPING (REGULATION 13)

EIA SCOPING REPORT

5.4.1. An EIA Scoping Report was submitted to MCC in February 2016 alongside a request for a formal Scoping Opinion in accordance with Regulation 13 of the EIA Regulations. The EIA Scoping Report is presented in **Appendix 5.1**. The aims of the EIA Scoping Report were to:

- Provide an outline description of the Proposed Scheme;
- Clarify the approach to the EIA, including statutory and non-statutory consultation;
- Establish the approach to the consideration of alternatives and cumulative effects;
- Determine insignificant environmental effects which could be formally 'scoped out';
- Identify sensitive receptors to be assessed within the ES;
- Determine key potentially significant environmental effects to be addressed within the ES (and an outline of the assessment methodology to be adopted);
- Limitations identified up to the point of the submission of the EIA Scoping Report; and
- Establish the format and structure of the ES.

5.4.2. An EIA Scoping Note was prepared for the succeeding iteration of the Proposed Scheme in accordance with best practice. The note is provided in **Appendix 5.2**. Following the completion of the EIA Scoping Report (**Appendix 5.1**) in February 2016, scoping has been ongoing as the effects are better understood. **Table 5** of the EIA Scoping Note (**Appendix 5.2**), reproduced below in **Table 5.2** confirms the changes to the scope of the ES compared to that proposed within the EIA Scoping Report in February 2016. To date an EIA Scoping Opinion has not been received from MCC.

POTENTIALLY SIGNIFICANT ENVIRONMENTAL TOPICS

5.4.3. The EIA Scoping Note **(Appendix 5.2)** outlined that the Proposed Scheme has the potential to result in likely significant effects on the environment associated with the following topic areas:

- Noise and Vibration;
- Townscape and Visual;
- Built Heritage;
- Wind;
- Daylight, Sunlight and Overshadowing;
- Socio-economics;
- Archaeology; and
- Cumulative Effects.

INSIGNIFICANT TOPICS

5.4.4. As part of the EIA Scoping process, a range of existing reports and data sets in relation to the existing environment were reviewed. Following this exercise, a number of topics were not considered necessary for assessment within the EIA and have therefore been 'scoped out'. These topics have not formed part of the ES and are presented below alongside an appropriate evidence base.

AGRICULTURE

5.4.5. The Proposed Scheme would be located in its entirety upon previously developed land. Therefore, its implementation would not involve the loss of agricultural land or affect farm businesses during the construction and operation phases.

5.4.6. The available ALC mapping (1:250,000) scale produced by the Ministry of Agriculture, Fisheries and Food (MAFF) shows that the whole of the Site is classified as Urban. Therefore, potential effects upon agriculture have not been assessed within this ES.

TRANSPORT AND ACCESS

5.4.7. The Proposed Scheme is located within a city centre environment with numerous retail and leisure facilities, where HGV movements are common. In this context, it is considered there is unlikely to be a significant increase in HGV movements as a result of the construction of the Proposed Scheme, assuming that there would be no more than 25 HGVs operating per day. HGV demand to / from the Site is therefore anticipated to be negligible and there are not expected to be noticeable effects on congestion. It is also assumed that the construction of the Proposed Scheme would directly generate a maximum of 456 employees travelling to the Site, with a further 329 employed indirectly or through the supply chain, who would not usually be travelling to the site on a regular basis. However, again considering the city centre context such additional movements are not considered to be significant.

5.4.8. Suspension of car parking on Jackson's Row, Bootle Street and Southmill Street may be required during construction; however, the number of car parking spaces to be suspended is unlikely to cause a significant increase in congestion and therefore is not considered to be significant.

5.4.9. It is assumed that development operational traffic would utilise the local road network in Manchester City Centre to gain access to the Site, including Deansgate, Southmill Street, Jackson's Row and Bootle Street. An initial assessment of this local road network and the transport facilities within walking distance of the Site has demonstrated that it is in a highly sustainable and accessible location given a large number of facilities (i.e. destinations) are located within the Chartered Institution of Highways and Transportation (CIHT) recommended walking distance in Manchester City Centre. There are consequently significant opportunities for sustainable modes of travel for future residents, users and employees of the Proposed Scheme.

5.4.10. There are approximately 70 parking spaces contained on the existing Site and, once complete, the Proposed Scheme is expected to contain approximately 136 parking spaces. An analysis of the Proposed Scheme, including its size, development mix and proposed parking provision, has shown that the anticipated development traffic during operational phases is unlikely to have a significant effect on the operation of the junctions at the Site, and would not cause any significant congestion. In addition, the proposals include measures to promote sustainable travel patterns and a significant percentage of journeys to and from the Site are assumed to be taken by modes of transport other than private car.

5.4.11. A **Transport Statement (TS)** has been produced to support the ES and the planning application, and a **(Framework) Travel Plan ((F)TP)** produced to ensure sustainable transport. The likely number of operational traffic movements associated with the Proposed Scheme is set out within the TS together with any identified delivery vehicle movements. Therefore, potential effects upon traffic and transport have not been assessed within this ES.

FLOODING, HYDROLOGY AND WATER RESOURCES

5.4.12. The Site is not located within the vicinity of the coast, nor in a tidal estuary, and therefore the risk of such flooding is low. The Environment Agency's Reservoir Flood Map also shows that the Site is not in an area that would be inundated with flood waters due to catastrophic failure of reservoir dams. The Site is located within Flood Risk Zone 1, which is considered to be at low risk of flooding, and there would not be a significant change in the permeability of the ground due to the presence of existing hardstanding on the Site.

5.4.13. A **Drainage Strategy** would be implemented to mitigate any surface water flood risk. Run-off would be managed by the collection of surface water and discharge from the Site. This would reduce any flood risk on-site. The Manchester Salford and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) (2011) Groundwater Flooding Map indicated that the Site is neither at risk from groundwater flooding nor in an area at risk of groundwater rebound. Although the Proposed Scheme involves construction of a basement floor, the Preliminary Geotechnical and Environmental Assessment (**Appendix 2.3**) confirms that lowest basement slab is currently anticipated to be 29.8m AOD. Excavations to around 28.3m AOD will likely be required for foundations, with excavations locally to around 26.8m AOD for lift pits. Based on groundwater standing at a minimum depth of 25.49m AOD the excavations for foundations (including piling) are anticipated to be above the groundwater table. It is therefore assumed that the construction of these structures alone would not significantly alter the risk of groundwater flooding at this location. Therefore, the potential increase in flood risk to construction workers and future Site users and third parties is considered to be insignificant.

5.4.14. During the construction phase, there would be a number of activities which could reduce surface water quality with respect to physical contaminants. These include: installation of temporary drainage and service diversions / installations; site clearance; and materials handling, storage, stockpiling, spillage and disposal etc. The construction activities may lead to the disturbance and mobilisation of physical contaminants (i.e. dust, sediments and muds). However, there are no open watercourses within the Site or its vicinity, and a surface water drainage system would be implemented, together with SuDS to restrict and treat surface water run-off. There would also be a sediment control system that would ensure no sediments enter any wider connections. Based on the assumption that flows would be controlled and attenuated as part of the drainage system, potential increase in sediment loading entering surface watercourses and drainage features is considered to be insignificant.

5.4.15. During the operational phase of the Proposed Scheme, the majority of the Site would be occupied by built form and hard-standing. Therefore, there is anticipated to be a low volume of physical contaminants (sediment) which could potentially be entrained in surface water run-off over hard standing and landscaping areas and discharged to surface water receptors. Furthermore, the Proposed Scheme includes for covered car-parking which should reduce the risk of pollutant transport. The potential effects of changes to physical contamination (i.e. sedimentation) entering surface water bodies and drainage features during the operational phase are therefore considered to be insignificant.

5.4.16. It is anticipated that the increase in potable water demand in relation to the wider water resources and capacity would not be significant in the context of current water demand within the city centre. In addition, non-potable water demand would also be minimised by the use of water recycling. It is assumed that the existing infrastructure would be able to handle any increase in demand. However, financial contribution to the supplier (United Utilities) may be required to upgrade the current supply system accordingly, although this in itself is not an environmental consideration.

5.4.17. It is also anticipated that the increase in foul flows in relation to the foul sewerage capacity would not be significant. There are no permitting limits for the Site in terms of foul water discharge. The Site benefits from a combined sewer system therefore there is not anticipated to be significant effects upon sewer capacity.

5.4.18. Therefore, potential effects upon flooding, hydrology and water resources have not been assessed within this ES.

5.4.19. Further information is provided in the **Flood Risk Assessment (FRA)** and a **Drainage Strategy**, Core Documents produced to support the ES and the planning application.

GROUND CONDITIONS, HYDROGEOLOGY AND CONTAMINATION

5.4.20. The Site is located within a City Centre location. Historical mapping indicates the Site has had land use classes C3 / D2 / A4 / B1 for a number of years (**Appendix 2.1**). The Site is underlain by a shallow layer of Made Ground, which is assumed to be removed as part of the Proposed Scheme (including basement excavations). Contaminants within the soil (see **Appendix 2.3**) are therefore expected to be removed, and the potential exposure of future Site users and third parties to contamination during the operational phase is considered to be insignificant. The removal of contaminants during the construction phase has the potential to affect construction workers and cause contaminated runoff which has the potential to affect soils and controlled waters. However, **Chapter 3 – Description of the Proposed Scheme** confirms that construction works would be managed in accordance with the EA Pollution Prevention Guidelines (**Ref. 5.4 – Ref. 5.11**) and CIRIA guidance 'C532 - Control of Pollution from Construction Sites' (**Ref. 5.12**) to help ensure a well-managed operation which minimises potential environmental risks. As such, effects due to potential releases / migration of contamination (uncontrolled discharges / accidental spillages) to controlled waters during the construction phase are considered insignificant.

5.4.21. The ground gas monitoring data available confirms that no special gas protection measures are required (**Appendix 2.3**). Furthermore, there are no areas of concern such as historic landfills or mining activities within close proximity to the Site that could pose any potential risk. However, if any potential effects were to arise from ground gas following further investigation, they will be appropriately mitigated prior to the construction phase under Part IIA of the Environmental Protection Act 1990 and through following construction best practice measures. Therefore, the potential risk of hazardous ground gas during the construction and operation phases is considered to be insignificant.

5.4.22. Initial site investigations undertaken in November 2015 (**Appendix 2.3**) confirm that rock strength is significant at the proposed formation level. It is possible that rock mass in the vicinity of the West Manchester Fault may have an increased weathering profile or have a weakened / broken state. Subject to further ground investigation the basement construction is therefore anticipated to require the use of embedded bored pile wall and propping of the basement wall will likely be required to control deflections and ground movement at the Site boundaries. Following implementation of such design measures and further monitoring, the potential risks from unstable and compressible ground as a result of the Proposed Scheme are considered to be insignificant.

5.4.23. During construction it is anticipated that the basement and foundations work may expose the underlying sandstone bedrock. A Construction Environmental Management Plan (CEMP) will be in place that will control activities with a potential to cause contamination to prevent discharges to the sandstone.

5.4.24. During the operational phase of the Proposed Scheme there is potential for localised spillage of fuel, which may be carried to the underlying aquifers and surface water drainage system. However, the Proposed Scheme would implement an appropriate Drainage Strategy. Contaminants from fuel spillages which are likely to occur on areas of hard-standing (car parking areas) would be subject to a controlled drainage scheme and therefore would minimise contaminants reaching groundwater and surface water features. Furthermore, proposed car parks would be under cover and not subject to weather, which would further reduce the risks of contaminant transport. Therefore, the potential release / migration of contamination from accidental spillages on groundwater and surface water receptors is considered to be insignificant.

5.4.25. Therefore, potential effects upon ground conditions, hydrogeology and contamination have not been assessed within this ES.

5.4.26. A Geo-environmental Desk Study (**Appendix 2.1**) and **Preliminary Geotechnical and Environmental Assessment (Appendix 2.3)** have been produced to support the ES and the planning application.

ARTIFICIAL LIGHTING

5.4.27. The Site is currently lit and is likely to be classified as an E4 Environmental Zone ('i.e. an area of high district brightness') (**Ref. 5.13**) due to its location within Manchester City Centre with high levels of night-time activity. Sources of existing lighting include street lighting on the roads along the Site boundary, bulkheads (industrial, function wall lights) fixed on the Bootle Street side of Greater Manchester Police Station building and fugitive light spill from the surrounding buildings. The surrounding road network is therefore already lit by inconsistent levels of lighting.

This chapter has been updated - please refer to the Environmental Statement Addendum (Volumes 1 and 2) (2019)
This chapter has not been updated and remains valid

5.4.28. Potential sensitive receptors to light spill and glare include residential properties and users of the local road and footpaths surrounding the Site. The key receptors are residents in close proximity to the Site which have windows directly facing the Site and which may be subject to an increase in light that may be termed a statutory nuisance. Residents in the immediate vicinity of the Site are limited to one property above the Old Nags Head pub on Jackson's Row.

5.4.29. During the construction phase, floodlighting / security and health lighting installations associated with on-going working areas, where equipment is stored and safety hazards may be present. However, a Construction Environmental Management Plan (CEMP) will be prepared and agreed with MCC prior to the commencement of works. As part of the CEMP, the detailed measures will be implemented to minimise light spill and glare to nearby sensitive receptors. It is assumed that operational lighting installations will be designed to relevant British Standards (including BS 5489-1: 2013 'Code of practice for the design of road lighting: Lighting of roads and public amenity areas') (**Ref. 5.14)** and will take account of the ILP 'Guidance Notes for the Reduction of Obtrusive Light' (**Ref. 5.15**). Any illuminated signs would be designed to meet the ILP 'PLG05 'The Brightness of Illuminated Advertisements' (**Ref. 5.16**). As such, any increase in light spill and glare is unlikely to be significant.

5.4.30. It is considered that any new lighting installations will be operational prior to occupation of future residential properties and therefore it is not anticipated that future residential receptors will experience a change from baseline conditions.

5.4.31. During operation, the potential for light spill and glare will be limited to one residential receptor on Jackson's Row. It is expected that the operational lighting installations associated with the Proposed Scheme will be designed to best practice guidance, including British Standard (BS) 5489-1:2013. It is therefore considered that upward light will be limited and new lighting will provide a more consistent level of lighting improving a sense of security. Additionally, any new lighting will be designed to ensure that the source of lighting is not facing or adjacent to a residential window.

5.4.32. Based on the evidence to date, effects relating to nuisance from lighting are considered insignificant and have not been considered in the ES.

5.4.33. Changes to views of the Site are considered within **Chapter 8 – Townscape and Visual** and the setting of designated and non-designated heritage assets are assessed in **Chapter 9 – Built Heritage**.

Solar Glare

5.4.34. The tower is to be comprised of fixed double glazed windows within a bronze metal curtain wall system. The system will alternate between sculpted fins and silicone joins between the fixed glazing panels, with the crosspieces being either a triangular profile or back sprayed glass sprandrels.

5.4.35. The use of an anodised finish will give the bronze tone a warm and reflective visual appearance that is responsive to natural light. This will be super durable to weather resistance and UV radiation. All finishes will have a gloss factor of 30%.

5.4.36. The Proposed Scheme façade is therefore not dominated by glass which is associated with significant solar glare effects but is broken by the use of solid cladding. The inclusion of a proportion of all façade comprising of dark / non reflective / non specular solid cladding is likely to reduce the risk of solar glare effects on surrounding major road junctions. However, as part of the post planning detailed design process further consideration of solar glare effects will be undertaken once the glass specification and final façade design are known, to ensure that any necessary mitigation measures are implemented.

Air Quality

5.4.37. Since the issue of the EIA Scoping Report an assessment of construction dust has been undertaken and is provided in **Appendix 2.4**). The assessment confirms that provided the appropriate mitigation measures within the Construction Environment Management Plan (CEMP) (as detailed within **Chapter 3 – Description of the Proposed Scheme**) are implemented, dust and PM10 generated by on-site activities would be expected to have a negligible effect on sensitive receptors.

5.4.38. It is anticipated that during construction, there will be no more than 25 HGV movements per day. As the Site is within the Greater Manchester Air Quality Management Area (AQMA), MCC utilises guidance published by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) in May 2015 to determine the requirement for an air quality assessment. This guidance sets out a number of criteria, including the change in traffic on local roads. The threshold for assessment of HGVs within an AQMA is a change of Heavy Duty Vehicle (HDV; HGVs and buses) flows of more than 25 Annual Average Daily Traffic (AADT). Therefore, the threshold is not exceeded and effects are not considered to be significant and will not be assessed within the ES.

5.4.39. In accordance with guidance provided by the Institute of Air Quality Management (IAQM) (**Ref. 5.16**) an initial search has been undertaken for designated ecological sites within proximity to the Site. This search has identified that the closest international or nationally designated site (the Rochdale Canal SAC) is located 6.1km to the northeast of the Site. Due to this distance, habitat degradation associated within construction dust and exhaust emissions is considered insignificant and will not be assessed within the ES.

5.4.40. With regards to the potential effects of emissions from operational traffic on designated habitats, the Design Manual for Roads and Bridges (DMRB) (**Ref. 5.17**) provides relevant guidance. Significant air quality effects would potentially be experienced at ecological receptors located within 200m of roads where daily traffic flows change by 1,000 (as Annual Average Daily Traffic (AADT)) or more, or Heavy Goods Vehicles (HGVs) flows change by 200 AADT or more. Once completed, the Proposed Scheme is expected to contain approximately 136 parking spaces, indicating daily traffic flow changes of well below the 1,000 AADT limit. In addition, the closest designated habitat is located 6.1km to the northeast. Consequently, it is considered unlikely that there would be any significant effects at ecological receptors as a result of the operation of the Proposed Scheme.

5.4.41. At this stage A3 and A4 uses are included within the Proposed Scheme along with other planning uses. Although there is the potential for odorous emissions due to these proposed uses, it is anticipated that any emissions would be minimised through adoption of design measures consistent with those set out in Defra's Control of Odour and Noise from Commercial Kitchen Exhaust Systems guidance and would be subject to additional approvals.

5.4.42. The assessment of the potential air quality effects as a result of traffic associated with the operational phase of the Proposed Scheme has been completed in line with published methodologies and technical guidance (**Appendix 2.4**). The pollutants considered in this part of the assessment were NO2 and particulate matter (PM10 and PM2.5). The results show that the Proposed Scheme would cause a negligible effect on concentrations of all three pollutants at nearby sensitive receptors. The potential air quality effects as a result of traffic associated with the construction phase was also considered to be negligible.

5.4.43. The effects on the Proposed Scheme are considered to be insignificant and therefore air quality will not be assessed further within the ES.

Biodiversity

5.4.44. There are no statutory designated ecological sites within or immediately bordering the Site. There is one Special Area of Conservation (SAC) (Rochdale Canal SAC) located 6.1km to the northeast. The Site does not share any contiguous or complimentary habitat with the SAC, and the SAC's primary classification is for its aquatic vegetation community (the SAC is not protected for bat or bird species). However, there are no connecting features between the described statutory or non-statutory sites and the Site. In addition, given the distance between the SAC and the Site, there is unlikely to be a significant increase in recreational pressure from new residents, or deterioration in surface or groundwater (refer to **Section 5.4** and **Section 5.5** of this EIA Scoping Report). Therefore, potential effects on the statutory designated site are not anticipated to be significant and will not be assessed within the ES. Habitat Regulations Assessment (HRA) Screening is therefore not considered necessary.

5.4.45. A review of available information identified three non-statutory sites (SBI's), within 2km of the Site. However, there is no connecting or complimentary habitat between the Site and these sites and therefore potential effects are not anticipated to be significant and will not be assessed within the ES.

This chapter has been updated - please refer to the Environmental Statement Addendum (Volumes 1 and 2) (2019)
This chapter has not been updated and remains valid

5.4.46. A review of the available information within the local area has found no suitable habitat or records for protected species other than breeding birds and bats. Since the completion of the EIA Scoping, bat surveys have been completed (see **Appendix 2.2 - Biodiversity Assessment**). The bat surveys conclude that there is no evidence of bats roosting in the Site and there is very limited potential for foraging across the Site given the limited vegetation present on the Site. Therefore the potential for disturbance or loss of bats during the construction phase is considered to be low. As a precautionary measure, buildings should be re-surveyed prior to demolition or other construction activities.

5.4.47. Additionally, given the limited vegetation on Site the potential for disturbance or loss to breeding birds during the construction phase is also considered low. It is assumed that the Construction Environmental Management Plan will include measures to ensure an ecologist provides appropriate checks for the presence of breeding birds prior to any demolition or other construction activities.

5.4.48. Assuming these precautionary measures are implemented, the effects of the Proposed Scheme on biodiversity are not considered to be significant and therefore biodiversity will not be assessed further within the ES.

Waste

5.4.49. The majority of demolition waste will comprise stone and brick from the existing buildings on the Site. The Applicant has confirmed that demolition waste will be used for temporary works on Site and then recycled off Site. The volume of demolition waste has been estimated to be between 20,000m3 and 50,000m3. Based on the worst case total building volume (i.e. 50,000m3) the estimated demolition has been quantified using the methodology as outlined in the EIA Scoping Report (**Appendix 5.1**). It is estimated that 25,000 tonnes of demolition waste will be generated as a result of the proposed demolition activities at the Proposed Scheme. The retention of the Sir Ralph Abercromby Inn public house and the Portland Stone front of the Police Station means that this estimate is conservative and real-life volumes may in fact be less than that stated here.

5.4.50. Compared to the 2010 Construction and Demolition (C+D) recycling facility capacity as detailed in **Table 5.1** (c. 2.4m tonnes) (**Ref. 5.18**), 25,000 tonnes of demolition waste would not significantly increase pressures on C+D recycling facility capacity, when considering the inert nature of the demolition waste, the short-term nature of the required C+D recycling facilities, the current number of operational sites and the current capacity.

Table 5.1 – Waste facility capacity 2010

Table E1 Available capacity in 2010 Waste Management type	No. operational sites	Current Throughput (1000t)	Current Capacity (1000t)	Void space 2009 (1000t)
Landfill (non-hazardous)	3	1282	1282	8770
Treatment Plant	22	216.141	1394.982	
Recycling	122	1191.446	2421.559	
IVC	3	0	129	
Windrow composting	1	1.482	4.999	
Green waste production	2	0	105	
Landfill (hazardous)	1	18	18	994
Landfill (C+D)	3	95	269.2	2091
Recycling (C+D)	27	0	2481.76	
Transfer Station	159	1779.572	8734.838	
Waste Water Treatment	4	113.693	862.5	

This chapter has been updated - please refer to the Environmental Statement Addendum (Volumes 1 and 2) (2019)
This chapter has not been updated and remains valid

5.4.51. In addition to demolition waste it is understood that the total volume of excavation will be approximately 3,000m3. Using a conversion factor of 0.43m3 = 1 metric tonne it is estimated that 6,977 tonnes of earthworks will be generated as a result of proposed earthwork activities at the Site. It is confirmed that excavation material will be used as temporary works on Site and then be recycled off Site. Compared to the 2010 Construction and Demolition (C+D) recycling facility capacity as detailed in **Table 5.1** (c. 2.4m tonnes), 6,977 tonnes of earthworks would not significantly increase pressures on Construction and Demolition (C+D) recycling facility capacity when considering the short term nature of the required C+D recycling facilities, the current number of operational sites and the current capacity.

5.4.52. With regards to construction waste, this is likely to consist of materials such as packaging from deliveries and materials that become surplus to requirements. Estimated construction waste arisings have been quantified based on Environmental Performance Indicators (EPIs) developed by the Building Research Establishment (BRE) which measure tonnes of construction waste/100m2 (**Ref. 5.19**). It is estimated that 12,666 tonnes of construction waste will be generated throughout the construction phase of the Proposed Scheme. Over the duration of the construction works (expected to be 2018-2022), this equates to an average of approximately 3,167 tonnes per year, although this is likely to vary significantly according to the construction programme and phasing. It is assumed that the vast majority of construction waste will either be re-used on Site or recycled off-Site. Compared to the 2010 C+D recycling facility capacity as detailed in **Table 5.1** (c. 2.4m tonnes), 3,167 tonnes of construction waste per year would not significantly increase pressures on C+D recycling facility capacity.

5.4.53. The management of waste produced during the operational phase of the Proposed Scheme will be considered and addressed through the design process and a **Waste Management Strategy** (Core Document, submitted to support the planning application) to ensure it is managed in a way to minimise environmental effects in accordance with legislation, guidance and local targets. Therefore, effects of operational waste are not considered significant, and will therefore not be considered in the ES.

5.4.54. The increases in noise, dust and visual intrusion associated with the transportation of construction waste materials from the Site to waste treatment and disposal facilities will be assessed appropriately within the relevant environmental components of the ES (**Chapter 6: Noise and Vibration, Appendix 2.4: Air Quality Report** and **Chapter 8: Townscape and Visual**), and will therefore not be considered in the ES.

5.4.55. Based on the above, it is considered that waste generated during the construction and operational phases will be insignificant and will not be assessed further within the ES. Further information regarding waste from the Proposed Scheme is available within the **Waste Management Strategy**, a Core Document to support the planning application.

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Table 5.2: Changes to the Potential Significant Effects Identified at Scoping

Technical Topic Area	Potential Significant Effect Identified at the Scoping Stage (February, 2016)	Potential Significant Effect Assessed as part of the ES (January, 2017)	A Potential Significant Effect Identified at the Scoping Stage (September, 2017)
Noise and Vibration	Construction ¡ Disturbance to sensitive receptors from noise generated by on-site construction activities; and ¡ Disturbance to sensitive receptors from vibration generated by any construction activities likely to be particularly vibration generative. Operation ¡ Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the fixed plant / goods delivery noise and entertainment noise; and ¡ Disturbance to future proposed noise sensitive uses from the prevailing noise environment (e.g. existing road traffic, existing fixed plant on nearby buildings and existing entertainment from surrounding premises).	Construction ¡ Disturbance to sensitive receptors from noise generated by on-site construction activities; and ¡ Disturbance to sensitive receptors from vibration generated by any construction activities likely to be particularly vibration generative. Operation ¡ Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the fixed plant / goods delivery noise and entertainment noise; and ¡ Disturbance to future proposed noise sensitive uses from the prevailing noise environment (e.g. existing road traffic, existing fixed plant on nearby buildings and existing entertainment from surrounding premises).	Construction ¡ Disturbance to sensitive receptors from noise generated by on-site construction activities; and ¡ Disturbance to sensitive receptors from vibration generated by any construction activities likely to be particularly vibration generative. Operation ¡ Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the fixed plant / goods delivery noise and entertainment noise; and ¡ Disturbance to future proposed noise sensitive uses from the prevailing noise environment (e.g. existing road traffic, existing fixed plant on nearby buildings and existing entertainment from surrounding premises).
Air Quality	Construction ¡ None. Operation ¡ Increase in pollutant concentrations (NO2, PM10 and PM2.5) as a result of exhaust emissions arising from operational traffic on local air quality at sensitive residential receptors.	N/A	An assessment of road traffic generated by the Proposed Scheme is anticipated to confirm that the potential effects on pollutant concentrations are negligible.

Townscape and Visual	Construction ¡ Change to Site and surrounding character due to the presence of machinery, hoardings, scaffolding, tower cranes, earthworks, stockpiles and construction activities; ¡ Change in visual amenity; and ¡ Change in urban grain height and massing. Operation ¡ Change to Site and surrounding character due to new built form and landscaping; ¡ Change in visual amenity; and ¡ Change in urban grain height and massing.	Construction ¡ Change to local townscape character due to the presence of machinery, hoardings, scaffolding, tower cranes, earthworks, stockpiles and construction activities within the Site; ¡ Change in visual amenity; and ¡ Change in urban grain height and massing. Operation ¡ Change to local townscape character due to new built form and landscaping; ¡ Change in visual amenity; and ¡ Change in urban grain height and massing.	Construction ¡ Change to local townscape character due to the presence of machinery, hoardings, scaffolding, tower cranes, earthworks, stockpiles and construction activities within the Site; ¡ Change in visual amenity; and ¡ Change in urban grain height and massing. Operation ¡ Change to local townscape character due to new built form and landscaping; ¡ Change in land use and visual amenity; and ¡ Change in urban grain height and massing.
Built Heritage	Construction ¡ Change in setting of listed buildings in the vicinity of the Proposed Scheme both inside and outside the Deansgate Conservation Area; and ¡ Change in setting of non-designated heritage assets within the Deansgate Conservation Area. Operation ¡ Change in setting of listed buildings in the vicinity of the Proposed Scheme both inside and outside the Deansgate Conservation Area; and ¡ Change in setting of non-designated heritage assets within the Deansgate Conservation Area.	Construction ¡ Visual impact on setting of listed buildings; ¡ Visual impact on character and appearance of conservation areas; and ¡ Demolition of existing buildings. Operation ¡ Visual impact on setting of listed buildings; and ¡ Visual impact on character and appearance of conservation areas.	Construction ¡ Visual impact on setting of listed buildings; ¡ Visual impact on character and appearance of conservation areas; and ¡ Demolition of existing buildings. Operation ¡ Visual impact on setting of listed buildings; and ¡ Visual impact on character and appearance of conservation areas.

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Wind	Construction ¡ None. Operation ¡ Reduction in the safety of pedestrians as a result of an increase in wind speeds; and ¡ Pedestrian discomfort as a result of localised zones of acceleration.	Construction ¡ None. Operation ¡ Reduction in the safety of pedestrians as a result of an increase in wind speeds; and ¡ Pedestrian discomfort as a result of localised zones of acceleration.	Construction ¡ None. Operation ¡ Change in the safety of pedestrians as a result of an increase in wind speeds; and ¡ Pedestrian discomfort as a result of localised zones of acceleration.
Daylight, Sunlight and Overshadowing	Construction ¡ None. Operation ¡ Loss of natural light (daylight and sunlight) to adjacent properties.	Construction ¡ None. Operation ¡ Loss of natural light (daylight) to adjacent properties; ¡ Loss of natural light (sunlight) to adjacent properties; and ¡ Increased overshadowing to open spaces.	A re-assessment of overshadowing of open spaces will be undertaken. The results will be included in this Chapter for transparency given concern raised during consultation (see **Statement of Community Involvement, dated, November**). Operation ¡ Loss of natural light (daylight) to adjacent properties; ¡ Loss of natural light (sunlight) to adjacent properties; and ¡ Increased overshadowing to open spaces.
Biodiversity	Construction ¡ None. Operation ¡ Disturbance and loss of breeding birds and bats.	N/A	Bat surveys confirmed absence of species and therefore no further assessment required as detailed in Table 4. Given limited vegetation and appropriate ecological controls through the CEMP effects on breeding birds are not considered significant.

Waste	Construction ¡ Increase in solid waste generation from excavation and construction materials and increase in demand for local waste treatment and disposal facilities. Operation ¡ None.	N/A	Further information since the EIA Scoping has been made available. The volume of waste during the construction phase is considered to be insignificant as set out in Table 4.
Socio-economics	Construction ¡ Direct employment opportunities for local population; ¡ Indirect and induced employment associated with spending in the local economy by contractors and contracts placed with suppliers; ¡ Displacement of users of the synagogue; and ¡ Displacement of users of the public house. Operation ¡ Direct employment opportunities for local population; ¡ Indirect and induced employment associated with spending in the local economy by employees and contracts placed with suppliers and contractors; ¡ Spending from the new community, and users of hotel and offices, and associated benefits to local economic receptors; ¡ Delivery of the high quality public realm and new infrastructure while	Construction ¡ Direct employment opportunities for local population; ¡ Indirect and induced employment associated with spending in the local economy by contractors and contracts placed with suppliers; and ¡ Displacement of users of the synagogue and public house. Operation ¡ Direct employment opportunities for local population; ¡ Indirect and induced employment associated with spending in the local economy by employees and contracts placed with suppliers and contractors; ¡ Spending from the new community, and users of hotel and offices, and associated benefits to local economic receptors; ¡ Delivery of the high quality public realm and new infrastructure; and ¡ Improved community connectivity within and around the Site.	Construction ¡ Direct employment opportunities for local population; ¡ Indirect and induced employment associated with spending in the local economy by contractors and contracts placed with suppliers; and ¡ Displacement of users of the synagogue. Operation ¡ Direct employment opportunities for local population; ¡ Indirect and induced employment associated with spending in the local economy by employees and contracts placed with suppliers and contractors; ¡ Spending from the new community, and users of hotel and offices, and associated benefits to local economic receptors; ¡ Delivery of the high quality public realm and new infrastructure; and ¡ Improved community connectivity within and around the Site.

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	¡ maintaining and enhancing the existing heritage character; and ¡ Improved community connectivity within and around the Site.		
Archaeology	Construction ¡ Loss or disturbance of potential buried archaeological remains.	Construction ¡ Loss or disturbance of potential buried archaeological remains.	Construction ¡ Loss or disturbance of potential buried archaeological remains However, the consideration of archaeology will remain a separate Chapter of the ES which should be read in conjunction with Built Heritage.

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5.5 MCC CONSULTATION ASSOCIATED WITH THE FORMULATION OF THE SCOPING OPINION

5.5.1. As part of MCC's responsibility under Regulation 13 of the EIA Regulations, MCC should have undertaken consultation with statutory consultees. However, whilst various attempts were made to secure an EIA Scoping Opinion, to date an EIA Scoping Opinion from MCC has not been received. Despite this, there has been an open dialogue with MCC throughout the project in relation to the EIA.

5.6 CONSULTATION

5.6.1. In addition to the formal consultation associated with the EIA Scoping process, technical and public consultation has been undertaken.

TECHNICAL CONSULTATION

5.6.2. As part of the EIA process technical consultation with a range of statutory and non-statutory consultees has been ongoing. An overview of the technical consultation undertaken for each topic area is provided in **Table 5.3** below. Further details are provided in **Chapters 6 to 13**.

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Table 5.3: Overview of Technical Consultation

Technical Area	Consultee	Contact	Overview of Consultation
Noise and Vibration	MCC	Richard Knightley, Environmental Protection Officer	11/12/2015 & 14/1215 - The general scope and duration of the baseline noise survey, and the scope and assessment methodology to be adopted within the assessment, were discussed and agreed in principle. Noise from Entertainment venues i.e. music as part of the proposals should aim to target a level of 10 dB below the background in each octave band at the nearest noise sensitive facade. There will likely be restrictions on hours of operation for the entertainment uses – there are other noise/impacts from entertainment uses that can only be effectively dealt with via restrictions to operational hours.
	MCC	Richard Knightley, Environmental Protection Officer	Additional comments received 15/12/2015 – the use of mechanical vent noise to act as masking within rooms is acceptable where this can be designed to achieve NR30 daytime and NR25 night-time. For entertainment sources located within the same Tower as the residential element then the 63Hz and 125Hz are key controls is this regard, and follows the concert code of practice, with the use of the Moorhouse Defra method* for the assessment of low frequency noise. * The Moorhouse / Defra methods, commonly known as NANR45, cannot be used for the assessment of low frequency noise from entertainment sources so this comment has not been applied in the assessment.
	MCC	Richard Knightley, Environmental Protectiopn Officer	Email 03/03/16: Construction works to be carried out in accordance with MCC's GD 03 Public Protection Information for Developers Version 1.01.

Air Quality	MCC	Rebecca Twigg Neighbourhood Officer - Environmental Protection	Original enquiry made 29/10/15 to determine contact and propose methodology. Confirmation received that methodology is acceptable on 04/11/15.
	MCC	Rebecca Twigg Neighbourhood Officer - Environmental Protection	Enquiry sent 07/12/15 to confirm we do not need to assess effects on construction traffic as likely HGV movements per day has been reduced to 25 rather than 10 per hour. This is below the threshold defined in the EPUK/IAQM 2015 guidance, and therefore the impacts on air quality as a result of HDVs travelling to and from the site during the construction phase are unlikely to be significant. Advised on 09/12/15 that the proposed methodology is acceptable. Confirmed threshold and agreed that it was acceptable to scope out the effects of construction traffic on air quality.
	MCC	Richard Knightley Neighbourhood Officer - Environmental Protection	27/09/2016 – Acceptance of update to methodology as guidance and assessment approach has changed since the last consultation.
	MCC	Sue Jones Neighbourhood Officer – Environmental Protection	09/10/2017 – Acceptance of update to methodology due to scheme changes. Council requested mitigation in line with good practice measures outlined in EPUK/IAQM guidance regardless of whether mitigation measures were required
Townscape and Visual	MCC	J. Armstrong – Planning	Requested agreement on the scope of assessment and methodology on 29/10/15. Will also seek to agree viewpoint locations. Response received 10/11/15 which

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			stated that consultation process will be on-going and needs to go to planning.
Built Heritage	Historic England	Anna Boxer, Principal Inspector	19th March 2015: Initial meeting to discuss the site and agree HE involvement.
	Historic England	Anna Boxer, Principal Inspector	23 June 2015: Meeting to discuss the draft Heritage Appraisal report for the site to agree baseline.
	Historic England	Anna Boxer, Principal Inspector	14 October 2015: Meeting to discuss the draft Strategic Regeneration Framework document and incorporate HE comments.
	Historic England	Anna Boxer, Principal Inspector	10 December 2015: Site visit to allow HE to understand nature of the existing buildings within the site.
	Historic England	Anna Boxer, Principal Inspector	17 December 2015: Review of emerging design, particularly landscaping treatment to the north-east corner of the site in response to links with Albert Square.
	Historic England	Anna Boxer, Principal Inspector	20 January 2016: Review of emerging design and the massing/ height of the proposed towers. This led to need for review of key viewpoints for visual impact appraisal.
	Historic England	Anna Boxer, Principal Inspector	9 February 2016: Meeting to discuss key viewpoints for appraising potential visual impact agreed.
	Historic England	Anna Boxer, Principal	11 March 2016: Workshop to review design development and key issues such as design treatment to Bootle Street elevation at street level to increase activity and

		Inspector	interest.
	Historic England	Expert Advisory Group	4 May 2016: Site Visit and workshop to review design development of the scheme.
	Historic England	Anna Boxer, Principal Inspector, and Catherine Dewar, Planning Director	11 August 2016: Meeting to review key views and videos.
	Historic England	Anna Boxer, Principal Inspector, and Catherine Dewar, Planning Director	15 September 2016: Meeting to review key views and videos and discuss planning submission.
	Historic England	Chris Smith, Head Planning Director	18th April 2017: Review of MAKE's scheme following review by Stephen Hodder
	Historic England	Catherine Dewar, Planning Director	22 May 2017: Initial meeting following the appointment of Hodder & Partners as project architects
	Historic England and Manchester City Council	Catherine Dewar, Planning Director	1st June 2017: Discussion of emerging revised scheme

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	Historic England	Catherine Dewar, Planning Director, and Nigel Barker. Head Planning Director	21st June 2017: Discussion of emerging revised scheme
	Historic England	Nigel Barker, Head Planning Director	22nd August 2017: Presentation of emerging scheme
	Historic England	Catherine Dewar, Planning Director	25th September 2017: Review of Scheme
	Historic England	Catherine Dewar, Planning Director	9th October 2017: Review of revised design to tower
Wind, Daylight, Sunlight and Overshadowing	No need for consultation as methodology is to adhere to national standards.		
Biodiversity	MCC	Derek Richardson	Confirmed on 10/11/15 that some level of survey and assessment is required. For the planning application to be considered and determined in the absence of fully comprehensive survey information (bat emergence/activity surveys) we need to either: ■ Conclude building inspections have negligible potential to support bats and therefore that no further survey is necessary; or ■ If the buildings were assessed as having some potential to support bats we would need to set out a course of action that could/would be followed to ensure that the development would not cause any harm to bats, should bats in fact be present. Confirmed bat interest is small in that area from their knowledge, and any bats are likely to be Pipistrelle.

Waste	MCC	Laura Miller	Agreement to methodology for assessment agreed (November 2015).
Socio-economics	MCC	Laura Miller	Enquiry made 11/11/15 with regards to the scope and assessment methodology for the socio-economics assessment. No response received to date.
Archaeology	HER	N Redhead	Visited HER at GMAAS and had discussions with Norman Redhead. Provided team with useful literature and discussed project (November 2015).

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5.7 PUBLIC CONSULTATION

5.7.1. A summary of the public consultation is provided below with further detail provided in the Core Document, **Statement of Community Involvement (SCI)**.

PREVIOUS ITERATION OF THE PROPOSED SCHEME

5.7.2. Public consultation events were held on the 12th and 13th September 2016 at the Manchester Reform Synagogue and on the 19th October 2016 at Manchester Central library.

5.7.3. During the pre-application consultation, a range of communication methods, as well as the public exhibitions as described above, were used to provide information about the Proposed Scheme and ensure that people had the opportunity to provide their feedback. These methods included:

- An introductory email, letter and briefing pack sent to locally elected members and key City stakeholders;
- A consultation postcard sent to 744 nearby residential and business addresses;
- A press release issued to prominent local publications during the consultation;
- An advert placed in the Manchester Evening News during the consultation;
- A project-specific website, which included digital copies of the exhibition display boards and hosted an enquiries form;
- A project-specific email address for members of the public to send feedback and make enquiries; and
- A dedicated telephone information line for people to ask questions and provide their feedback.

5.7.4. In total, 499 people attended the public exhibitions held on 12 September 2016, 13 September 2016, and 19 October 2016. 233 written consultation responses were submitted over these days. Additional feedback was received through emails. The feedback received considered a wide variety of aspects of the proposals. The main areas of interest related to:

- Regeneration of the Site;
- The heritage of existing buildings on the Site;
- The height of the proposed buildings and their impact on the cityscape;
- The proposed use of the new public realm; and
- Environmental assessments of the development, in particular impacts to wind and daylight.

THE PROPOSED SCHEME

5.7.5. Public consultation events were held on the 12th July 2017 at Manchester Central Library and on the 23rd August 2017 at the Royal Exchange. Further detail is provided in the Core Document, **Statement of Community Involvement (SCI)**.

5.7.6. All feedback received during the consultation has been considered by the project team throughout the development of the proposals. Section 7 of the SCI explains how all issues raised by consultation respondents have been comprehensively addressed and where more detailed information about each of these issues can be seen within the planning application documentation.

5.7.7. The effects of the Proposed Scheme in relation to heritage, height of buildings, wind and daylight have been assessed in this ES and are detailed in **Chapter 9: Built Heritage**, **Chapter 8: Townscape and Visual**, **Chapter 10: Wind** and **Chapter 11: Sunlight, Daylight and Overshadowing** respectively.

5.8 APPROACH TO THE ASSESSMENT OF THE PROPOSED SCHEME

5.8.1. This section outlines the phases of the Proposed Scheme that have been assessed, together with the approach to the baseline conditions, future baseline conditions, cumulative effects and design solutions / assumptions. It also sets out the overarching approach to the EIA, together with project specific requirements for the assessment of effects.

BASELINE SCENARIO

5.8.2. Baseline information (environmental characteristics and conditions) has been collated for the Site, based upon surveys undertaken and information available at the time of the assessment. Technical **Chapters 6 – 13** provide details of the baseline information for the Site and a summary is provided in **Chapter 2: The Existing Site and Surroundings**.

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5.8.3. The baseline conditions for the purpose of the ES will be as per the ES prepared for the previous iteration of the Proposed Scheme. This has been clearly outlined within technical **Chapters 6 – 13**. The dates of surveys and the dates when data sources have been accessed are provided within technical **Chapters 6 – 13**. The following table sets out the baseline information used in the previously submitted ES for each topic, alongside justification where this baseline is considered suitable for use in this ES.

Table 5.4 – Baseline data collection by topic

Topic	Baseline used in submitted ES	Application in new ES
Noise	Noise monitoring as part of an environmental noise survey to establish baseline noise levels was undertaken in November 2015.	It was found that the noise environment present within the vicinity of the Site predominantly consists of road traffic noise on the local road network, fixed plant / delivery noise sources and entertainment noise associated with existing commercial premises surrounding the site. This has not changed and therefore the baseline is considered to be appropriate.
Socio-economics	A desk study and site visit were undertaken in November 2015.	The nature of socio-economic conditions at and around the Site has not changed, so the baseline is considered to be appropriate.
Townscape and Visual	A desk study and site visit were undertaken in June and August 2016.	Elements of the baseline will be updated for this assessment, such as photography, kinetic track video and 3D reference data surveys, to take account of changes to visual baseline from other development in the centre of Manchester.
Cultural Heritage	A desk study and a site visit were undertaken in April 2016.	There has been no change to the Site location or proposed Scheme footprint so the baseline is considered to be appropriate.
Wind	A baseline scenario was modelled based on the existing conditions at the Site at the time of assessment. A cumulative scenario took into account committed developments identified during preparation of the original ES.	Due to the retention of the Sir Ralph Abercromby Inn Public House and the Portland Stone façade of the former police station in the revised scheme and the ongoing development in Manchester City Centre, the baseline modelling scenario will be updated for the new ES. Also, other development schemes currently under construction are to be included in the baseline scenario to account for the strong interdependency between wind and the changing urban environment.
Daylight, Sunlight and Overshadowing	A baseline scenario was modelled based on the existing buildings at and around the Site.	An updated baseline modelling scenario will be prepared for this assessment taking account of recent construction activity in Manchester City Centre.

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Topic	Baseline used in submitted ES	Application in new ES
Archaeology	A desk study and site visit were undertaken in February 2016.	There has been no change to the Site location or proposed Scheme footprint so the baseline is considered to be appropriate.
Biodiversity	A desk study and walkover survey was undertaken in October 2015. Bat surveys were undertaken in September 2016.	Given the nature and location of the Site (i.e. city centre urban, disused buildings) and the length of time since the bat survey (less than 2 years), it is considered that survey findings are still appropriate for use as baseline.
Geotechnical	Fieldwork was undertaken during November 2015.	Given the nature and location of the Site, no change in geotechnical baseline conditions is likely to have occurred, and therefore the baseline is considered to be appropriate.
Air Quality	A desk study and modelling of a baseline scenario was undertaken in 2016.	The desk study and baseline modelling will be updated to reflect the latest figures.

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5.8.4. The assessments presented within this ES have also considered the future baseline under a 'do nothing' / 'do minimum' scenario. It is considered that the future baseline on Site will remain relatively unchanged. The future baseline scenario is discussed within technical **Chapters 6 – 13** where relevant. However, it should be noted that the Proposed Scheme has been assessed against the baseline conditions and not against the future baseline conditions as the limitations, necessary assumptions and lack of baseline evidence would not result in a robust assessment, with the exception of wind.

5.8.5. Due to the strong interdependency between wind and the changing urban environment, other development schemes currently under construction are to be included in the baseline scenario. The wind assessment therefore considers a baseline scenario taking account of the existing surroundings, including those buildings that are currently being built; this will be compared to a scenario with the Proposed Scheme added. A further (cumulative) scenario will also be considered taking account of other developments which will have started construction by the time the Proposed Scheme is being constructed.

PHASES OF THE PROPOSED SCHEME AND ASSESSMENT SCENARIOS

5.8.6. Consideration has been given to two phases of the Proposed Scheme i.e. construction and operation which are assumed to be implemented over a 3 year 7 month period as described in **Chapter 3: Description of the Proposed Scheme**. The demolition, site preparation, earthworks and construction activities are referred to as the 'construction phase' in the remainder of this ES and have been assessed as a single phase. The Proposed Scheme will be built out in a single phase as described in **Chapter 3: Description of the Proposed Scheme**. The construction and operational phases are defined as below:

- Construction phase: 2018 – 2021; and
- Operational phase: 2021 onwards.

5.8.7. It is assumed that there will be no overlap between the construction and operation of the Proposed Scheme.

DESIGN SOLUTIONS AND ASSUMPTIONS

5.8.8. The project team (refer to **Table 1.1** in **Chapter 1: Introduction**) have worked cohesively as a design team over the last 2 years. During this time, environmental constraints have been addressed and design options informed by iterative environmental assessment. Details of the design iterations are provided in **Chapter 4: Consideration of Alternatives**.

5.8.9. The assessment of the pre-mitigation effects of the Proposed Scheme has been based on the information contained within **Chapter 3: Description of Proposed Scheme**. The specific information, upon which the pre-mitigation assessment is based, is described at the beginning of the Assessment of Effects, Mitigation and Residual Effects sections within **Chapters 6 - 13**.

5.8.10. As a result of the design iterations a number of potentially significant effects have also been reduced in severity. For example, the Proposed Scheme incorporates design measures to reduce the effects of wind on and around the Site.

MITIGATION

5.8.11. Schedule 4, Part 1, Paragraph 2 of the EIA Regulations 2011 states that an ES should include:

'a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment'.

5.8.12. The Institute of Environmental Management and Assessment (IEMA) issued 'Shaping Quality Development' in November, 2015 (**Ref 5.20**) and 'Delivering Quality Development' in July, 2016 (**Ref 5.21**). In accordance with these guidance documents, three types of mitigation will be identified and used within the ES: primary; secondary; and tertiary.

5.8.13. These terms are defined as follows:

- **Primary mitigation** – modifications to the location or design of the Proposed Scheme made during the pre-application phase that are an inherent part of the project;
- **Secondary mitigation** – actions that will require further activity in order to achieve the anticipated outcome. These may be imposed through inclusion within the ES; and

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

5.8.14. The primary and tertiary mitigation will be presented within **Chapter 3 – Description of the Proposed Scheme** in the ES and within the 'Relevant Elements of the Proposed Scheme and Establishing the Pre-Mitigation Scenario' section, which will be included within each environmental topic. The assessment of the likely significant environmental effects for the pre-mitigation scenario will take such mitigation into account in determining the magnitude of change.

5.8.15. Following the conclusion of the effects based on the Proposed Scheme, any further mitigation measures (i.e. secondary mitigation) will be outlined within the 'Assessment of Effects, Mitigation Measures and Residual Effects' section for each environmental topic in **Chapters 6 - 13**. These mitigation measures will further reduce a negative effect or enhance a positive one.

5.8.16. The primary, secondary and tertiary mitigation will be summarised in **Chapter 14 - Summary of the Environmental Statement** in the ES.

5.9 ITERATIVE SCOPING OF THE ASSESSMENT

5.9.1. Whilst the EIA scoping process seeks to establish the overall framework for the EIA in relation to the likely significant environmental effects, iterative re-scoping has been undertaken through the EIA process. This iterative 're-scoping' process commenced in 2015 and continued until the final assessments were completed as part of the EIA.

5.10 APPROACH TO ASSESSMENT

5.10.1. The Proposed Scheme has been assessed in accordance with the description and supporting plans as detailed in **Chapter 3: Description of the Proposed Scheme**. This exactly reflects what planning permission is being sought for.

ASSESSMENT CRITERIA

5.10.2. The significance level attributed to each effect identified has been assessed based on the magnitude of change due to the Proposed Scheme and the sensitivity of the affected receptor / receiving environment to change, as well as a number of other factors that are outlined in more detail below. The determination of the significance of residual effects has been assessed with regard to the extent to which mitigation and enhancement measures will reduce or reverse negative effects or enhance positive effects.

5.10.3. The assessment of potential effects for each of the technical topics are presented in technical **Chapters 6 – 13** and have taken into account a number of criteria to determine whether or not the potential effects are 'significant'. Wherever possible and appropriate, the effects have been assessed quantitatively. The following criteria has been taken into account when determining the significance of the potential effects:

- Relevant legislation and planning policy;
- International, national, regional and local standards;
- Likelihood of occurrence of the potential effect;
- Geographical extent of potential effect;
- Sensitivity and / or value of the receiving environment or receptor;

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- Magnitude and complexity of effect;
- Whether the effect is temporary or permanent;
- Duration (short, medium or long-term), frequency and reversibility of effect;
- Inter-relationship between different effects (both cumulatively and in terms of potential effect interactions); and
- The outcomes of consultations.

Sensitivity of receptors

5.10.4. The sensitive receptors considered within the ES are identified within technical **Chapters 6 – 13**. The sensitivity of the receptors / receiving environments to change is also defined within technical **Chapters 6 – 13**, and has been determined by quantifiable data (where available), the consideration of existing designations and professional judgement. The scale used (high, medium, low, and negligible), unless otherwise stated, is shown in **Table 5.5** below. Some examples are as follows:

- A water body of "very good" chemical or biological status would be more sensitive to pollution than a water body of "poor" or "bad" chemical or biological status (as defined quantitatively by the Environment Agency's criteria1); and
- A residential estate would generally be considered more sensitive to noise and poorly controlled lighting from a construction site than an industrial estate.

Magnitude of Change

5.10.5. The magnitude (scale) of change for each identified effect has been predicted as a deviation from the established baseline conditions, for the construction phase and the operation phase of the Proposed Scheme. The scale used (large, medium, small and negligible), unless otherwise stated, is shown in **Table 5.5** below.

5.10.6. The magnitude of change identified is based on the peak potential magnitude of change, i.e., the greatest likely magnitude of change that may potentially be experienced by a sensitive receptor (existing or proposed) during any one phase.

Assessing Effect Significance

5.10.7. The significance of effects has been assessed using available appropriate national and international standards or limits (World Health Organisation (WHO) Limits, European Union (EU) Quality Standards, etc.). Where no standards exist or are unavailable, the assessments in each environmental technical area describe professional judgements (assumptions and value systems) that underpin the attribution of significance. Each effect has been assessed against the change of magnitude and the sensitivity of the receptor as shown in **Table 5.5** below.

Table 5.5: Matrix for Determining Significance of Effects

Magnitude / Scale of Change	Value/Sensitivity				
	High	Medium	Low	Negligible
Large	Major	Moderate to Major	Minor to Moderate	Negligible
Medium	Moderate to Major	Moderate	Minor	Negligible
Small	Moderate	Minor to Moderate	Negligible to Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

5.10.8. The terms as used within the **Table 5.4** have been defined below:

- **Major positive or negative effect**: where the Proposed Scheme would cause significant improvement or deterioration to the existing environment;
- **Moderate positive or negative effect**: where the Proposed Scheme would cause noticeable improvement or deterioration to the existing environment;
- **Minor positive or negative effect**: where the Proposed Scheme would cause perceptible improvement or deterioration to the existing environment; or

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This chapter has not been updated and remains valid

- **Negligible**: no discernible improvement or deterioration to the existing environment.

5.10.9. It should be noted that specific criteria have been developed for certain technical studies. Where there is a deviation from **Table 5.5**, it is clearly explained in the respective technical **Chapters 6 – 13**. Furthermore, the inter-relationship between environmental effects and residual effects following implementation of mitigation measures is also discussed in the technical chapters.

5.10.10. Tables summarising the primary and tertiary mitigation, the likely significant effects associated with each technical topic area, potential secondary mitigation measures and residual effects are provided at the end of each technical **Chapters 6 – 13**. The tables provide a clear distinction of the type of effect:

- Positive or negative;
- Permanent or temporary;
- Direct or indirect; and
- Short, medium or long-term.

5.10.11. In terms of the duration of an effect, short-term has been considered as 1 year (or below), a medium term effect has been considered to be between 1 and 10 years in duration and a long-term effect has been considered to be greater than 10 years in duration. If variation is required for good reason, this has been explained in technical **Chapters 6 – 13**.

5.11 CUMULATIVE EFFECTS

5.11.1. Schedule 4 of the EIA Regulations requires that the cumulative effects of a development are considered within an EIA. There is no widely accepted methodology or best practice for assessing cumulative effects although various guidance documents exist. The following approach has been adopted for the assessment of cumulative effects, based on previous experience, the types of receptors being assessed, the nature of the Proposed Scheme, the reasonably foreseeable / committed developments under consideration and the information available to inform the assessment.

5.11.2. All technical assessments have considered effect interactions and in-combination effects. Effect interactions are the combined or synergistic effects caused by the combination of effects of the Proposed Scheme on a particular receptor which may collectively cause a more significant effect than individually.

5.11.3. In-combination effects are the combined effects of the Proposed Scheme together with other 'committed developments' which meet one of more of the following criteria:

- Permitted application(s) not yet implemented;
- Submitted application(s) not yet determined;
- All refusals subject to appeal procedures not yet determined;
- Projects identified in the relevant development plan (and emerging development plans);
- The proposed development(s) to be considered has a concurrent construction and / or operational phase; and
- The proposed development(s) to be considered is within a relevant geographical boundary with common receptors. Further details regarding the scope and methodology of the assessment of cumulative effects, the identification of relevant committed developments and a description of those included within the assessment are provided in **Chapter 14: Cumulative Effects**.

[1] As outlined in the WFD River Basin Management Plan quality classifications

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This chapter has not been updated and remains valid

5.12 REFERENCES

- **Ref 5.1**: Statutory Instrument 2011 No.1824 Town and Country Planning 'The Town and Country Planning (Environmental Impact Assessment) Regulations 2011'.
- **Ref 5.2**: Statutory Instrument 2015 No.660 Town and Country Planning, England 'The Town and Country Planning (Environmental Impact Assessment) (Amendment) Regulations 2015'.
- **Ref. 5.3**: Department for Communities and Local Government, National Planning Practice Guidance, (March 2014)
- **Ref. 5.4**: Environment Agency (2013) PPG 1 'Understanding Your Environmental Responsibilities - Good Environmental Practices'
- **Ref. 5.5**: Environment Agency (2011) PPG 2 'Above Ground Oil Storage Tanks'
- **Ref. 5.6**: Environment Agency (2006) PPG 3 'Use and Design of Oil Separators in Surface Water Drainage Systems'
- **Ref. 5.7**: Environment Agency (2007) PPG 5 'Works and Maintenance in or Near Water'
- **Ref. 5.8**: Environment Agency (2012) PPG 6 'Working at Construction and Demolition Sites'
- **Ref. 5.9**: Environment Agency (2004) PPG 8 'Safe Storage and Disposal of Used Oils'
- **Ref. 5.10**: Environment Agency (2009) PPG 21 'Incident Response Planning'
- **Ref. 5.11**: Environment Agency (2011) PPG 22 'Dealing with Spills'
- **Ref 5.12**: CIRIA C532 Control of Water Pollution from Construction Site: Guidance for Consultant and Contractors
- **Ref 5.13**: Institute of Lighting Professionals (2011) 'Guidance Notes for the Reduction of Obtrusive Light'
- **Ref 5.14**: British Standard 5489 -1:2013 'Code of practice for the design of road lighting: Lighting of roads and public amenity areas'
- **Ref: 5.15**: ILP (2015) 'PLG05 'The Brightness of Illuminated Advertisements'
- **Ref 5.16**: IAQM (2014) Guidance on the assessment of dust from demolition and construction
- **Ref 5.17**: HA, (2007). DMRB: Volume 11, Section 3, Part 1: Air Quality. HA 207/07
- **Ref 5.18**: Greater Manchester Geological Unit (March 2010) 'Joint Waste Development Plan Document for Greater Manchester – Needs Assessment Update Report'
- **Ref 5.19**: BRE Smartwaste (June 2012) 'BRE Waste Benchmark Data'
- **Ref 5.20**: IEMA (2015) 'Shaping Quality Development'
- **Ref 5.21**: IEMA (2016) 'Delivering Quality Development'.
- **Ref. 5.22**: Statutory Instrument 2017 No.571 Town and Country Planning, England 'The Town and Country Planning (Environmental Impact Assessment) Regulations 2017'.

This chapter has not been updated and remains valid

6

NOISE AND VIBRATION

6 NOISE AND VIBRATION

6.1 INTRODUCTION

6.1.1. This Chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Scheme upon noise and vibration. It considers the potential impacts generated by the construction and operational phases of the Proposed Scheme. This Chapter also provides an assessment of the suitability of the Site for noise sensitive aspects of the development (i.e. residential, hotel, and offices), and the need to provide an adequate noise environment for future occupants.

6.1.2. The Chapter describes the assessment methodology, the baseline conditions at the Site and in the surrounding area, any primary and tertiary mitigation adopted for the purposes of the assessment, a summary of the likely significant effects taking into account national legislation and guidance, the further mitigation measures required to prevent, reduce or offset any significant negative effects, and the likely residual effects after these measures have been employed.

6.1.3. This Chapter (and its associated figures and appendices) is intended to be read as part of the wider ES, with particular reference to the introductory chapters of this ES (**Chapters 1 to 5**), as well as **Chapter 13: Cumulative Effects.**

6.1.4. The Chapter is necessarily technical in nature. Therefore, to aid the reader, an overview of noise and terminology is presented in **Appendix 6.1.**

6.2 LEGISLATIVE FRAMEWORK AND GUIDANCE

LEGISLATIVE FRAMEWORK

6.2.1. The applicable legislative framework is summarised as follows:

- Sections 60 and 61 of the Control of Pollution Act 1974 (**Ref. 6.1**) give the local authority special powers for controlling noise arising from construction and demolition works, regardless of whether a statutory nuisance has been caused or is likely to be caused. Works within the scope of these provisions include repair and maintenance work and road works. These powers may be exercised either before works start or after they have started; and
- Section 79 of the Environmental Protection Act 1990 (as amended) (**Ref. 6.2**) declares a number of matters, including noise, to be statutory nuisances. Under the provisions of the Environmental Protection Act, the local authority is required to inspect its area periodically to detect any nuisance and, where a complaint of a statutory nuisance is made by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint.

GUIDANCE

6.2.2. For a development of this nature, there is no specific all-encompassing guidance relating to the standards associated with noise emission / noise effect. In lieu of any specific national and local guidance, assessing the effect of such a development during the construction and operational phases must draw upon the following Standards and guidance documents:

- Planning Practice Guidance (PPG) 2014 **(Ref. 6.3**);
- Guidance relating to the effects of construction noise on sensitive receptors in the vicinity of the Site is taken from BS 5228-1:2009+A1:2014 Noise and Vibration Control on Construction and Open Sites. Part 1: Noise (BS 5228-1) (**Ref. 6.4**);
- Guidance relating to the effects of construction vibration on sensitive receptors and buildings in the vicinity of the Site is taken from BS 5228-2: 2009+A1:2014 Noise and Vibration Control on Construction and Open Sites. Part 2: Vibration (BS 5228-2) (**Ref. 6.5**);
- Guidance relating to the effects of operational noise of fixed plant / goods delivery noise sources on sensitive receptors in the vicinity of the Site has been taken from BS 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound (BS 4142) (**Ref. 6.6**) and Manchester City Council's Planning and Noise Technical Guidance Note) (**Ref. 6.15**);
- Guidance relating to the effects of entertainment noise on sensitive receptors in the vicinity of the Site has been taken from the Code of Practice on Environmental Noise Control at Concerts (The Pop Code) (**Ref. 6.8**) and Manchester City Council 's Planning and Noise Technical Guidance Note;

- The suitability of the Site for noise sensitive aspects of the development (i.e. residential, hotel and offices) has been considered with regard to the guidance taken from BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Building (BS 8233) (**Ref. 6.9**), the World Health Organisation (WHO):1999 Guidelines for Community Noise (**Ref. 6.10**), ProPG: Planning and Noise (2017) Professional Practice Guidance on Planning and Noise (**Ref. 6.11**) and Manchester City Council's Planning and Noise Technical Guidance Note.

6.2.3. Descriptions of the above standards and guidance documents are provided in **Appendix 6.2**.

6.3 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

6.3.1. **Table 6.1** provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 6.1: Summary of Consultation Undertaken to Date

Body / organisation	Individual / stat body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
MCC	Richard Knightley, Environmental Protection	11th and 14th December 2015: Telephone conversation and email correspondence relating to pre-application agreement to the approach to the noise assessment methodology.	The general scope and duration of the baseline noise survey, and the scope and assessment methodology to be adopted within the assessment, were discussed and agreed in principle.
MCC	Richard Knightley, Environmental Protection Officer	Email received 15/12/2015	The use of mechanical vent noise to act as masking within rooms is acceptable where this can be designed to achieve NR30 daytime and NR25 night-time. For entertainment sources located within the same Tower as the residential element then the 63Hz and 125Hz are key controls in this regard, and follows the concert code of practice, with the use of the Moorhouse Defra method for the assessment of low frequency noise. The Moorhouse / Defra methods, commonly known as NANR45, cannot be used for the assessment of low frequency noise from entertainment sources so this comment has not been applied in the assessment.
MCC	Richard Knightley, Environmental Protection Officer	Email 03/03/2016	Construction works to be carried out in accordance with MCC's GD 03 Public Protection Information for Developers Version 1.02.
MCC	David Brettell, Senior Planner	Email 15/02/2017	Comments received in relation to the scope of the noise survey and noise mitigation proposed as part of the scheme. Where entertainment noise is proposed the L_{Aeq}

			(entertainment noise) shall be controlled to 10dB below the L_{A90} (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63HZ and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB, respectively. Requirement to clarify the need to provide "*comment and an assessment of maximum permissible limits within the premises in order to meet the above noise limits. Details of noise mitigation measures such as acoustic lobbies, glazing specification and facade performance should be included within the report to demonstrate how the above criteria will be met*."

SCOPE OF THE ASSESSMENT

6.3.2. This section confirms the scope of the assessment and re-iterates the evidence base for insignificant effects scoped out of the assessment as detailed within the EIA Scoping Note provided in Appendix 5.2.

Insignificant Effects

6.3.3. The following effects have been considered insignificant and have therefore not been considered, or have been assessed elsewhere, within the ES:

- Traffic noise during the construction phase of the Proposed Scheme. The construction phase of the Proposed Scheme is likely to generate no more than 25 HGV vehicle movements per day. The additional HGV vehicle movements to and from the Site are anticipated to be minimal in context of the existing traffic flows on the surrounding local road network. Notwithstanding the potential increase in HGVs on the surrounding local road network, the potential changes in existing road traffic noise at existing sensitive receptors, including the Nag's Head residential receptor, from construction phase development generated traffic noise, are expected to be insignificant.
- Traffic noise during the operational phase of the Proposed Scheme. Once operational, resident and staff vehicle movements to and from the Site are expected to be limited. Guidance provided in the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 7 states that for there to be a change in noise level of 1 dB $L_{A10,18hr}$ there would have to be a 25% increase or 20% decrease in road traffic flows on the affected links (**Ref. 6.16**). A 1dB change in road traffic noise level represents a small effect in the short term and a negligible effect in the long term. Therefore, the potential changes in existing road traffic noise at existing and proposed local residents from development generated traffic noise and disturbance are expected to be insignificant; and
- Vibration during the operation of the Proposed Scheme. It is not expected that the Scheme will generate significant levels of vibration at existing sensitive receptors during the operational phase.

6.3.4. Predictions have been undertaken of the likely entertainment sources associated with the Proposed Scheme, namely noise egress from the street level public square, the roof level public square and the potential use of one of the terraces as a bar. The Ballroom on the fourth and fifth floors of Block A (hotel and residential tower) will be used as a function space for events. Due to the design proposals for the Ballroom level (Drawing Level 04 GA Plan 004), being located centrally within the Site, and that the space will be designed to control the egress of noise from amplified music events, it is deemed that noise breakout from these areas will be negligible. Therefore, the potential effects on noise sensitive receptors from the ballroom have not been assessed within the ES.

Potentially Significant Effects

Construction Phase

- Disturbance to sensitive receptors from noise generated by on-site (non-traffic) construction activities; and
- Disturbance to sensitive receptors from vibration generated by any non-traffic construction activities likely to be particularly vibration generative.

Operation Phase

- Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the proposed fixed plant / goods delivery noise;
- Disturbance to existing sensitive receptors and future proposed noise sensitive uses from proposed entertainment noise;
- Existing baseline noise levels on future proposed noise sensitive uses; and
- Predicted noise levels on the proposed external residential balconies and external public amenity areas.

6.3.5. The scope of the assessment for operational effects has not deviated from that outlined in the EIA Scoping Note; however the effects have been split out due to the assessment methodologies used.

EXTENT OF THE STUDY AREA

6.3.6. Consideration has to be given to the constraints placed upon the Site by the existing noise climate as well as the effects that the Proposed Scheme might have on nearby sensitive locations. Therefore, the study area is defined by the Site boundary and the proximity of noise-sensitive receptors in the area immediately beyond the Site. The location of the high sensitivity receptors are shown on **Figure 6.1**. The highly sensitive noise sensitive receptors include the residential receptors above the Old Nags Head Pub on Jackson's Row and the Radisson Blu Hotel off Peter Street. Non-residential receptors would usually be considered to be of medium sensitivity; such receptors considered include the Friends Meeting House, situated to the east of Southmill Street.

METHOD OF BASELINE DATA COLLATION

BASELINE NOISE SURVEY

6.3.7. At the outset of the assessment, and prior to undertaking the baseline noise survey, an online mapping review was undertaken to determine the potential dominant noise and vibration sources present on Site, and identify local noise sensitive receptors. This approach allowed appropriate targeting of the baseline noise measurement locations.

6.3.8. In order to determine the baseline noise levels present at the Site and at locations representative of a sample of local receptors, an environmental noise survey was conducted on, and within the vicinity of, the Site. The baseline noise survey included long term continuous unattended measurements which were subject to periodic attendance during selected periods. Noise monitoring equipment was installed on the 5th November 2015 and collected in on the 12th November 2015.

6.3.9. For this ES, it was found that the noise environment present within the vicinity of the Site predominantly consists of road traffic noise on the local road network, fixed plant/delivery noise sources and entertainment noise associated with existing commercial premises surrounding the site. This has not changed and therefore the baseline is considered to be appropriate.

6.3.10. Noise monitoring locations were selected such that the dominant noise sources and a sample of existing and proposed noise sensitive receptors were represented. The following measurement locations were employed during the survey. The location of the measurements is shown in **Figure 6.2**.

- **Measurement Location 1**: Located in the northern part of the Site at a height of approximately 13.7 m above ground level and in free-field conditions. Longer term unattended measurements were carried out at this location between approximately 14:00 hours on the 5th November 2015 and approximately 14:30 hours on the 12th November 2015. This measurement location is considered to be representative of the proposed hotel and residential apartments located on the northern façade of the tower of Block A.
  - Noise Environment: Baseline noise levels consist of road traffic on Jackson's Row, distant traffic on Deansgate and noise from fixed plant associated with surrounding premises. Entertainment music and patron noise associated with the Venue Nightclub were also audible up to approximately 04:00 hours on the nights during the survey when events were held at the premises. These included the nights of Friday (i.e. 6th - 7th November), Saturday (i.e. 7th – 8th November) and Wednesday (i.e. 11th – 12th November).

- **Measurement Location 2**: Located in the eastern part of the Site at a height of approximately 15.5 m above ground level and approximately 1 m from the eastern facing façade of the Police Headquarters building. Longer term unattended measurements were carried out at this location between approximately 14:00 hours on the 5th November 2015 and approximately 12:00 hours on the 12th November 2015. This measurement location is considered to be representative of the proposed boutique hotel and offices located on the eastern façade of Block B.
  - Noise Environment: Baseline noise levels consist of road traffic on Southmill Street and Peter Street, and noise from fixed plant associated with surrounding premises.
- **Measurement Location 3**: Located in the southern part of the Site at a height of approximately 13.7 m above ground level and in free-field conditions. Longer term unattended measurements were carried out at this location between approximately 15:00 hours on the 5th November 2015 and approximately 15:30 hours on the 12th November 2015. This measurement location is considered representative of the proposed southern façade of the tower of Block A, and has been used to establish the noise levels likely to be generated at the proposed hotel and residential apartments located on the southern façade of the tower.
  - Noise Environment: Baseline noise levels consist of road traffic on Bootle Street and noise from fixed plant associated with surrounding premises. Entertainment music and patron noise associated with the Albert Hall and licensed premises on Peter Street / Bootle Street were also audible up to approximately 04:00 hours on the nights during the survey when events were held at the premises. These included the nights of Friday (i.e. 6th - 7th November), Saturday (i.e. 7th – 8th November) and Tuesday (i.e. 10th – 11th November).
  .
- **Measurement Location 4**: Located in the north-eastern part of the Site at a height of approximately 10.5 m above ground level and approximately 2.5m from the façade of the existing Synagogue. Longer term unattended measurements were carried out at this location between approximately 15:00 hours on the 5th November 2015 and approximately 14:00 hours on the 10th November 2015. This measurement location is considered to be representative of the proposed hotel and residential apartments located on the northern façade of the tower of block A and the local noise sensitive receptors of the Old Nags Head Public House.
  - Noise Environment: Baseline noise levels consist of road traffic on Jackson's Row, distant traffic on Deansgate and noise from fixed plant associated with surrounding premises. Entertainment music and patron noise associated with the Old Nags Head and Venue Nightclub also contributed to the measured noise levels on the nights during the survey when events were held at the premises. These included the nights of Friday (i.e. 6th - 7th November 2015), Saturday (i.e. 7th – 8th November 2015) and Wednesday (i.e. 11th – 12th November 2015).

6.3.11. Details of the sound level monitoring equipment used during the survey are presented within **Table 6.2**. All sound level meters had been calibrated to traceable standards within the preceding two years and the field-calibrators within the preceding 12 months.

Table 6.2: Noise Measurement Equipment

Measurement Location	Equipment	Make and Model	Serial Number	
1	Sound Level Meter	01dB-Stell Duo 'Datalogging Integrating Sound Level Meter'	10329	
	Pre-amplifier	01dB-Stell PRE 21 S Preamplifier	10261	
	Microphone	G.R.A.S Type 40CD Condenser Microphone	154440	
	Calibrator	01dB Cal 21	34134164	
2	Sound Level Meter	01dB-METRAVIB Black Solo 'Datalogging Integrating Sound Level Meter'	65811	
	Pre-amplifier	01dB-Metravib PRE 21 S	16485	
	Microphone	01dB Metravib MCE 212 Microphone	166394	
	Calibrator	01dB-Stell Cal 21	34634224	
3	Sound Level Meter	01dB-Stell Duo 'Datalogging Integrating Sound Level Meter'	10328	
	Pre-amplifier	01dB-Stell PRE 21 S Preamplifier	10233	
	Microphone	G.R.A.S Type 40CD Condenser Microphone	154531	
	Calibrator	01dB Cal 21	34134166	
4	Sound Level Meter	01dB-METRAVIB Black Solo 'Datalogging Integrating Sound Level Meter'	65242	
	Pre-amplifier	01dB-Metravib PRE 21 S	16781	
	Microphone	01dB Metravib MCE 212 Microphone	153334	
	Calibrator	01dB-Stell Cal 21	35242306	

6.3.12. Continuous wind speed and direction measurements, together with rainfall measurements, were also undertaken on the Site between approximately 11:00 hours on the 5th November 2015 and approximately 11:30 hours on the 12th November 2015. In accordance with British Standard methodology, and to ensure a realistic and reliable dataset, where meteorological conditions were considered unsuitable (i.e. average wind speeds greater than 5 m/s and precipitation) then these periods have been removed from the continuous measurement data set prior to further analysis. A summary of the prevailing conditions on each day of the survey is set out in **Table 6.3.**

Table 6.3: Summary of Meteorological Conditions during the Survey

Date	Predominant Wind Direction	Range in Mean 10-minute Wind Speeds (m/s)	Rainfall Periods
05.11.2015	ENE	0.0 - 1.3	Periods excluded between 13:50 to 16:50 hours.
06.11.2015	ENE	0.4 – 6.7 Periods above 5.0 m/s excluded. Including 17:40 to 18:10 and 18:40 to 00:00	Periods excluded between 07:50 to 08:20; 11:20 to 11:50; 12:10 to 12:20; 12:50 to 13:20; and 15:20 to16:40.
07.11.2015	SW	0.0 – 6.7 Periods above 5.0 m/s excluded. Including 00:00 to 01:00; 01:50 to 02:40;	Periods excluded between 04:10 to 07:40; 08:10 to 09:30; 10:40 to 11:40; 13:40 to 14:40; and 17:40 to 18:10.
08.11.2015	ENE	0.0 – 3.1	Periods excluded between 09:00 to 10:20; 16:50 to18:00; and 18:50 to 19:30.
09.11.2015	SW	0.4 – 8.9 Periods above 5.0 m/s excluded. Including 01:20 to 01:50; 02:10 to 02:30; 02:50 to 03:10; and 03:20 to 07:40.	Periods excluded between 07:40 to 15:00 and 16:10 to 16:30.
10.11.2015	SW	0.4 – 4.0	N/A
11.11.2015	SW	0.0 – 2.2	Periods excluded between 17:40 and 18:30.
12.11.2015	ENE	0.0 – 7.2 Periods above 5.0 m/s excluded. Including 06:40 to 08:00, 08:10 to 09:40 and 10:40 to 11:00.	N/A

6.3.13. A summary of the measured noise levels recorded during the baseline noise survey is presented within Section 6.5 of this Chapter, and set out in full in **Appendix 6.4**.

Baseline Vibration

6.3.14. It was determined that there are no existing significant sources of vibration in the vicinity of the Site and therefore it was considered that vibration monitoring would not be necessary.

ASSESSMENT METHODOLOGY

CONSTRUCTION PHASE

6.3.15. A series of construction noise level predictions have been undertaken in accordance with BS 5228-1, with the results compared against criteria also derived from this standard. These have been reported for the nearest noise sensitive dwellings as described in the standard.

6.3.16. Ground borne vibration calculations of activities / machinery associated with typical on-site construction phase activities have been performed for activities / machinery during construction based on the empirical prediction procedures presented within BS 5228-2, TRL RR 246: 1990 Traffic Induced Vibration in Buildings (applicable to Heavy Goods Vehicle induced vibration) (**Ref. 6.12**), and TRL Report 429: 2000 Ground borne Vibration Caused by Mechanical Construction Works (Applicable to Vibratory Rollers) (**Ref. 6.13**).

OPERATIONAL PHASE

Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the proposed fixed plant / goods delivery noise

6.3.17. Noise from fixed plant, goods deliveries and other activities associated with the proposed retail uses of the Proposed Scheme will need to be controlled. It is considered that this will include the following;

- Plant rooms are to be situated at the basement B1 level to the east below the offices, to the westside of Block A on the ground floor and a mezzanine plant room at ground mezzanine floor level of Block A. Further plant rooms will be situated on the fifth floor of Block A and also on the eleventh level floor of Block B; and
- Sub-station and delivery loading bays will be situated on the Bootle Street frontage on ground level of Block A.

6.3.18. At this stage, details of the proposed nature, type, number and/or location of such plant or operations are not available. Accordingly it is appropriate to specify suitable noise limits to which such plant or operations should conform.

Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise associated with the public space (entertainment noise)

6.3.19. A public square is to be located at street level with an active frontage comprising of food and beverage retail outlets opening onto Bootle Street. This space will primarily be used as a public open space within a city setting, although different events could be held within the space at any time of the year.

6.3.20. The roof level of Block A at the sixth floor level will be used for amenity space and comprises the start of a feature stairway leading up in terraces onto the roof level of Block B at floor level 10.

6.3.21. The roof at Block B level 10 will feature publically accessible outdoor space and is described as a roof terrace. This area will combine a roof garden, retail and leisure space and is intended to host year-round programmable activities. Based upon the proposed uses of the street level and roof top public spaces, two possible scenarios have been considered:

- Typical use: applicable when the space is used for markets fairs and food festivals with a reasonable level of amplified music, or “background music”. Speech is assumed to be the dominant noise source; and

- Occasional music / Sports Events: applicable for when the space is being used for live music events or the screening of major sporting events. This scenario would only be expected to be applicable for a small number of events per year.

6.3.22. The 'typical use' assessment of the street level and roof top public squares has considered a worst case scenario of combined amplified music, or "background music" and raised voices for a capacity of 1000 people using the roof terrace and a third of this number using the street level public square.

6.3.23. For the assessment of 'occasional music / sports events' the predictions have incorporated sound levels for raised music into the 'typical use' scenario.

6.3.24. The roof bar at floor level 5 of the eastern side of Block B which would overlook Southmill Street and may feature outdoor seating areas. This bar area would form a terrace of the eastern aspect of Block B with the main 10 storeys rising behind and above the bar area. These outdoor seating areas would be fully or partially screened from the noise sensitive facades of Block A by the remaining 5 floors of the offices of Block B when viewed from the tower itself, depending on the receptor location on Block A.

6.3.25. A detailed acoustic model of the Site has been created to calculate the noise levels expected across the façades of noise sensitive aspects of the Proposed Scheme and the level of noise likely to be generated by operational phase activities at noise sensitive receptors surrounding the Site. The model has been generated using CadnaA® noise mapping software, accounting for moderate downwind propagation. The noise model has taken the following into consideration:

- The model was set up to apply the prediction methodology set out in the International Standard ISO 9613-2: 1996 Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation (ISO 9613-2) (**Ref. 6.14**).
- The model was set up to include second order reflected noise from solid structures.
- In general, the ground absorption for the model has been set to G=0 (100% hard ground).
- The Site and the surrounding land has been taken into account; and
- The model has taken into consideration the layout of existing buildings surrounding the Site as well as the Proposed Scheme building layout.

EXISTING BASELINE NOISE LEVELS ON FUTURE PROPOSED NOISE SENSITIVE USES

6.3.26. For the noise sensitive aspects of the Proposed Scheme, as agreed during consultation with Manchester City Council and in accordance with the guidance contained within BS 8233, the following criteria would apply:

- Indoor ambient noise levels to not exceed 35 dB $L_{Aeq,16hr}$ within living rooms of the residential apartments and hotel of Block A and the boutique hotel in Block B during the daytime (07:00-23:00).
- Indoor ambient noise levels should achieve between 45 and 50 dB $L_{Aeq,T}$ within the offices of Block B, depending on the use of the room, during the day (07:00-23:00).
- Indoor ambient noise levels to not exceed 30 dB $L_{Aeq,8hr}$ within bedrooms of the residential apartments and hotel within Block A and the boutique hotel in Block B during the night-time (23:00-07:00).
- Indoor maximum noise levels to typically not exceed 45 dB L_{Amax} within bedrooms of the residential apartments and hotel within Block A and the boutique hotel in Block B during the night-time (23:00-07:00). For the purposes of this assessment, the maximum noise level typically not exceeded has been taken as the 15th highest L_{AFmax} noise event recorded during a typical night-time period. This is in line with guidance from the WHO Guidelines and Manchester City Council's Planning & Noise Technical Guidance document.
- Noise levels in any balcony / garden or external residential amenity area associated with the residential apartments and external amenity areas ideally should not exceed 55 dB $L_{Aeq,16hr}$ during the day.
- Noise from any external entertainment activities should not exceed the low frequency noise level limits of 47 dB $L_{63eq,T}$ and 41 dB $L_{125eq,T}$ within the residential apartments or hotel rooms; and
- Noise from regular entertainment sources associated with the Proposed Scheme should be designed to achieve a noise level of at least 10 dB below the existing background noise level in each octave band at the location of noise sensitive aspects of the Proposed Scheme (i.e. the residential apartments and hotel of the tower of block A and the boutique hotel in Block B) during the proposed periods of operation. The Environmental Health Department of Manchester City Council have suggested that where entertainment noise is a dominant noise source, the background noise within the apartments and hotel rooms can be taken into consideration and noise from any proposed mechanical building services equipment can be used to mask external entertainment noise. On this basis, assuming that the mechanical services noise is designed such that it does not exceed the required indoor ambient noise levels at any time of the day

(equivalent to NR25), entertainment noise ingress into any hotel room or apartment from any internal entertainment space to not exceed a noise level of NR25 - 10 dB (i.e. NR 15).

SIGNIFICANCE CRITERIA

6.3.27. The assessment of potential effects as a result of the Proposed Scheme has taken into account both the construction and operational phases. The construction phase includes enabling works, demolition, earthworks and construction activities as set out in **Chapter 3: Description of the Proposed Scheme**. The significance level attributed to each effect has been assessed based on the magnitude of impact / change due to the Proposed Scheme and the sensitivity of the affected receptor, as well as a number of other factors that are outlined in more detail in **Chapter 5: Approach to EIA**. The sensitivity of the affected receptor is assessed on a scale of high, medium, low and negligible, and the magnitude of impact (or change) is assessed on a scale of large, medium, small and negligible (as shown in **Chapter 5: Approach to EIA**). The methodology for determining the magnitude of change for each impact is detailed below.

SENSITIVITY OF RECEPTOR

6.3.28. The sensitivity criteria for construction phase and the operational phase of the Proposed Scheme are considered to be the same and are presented in **Table 6.4**. The description of the receptor, the examples and assigning the sensitivity to each receptor, is derived from the Planning Advice Note (PAN) 1/2011: Planning and Noise and the Technical Advice Note (TAN) that accompanies the PAN. Although these documents are intended to provide advice on the role of the planning system in Scotland, the approach to assigning the sensitivity is well proven in the context of EIA.

Table 6.4: Sensitivity of Receptor

Sensitivity of Receptor	Description	Examples
High	Receptors where people or operations are particularly susceptible to noise and/or vibration.	Residential, schools, hotels and hospitals.
Medium / Low	Receptors of moderate to low sensitivity to noise and/or vibration, where it may cause some distraction or disturbance.	Offices and restaurants.
Negligible	Receptors where distraction or disturbance from noise and/or vibration is minimal.	Buildings not occupied, factories and working environments with existing levels of noise.

Magnitude of Impact

Disturbance to sensitive receptors from noise generated by on-site (non-traffic) construction activities

6.3.29. For construction activities, following the ABC Method for determining significance provided within BS 5228-1 (set out in **Appendix 6.2** and **Table A6.2-1**) and given the prevailing ambient noise levels at the sensitive receptors established as part of the baseline noise survey (as set out in Section 6.5 of this Chapter), it is considered appropriate that the construction noise assessment be undertaken against the façade noise limits identified in **Table 6.5**. BS 5228-1, **Table E.1**, Note 3 states that these limits apply to residential receptors only, and by assessing against this set of criteria will ensure that the significance of effects in relation to non-residential receptors is also assessed.

Table 6.5: Criteria Used to Determine Magnitude of Impact Scale for Construction Site Noise at Dwellings

Magnitude of Impact 1	Daytime Construction Noise Level (Façade), LAeq,T (dB)2	Weekday Evening Construction Noise Level (Façade), LAeq,T (dB)3	Night-time Construction Noise Level (Façade), LAeq,T (dB)3
Large	>75	>75	>65
Medium	70 to 75	70 to 75	60 to 65
Small	65 to 70	65 to 70	55 to 60
Negligible	<65	<65	<55
1 A lower magnitude may apply where works are very short in duration. 2 Category A of the ABC Method in BS5228-1 has been adopted in determining the significance for these receptors based on a prevailing daytime noise levels established during the baseline noise survey. 3 Category C of the ABC Method in BS5228-1 has been adopted in determining the significance for these receptors based on a prevailing weekend and night-time noise levels established during the baseline noise survey.			

Disturbance to sensitive receptors from vibration generated by on-site (non traffic) construction activities

6.3.30. The magnitude of impact from vibration due to construction activities has been determined according to the resulting levels in absolute terms, as presented in **Table 6.6**, which is based on the guidance contained within BS 5228-2 for human perception.

Table 6.6: Criteria Used to Determine the Magnitude of Impact Scale for Construction Site Vibration

Magnitude of Impact	Construction Vibration Component Peak Particle Velocity (mms-1)
Large	>10.0
Medium	+1.0 to +10.0
Small	+0.3 to +0.9
Negligible	<+0.3

6.3.31. These criteria are far more stringent than those given in BS5228-2 for determining the likely magnitude of vibration damage to buildings. Therefore, by extension, an assessment using the criteria in **Table 6.6** will ensure that the significance of effects in relation to building damage is also assessed (with lower significance than the identified effects on human perception).

Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the fixed plant / goods delivery noise

6.3.32. The assessment of potential effects from noise generated by the fixed plant / commercial noise sources associated with the Proposed Scheme has been determined drawing upon the guidance contained within BS 4142. **Table 6.7** presents the magnitude of impact criteria associated with noise generated.

6.3.33. The BS4142:2014 assessment method enables rating noise level criteria applicable to noise generating activities to be specified relative to typical background $L_{A90,T}$ sound levels experienced at specific receptors under consideration. On this basis, within BS4142 it is stated;

"Where a rating level does not exceed the background sound level, this is an indication of the specific source having a low impact, depending on the context."

6.3.34. Therefore, where a rating noise level no greater than the existing background sound level can be achieved, this would indicate that the associated magnitude of impact is negligible to low.

Table 6.7: Criteria Used to Determine Magnitude of Impact Scale for Fixed Plant / Commercial Noise after Completion

Impact Magnitude	Difference Between Rating Level $L_{Ar,Tr}$ and Background Noise Level $L_{A90,T}$ (dB)	Commentary
Large	≥+10	Likely to be an indication of a "significant adverse impact" in accordance with the BS 4142 assessment methodology.
Medium	+5 to +9	A difference of around +5dB is likely to be an indication of an "adverse impact" in accordance with the BS 4142 assessment methodology.
Small	0 to +4	An indication of the specific sound having a "low impact" in accordance with the BS 4142 assessment methodology.
Negligible	-5 to -1	An indication of the specific sound having a negligible impact in general accordance with the BS 4142 assessment methodology.

6.3.35. Notwithstanding the guidance contained within BS 4142, the Planning and Noise Technical Guidance document requires noise generated by proposed fixed externally mounted building services equipment to be designed to achieve a Rating Level of at least 5 dB below the existing background noise level in each octave band at the nearest existing noise sensitive location during the proposed periods of operation. Providing the fixed plant / commercial sources associated with the Proposed Scheme can be designed, selected, located and/or configured such that the target Rating Level is achieved, it is assumed that at worst only residual effects of negligible significance would remain.

Disturbance to existing sensitive receptors and future proposed noise sensitive uses from entertainment noise

6.3.36. The assessment of potential effects from noise generated by the entertainment noise sources associated with the Proposed Scheme has been determined drawing upon the guidance contained within the Planning and Noise Technical Guidance document and the Code of Practice on Environmental Noise Control at Concerts. In summary the following criteria would apply:

- Noise from regular entertainment sources associated with the Proposed Scheme should be designed to achieve a noise level of at least 10 dB below the existing background noise level in each octave band at the nearest existing sensitive receptors during the proposed periods of operation; and
- The outdoor public space is proposed to be used to host occasional music and sport screening events. Providing that such events are limited to a small number of events per year, it may be possible to agree with the Local Authority a relaxed set of criteria in line with the Pop Code.
- Providing the entertainment noise sources associated with the Proposed Scheme can be designed, selected, located and/or configured such that the target criteria is achieved, it is assumed that at worst only residual effects of negligible significance would remain.

6.3.37. As agreed during consultation with MCC and in accordance with the guidance contained within BS8233:2014, the daytime design target for internal habitable areas such as living rooms is 35 dB $L_{Aeq,16hr}$. During the night-time 8 hour period, the design target applicable to bedrooms is 30 dB $L_{Aeq,8hr}$. In addition, a design target for typical maximum noise levels inside bedrooms at night of 45 dB L_{AFmax} has been adopted in accordance with the WHO Guidelines.

6.3.38. Where it is identified that the Proposed Scheme can be designed such that the adopted assessment criteria are not exceeded, the magnitude of impact is categorised as being negligible.

6.3.39. A design target of 55 dB $LA_{eq,16hr}$ applicable within principal outdoor amenity areas during the day has also been adopted.

6.3.40. Whilst BS8233 states that it is desirable that the noise levels in outdoor amenity areas do not exceed an upper guideline value of 55 dB $L_{Aeq,T}$ in noisier environments, the standard recognises that a higher external noise criteria may be appropriate under certain circumstances. An example given are locations within city centres or urban areas adjoining the strategic road network. BS8233 adds that, where it may be necessary, compromise should be made between elevated noise levels and other factors such as the convenience of living in these locations.

6.3.41. Predicted noise levels in residential amenity spaces between 55 and 57 dB $L_{Aeq16hr}$ are therefore registered as being of medium magnitude of impact. Levels above 57 dB $L_{Aeq16hr}$ will be considered to be of large magnitude of impact. Predicted levels between 55 and 50 dB $L_{Aeq16hr}$ will be registered as small and predicted levels below 50 dB $L_{Aeq16hr}$ will be registered as negligible.

Effect Significance

6.3.42. The following terms have been used to define the significance of effects:

- **Major effect**: where the Proposed Scheme could be expected to have a very significant effect (either positive or negative) on existing and proposed noise sensitive receptors both within and surrounding the Site;
- **Moderate effect**: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on existing and proposed noise sensitive receptors both within and surrounding the Site;
- **Minor effect**: where the Proposed Scheme could be expected to result in a small, barely noticeable effect (either positive or negative) on existing and proposed noise sensitive receptors both within and surrounding the Site; and
- **Negligible:** where no discernible effect is expected as a result of the Proposed Scheme on existing and proposed noise sensitive receptors both within and surrounding the Site.

Effect Duration

6.3.43. The duration of an effect is considered to be short-term where the activity potentially exists for up to 1 year, medium-term where the activity potentially exists for between 1 and 10 years and long-term where the activity potentially exists for greater than 10 years.

Requirements for Mitigation

6.3.44. Where the effect significance is identified to be of moderate to major negative significance, consideration has been given to appropriate mitigation measures. Where effects of negligible and minor negative significance are identified these are considered to be 'Not Significant'.

6.3.45. Prescribed mitigation measures are committed to and will be implemented.

6.4 BASELINE CONDITIONS

6.4.1. A summary of the measured noise levels recorded during the baseline noise survey is presented within **Table 6.8** and **Table 6.9.**

Table 6.8: Summary of Daytime (07:00-23:00) Baseline Noise Measurement Results, dB

Day (Date)	$L_{Aeq,16hr}$				$L_{A90,1hr}$ [a]			
	ML1[b]	ML2[c]	ML3[b]	ML4[c]	ML1[b]	ML2[c]	ML3[b]	ML4[c]
Thu (05.11.2015)	59	63	59	59	56	56	56	55
Fri (06.11.2015)	60	64	58	61	56	59	55	55
Sat (07.11.2015)	59	69	58	62	56	58	55	55
Sun (08.11.2015)	58	61	56	60	57	55	55	55
Mon (09.12.2015)	59	62	59	59	57	55	55	56
Tue (10.11.2015)	65	63	58	67	56	58	55	55
Wed (11.11.2015)	59	62	58	- [d]	56	57	55	- [d]
Thur (12.11.2015)	59	64	58	- [d]	57	NA	NA	- [d]

[a] For the purpose of this assessment, statistical analysis of the background sound levels has been undertaken in accordance with the example method set out in Section 8.1 of BS 4142 to establish the most regular occurring background noise level rounded to the nearest whole number. Time periods of 1-hour for the day have been adopted.
[b] Free-field measurements.
[c] Façade measurements.
[d] The battery of the measurement equipment failed at approximately 14:00 hours on the 10th November 2015.

Table 6.9: Summary of Night-time (23:00-07:00) Baseline Noise Measurement Results, dB

Day (Date)	$L_{Aeq,8hr}$				$L_{A90,15minute}$ [a]				Typical L_{AFmax} [e]			
	ML 1	ML 2	ML 3	ML4	ML 1	ML 2	ML 3	ML 4	ML 1	ML 2	ML 3	ML 4
Thu (05-06.11.2015)	56	59	56	57	52	50	53	50	75	78	78	73
Fri (06-07.11.2015)	62	62	58	63	57	57	55	58	76	77	73	79
Sat (07-08.11.2015)	62	68	59	64	61	65	58	64	79	87	75	81
Sun (08-09.11.2015)	55	58	54	56	53	53	51	51	72	75	67	71
Mon (09-10.12.2015)	56	60	54	56	52	51	50	50	73	82	72	75
Tue (10-11.11.2015)	55	60	55	- [d]	52	51	52	- [d]	77	79	73	- [d]
Wed (11-12.11.2015)	60	60	56	- [d]	55	53	53	- [d]	77	79	73	- [d]

[a] For the purpose of this assessment, statistical analysis of the background sound levels has been undertaken in accordance with the example method set out in Section 8.1 of BS 4142 to establish the most regular occurring background noise level rounded to the nearest whole number. Time periods of 15-minute for the night have been adopted.
[b] Free-field measurements.
[c] Façade measurements.

[d] The battery of the measurement equipment failed at approximately 14:00 hours on the 10th November 2015.
[e] The Typical L_{AFmax} has been taken as the 15th highest individual L_{AFmax} that occurred during the night-time

6.4.2. **Table 6.10** provides a summary of the typical octave band noise levels measured at the boundary of the Site towards the nearest noise sensitive premises. The noise spectrum shown is taken from a single measurement period when the corresponding broadband A-weighted background noise level was equivalent to the most regularly occurring value during the assessment period. The results presented within **Table 6.10** will be used to determine noise level limits for any externally mounted building services equipment associated with the Proposed Scheme as well as noise level limits for entertainment noise.

Table 6.10: Typical Octave band Background Noise Levels

Location	Parameter	Measurement date and time	Octave Band Centre Frequency, Hz							
			63	125	250	500	1 k	2 k	4 k	8 k
ML2	Daytime (07:00-23:00) $L_{90,1hr}$, dB	08/11/2015 08:00	55	57	55	48	47	41	34	25
	Night-time (23:00-07:00) $L_{90,15minute}$, dB	10/11/2015 02:45	53	48	47	45	43	36	30	22
ML3	Daytime (07:00-23:00) $L_{90,1hr}$, dB	08/11/2015 08:00	56	54	53	50	47	42	35	24
	Night-time (23:00-07:00) $L_{90,15minute}$, dB	10/11/2015 02:45	56	53	50	47	45	40	34	24
ML4	Daytime (07:00-23:00) $L_{90,1hr}$, dB	08/11/2015 11:00	60	57	54	52	51	45	36	23
	Night-time (23:00-07:00) $L_{90,15minute}$, dB	10/11/2015 04:45	55	51	50	47	46	40	32	20

FUTURE BASELINE

6.4.3. The noise environment affecting the Site is dominated by road traffic on the local road on the existing network, fixed plant / delivery noise sources and entertainment noise associated with existing commercial premises surrounding the Site. Should the Proposed Scheme not proceed, then it is anticipated that changes in noise of negligible significance would arise. This conclusion is based on the assumption that road traffic and the noise generated by existing fixed plant / delivery and entertainment sources are unlikely to increase significantly in future years in the immediate area surrounding the Site.

6.5 SENSITIVE RECEPTORS

6.5.1. The following are the sensitive receptors which have been assessed:

- The nearest existing residential premises to the Proposed Scheme, identified by Environmental Health of MCC, are located above the Old Nags Head Public House approximately 10m to the north-west of the Site on the opposite side of Jacksons Row;

- Further afield, there is the Radisson Blu Edwardian Hotel approximately 55 m to the south of the Site on the opposite side of the A34; and
- There are a number of commercial premises / offices the closest of which are the Sir Ralph Abercromby Inn within the development boundary itself and offices immediately adjacent to the western Site boundary at 201 Deansgate. Other premises are located approximately 10m from the boundary of the Site on the opposite side of Jacksons Row, Southmill Street and Bootle Street. Of particular note is the Friends' Meeting House to the east of Southmill Street which has meeting and conference room facilities.

6.5.2. The receptors of a residential nature, i.e. existing residential premises and Radisson Blu Edwardian Hotel, have been considered for both construction and operational phases of the Proposed Scheme in line with established guidance for the assessment of impacts from plant use and entertainment noise. The sensitivity of commercial premises/offices (as non-residential receptors), due to the fact that they are not used for residential purposes, is considered to be medium. Based on this and information available about each of the receptors at this stage, they have been considered for the construction phase only. Further consideration of absolute noise arising from fixed plant and entertainment noise can be considered further during more detailed refinements of design.

6.5.3. The locations of high sensitivity receptors are shown on **Figure 6.1**.

6.6 RELEVANT ELEMENTS OF THE PROPOSED SCHEME AND ESTABLISHING THE PRE-MITIGATION SCENARIO

CONSTRUCTION PHASE

6.6.1. The assessment of the potential effects for the construction phase is based on the design solutions and assumptions as presented in Chapter 3: Description of the Proposed Scheme. It is inevitable with any major development that there will be some disturbance caused to those nearby during construction.

6.6.2. For the purpose of the assessment, the main sources of noise and vibration generation during this phase are anticipated to include the following activities and it is assumed that these actions will be undertaken in broadly the following order (although there is likely to be some overlap between each stage/individual process):

- Securing of the Site and the implementation of temporary fencing;
- Creation of internal access, haulage routes; parking and traffic measures;
- Creation of construction compounds;
- Site clearance, including vegetation and tree removal and removal of existing below ground services and structures;
- Demolition of existing synagogue and rear portion of Police Station buildings;
- Earthworks and surface re-profiling/sub-base works to obtain required finished floor levels;
- Foundation construction (at this stage it is assumed that raft foundations would be required);
- Construction of the office block and the hotel and synagogue building;
- Construction of the tower;
- Installation of plant; and
- Implementation of public realm, landscape, lighting; strategies and external and internal finishing.

6.6.3. The potential noise and vibration effects of the key stages of the construction phase of the Proposed Scheme have been assessed at a sample of existing sensitive receptors that constitute dwellings. A number of assumptions have been made in the calculations of noise and vibration levels resulting from activities and plant during construction. Such assumptions relate to the type, location and number of plant as well as their duration of operation, and have been applied based on the information provided by the appointed Contractor, and experience gained from similar projects.

- The contractor has already committed to the following as part of the Scheme: Deliveries will be programmed to arrive on a “just in time “basis at pre-defined times. Coordination and timing of deliveries will be planned ahead at weekly meetings. Care will be taken to ensure materials are unloaded from vehicles with a view to minimisation of noise. Any storage areas onsite will fluctuate to suit the construction programme. Deliveries will be routed so as to minimise disturbance to local residents and delivery vehicles should be prohibited from waiting within or near the Site with their engines running. There will be no parking on Site for construction vehicles with all staff parking in local car parks; and
- Neighbourhood liaison should be undertaken with occupiers of residential and business properties that are likely to be affected by the works, informing them in advance of the nature and expected duration of the works and the proposed hours of work. A noticeboard should be displayed in a prominent position near the Site detailing named contacts who are able to provide further information and deal with any complaints as appropriate during all working hours.

OPERATIONAL PHASE

6.6.4. The Proposed Scheme has incorporated the existing contours of the Site as far as possible. Topographical data for the Site was incorporated from drawing reference number 13643-100-2DT.

6.6.5. Floor layouts and building elevations have referenced drawings supplied by the Architect for the scheme Hodder and Partners (Drawing reference 00M Level 0M GA Plan to 021 Upper Tower Rev 00 03.03.16 for floor plans, and drawing reference 201 to 216 for building elevations).

6.7 ASSESSMENT OF EFFECTS, MITIGATION AND RESIDUAL EFFECTS

CONSTRUCTION PHASE

DISTURBANCE TO SENSITIVE RECEPTORS FROM NOISE GENERATED BY ON-SITE (NON-TRAFFIC) CONSTRUCTION ACTIVITIES

6.7.1. The works have been split down into the following key stages for prediction purposes.

- Stage 1: Demolition, pre-enabling and enabling works;
- Stage 2: Main construction phase – Foundation construction (i.e. sub-structure works); and
- Stage 3: Main construction phase – Tower construction (i.e. super-structure works).

6.7.2. An estimate of the likely noise from the construction activities has been made for a sample of local receptors in the vicinity of the Site. The predictions are based on the methodology contained within BS 5228-1 and are in terms of the $L_{Aeq,T}$ noise levels over the core working day.

6.7.3. Standard working hours will be 07:30 to 18:00 hours, Monday to Friday and 08:30 to 14:00 hours on Saturdays with no work on Sundays and Bank holidays. It is possible that exception to this may arise on occasion outside of these hours, with some periods of construction required during the night-time. The phases of construction when this may be required could include for example the frame construction to apply finishes to concrete slabs.

6.7.4. On this basis the assessment of significant effects from construction noise have been assumed for a worst case daytime scenario as the threshold value derived for weekday daytime (07:00 to19:00), Weekends and weekday evenings (19:00 to 23:00) have adopted the same threshold value range on the basis of the results of the baseline survey. Additionally a night-time construction scenario has been considered on the basis of the main construction phase i.e. Stage 3.

6.7.5. Predictions have been undertaken for each of the stages presented in Section 6.6 above. **Table 6.11** sets out the typical plant types, numbers and utilisation (the percentage of time plant is actually operating during the working day - the 'on-time') that have used in the noise level predictions. This includes a large rotary bored piling rig, which may not be used during the construction phase, but is used to provide a worst case scenario.

Table 6.11: Plant and Equipment (and Associated Noise Levels) Associated with the Construction Phase

Plant/ Equipment	Number of Plant	Sound Power Level, LWA (dB) and Data Source Reference	Assumed Percentage Time On Site
Stage 1: Demolition, pre-enabling and enabling works			
Tracked excavator	1	110 (BS 5228-1 (Ref 3.1) Table C1: 12)	60
Tracked crusher	1	110 (BS 5228-1 Table C1:14)	80
Tower Crane (35m Jib)	2	105 (BS 5228-1 Table C4:49)	40
Tower Crane (40m Jib)	1	105 (BS 5228-1 Table C4:49)	40
Tower Crane (48m Jib)	1	105 (BS 5228-1 Table C4:49)	40
Articulated dump truck	1	106 (BS 5228-1 Table C4:2)	60

Pulverisor mounted on excavator	1	104 (BS 5228-1 Table C1:4)	30
Breaker mounted on excavator	1	114 (BS 5228-1 Table C1:13)	30
Scaffold access platform	1	95 (BS 5228-1 Table C4:57)	20
Road sweeper	1	104 (BS 5228-1 Table C4:90)	25
Skip wagon	1	106 (BS 5228-1 Table C8:21)	10
Diesel generator	1	94 (BS 5228-1 Table C4:78)	100
Stage 2: Main construction phase - Foundation construction			
Tower Crane (35m Jib)	2	105 (BS 5228-1 Table C4:49)	40
Tower Crane (40m Jib)	1	105 (BS 5228-1 Table C4:49)	40
Tower Crane (48m Jib)	1	105 (BS 5228-1 Table C4:49)	40
Tracked excavator	1	110 (BS 5228-1 Table C1:12)	60
Articulated dump truck	1	106 (BS 5228-1 Table C4:2)	60
Concrete mixer truck	2	108 (BS 5228-1 Table C4:20)	40
Concrete pump + concrete mixer truck idling	1	103 (BS 5228-1 Table C4:26)	60
Large rotary bored piling rig	1	111 (BS 5228 – Table C3.14)	50
Delivery wagon	25	107 (BS 5228-1 Table 11.14)	-
Poker vibrator	2	97 (BS 5228-1 Table C4:34)	50
Vibratory roller	1	105 (BS 5228-1 Table C5:26)	20
Road sweeper	1	104 (BS 5228-1 Table C4:90)	25
Diesel generator	2	94 (BS 5228-1 Table C4:78)	100
Stage 3: Main construction phase - Tower construction			
Tower Crane (35m Jib)	2	105 (BS 5228-1 Table C4:49)	40
Tower Crane (40m Jib)	1	105 (BS 5228-1 Table C4:49)	40
Tower Crane (48m Jib)	1	105 (BS 5228-1 Table C4:49)	40
Telescopic handler	1	99 (BS 5228 Table C2:35)	80

Mobile telescopic crane	1	105 (BS 5228 Table C4:39)	40
Concrete mixer truck	2	108 (BS 5228-1 Table C4:20)	40
Concrete pump + concrete mixer truck idling	1	103 (BS 5228-1 Table C4:26)	60
Delivery wagon	25	107 (BS 5228 Table C6:21)	-
Poker vibrator	2	97 (BS 5228-1 Table C4:34)	50
Angle grinder	1	108 (BS 5228-1 Table C4-93)	50
Road sweeper	1	104 (BS 5228-1 Table C4:90)	25
Diesel generator	2	94 (BS 5228 Table C4:78)	100

6.7.6. In practice, the plant items identified for each stage will move around the Site, operating at different times, for different durations and at different locations on any one day for the duration of the works. As a consequence, noise levels at any receptor may vary quite considerably day-to-day. Hence, it is necessary to rationalise the geographic and temporal spread of activities to obtain a meaningful prediction (and subsequent assessment) and to this end, various assumptions have necessarily been made as described in the following paragraphs.

6.7.7. The most important assumptions relate to the location of construction plant and their operational 'on-time' during the period of interest.

6.7.8. With respect to the geographical location of the plant, the full complement of plant for each stage, as identified above, is assumed to operate together at a single point as follows:

- For Stage 1 works, at the approximate centre of the existing structure earmarked for demolition that is the closest to the noise sensitive receptor; and
- For Stage 2 and 3 works, at the approximate centre of the Block A tower building.

6.7.9. Other assumptions which have been made with respect to the construction noise predictions are:

- No barriers have been included;
- Acoustically hard ground cover has been assumed between the noise source and receptor;
- No atmospheric absorption has been included;
- 3 dB has been added to all predictions to account for façade reflections;
- Source and receptors have both been taken to be 1.5 metres high. In reality the noise sources associated with the tower cranes will be at a higher elevation than this. The distances to the receptor from the crane sources will be greater in reality due to the slant distance. The calculation based at 1.5m above ground therefore assumes a shorter source to receptor distance and is worst case; and
- Meteorological conditions have been taken to be 'neutral'.

6.7.10. On the basis described above, construction noise levels have been determined at key residential receptors. The results are presented in **Table 6.12**. These predictions and the assumptions upon which they are based should be re-visited at the appropriate time, when more is known about the demolition and construction process.

Table 6.12: Predicted Unmitigated Pre-Enabling, Enabling and Construction Noise Levels, Façade $L_{Aeq,T}$ dB

Receptor Location	Negligible Magnitude Of Effect For Construction Noise Levels	Predicted Pre-Enabling, Enabling and Construction Noise Levels, $L_{Aeq,T}$ dB		
		Stage 11	Stage 2	Stage 3
Old Nags Head	65	81.6	79.6	77.7
Radisson Blu Hotel	65	73.4	70.6	68.6

1 The calculation for Stage 1 assumed no screening from some of the ground mounted plant items to the receptors that might be expected in the presence of deep excavations on site.

6.7.11. The significance of the noise effects during construction can be determined by comparing the predicted construction noise levels shown in **Table 6.12** to the proposed magnitude of impact scale as outlined in **Table 6.5**. Demolition works are predicted to generate the most significant negative effects. Additionally night-time works during Stage 3 have been considered due to the more sensitive criteria for the magnitude of impact for night-time construction activities.

6.7.12. The sensitivity of residential use above The Old Nags Head is considered to be high, and the magnitude of impact prior to mitigation, is considered to be large according to **Table 6.5** during the daytime / evening. Therefore, there is likely to be a direct, temporary, short to medium term effect on the residential premises above The Old Nags Head of **major negative** significance prior to the implementation of mitigation measures.

6.7.13. The sensitivity of Radisson Blu Hotel is considered to be high, and the magnitude of impact prior to mitigation, is considered to be medium during the daytime / evening during construction stages 1 and 2. Therefore, there is likely to be a direct, temporary, short to medium term effect on the nearest occupants of the hotel of **moderate negative** significance prior to the implementation of mitigation measures. During stage 3 construction the magnitude of impact prior to mitigation, is considered to be small during the daytime / evening. Therefore, there is likely to be a direct, temporary, short to medium term effect on the nearest occupants of the hotel of **minor negative** significance prior to the implementation of mitigation measures.

6.7.14. The sensitivity of the nearest existing receptor within the commercial premises / offices (201 Deansgate, the Sir Ralph Abercromby Inn and the Friends' Meeting House) is considered to be medium, and the magnitude of impact prior to mitigation is considered to be large at worst. Therefore, there is likely to be a direct, temporary, short to medium term effect on the occupants of the commercial premises / offices of **moderate negative** significance prior to the implementation of mitigation measures.

6.7.15. During night-time construction activities the sensitivity of residential use above The Old Nags Head is considered to be high, and the magnitude of impact prior to mitigation, is considered to be large. Therefore, there is likely to be a direct, temporary, short to medium term effect on the residential premises above The Old Nags Head of **major negative** significance prior to the implementation of mitigation measures.

6.7.16. During night-time construction activities the sensitivity of Radisson Blu Hotel is considered to be high, and the magnitude of impact prior to mitigation, is considered to be large. Therefore, there is likely to be a direct, temporary, short to medium term effect on the nearest occupants of the hotel of **major negative** significance prior to the implementation of mitigation measures.

6.7.17. Night-time works are likely to be of very short duration and as stated in Table 6.5, a lower magnitude of impact may occur. It should also be noted that an assumption applied to the night-time assessment has considered that all the plant shown in **Table 6.11** for Stage 3 works, will operate concurrently. In reality this may not be the case when specific activities are being undertaken.

Mitigation / enhancement

6.7.18. In the preliminary calculations presented in **Table 6.12**, no consideration has been given to the use of temporary screens or hoardings, as although hoardings will be used there is insufficient detail available as to the type of material used and the height of hoarding to be installed. A 3 metre high solid hoarding positioned at the construction Site boundary could provide up to 10 dB acoustic benefit for all ground floor activities where the line of sight to the nearest receptors is completely obscured and up to 5 dB where there is partial line of sight. The benefit will be reduced at first floor level and most probably be insignificant at levels above this. However, as some attenuation will be realised at ground floor locations if hoarding is erected, it should consist of plywood sheets (19 mm thick) or similar, with all knot holes, cracks and other joints, including that with the ground, sealed to minimise the passage of sound.

6.7.19. Ultimately, to ensure construction noise levels are reduced wherever possible, it is recommended that the following 'best practice' measures are employed by the contractor:

- The contractor and their sub-contractors should at all times apply the principle of Best Practicable Means as defined in Section 72 of the Control of Pollution Act and carry out all work in such a manner as to avoid or reduce any disturbance from noise (and vibration) as far as is practicable;
- Guidance given in BS 5228-1 (Section 8 - Control of noise and Annex B - Noise sources, remedies and their effectiveness) should be followed as far as is practicable and advice and training on noise minimisation given to staff during Site induction procedures;
- All plant brought on to Site should comply with the relevant EC/ UK noise limits applicable to that equipment or should be no noisier than would be expected based on the noise levels quoted in BS 5228-1. Each plant item should be well maintained and operated in accordance with manufacturers' recommendations and in such a manner as to minimise noise emissions;
- Electrically powered plant should be preferred, where practicable, to mechanically powered alternatives. All mechanically powered plant should also be fitted with suitable silencers, as appropriate;
- Items of plant on Site operating intermittently should be shut down in the intervening periods between use;
- Where feasible, all stationary plant should be located so that the noise effect at receptors is minimised and, if practicable, every item of static plant when in operation should be sound attenuated using methods based on the guidance and advice given in BS 5228-1;
- Careful selection of construction methods and plant should be investigated and utilised, for example, breaking-out of concrete structures using, where possible, low noise methods such as munching or similar, rather than percussion breaking;
- Temporary acoustic barriers and other noise containment measures such as screens, sheeting and acoustic hoarding at the Site boundary should be erected where appropriate to minimise noise breakout and reduce noise levels at potentially affected receptors; and
- If a temporary significant noise (or vibration) effect cannot reasonably be prevented and the works being undertaken are crucial to progressing a particular phase of the project, then separate liaison with the MCC is likely to be necessary to ensure an acceptable compromise is reached.

6.7.20. The environmental management control measures detailed above should act as a guide when implementing environmental controls and monitoring during the works.

6.7.21. The above measures should be implemented through the CEMP which will be prepared and submitted to MCC for approval. The need for noise monitoring and the setting of noise (and vibration) action levels to assist in controlling noise (and vibration) at potentially sensitive receptor locations will be identified through the CEMP.

Residual effects

6.7.22. Following the implementation of the recommended mitigation the following residual effects are predicted.

- The sensitivity of residential use above The Old Nags Head is high, and the magnitude of impact, following mitigation, is medium during the daytime / evening. Therefore, there is likely to be a direct, temporary, short to medium term residual effect on the residential premises above The Old Nags Head of **moderate negative** significance following the implementation of mitigation measures.
- The sensitivity of Radisson Blu Hotel is considered to be high, and the magnitude of impact, following mitigation, is considered to be small during the daytime / evening. Therefore, there is likely to be a direct, temporary, short to medium term residual effect on the nearest occupants of the hotel of **minor negative** significance during stage 1 and 2, and of **negligible** significance during stage 3 construction following the implementation of mitigation measures;
- During night-time construction activities the sensitivity of residential use above The Old Nags Head is considered to be high, and the magnitude of impact following mitigation, is considered to be large. Therefore, there is likely to be a direct, temporary, short to medium term effect on the residential premises above The Old Nags Head of **major negative** significance following the implementation of mitigation measures.
- During night-time construction activities the sensitivity of Radisson Blu Hotel is considered to be high, and the magnitude of impact following mitigation, is considered to be medium. Therefore, there is likely to be a direct, temporary, short to medium term effect on the nearest occupants of the hotel of **major negative** significance following the implementation of mitigation measures.

6.7.23. Taken in the context of the assessment being based upon a worst case scenario for the purposes of the EIA, the assessment has considered a continuous phasing with the construction plant presented in **Table 6.11** operating at the centre of the development block closest to the assessed noise sensitive receptors. In reality these plant items will move around the Site and not necessarily operate concurrently or for the durations stated throughout the entire construction phases.

DISTURBANCE TO SENSITIVE RECEPTORS FROM VIBRATION GENERATED BY ON-SITE (NON TRAFFIC) CONSTRUCTION ACTIVITIES

6.7.24. Ground borne vibration calculations have been performed for typical activities / machinery during construction based on the empirical prediction procedures presented within BS 5228-2, TRL RR 246: 1990 Traffic Induced Vibration in Buildings (applicable to Heavy Goods Vehicle induced vibration), and TRL Report 429: 2000 Ground borne Vibration Caused by Mechanical Construction Works (Applicable to Vibratory Rollers).

6.7.25. Such predictions have been performed in order to determine the possible distances at which the adopted magnitude of impact criteria may be registered based on a specified confidence limit (where applicable). In this regard, ground borne vibration levels and associated distances have been identified for a sample of typical vibration sources which may be associated with the construction phase. At this stage it is assumed that a contiguous or secant bored pile wall will likely be required to support the basement excavation and piled foundations for the proposed tower buildings will be required.

6.7.26. It should be noted that contiguous or secant bored piling involves the use of rotary or continuous flight auger (CFA) methods and guidance provided in BS 5228-2 suggests that rotary bored piling tends to set up low level vibrations when compared to other types of piling such as impact piling. Technical datasheets on CFA techniques produced by Skanska and guidance within BS 5228-2 suggest that this process is virtually vibration free.

6.7.27. However, if it is necessary to install casings to support the bored hole or where there is unexpected hard ground in the way then this installation process can set up short term intermittent vibrations as would be the case with any impact bored piling method. The calculations have therefore assumed that intermittent vibrations will occur during the contiguous or secant bored piling phase.

6.7.28. Piling will be required during the construction of the foundations for the tower. The predictions have assumed that the piling equipment will operate for some time at a point closest to the nearest vibration sensitive receptors, this being approximately 10m from the commercial offices, Old Nags Head (29m), the Sir Ralph Abercromby Inn (19m) and the Friends' Meeting House (35m).

Table 6.13: Predicted Ground borne Vibration Levels Applicable to Typical Vibration Generating Enabling Works and Construction Activities

Operation	Confidence Limit	Distance (m)	PPV (mms-1)
Contiguous or Secant Bored Piling	95	48	0.3
	95	19	1.0
	95	3.3	10.0
Rotary bored piling - augering	N/A	20	0.3
	N/A	6	1.0
	N/A	0.6	10.0
Rotary bored piling – driving casing	N/A	75	0.3
	N/A	23	1.0
	N/A	2.3	10.0
Piling - driven cast in place	95	215	0.3
	95	85	1.0
	95	15	10.0
Vibratory Rollers – start & end[1]	95	60	0.3
	95	23	1.0
Vibratory Rollers – steady state	95	3.3	10.0
HGVs [2]	N/A	50	0.3
	N/A	17	1.0
	N/A	2.5	10.0

[1] Assumes 2 rollers, 0.4mm amplitude, drum width of 1.3m, e.g. heavy duty ride on roller
[2] Assumes max height / depth of surface defect of 50mm, max speed of 30km/h, and that surface defect occurs at both wheels.

6.7.29. It should be noted that the data presented within **Table 6.13** is general in nature and is not specific to any one site. Furthermore, there may be a variety of different potential vibration generating activities employed other than those listed. However, the vibration levels and associated distances can be used to determine the typical distances at which specific impacts could be registered (within an associated confidence limit).

6.7.30. Drawing upon the layout for the Proposed Scheme it can be seen that at its closest point, the built development is proposed at distances ranging between approximately 2m and 10m from the closest existing commercial and residential premises respectively (refer to **Figure 6.2** - Noise Assessment Locations), i.e. less than the 2.3m setback distance at which the vibration magnitude of impact in **Table 6.6** is considered to be large.

6.7.31. The predicted effects at the nearest existing sensitive receptors are as follows:

- The sensitivity of the nearest existing residential receptor (residents above Old Nags Head) is considered to be high, and the magnitude of effect prior to mitigation, is considered to be medium at worst. Therefore, there is likely to be a direct, temporary, short to medium term effect on the residential premises above the Old Nags Head Public House of **moderate negative** significance prior to the implementation of mitigation measures.
- The sensitivity of the nearest existing receptor within the commercial premises / offices (201 Deansgate, the Sir Ralph Abercromby Inn and the Friends' Meeting House) is considered to be medium, and the magnitude of effect prior to mitigation is considered to be large at worst. Therefore, there is likely to be a direct, temporary, short to medium term effect on the occupants of the commercial premises / offices of **minor to moderate negative** significance prior to the implementation of mitigation measures.

MITIGATION / ENHANCEMENT

6.7.32. Wherever possible those activities that can impart significant levels of vibration into the ground should be substituted with alternatives which generate less vibration. If alternative plant cannot be sourced then vibration generating plant should be used sparingly. Furthermore, given the propensity for more noticeable vibration during the start-up and shut down of plant which inherently generates significant levels of vibration, it is recommended that wherever possible this equipment should be started or stopped at least 30 metres away from any vibration sensitive receptors wherever practicable, and in any case as far away as possible.

6.7.33. It is recommended that where possible during the construction of the foundations, rotary piling techniques are adopted.

6.7.34. The levels of vibration which can cause significant damage to buildings are at least one order of magnitude higher than those for human disturbance. Consequently, it may also be concluded that potential significant negative effects are anticipated in terms of building damage from construction vibration where works are being carried out in close proximity of commercial premises on Deansgate and the Sir Ralph Abercromby Inn. This warrants close attention throughout the works to ensure that vibration levels remain below those that are likely to cause damage to the building, and to minimise disturbance to occupants.

6.7.35. Notwithstanding the above advice, it would be prudent to monitor closely the construction process, especially at the commercial premises on Deansgate and immediately surrounding Listed Buildings, to ensure vibration effects are minimised, so far as is reasonably practicable. Any such monitoring protocols should be incorporated in both the CEMP and construction method statements provided by the Principal Contractor.

Residual Effects

6.7.36. The sensitivity of the nearest existing residential receptor is considered to be high, and the magnitude of impact following mitigation (and assuming rotary piling techniques are adopted rather than impact piling), is considered to be medium at worst when working at their closest to sensitive receptors. Therefore, there is likely to be a direct, temporary, short to medium term effect on the residential premises above the Old Nags Head Public House of **moderate negative** significance following the implementation of mitigation measures.

6.7.37. The sensitivity of the nearest existing receptor within the commercial premises / offices is considered to be medium, and the magnitude of impact following the implementation of mitigation is considered to be small for the majority of the construction phase and medium when works are at their closest. Therefore, there is likely to be a direct, temporary, short to medium term effect on the occupants of the commercial premises / offices of **minor negative** significance following to the implementation of mitigation measures.

OPERATIONAL PHASE

DISTURBANCE TO EXISTING SENSITIVE RECEPTORS AND FUTURE PROPOSED NOISE SENSITIVE USES FROM NOISE GENERATED BY THE Proposed FIXED PLANT / GOODS DELIVERY NOISE

6.7.38. At this stage in the design of the Proposed Scheme, specific details of the externally mounted building services plant and the type and number of commercial goods deliveries per day, are not available.

6.7.39. It should be noted, however, that the service yard for the Proposed Scheme is located on the south façade and thus the identified high sensitivity receptors would all be significantly shielded from delivery noise as a result of natural building screening.

6.7.40. Noise from plant and commercial sources such as these are typically assessed in the context of BS 4142, which involves a comparison of the plant / commercial source sound level with allowance for acoustic feature corrections, and the measured background (LA90) sound level at existing and future receptor locations.

6.7.41. The noise sensitive existing and future receptor locations include The Old Nags Head, the hotel and the residential apartments of Block A, and the boutique hotel in Block B.

Table 6.14: Noise Rating Levels (Lr,Tr) dB, to be achieved for any externally mounted building services equipment

Receptor Location	Representative Baseline monitoring location	Parameter	Octave Band Centre Frequency, Hz							
			63	125	250	500	1 k	2 k	4 k	8 k
Block A Hotel and Apartments (south and east façade)	ML3	Daytime (07:00-23:00) $L_{90,1hr}$, dB	51	49	48	45	42	37	30	19
		Night-time (23:00-07:00) $L_{90,15min}$, dB	51	48	45	42	40	35	29	19
Old Nags Head and Block A Hotel and Apartments (north and west façade)	ML4	Daytime (07:00-23:00) $L_{90,1hour}$, dB	55	52	49	47	46	40	31	18
		Night-time (23:00-07:00) $L_{90,15min}$, dB	50	46	45	42	41	35	27	15
Block B – Boutique Hotel	ML2	Daytime (07:00-23:00) $L_{Ar,Tr}$, dB	50	52	50	43	42	36	29	20
		Night-time (23:00-07:00) $L_{Ar,Tr}$, dB	48	43	42	40	38	31	25	17

6.7.42. The significance of the noise effects prior to the implementation of mitigation for the assessment of fixed plant can be determined by comparing the worst case plant noise rating levels ($L_{Ar,Tr}$) with the existing background sound levels in each of the octave bands presented in **Table 6.14**, at the nearby noise sensitive receptors.

6.7.43. A worst case rating level ($L_{Ar,Tr}$) is predicted to be one where the total sound emanating from the operation of the fixed plant and commercial deliveries and including corrections for certain acoustic features at the nearest noise sensitive receptors exceeds MCC's preferred criteria by 10dB or more.

6.7.44. Therefore the sensitivity of the residential apartments and hotel at the façades of the tower, the Old Nags Head and the boutique hotel are considered to be high, and the magnitude of impact prior to mitigation, is considered to be large according to **Table 6.7** when the total combined rating level from fixed plant and goods deliveries are greater than 10dB when compared to the criteria specified by MCC. Therefore, there is likely to be a direct, permanent, long term effect on the nearest residential noise sensitive receptors of **major negative** significance prior to the implementation of mitigation measures.

Mitigation / enhancement

6.7.45. Sound from externally mounted plant can be readily mitigated through design measures, such as;

- Procurement of 'quiet' non-tonal fixed plant;
- Locating plant and air vents away from noise-sensitive receptors;

- Incorporation of acoustic enclosures where practical;
- Incorporation of in-duct silencers as necessary;
- Incorporation of acoustic louvres; and
- Isolation of plant from building structures

6.7.46. As a detailed assessment may not be conducted until a later stage in the design process, any proposed fixed externally mounted building services plant should be designed such that the derived Rating Level presented in **Table 6.14** for the operational plant is at least 5 dB below the existing background (L_{90}) sound levels in each of the octave bands, at the nearby noise sensitive receptors.

6.7.47. At this stage, there is no reason why the design of the Proposed Scheme will not be able to incorporate the necessary mitigation measures i.e. plant specification, location etc. in order that the specified noise limits are achieved. Consideration of further, specific, noise mitigation measures is therefore considered unwarranted.

Residual effects

6.7.48. Providing the fixed plant / commercial sources associated with the Proposed Scheme can be designed, selected, located and/or configured such that the target Rating Levels at the corresponding receptors described in **Table 6.14** are achieved, the magnitude of impact would reduce to negligible.

6.7.49. The sensitivity of The Old Nags Head, hotel and proposed residential apartments is high, and the magnitude of impact, following mitigation, is negligible. Therefore, there is likely to be a direct, permanent, long-term residual effect on The Old Nags Head, hotel and residential apartments of **negligible** significance following the implementation of mitigation measures.

DISTURBANCE TO EXISTING SENSITIVE RECEPTORS AND FUTURE PROPOSED NOISE SENSITIVE USES FROM PROPOSED ENTERTAINMENT NOISE

6.7.50. On the Plan Summary and Level 10 GA Plan (Drawing (SK)1001 and Level 10 GA Plan Revision 010) of the rooftop pubic square there will be an outdoor space (roof terrace) that will be used to host occasional music and sport events.

6.7.51. The operational phase assessment has been based upon the following assumptions:

- The use of the rooftop public square is not to be used for entertainment events during the night-time period (23:00 – 07:00), although the assessment has considered some ‘typical use’ activities taking place after 23:00 hours.
- It is understood that an occupancy limit of 1000 people would apply at any time to the rooftop public square; and
- Recommendations have been based upon an area source calculation method to determine the worst case performance. Recommendations provided should be considered as preliminary only at this stage and could be subject to change. An updated assessment will be provided at the later design stages once the proposed layout and usage of the space has been confirmed.

6.7.52. The calculations have considered a ‘typical use’ scenario and a worst case scenario of the outdoor space in use:

- The potential noise impact generated from the street level public square and rooftop public square during typical use; and
- The potential noise impact generated from rooftop public square during occasional music and sports events.

Public Open Space During Typical Use and Occasional Music / Sports Events – Future Proposed Noise Sensitive Receptors

6.7.53. The potential noise impact generated from the street level public square and rooftop public square during typical use has been calculated by adopting the principles outlined within the Odeon Application Note – Restaurants issued by Odeon Room Acoustic Software, 2012.

6.7.54. This application note provides guidance for predicting the noise impact from social gatherings, such as that expected in canteens, bars and restaurants. Although the rooftop public square is in an external setting the Odeon Application note adopts the sound power level generated by human speech as a basis for the assessment. **Table 6.15** provides the sound power noise level generated by speech at various vocal efforts as presented within the Odeon Application Note.

Table 6.15 - Sound Power Level of Speech at Various Vocal Effort Levels, dB

Vocal effort	Octave Band Centre Frequency, Hz								A
	63	125	250	500	1k	2k	4k	8k	
Normal	45	55	65	69	63	56	50	45	68
Raised	48	49	70	75	72	64	57	48	76
Loud	52	63	72	80	80	73	66	55	83
Shouted	52	63	73	84	89	82	75	64	91

6.7.55. In line with the application note, the following is assumed:

- On average, 3.5 person group size (i.e. 286 people out of 1000 capacity talking at any one time); and
- Raised vocal effort

6.7.56. In addition to noise from patrons, the following sound power noise levels in **Table 6.16** have been assumed from amplified sound/music within the street level lower and rooftop public squares. This proposed noise level would be appropriate for a typical level of background, or ambient music.

Table 6.16: Maximum Total Sound Power Level of Amplified Sound/Music (Background Music) dB

	Octave Band Centre Frequency, Hz								A
	63	125	250	500	1 k	2 k	4 k	8 k	
Sound Power Level Lw dB	87	94	90	88	88	87	83	80	93

6.7.57. Additionally prediction of noise from occasional music / sport events included the maximum sound power levels of a music / sound system located centrally within the rooftop square. The sound power levels presented in **Table 6.17** are provided for information only at this stage and will need to be reviewed again as details of the proposed PA system and public space layout develop.

Table 6.17 - Maximum Total Sound Power Level of Amplified Sound/Music (Occasional Music / Sports Events)

	Octave Band Centre Frequency, Hz								A
	63	125	250	500	1k	2k	4k	8k	
Sound Power Level, Lw	100	107	103	101	101	100	96	93	106

6.7.58. Based upon the above sound power levels for noise from patrons and amplified music, the noise levels outside the east façade of the tower of Block A (hotel and residential apartments) at each floor have been calculated and are presented in **Table 6.18** and **Table 6.19** for each scenario. These levels have been presented as the worst case façade of the Proposed Scheme. It should be noted that the sound levels for the boutique hotel have not been presented as these are predicted to be significantly lower than the existing day and night-time ambient sound levels due to its location relative to the outdoor public space.

Table 6.18 - Predicted Noise Level from Typical Use outside the East Façade of the Tower (Free-Field), dB

Floor Level	Octave Band Centre Frequency, Hz								A
7-9 (Hotel)	63	125	250	500	1k	2k	4k	8k	
10-14 (Hotel)	43	50	50	54	51	46	39	31	55
15-18 (Hotel)	44	51	52	56	53	47	40	32	57
19-22 (Residential)	43	50	51	55	52	46	39	30	56
23-26 (Residential)	42	49	50	54	51	45	38	28	55
27-30 (Residential)	40	48	49	53	50	44	36	25	54
31-35 (Residential)	39	47	48	52	49	43	35	23	53
36-39 (Residential)	38	45	47	50	47	41	33	20	51

Table 6.19 - Predicted Noise Level from Occasional Music / Sport Events outside the East Façade of the Tower (Free-Field), dB

Floor Level	Octave Band Centre Frequency, Hz								A
	63	125	250	500	1k	2k	4k	8k	
7-9 (Hotel)	71	65	58	57	56	53	47	39	60
10-14 (Hotel)	71	65	60	60	58	55	50	42	63
15-18 (Hotel)	70	65	60	60	58	55	50	41	63
19-22 (Residential)	69	64	59	59	58	55	49	40	62
23-26 (Residential)	68	63	59	58	57	54	48	38	61
27-30 (Residential)	68	63	58	57	56	53	46	36	60
31-35 (Residential)	67	62	57	56	55	52	45	34	60
36-39 (Residential)	66	61	56	55	54	51	44	32	59

Table 6.20: Predicted Noise Level from The Public Space Outside the East Façade of the Tower (Daytime 07:00 – 23:00 hrs) (Free Field) dB

Floor Level	Parameter	Octave Band Centre Frequency, Hz							
		63	125	250	500	1 k	2 k	4 k	8 k
Floor 10 - Hotel	Noise Egress from roof terrace (Typical use)	42	49	51	55	52	46	38	30
	Noise Level Limit	46	44	43	40	37	32	25	14
	Exceedance	-4	5	8	15	15	14	13	16
Floor 19 - Apartments	Noise Egress from roof terrace (Typical use)	41	48	50	54	51	44	37	28
	Noise Level Limit	46	44	43	40	37	32	25	14
	Exceedance	-5	4	7	14	14	12	12	14
Floor 10 - Hotel	Noise Egress from roof terrace (Music / Sport Events use)	71	65	60	60	58	55	50	42
	Noise Level Limit	46	44	43	40	37	32	25	14
	Exceedance	25	21	17	20	21	23	25	28
Floor 19 - Apartments	Noise Egress from roof terrace (Music / Sport Events use)	69	64	59	59	58	55	49	40
	Noise Level Limit	46	44	43	40	37	32	25	14
	Exceedance	23	20	16	19	21	23	24	26

6.7.59. The results in **Table 6.20** illustrate that the noise level limits for entertainment noise associated with the Proposed Scheme as specified by MCC are exceeded at the east façade of the tower.

6.7.60. The sensitivity of the residents of the Proposed tower of Block A (residential and hotel) is considered to be high, and the magnitude of impact prior to mitigation, is considered to be medium to large as the noise levels exceed the criteria set by MCC. Therefore, there is likely to be a direct, permanent, long-term effect of **moderate** to **major negative** significance prior to the implementation of mitigation measures.

The Public Space in Typical Use and Occasional Music / Sport Events – Existing Noise Sensitive Receptors

6.7.61. **Table 6.21** presents the results of the noise level predictions of noise egress from the public open space for two scenarios at the nearest existing noise sensitive receptors with the corresponding noise level limit derived from a level 10 dB below the octave band background noise levels at ML3 and ML4 presented in **Table 6.10.**

Table 6.21: Predicted Noise Levels from the Public Space at Existing Noise Sensitive Receptors

Receptor Location	Parameter	Octave Band Centre Frequency, Hz							
		63	125	250	500	1 k	2 k	4 k	8 k
Old Nags Head (ML4)	Noise Egress from The Public Space: (Typical use)	27	31	29	31	26	20	13	3
	Noise Level Limit	50	47	44	42	41	35	26	13
	Exceedance	-23	-16	-15	-11	-15	-15	-13	-10
Radisson Blu Edwardian Hotel (ML3)	Noise Egress from The Public Space (Typical use)	32	38	40	43	39	32	23	11
	Noise Level Limit	46	43	40	37	35	30	24	14
	Exceedance	-14	-5	0	6	4	2	-1	-3
Old Nags Head (ML4)	Noise Egress from The Public Space (Music / Sport Events use)	35	39	33	33	30	26	19	9
	Noise Level Limit	50	47	44	42	41	35	26	13
	Exceedance	-15	-9	-11	-10	-12	-9	-7	-4
Radisson Blu Edwardian Hotel (ML3)	Noise Egress from The Public Space (Music / Sport Events use)	44	50	47	46	44	39	30	15
	Noise Level Limit	46	43	40	37	35	30	24	14
	Exceedance	-2	7	7	9	9	9	6	1

6.7.62. It has been stated that noise from regular entertainment sources associated with the Proposed Scheme should be designed to achieve a noise level of at least 10 dB below the existing background noise level in each octave band at the nearest existing sensitive receptors.

6.7.63. The results presented in **Table 6.21** illustrate the prescribed criteria can be achieved prior to secondary mitigation at the Old Nags Head for both scenarios.

6.7.64. At the upper floors of the Radisson Blu Hotel the criteria is exceeded in the octave band range 500Hz to 2kHz during ‘typical use’ and is exceeded in the octave band range 125Hz to 8kHz.

6.7.65. The sensitivity of residential use above the Old Nags Head is considered to be high, and the magnitude of impact prior to mitigation, is considered to be negligible as the noise levels are 10 dB below the existing background noise levels. Therefore, there is likely to be a direct, permanent, long-term effect of negligible significance prior to the implementation of mitigation measures.

6.7.66. The sensitivity of residential use at the Radisson Blu Hotel is considered to be high, and the magnitude of impact prior to mitigation, is considered to be medium to large as the noise levels exceed the background sound levels by up to 9dB in certain octave bands. Therefore, there is likely to be a direct, permanent, long-term effect of **moderate** to **major negative** significance prior to the implementation of mitigation measures.

Mitigation/enhancement

6.7.67. For the future proposed noise sensitive receptors, it may be possible to agree with the Local Authority that a higher level of noise could be generated from the outdoor public space during occasional events, such as that from live music performances or the screening of sports events. Code of Practice on Environmental Noise Control at Concerts (published by the Noise Council in 1995), commonly known as 'The Pop Code', provides guidance for appropriate noise level limits from occasional events.

6.7.68. The set of criteria would apply outside the noise sensitive premises and therefore the sound insulation performance of the external façade is not taken into consideration. As a result, this standard will effectively impose a limit on the level of entertainment noise that could be generated within the outdoor space. Table 6.22 provides the preliminary noise level limits that would apply to the public open space.

Table 6.22 - Noise level limits within the Public Open Space for Occasional Music / Sports Events

Event days per calendar year, per venue	Maximum Music Noise Level outside Residential apartments	Resultant noise level limit within Public Space	Comments
Up to 12 events*	65 dB(A)	98 dB(A)	Reasonable noise level limit for amplified music. Noise level limits will need to be enforced on amplified sound. Noise egress from loud acoustic instruments, such as that from drum kits, will need to be considered / controlled. The limit would allow for up to 500 people simultaneously shouting (i.e. during sporting event).

6.7.69. As the noise level limits refer to an external level in an area where there are already contributions from existing entertainment noise, it was agreed with the Environmental Health Department of MCC that where entertainment noise is a dominant noise source, the background noise levels within the apartments and hotel rooms can be taken into consideration and noise from any proposed mechanical building services equipment can be used to mask external entertainment noise.

6.7.70. For 'typical use' activities it is proposed that the internal guideline criteria presented in Section 1.3.32.1 are targeted for guiding the potential significance of effects on the future residents of the tower. As the 'Typical use' noise predictions are primarily comprised of contributions from raised voices, and that the building design is proposed to have mechanical ventilation strategy rather than rely upon openable windows for ventilation, the internal design criteria as stipulated by MCC provide a pragmatic approach to mitigation against such noise sources.

6.7.71. It should also be noted that the predictions have not included for any kind of screening around the rooftop public square itself. Chapter 3: Description of the Proposed Scheme indicates that this area will be enclosed on three sides with the fourth side affording views towards the Town Hall. It is possible then that acoustic screening on the south side of the upper square will afford some attenuation of noise egress from the roof terrace to the rooftop floors of the Radisson Hotel. Assuming that any screening of 2m in height would afford a 5 dB reduction in each octave band at the upper floors of the Radisson Blu Hotel the magnitude of impact following the implementation of mitigation is considered to be small.

6.7.72. The effectiveness of any screening on the west side of the rooftop public square in attenuating sound at the upper floors of the proposed tower will be limited due to the relative elevations of the sound source and the receiver.

6.7.73. Notwithstanding the above and in order to reduce the potential noise levels from the outdoor public space to the proposed residential apartments and hotel rooms, restrictions may need to be applied to its use. The requirements will be specified by MCC during the planning phase.

Residual effects

6.7.74. The sensitivity of the residents of the Proposed Scheme (residential and hotel) are considered to be high, and the magnitude of impact assuming appropriate noise limits are applied the entertainment uses is considered to be small during 'typical use'. Therefore, there is likely to be a direct, permanent, long-term residual effect of **minor negative** significance.

6.7.75. The sensitivity of the residents of the Proposed Scheme (residential and hotel) are considered to be high, and the magnitude of impact assuming appropriate noise limits are applied the entertainment uses is considered to be small during occasional music / sports events. Therefore, there is likely to be a direct, permanent, long-term residual effect of **minor negative** significance.

6.7.76. The sensitivity of the use at the Radisson Blu Hotel is considered to be high, and the magnitude of impact is considered to be small. Therefore, there is likely to be a direct, permanent, long-term effect of **minor negative** significance following the implementation of mitigation measures.

6.7.77. The sensitivity of residential use above the Old Nags Head is considered to be high, and the magnitude of impact remains negligible. Therefore, there is likely to be a direct, permanent, long-term residual effect of **negligible** significance.

EXISTING BASELINE NOISE LEVELS ON FUTURE PROPOSED NOISE SENSITIVE USES

6.7.78. The dominant existing noise sources affecting the Site are road traffic and plant noise during the daytime and entertainment noise and road traffic during the night-time periods. To predict the impact from existing noise sources in the vicinity of the Proposed Scheme on the future noise sensitive receptors a computer based noise model has been produced using the CadnaA® noise prediction software.

6.7.79. Sound levels obtained from the various entertainment sources, namely those from events held at The Venue and The Albert Hall and from measurements of various items of plant in the vicinity of the Site have been included in the model.

6.7.80. Receiver positions deemed to be representative of the north, east, south and west facades of the tower of Block A, the floors of the boutique hotel and the office of Block B were included at locations corresponding to each floor of respective development blocks. Based upon the results of the 3D model, the noise levels expected from the existing environmental noise sources have been calculated and are presented in **Table 6.18** and **Table 6.27**. Note that noise levels are provided as free-field noise levels and only the resultant broadband A-weighted noise levels are shown.

Table 6.23: Predicted Free-Field Noise Levels on the North Façade of the Tower from Existing Environmental Noise sources

Floor Level	Daytime (07:00–23:00), dB $L_{Aeq,1hr}$	Night-Time (23:00–07:00), dB $L_{Aeq,15min}$	Typical Night-Time (23:00–07:00) maximum noise level, dB L_{AFmax}
7-11 (Hotel)	63-60	66-64	80-78
12-15 (Hotel)	60-58	64-62	77-76
16-18 (Hotel)	58-57	62-61	75-74
19-28 (Residential)	57-54	61-58	74-71
29-39 (Residential)	54-51	57-55	71-68

Table 6.24: Predicted Free-Field Noise Levels on the East Façade of the Tower from Existing Environmental Noise sources

Floor Level	Daytime (07:00–23:00), dB $L_{Aeq,1hr}$	Night-Time (23:00–07:00), dB $L_{Aeq,15min}$	Typical Night-Time (23:00–07:00) maximum noise level, dB L_{AFmax}

7-11 (Hotel)	56-55	56-55	70-69
12-15 (Hotel)	55	56	69
16-18 (Hotel)	57-56	58-57	69
19-28 (Residential)	56-55	56	67
29-39 (Residential)	55-54	56	67-65

Table 6.25 Predicted Free-Field Noise Levels on the South Façade of the Tower from Existing Environmental Noise sources

Floor Level	Daytime (07:00–23:00), dB $L_{Aeq,1hr}$	Night-Time (23:00–07:00), db $L_{Aeq,15min}$	Typical Night-Time (23:00–07:00) maximum noise level, dB L_{AFmax}
7-11 (Hotel)	61-60	62-61	76-74
12-15 (Hotel)	60-59	60-59	73-72
16-18 (Hotel)	59-58	59-58	71
19-28 (Residential)	58-56	58-56	70-67
29-39 (Residential)	56-54	56-54	67-64

Table 6.26: Predicted Free-Field Noise Levels on the West Façade of the Tower from Existing Environmental Noise sources

Floor Level	Daytime (07:00–23:00), dB $L_{Aeq,1hr}$	Night-Time (23:00–07:00), dB $L_{Aeq,15min}$	Typical Night-Time (23:00–07:00) maximum noise level, dB L_{AFmax}
7-11 (Hotel)	42-41	41	54
12-15 (Hotel)	41	41-40	54-53
16-18 (Hotel)	41-40	40	53
19-28 (Residential)	40-38	39-38	52-51
29-39 (Residential)	38-37	38-36	51-49

Table 6.27: Predicted Free-Field Noise Levels at the Boutique Hotel and Offices of Block B from Existing Environmental Noise sources

Floor Level	Daytime (07:00–23:00), dB $L_{Aeq,1hr}$	Night-Time (23:00–07:00), dB $L_{Aeq,15min}$	Typical Night-Time (23:00–07:00) maximum noise level, dB L_{AFmax}
1-4 Boutique Hotel E Facade	60	57	77
1-10 Office Block B N Facade	61-59	-	-

5-10 Office Block B E Facade	59	-	-
1-10 Office Block B S Facade	59–57	-	-
1-10 Office Block B W Facade	60-58	-	-

6.7.81. On the basis that the existing noise levels at the west façade of the tower are predicted to be much lower than the remaining facades of the Proposed Scheme, the cumulative effects of the existing baseline noise and the potential noise from the proposed rooftop public square have been considered at the north, east and south facades only as the west façade will be in the noise shadow of activities associated with the street level and rooftop public squares.

6.7.82. The results in **Table 6.28** and **Table 6.31** are those based upon the combined noise level from existing environmental noise sources as well as the potential noise level from the proposed rooftop public square, expected on the north, east and south façade of the tower, and the boutique hotel during the daytime (07:00-23:00hrs) and night-time (07:00-23:00hrs) period prior to the implementation of secondary mitigation.

6.7.83. Consideration has been given to the use of different materials in the construction of the proposed units having regard to acoustic mitigation properties that such materials have.

6.7.84. It is accepted that the use of standard thermal glazing in residential units will reduce external noise levels by 33dB from an external façade noise level or 30dB from a free field noise level. Where standard trickle vents are also incorporated into the thermal glazing units, a "worst case" 25dB reduction from the external noise level should be achieved.

6.7.85. The predictions of the internal noise levels in the Tables below have included for standard thermal glazing with standard trickle vent with a sound reduction index value of 25dB.

Table 6.28: Predicted Noise Levels at the North Façade of the Tower and Internal Noise Criteria to BS8233:2014

Floor Level	Predicted External noise level dB(A) (Free Field) 07:00hrs – 23:00hrs	BS8233 Criteria Daytime $L_{Aeq,16hr}$	Daytime Internal Criteria Exceedance	Predicted External noise level dB(A) (Free Field) 23:00hrs – 07:00hrs	Typical Night-Time (23:00–07:00) maximum noise level, dB L_{AFmax}	BS8233 Criteria Night-time $L_{Aeq,8hr}$ / L_{AFmax}		Night-time Internal Criteria Exceedance $L_{Aeq,8hr}$ / L_{AFmax}	
7-11 (Hotel)	63-61	35	3	66-64	80-78	30	45	11	10
12-15 (Hotel)	60-59	35	0	64-62	77-76	30	45	9	7
16-18 (Hotel)	58-57	35	-2	62-61	75-74	30	45	7	5
19-28 (Residential)	57-55	35	-3	61-58	74-71	30	45	6	4
29-39 (Residential)	55-53	35	-5	58-55	71-68	30	45	3	1

Table 6.29: Predicted Noise Levels at the East Façade of the Tower and Internal Noise Criteria to BS8233:2014

Floor Level	Predicted External noise level dB(A) (Free Field) 07:00hrs – 23:00hrs	BS8233 Criteria Daytime $L_{Aeq,16hr}$	Daytime Internal Criteria Exceedance	Predicted External noise level dB(A) (Free Field) 23:00hrs – 07:00hrs	Typical Night-Time (23:00–07:00) maximum noise level, dB L_{AFmax}	BS8233 Criteria Night-time $L_{Aeq,8hr}$ / L_{AFmax}		Night-time Internal Criteria Exceedance $L_{Aeq,8hr}$ / L_{AFmax}	
7-11 (Hotel)	58-63	35	3	57-59	70-69	30	45	4	0
12-15 (Hotel)	63	35	3	59	69	30	45	4	-1
16-18 (Hotel)	63-62	35	3	59	69	30	45	4	-1
19-28 (Residential)	62-60	35	2	59-57	67	30	45	4	-3
29-39 (Residential)	60-58	35	0	57-56	67-65	30	45	2	-3

Table 6.30: Predicted Noise Levels at the South Façade of the Tower and Internal Noise Criteria to BS8233:2014

Floor Level	Predicted External noise level dB(A) (Free Field) 07:00hrs – 23:00hrs	BS8233 Criteria Daytime $L_{Aeq,16hr}$	Daytime Internal Criteria Exceedance	Predicted External noise level dB(A) (Free Field) 23:00hrs – 07:00hrs	Typical Night-Time (23:00–07:00) maximum noise level, dB L_{AFmax}	BS8233 Criteria Night-time $L_{Aeq,8hr}$ / L_{AFmax}		Night-time Internal Criteria Exceedance $L_{Aeq,8hr}$ / L_{AFmax}	
7-11 (Hotel)	62-61	35	2	62-61	76-74	30	45	7	6
12-15 (Hotel)	61-60	35	1	60-59	73-72	30	45	5	3
16-18 (Hotel)	59	35	-1	59	71	30	45	4	1
19-28 (Residential)	59-57	35	-1	58-56	70-67	30	45	3	0
29-39 (Residential)	57-55	35	-3	56-54	67-64	30	54	1	-3

Table 6.31: Predicted Noise Levels at the Boutique Hotel and Offices of Block B and Internal Noise Criteria to BS8233:2014

Floor Level	Predicted External noise level dB(A) (Free Field) 07:00hrs – 23:00hrs	BS8233 Criteria Daytime $L_{Aeq,16hr}$ ($L_{Aeq,T}$ in the case of offices)	Daytime Internal Criteria Exceedance	Predicted External noise level dB(A) (Free Field)	Typical Night-Time (23:00–07:00) maximum noise	BS8233 Criteria Night-time $L_{Aeq,8hr}$ / L_{AFmax}	Night-time Internal Criteria Exceedance $L_{Aeq,8hr}$ / L_{AFmax}

				23:00hrs – 07:00hrs	level, dB L_{AFmax}				
1-4 (Boutique Hotel)	59	35	-1	57	77	30	45	2	7
1-10 Office Block B N Facade	61	45	-9	-	-	-	-	-	-
5-10 Office Block B E Facade	60	45	-10	-	-	-	-	-	-
1-10 Office Block B S Facade	60	45	-10	-	-	-	-	-	-
1-10 Office Block B W Facade	68	45	-2	-	-	-	-	-	-

6.7.86. For the daytime period (07:00 to 23:00hrs) the sensitivity of the residents of the Proposed Scheme (hotel and residential apartments) are considered to be high, and the magnitude of impact prior to mitigation, at the worst affected level and façade is considered to be small as the noise levels exceed the internal criteria as presented in BS8233 for daytime periods by 3 dB. Therefore, there is likely to be a direct, permanent, long-term effect of **minor negative** significance prior to the implementation of secondary mitigation measures.

6.7.87. For the night-time period (23:00 to 07:00 hrs) the sensitivity of the residents of the Proposed Scheme (hotel and residential apartments) are considered to be high, and the magnitude of impact prior to mitigation, at the worst affected level and façade is considered to be large as the noise levels exceed the internal criteria as presented in BS8233 for night-time periods. Therefore, there is likely to be a direct, permanent, long-term effect of **major negative** significance prior to the implementation of secondary mitigation measures.

6.7.88. For the daytime hours corresponding to a typical working day of the offices, the sensitivity of the occupants are considered to be medium, and the magnitude of impact prior to mitigation at the worst affected façade is considered to be negligible. Therefore, there is likely to be a direct, permanent, long-term effect of **negligible** significance prior to the implementation of secondary mitigation measures.

Mitigation/Enhancement

6.7.89. Given that effects of **negligible** significance at worst are predicted for the daytime periods at the commercial office aspects of the Proposed Scheme the consideration for mitigation is not necessary.

6.7.90. Based upon the predicted night-time LAeq,T noise levels at the facades of the tower of Block A (residential accommodation aspects), consideration has been given to the noise attenuation that will be required to ensure a commensurate level of protection against noise for future occupants residing within such uses.

6.7.91. Additionally consideration has been given to the noise attenuation required at the façade of the boutique hotel to ensure the night-time L_{AFmax} criteria is met within the habitable rooms of the hotel.

6.7.92. The ProPG: Planning and Noise - Supplementary document Part 2: Good Acoustic Design indicates that the required noise attenuation can be achieved through a variety / combination of means. In order of preference, the following mitigation is recommended;

- “Quietening or removing the source of noise;
- Attenuating the sound on its path to the receiver;
- Obstructing the sound path between source and receiver;
- Improving the sound insulation of the building envelope; and

- Using agreements to manage noise."

6.7.93. Due to the design proposals and the existing and proposed noise sources only the last two points have been given further consideration as possible mitigation options.

- Design considerations in relation to the internal layout of residential rooms including placing sensitive habitable rooms away from the noisiest façade and use less sensitive spaces such as kitchens, dining areas and circulation spaces on these facades;
- Windows - a reduction in the number of windows on a façade, a reduced surface area of glazing, and considerate positioning of windows to habitable rooms;
- Incorporate façade components having appropriate acoustic properties such that acceptable internal noise levels can be achieved; and
- Ventilation - use acoustically treated inlets and outlets, consider location of inlets and outlets on facades away from the external noise source.

6.7.94. Notwithstanding the above recommendations, a worst case mitigation assessment has been undertaken in order to determine the acoustic properties of façade components that are expected to be required in order to achieve the adopted internal noise criteria within worst affected receptors closest to the existing and future proposed noise sources.

6.7.95. At this planning application stage it has been considered appropriate to apply the 'simple calculation' method given in BS8233, with single figure values being used in lieu of a full spectral noise break-in analysis.

6.7.96. This methodology does, however, potentially underestimate the sound insulation performance requirement by up to 5 dB. Therefore, the sound insulation performance figures cautiously include an allowance of 5 dB.

6.7.97. A summary of the internal noise criteria, the predicted free-field noise levels, and the required sound insulation values are set out in **Table 6.32.**

Table 6.32 - Required sound insulation performance for residential dwellings at worst case development locations, dB(A)

Location	Period	Noise level (dBA)	Internal target noise level	Required sound reduction
North Façade of Tower - worst case floor	Day ($L_{Aeq,16hour}$)	63	35	33
	Night ($L_{Aeq, 8hour}$)	66	30	41
East Façade of Tower – worst case floor	Day ($L_{Aeq,16hour}$)	63	35	33
	Night ($L_{Aeq, 8hour}$)	59	30	34
South Façade of Tower – worst case floor	Day ($L_{Aeq,16hour}$)	62	35	32
	Night ($L_{Aeq, 8hour}$)	62	30	37
Boutique Hotel	Night (L_{AFmax})	77	45	37

6.7.98. This provides adequate information regarding the suitability of the design at this planning application stage, although the sound reduction performance of the façade should be investigated in more depth as part of the detailed design once precise layout design, façade constructions, room layouts and dimensions have been finalised. The initial calculations have been undertaken in order to determine the possible glazing components which may be required to ensure that the adopted internal noise level criteria can be achieved.

6.7.99. It is assumed that the glazing will be the acoustic weak link in the sound reduction performance of the façade.

6.7.100. British Standard 12354-3:2000 Building Acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound (BS12354-3) (**Ref 6.14**) sets out data relating to the typical noise reduction performance of different glazing systems. A selection of these performances is set out in **Table 6.33**.

Table 6.33 - Typical Sound Reduction Properties of Insulating Glass Units

Glass / Cavity Width / Glass (mm)	Sound reduction ($R_w - C_{tr}$ dB)
4/12/6	29
6/12/6	30
10/12/4	33
12.8/16/6	36
10/16/8.4	37
16.8/16/16.8	41

6.7.101. Comparing the sound insulation performance requirements in **Table 6.32** with the typical sound insulation performance values of those different glazing systems presented in **Table 6.33**, it can be seen that a double glazing system, such as 12.8/16/6 and 10/16/8.4 (glazing (mm) / air gap (mm) / glazing (mm)), would be sufficient in order to achieve the internal noise criteria within habitable rooms on the east and south façade of the tower respectively. For the north façade an enhanced glazing system such as 16.8/16/16.8 (glazing (mm) / air gap (mm) / glazing (mm)) or better, would be sufficient in order to achieve the internal noise criteria within habitable rooms.

6.7.102. The above calculations do not make any allowance for the incorporation of permanent ventilation to the rooms as it is anticipated that the hotel rooms and residential apartments will be mechanically ventilated.

6.7.103. The above mitigation assessment has been provided as a means of demonstrating how acceptable internal noise levels can be achieved within the proposed noise sensitive buildings (residential apartments and hotel). A more rigorous and detailed break-in assessment will be required as the detailed design stage progresses.

6.7.104. The results in **Table 6.34** are those based upon the noise levels from the proposed street level and rooftop public squares, expected on the worst case facade of the hotel during the daytime (07:00-23:00hrs) period and assessed to the low frequency noise level limits of 47 dB $L_{63eq,T}$ and 41 dB $L_{125eq,T}$.

Table 6.34: Predicted Low Frequency Sound Insulation Performance of the East Façade of the Hotel

Floor Level	Parameter	Octave Band Centre Frequency, Hz							
		63	125	250	500	1 k	2 k	4 k	8 k
Floor 7 - Hotel	Noise Egress from the lower and upper square (Occasional Music / Sports Events) dB	71.0	65.0	58.0	57.0	56.0	53.0	47.0	39.0
	Typical Sound Insulation of Glazing of 36 dB Rw + Ctr dB	26	26	29	38	45	45	56	50
	Low Frequency noise level limit at 63 Hz and 125 Hz dB	47	41	-	-	-	-	-	-
	Limit exceedance	-1	-2	-	-	-	-	-	-

6.7.105. Based upon the proposed glazing specifications in **Table 6.32** to **Table 6.33** the following noise limits are expected to be achieved within the development.

- Daytime (07:00-23:00) indoor ambient noise levels to not exceed 35 dB $L_{Aeq,16hr;}$
- Night-time (23:00-07:00) indoor ambient noise levels to not exceed 30 dB $L_{Aeq,8hr;}$

- Night-time (23:00-07:00) indoor maximum noise levels to typically not exceed 45 dB L_{Amax}; and
- Entertainment noise to not exceed the low frequency noise level limits of 47 dB $L_{63eq,T}$ and 41 dB $L_{125eq,T}$ at any time within the hotel rooms.

Residual effects

6.7.106. The above tables demonstrate that, assuming an alternative means of ventilation is provided to the north and south facades of the tower and the boutique hotel and that in acoustic terms, the weakest element within the façade construction is the glazing, the following residual effects are expected.

6.7.107. The sensitivity of the residents of the Proposed Scheme (hotel / residential) is considered to be high, and the magnitude of impact at the worst affected level is considered to be negligible for daytime and night-time periods. Therefore, there is likely to be a direct, permanent, long-term residual effect of **negligible** significance.

6.7.108. These predictions are based on assumptions at this stage and are provided as an indication only. It is anticipated that more detailed noise ingress calculations following the methodology in BS 8233 to determine suitable building envelope sound insulation properties will be completed as the Proposed Scheme advances through the design stages.

PREDICTED NOISE LEVELS ON THE PROPOSED EXTERNAL RESIDENTIAL BALCONIES AND EXTERNAL AMENITY GARDENS

6.7.109. In addition to considering the effects of the Proposed Scheme on existing and future noise sensitive receptor locations, an assessment has also been undertaken of the noise environment on the external amenity areas and any proposed balconies associated with the residential dwellings of the tower.

6.7.110. MCC have stated that noise levels on any balcony space should ideally not exceed 55 dB $L_{Aeq,16hr}$ during the daytime. However, BS8233:2014 states that higher noise levels may be acceptable and a compromise could be achieved between elevated noise levels in external amenity spaces and the convenience afforded by the location of the development in terms of its strategic setting in the city centre.

6.7.111. External amenity areas are proposed for the roof of Block A at the podium level and associated roof terraces of the staircase connecting Block A with Block B. Residential balconies are proposed at the 19th Floor Level of the Block A tower (Floor 1 of the Residential Apartments) and above. These are proposed to be located centrally at the east and west facades of the tower from floors 19 through to 25. Above this level the external terraces are proposed at each façade with the penthouse level at Floor 38 and above having a continuous external terrace.

6.7.112. Based upon the existing environmental noise levels in the area and future proposed entertainment noise, a daytime noise level of less than 55 dB $L_{Aeq,T}$ is predicted at the location of the rooftop public square of Block A with levels of less than 53 dB $L_{Aeq,T}$ predicted. The external amenity areas of the terraces leading up to the roof square of Block B also meet the daytime criteria with the exception of the proposed amenity space at the Level 8 terrace where a level of 58 dB $L_{Aeq,T}$ is predicted.

6.7.113. Based upon the existing environmental noise levels alone, the balconies associated with the residential apartments on the north, east and south facades would not comply with MCC's suggested criterion of 55 dB $L_{Aeq,T}$. Predictions suggest that this will be exceeded by up to 3dB at the worst case affected locations.

6.7.114. The daytime external criterion of 55 dB $L_{Aeq,T}$ is expected to be exceeded on the residential balconies on the north, east and south facades when the street level and rooftop public squares are in use. Predictions suggest that this will be exceeded by up to 8dB at the worst case affected location on the east façade.

6.7.115. The sensitivity of the receptors using the external public amenity areas of the Proposed Scheme is considered to be high, and the magnitude of impact prior to mitigation from both existing daytime sound levels and when the upper square is in 'typical use' is considered to be small. Therefore, there is likely to be a direct, permanent, long-term effect of **minor negative** significance.

6.7.116. The sensitivity of the residents of the Proposed Scheme (residential) at the balconies on the north, east, and south facade is considered to be high, and the magnitude of impact prior to mitigation, at the worst affected level from existing daytime sound level is considered to be large. Therefore, there is likely to be a direct, permanent, long-term effect of **major negative** significance.

6.7.117. The sensitivity of the residents of the Proposed Scheme (residential) at the balconies on the north, east and south facade is considered to be high, and the magnitude of impact prior to mitigation, at the worst affected level from the lower and upper square (roof terrace) during worst case use is considered to be large. Therefore, there is likely to be a direct, permanent, long-term effect of **major negative** significance.

6.7.118. The sensitivity of the residents of the Proposed Scheme (residential) at the balconies on the west facade is considered to be high, and the magnitude of impact prior to mitigation, at the worst affected level from both existing daytime sound and when the rooftop public square is in 'typical use' is considered to be negligible. Therefore, there is likely to be a direct, permanent, long-term effect of **negligible** significance.

Mitigation/Enhancement

6.7.119. Given that effects of **minor negative** significance are predicted in the external public areas within the roof garden of Block B the consideration of mitigation is not necessary.

6.7.120. BS8233 provides guidance on external amenity spaces such as balconies, roof gardens and terraces or areas where external space is limited. In these locations, where the space maybe used for drying washing, storing bicycles or growing plants, then noise limits should not normally apply. Larger balconies however, where the intended use is for relaxation, can be designed to achieve the 55 dB $L_{Aeq,16hr}$ criterion through careful building design and the use of screens and this can be considered at the later design stages.

6.7.121. The sound level reductions that these mitigation measures could offer cannot be quantified precisely. However, based on the principle that partial screening of a noise source from the receiver location can offer up to 5-6dB in attenuation, levels of 57dB $L_{Aeq,T}$ could be achieved at the north, east and south façade when the lower and upper square hosts occasional music / sports events.

6.7.122. In order to reduce the potential noise levels from the street level and rooftop public squares to the proposed residential apartment balconies, restrictions may need to be applied to its use such as hosting occasional music / sports events. Such restrictions will be provided for through an Operational Management Plan which will be discussed and agreed with MCC during the planning phase.

Residual effects

6.7.123. For the rooftop public square of Block B, given that the implementation of mitigation is not necessary predicted effects of **minor adverse** significance remain.

6.7.124. The sensitivity of the residents of the Proposed Scheme (residential) at the balconies on the north, east and south facade is considered to be high, and the magnitude of impact is considered to be medium, at the worst affected level from the existing ambient noise and when the street level and rooftop public squares hosts occasional music / sports events. Therefore, there is likely to be a direct, permanent, long-term effect of **moderate negative** significance.

6.8 LIMITATIONS AND ASSUMPTIONS

6.8.1. BS 5228 Parts 1 and 2 provide guidance on the measurement and prediction of construction noise and vibration. The BS 5228-1 calculation procedures allow accurate noise levels to be determined for various construction activities. However, the value of any such predictions is necessarily limited by the number of assumptions that have to be made regarding the number and type of plant to be utilised, their location and detailed operating arrangements. Some of this information will be clarified as the project design progresses and later when resources are mobilised, but other information (such as exactly where the plant operates and for how long) will remain uncertain, even after the works have commenced.

6.8.2. At this stage, detailed information on all the construction techniques and equipment is not available. Consequently it has not been possible to accurately calculate the noise and vibration associated with works / activities during construction. The approach to the assessment has therefore been to consider the potential effects based on a number of assumptions of likely on-site operations based on experience gained from other similar sites and information provided by the project team.

6.8.3. Consideration has been given to the use of rotary piling techniques in the construction of the foundations. This method is typically regarded as virtually vibration free. If other methods of piling such as impact piling are to be considered then further assessment may be required at a later stage. The consideration of Contiguous or Secant bored piling which is likely to take place at closer distances to the receptors has used worst case factors in the prediction methods.

6.8.4. The assessment of vibration from construction activities has been undertaken based on vibration levels associated with a small range of key ground borne vibration generative construction activities. It is possible that activities other than those presented may take place, whilst, similarly, some of those presented may not be applicable to the activities specific to the Site at the time of construction. The conclusions drawn from this assessment, however, provide an indication of the possible effects that could arise during the construction phase.

6.8.5. At this stage, detailed information on the noise sources associated with the fixed plant / goods delivery noise associated with the operational activities of the Proposed Scheme is not available. The approach has therefore been to set appropriate noise limits drawing on the results of the baseline noise survey, a number of assumptions based on information from other similar sites where appropriate and information provided by the project team. As the detailed design of the Proposed Scheme progresses and source noise level data becomes available, the operational phase noise assessment should be updated to ensure the potential noise impacts at existing and proposed noise sensitive receptors is minimised where possible.

6.8.6. The assessment of noise impact from the use of the public open space namely the street level and rooftop public squares has considered noise from raised voices and amplified music for a capacity of 1000 people. In addition an assessment has been made of the use of the space for music and sports events which could have the potential to generate higher levels of noise at the nearest noise sensitive aspects of the Proposed Scheme. However, due to insufficient detail at this early design stage assumptions have been made as to the noise levels and the location of the source within the public space. The assessment has considered noise from a PA system or music from a fixed point located centrally within the public space. Further detailed noise predictions may have to be undertaken at a later stage once the design becomes finalised, and the recommended mitigation in the form of façade acoustic design may have to be revisited.

6.8.7. The scope of the assessment has considered the existing noise sources in the vicinity of the site and the future proposed entertainment noise sources that will form a component part of the Proposed Scheme and the impacts upon the existing and future proposed noise sensitive receptors. Outline mitigation measures have been provided to protect existing and proposed noise sensitive receptors where appropriate. As the detailed design of the Proposed Scheme progresses it is expected that more detailed noise predictions will be undertaken and specific building design measures will be developed, to protect the future occupants and users of the Proposed Scheme from any noise generative activities and plant forming a part of the Proposed Scheme.

6.9 SUMMARY

6.9.1. This Chapter has considered the potential noise and vibration effects that could arise as a result of the Proposed Scheme, during both the construction and operational phases.

6.9.2. An environmental noise survey was carried out to establish the baseline noise levels present at locations representative of a sample of existing noise sensitive receptors and future noise sensitive aspects of the Proposed Scheme. The survey included long term continuous unattended measurements which were subject to periodic attendance during selected periods. The noise monitoring equipment was installed on the 5th November 2015 and collected in on the 12th November 2015. It was found that the noise environment present within the vicinity of the Site predominantly consists of road traffic noise on the local road network, fixed plant / delivery noise sources and entertainment noise associated with existing commercial premises surrounding the site.

6.9.3. Drawing upon the results of construction noise level predictions, undertaken in accordance with BS 5228-1, it has been identified that without consideration of mitigation measures, noise levels will be above the threshold of large magnitude of impact. A direct, temporary short to medium term effect of major negative significance has been predicted where the noise receptor is of a high sensitivity. With the implementation of the recommended mitigation measures in the form of erection of a perimeter site hoarding and application of relevant guidance for keeping noise and vibration levels during construction works to a minimum, either by management through a CEMP or similar, potential effects can be minimised. Therefore residual effects range from moderate to major negative significance.

6.9.4. The assessment of ground borne vibration arising from construction works has been undertaken drawing upon the guidance contained within BS 5228-2. For the construction operations that have been assessed, it is considered that without regard to appropriate mitigation measures, the magnitude of impact is considered to be medium at the nearby vibration sensitive receptors. The effect is therefore a direct, temporary short to medium term effect of moderate negative significance. It is expected that these effects will be occasional during the phases of construction when plant is likely to be in close proximity to the receptors. With the implementation of vibration monitoring and environmental management controls any potential effects can be minimised and residual effects no worse than **minor to moderate negative** significance are expected.

6.9.5. Entertainment sources associated with the Proposed Scheme, namely noise associated with streel level and rooftop public square have been assessed at the nearest existing noise sensitive receptors. When assessed to MCC's requirements for entertainment noise being 10 dB below the existing background sound level in each octave band at the facades of the existing noise sensitive receptors, and prior to secondary mitigation, direct, permanent, long-term effects of moderate to major significance have been predicted at the Radisson Blu Hotel. With the implementation of suitable screening to the rooftop public square residual effects of **minor negative** significance are expected.

6.9.6. An assessment of the entertainment noise sources associated with street level and rooftop public square have been assessed at the proposed noise sensitive aspects of the Proposed Scheme. When assessed to MCC's requirements for entertainment noise, the criteria were found to have been exceeded on some aspects and direct, permanent, long term effects of moderate to major negative significance were predicted on the worst case facade. Mitigation has been recommended in the form of the application of restrictions to the use of the street level and rooftop public square and that these will be specified through an Operational Management Plan which will be discussed and agreed with MCC at the planning phase. Therefore following mitigation, direct, permanent, long-term effects of minor negative significance have been predicted when assessed to MCC's criteria.

6.9.7. It has been proposed that the assessment should consider the internal design criteria for existing baseline noise levels as agreed with MCC during the consultation process. An assessment has, therefore, been made of the cumulative impact of existing noise sources and street level public square and roof terrace on the future proposed noise sensitive aspects of the Proposed Scheme.

6.9.8. Prior to the implementation of secondary mitigation measures and assuming standard thermal glazing and when assessed to the internal design criteria given in BS8233:2014, a direct, permanent, long-term effect of **minor negative** significance is predicted for the day-time and **major negative** significance for the night-time periods. Mitigation has been recommended in the form of an enhanced glazing specification to the residential aspects of the north, east and south façade of the tower. Effects not worse than negligible significance have been predicted assuming the minimum recommendations for glazing specifications are followed and an alternative ventilation and cooling strategy to that which solely relies upon openable windows other than for rapid purge ventilation.

6.9.9. The assessment of potential noise disturbance to the occupants of the offices within Block B identified effects of negligible significance prior to secondary mitigation when the street level and rooftop public squares are used to host occasional music / sport events. Further mitigation was not considered necessary

6.9.10. An assessment has been undertaken of the noise environment on the open public amenity spaces and the balconies of the proposed residential dwellings of the tower of Block A from the existing ambient noise and when lower ground and upper rooftop squares host occasional music/sport events. Noise levels have been compared to the design criteria for external amenity spaces provided in BS8233 and the criterion level of 55 dB $L_{Aeq,T}$ as stipulated by MCC. As a result of existing external noise levels during the daytime periods, direct, permanent, long-term effects of **major negative** significance have been predicted at the residential balconies of the Proposed Scheme. . When the rooftop public square is in use for events during the daytime periods the upper design criterion level of 55 dB $L_{Aeq,T}$ has been predicted to be exceeded at the residential balconies and effects of **major negative** significance have been predicted. Mitigation has been recommended in the form of careful design and use of screens to the balconies. Following mitigation effects not worse than moderate adverse significance have been predicted from the existing ambient noise levels and during events.

6.9.11. In order to reduce the potential noise levels from the street level and rooftop public squares to the proposed residential apartment balconies, restrictions may need to be applied to their use. The requirements will be specified by MCC during the planning phase.

Table 6.25: Summary of Effects Table for Noise and Vibration

Description of Effects	Receptor	Significance and Nature of Effects Prior to Mitigation / Enhancement	Summary of Mitigation / Enhancement	Significance and Nature of Effects Following Mitigation / Enhancement (Residual)
Construction Phase				
Disturbance to sensitive receptors from noise generated by on-site (non-traffic) construction activities	Old Nags Head day time Night time	●- T D ST/MT ●- T D ST/MT	Erection of solid perimeter site hoarding. Implementation of the environmental management controls will serve to minimise any potential effects to be implemented through the CEMP.	● - T D ST/MT ●- T D ST/MT
	Radisson Blu Hotel day time Night time	● - T D ST/MT ● - T D ST/MT		● - T D ST/MT ●● - T D ST/MT
Disturbance to sensitive receptors from vibration generated by on-site (non traffic) construction activities	Old Nags Head	● - T D ST/MT	Vibration generating plant should be used sparingly. Equipment should be started or stopped at least 30 metres away from any vibration sensitive receptors wherever. Where possible during the construction of the foundations, rotary piling techniques are adopted. Implementation of vibration monitoring and protocols.	● - T D ST/MT
Disturbance to sensitive receptors from vibration	201 Deansgate / Sir Ralph Abercromby Inn /	●● - T D ST/MT		● - T D ST/MT

generated by on-site (non traffic) construction activities	Friends' Meeting House			
Operational Phase				
Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the proposed fixed plant / goods delivery	Residential apartments at the façade of the Tower, the Old Nags Head and the hotels	●- P / D / LT	Design measures for fixed plant items, such as equipment selection, location of equipment, installation of attenuators or enclosure of equipment. Location and configuration of deliveries so that the total fixed plant and noise from deliveries do not exceed the Noise Rating Levels ($L_{r,Tr}$) dB (provided in **Table 6.14**), at the nearest noise sensitive receptors.	● P / D / LT
Disturbance to existing sensitive receptors and future proposed noise sensitive uses from proposed entertainment noise	Old Nags Head	● P / D / LT	N/A	● P / D / LT
	Radisson Blu Hotel	●● P / D / LT	Screening on southern extent of the upper square (roof terrace)	● P / D / LT
	East facade of the Tower and hotel	●●- P / D / LT	Application of appropriate noise limits and restrictions on the use of the upper square (roof terrace) by MCC.	● P / D / LT
Existing baseline noise levels in combination with the use of the public open spaces on future	Hotel / residential at the north, east and South facades of the Tower and	●- P / D / LT	Implementation of suitable glazing during the post planning detailed design. Glazing and ventilation specification provided to the north, east and south facades of the Tower to meet internal design criteria specified in BS8233: 2014.	● P / D / LT

proposed noise sensitive uses	the boutique hotel The offices of Block B	● P / D / LT	Implementation of mitigation not required for the offices of Block B	● P / D / LT
Predicted noise levels in public amenity areas and on the proposed external residential balconies	Users of the public open spaces at the roof garden Residents of the Proposed Scheme (residential) at the balconies on the Tower From existing ambient noise levels During Occasional Music / Sport Events on the lower and upper square (roof terrace)	●- P / D / LT ●- P / D / LT	Design with use of screening and restrictions applied to uses. Requirements to be implemented through an Operational Management Plan to be discussed and agreed with MCC during the planning phase.	● P / D / LT ●- P / D / LT

Key to table:

●Major significance, ●Moderate significance, ●Minor significance, ●Negligible significance

+ / - = Positive or Negative P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term

N/A = Not Applicable

6.10 REFERENCES

- **Ref. 6.1**; Control of Pollution Act 1974;
- **Ref. 6.2**; Environmental Protection Act 1990 (as amended);
- **Ref. 6.3**: Planning Practice Guidance (PPG) 2014;
- **Ref. 6.4**: BS 5228-1:2009+A1:2014 Noise and Vibration Control on Construction and Open Sites. Part 1: Noise (BS 5228-1);
- **Ref. 6.5**: BS 5228-2: 2009+A1:2014 Noise and Vibration Control on Construction and Open Sites. Part 2: Vibration (BS 5228-2);
- **Ref. 6.6**: BS 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound (BS 4142);
- **Ref. 6.7**: Manchester City Council (MCC) GD03 Public Protection Information for Developers Version: 1.01 (GD03);
- **Ref. 6.8**: Code of Practice on Environmental Noise Control at Concerts (The Pop Code);
- **Ref. 6.9**: BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Building (BS 8233);
- (**Ref. 6.10**): World Health Organisation (WHO):1999 Guidelines for Community Noise;
- (**Ref. 6.11**): ProPG: Planning and Noise, 2017 – Professional Practice Guidance on Planning and Noise – New Residential Development;
- (**Ref. 6.12**): TRL RR 246: 1990 Traffic Induced Vibration in Buildings (applicable to Heavy Goods Vehicle induced vibration);
- (**Ref. 6.13**): TRL Report 429: 2000 Ground borne Vibration Caused by Mechanical Construction Works (Applicable to Vibratory Rollers);
- (**Ref. 6.14):** International Standard ISO 9613-2: 1996 Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation (ISO 9613-2);
- (**Ref. 6.15**): Manchester City Council (MCC) Planning and Noise Technical Guidance 2015; and
- (**Ref. 6.16):** Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment (1993 and subsequent amendments).
- (**Ref. 6.17**): British Standard 12354-3:2000 Building Acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound (BS12354-3)

7

SOCIO-ECONOMICS

7 SOCIO-ECONOMICS

7.1 INTRODUCTION

7.1.1. This Chapter assesses the likely significant effects arising from the Proposed Scheme upon socio-economics. In particular, it considers employment opportunities and displacement of users of the synagogue during the construction phase. During the operational phase, effects in relation to employment opportunities generated by non-residential uses within the Proposed Scheme, improved community connectivity and the delivery of a high quality public realm and infrastructure are considered.

7.1.2. The Chapter describes the assessment methodology. the baseline conditions at the Site and in the surrounding area; any design assumptions adopted for the purposes of the assessment; a summary of the likely significant effects taking into account national legislation; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been employed.

7.1.3. This Chapter is necessarily technical in nature and contains terminology relating to socio-economics. As such, a glossary has been provided within **Appendix 7.1** to define and explain the terminology used in this Chapter.

7.1.4. This Chapter (and its associated appendices) is not intended to be read as a stand-alone assessment and reference should be made to the introductory and explanatory Chapters of this ES **(Chapters 1 – 5)**, and **Chapter 13: Cumulative Effects**.

7.1.5. Reference should also be made to the Regeneration Statement prepared by Deloitte, a Core Document submitted to support the planning application. Whilst this Chapter focuses on the likely significant environmental effects due to the Proposed Scheme, the Regeneration Statement frames the Proposed Scheme within the economic and strategic context of the Manchester city region.

7.2 LEGISLATION, POLICY AND GUIDANCE

LEGISLATIVE FRAMEWORK

7.2.1. There are no legislative requirements in relation to the assessment of socio-economic effects and the assessment is guided by the UK Government's planning policy and other best practice guidance.

GUIDANCE

7.2.2. The following guidance documents have been used during the preparation of this Chapter:

- Homes and Communities Agency (HCA) (2014) 'Additionality Guide: A standard approach to assessing the additional impact of interventions, Method Statement', 4th Edition (**Ref. 7.1**); and
- HCA (2015) Employment Densities Guidelines 3rd Edition (**Ref. 7.2**).

7.2.3. In addition, the Chapter draws upon the principles set out in the following guidance documents:

- Highways England (1993) Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects (**Ref. 7.3**); and
- Highways England (unpublished) DMRB Volume 11 Section 3 Peoples and Communities Interim Advice Note (**Ref. 7.4**).

7.3 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

7.3.1. A meeting with MCC, David Roscoe (City Centre Planning Team) confirmed that the City Council's view was that socio-economic effects generated by the Proposed Scheme were likely to be significant. However, no further advice regarding the scope of the assessment from MCC has been provided.

SCOPE OF THE ASSESSMENT

7.3.2. An EIA Scoping Report was submitted to MCC on February 18th 2016 as presented in **Appendix 5.1**. This section provides an update on the scope of the assessment and re-iterates the evidence base for insignificant effects following further iterative assessment since February 18th 2016; in line with the Scoping Note submitted for the succeeding iteration of the Proposed Scheme.

Insignificant Effects

7.3.3. The following effects have been considered insignificant and have therefore not been considered in this assessment, or have been assessed elsewhere, within the ES:

- The potential for disturbance and a reduction in amenity for residents during construction will be considered in other Chapters, e.g. **Chapter 6: Noise and Vibration**, **Chapter 8: Townscape and Visual**; and **Appendix 2.4: Air Quality Assessment**;
- Effects on human health are considered within **Chapter 6: Noise and Vibration** and **Appendix 2.4: Air Quality Assessment**;
- Whilst certain elements of the construction phase will require the employment of non-local specialist contractors, it is assumed that the majority of employment opportunities will be made available to economically active individuals that reside in the area local to the Site (e.g. MCC or Greater Manchester). Therefore, the anticipated increase in demand for educational facilities, healthcare services and accommodation local to the Site is not considered to be significant during the construction phase and will not be considered further within this Chapter;
- Whilst temporary and partial closures of the streets surrounding the Site may be required for health and safety purposes and for the storage of materials, site compounds and for access purposes during the construction phase, there is not anticipated to be a significant reduction in footfall and associated disruption to local businesses in the immediately vicinity of the Site. Therefore, disruption to local businesses is not considered further in this Chapter;
- Given the residential element of the Proposed Scheme, there is the potential for additional children of school age to be resident in the area as a result of the Proposed Scheme. No calculations were publicly available from MCC for the anticipated child yield from the type of development proposed, so the child yield calculation methodology published by Salford City Council (SCC) was used given the proximity of the Site to the Salford area. Based on the child yield calculations available from SCC, new build apartments are expected to have a negligible child yield of 0.01 per apartment (**Ref. 7.5**). Based on this yield, the Proposed Scheme is likely to generate an additional 2 children. However, the Proposed Scheme will be providing larger units than is typical for new build developments. Therefore, the SCC methodology may not be appropriate. However, no calculations were publicly available from MCC for the anticipated child yield from the type of development proposed. The 'School Place Planning and Admissions' report notes forecasts through demographic modelling growth in the city's school age population. However, capital funding has been committed to the creation of additional places and it is expected that the growth of educational facilities to meet place demand will continue for the foreseeable future (**Ref. 7.6**). As such the demand for schools from the Proposed Scheme will be minimal (e.g. 2 places) or if greater number (e.g. 25), the need will be met through wider initiatives. As such, increase in demand on educational facilities will not be considered further within this Chapter;
- There are 16 General Practitioner (GP) surgeries located within a 2km radius of the Site which are all accepting new patients (**Ref. 7.7**). Based on publicly available information, the ratio of doctors to patients is lower than the target ratio of 1:1,800 at seven of the GPs and higher at nine (**Ref. 7.7**). However, overall, the ratio of doctors to patients registered at GPs within 2km of the Site is lower than 1:1,800. Furthermore, the total number of residents (assumed to be 444 on a multiplier of 2.35 individuals per residential unit) represents approximately 3.3% of the total patients currently registered with GPs within 2km. There are 17 dentists registered within 2km of the Site, two of which are currently accepting new patients. Therefore, given the existing capacity and limited additional demand on healthcare services, no likely significant effects in terms of local healthcare services are anticipated. Therefore, an increase in the demand for healthcare services will not be considered further within this Chapter;
- As of 2015, the existing resident population within MCC was 530,300. The estimated average household size within Manchester in 2011 was 2.35 individuals per household. As such, the anticipated number of households is 225,660. The average household spend per week on all household goods and services in 2015 was £531.30. As such, the total anticipated spend in MCC is £6,232,786,560 per year. Based on the quantum of residential units proposed as part of the Proposed Scheme, the additional spend in the local economy generated by the Proposed Scheme is over £5,221,616. As an overall proportion of the total spend in MCC, this equates to 0.07%. As such, an increase in household spending associated with the

residents of the Proposed Scheme is not considered to be significant and will not be considered further within this Chapter;

- Potential for vandalism, burglary and theft of site equipment and the local community's perception of crime is not considered significant as it is assumed that site security arrangements for the Proposed Scheme will be in line with the requirements set out within the Construction (Design and Management) Regulations 2015 (**Ref. 7.8**). Once completed, the Proposed Scheme will deliver an active frontage to most elevations with principal entrances to the buildings for residents, customers and staff located in obvious positions and readily apparent from the public realm. It is anticipated that the Proposed Scheme will be designed to incorporate the 'Secured by Design' principles (**Ref. 7.9**) and liaison has been undertaken with the Police Architectural Liaison Officer. The Crime Impact Statement is submitted with the planning application and reports that in principle, the Police are satisfied that the Proposed Scheme has designed out the potential for crime to an acceptable level. Therefore, effects in relation to crime are not considered further within this Chapter;
- The Sir Ralph Abercromby Public House will be retained as part of the Proposed Scheme. Therefore, there will not be a displacement of users and this will not be considered further within this Chapter; and
- Consideration of the effects on existing heritage character is presented within **Chapter 9: Built Heritage**.

Likely Significant Effects

7.3.4. The following likely significant effects will be assessed:

Construction Phase

- Direct employment opportunities for the local population;
- Indirect and induced employment associated with spending in the local economy by contractors and contracts placed with suppliers; and
- Displacement of users of the synagogue.

Operational Phase

- Direct employment opportunities for the local population;
- Indirect and induced employment associated with spending in the local economy by employees and contracts placed with suppliers and contractors;
- Delivery of the high quality public realm and new infrastructure; and
- Improved community connectivity within and around the Site.

EXTENT OF THE STUDY AREA

7.3.5. The Site is located within the administrative area of MCC. As such, it is assumed that the majority of the jobs generated by the Proposed Scheme are likely to be filled by individuals within this local authority area. As such, the local study area has been set as the MCC local authority area.

7.3.6. Given the scale of the Proposed Scheme, economic linkages and travel to work patterns, it is anticipated that the employment effects will extend across the Greater Manchester area as the area from which the Proposed Scheme would draw the majority of its workforce. Therefore, the 'regional' Study Area has been set as Greater Manchester. This area incorporates MCC's administrative area alongside Bolton, Bury, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan.

7.3.7. Statistics for North West Region, England / Great Britain / UK have been provided for context but are not utilised within the assessment.

7.3.8. The study area for changes to the delivery of new public realm and community connectivity focuses on users of the Site and immediate vicinity (up to c. 200m from the Site boundary). Due to the nature of the changes, effects are only considered likely to be significant within this area.

METHOD OF BASELINE DATA COLLATION

Desk Study

7.3.9. A desk study has been undertaken which included a review of available baseline information to determine the baseline conditions in the Study Areas. The following data sources have been reviewed:

- Office for National Statistics (ONS) NOMIS (**Ref. 7.10**);
- Indices of Multiple Deprivation (**Ref. 7.11**);
- MCC State of the City Report: 2015 (**Ref. 7.12**);

- Make Regeneration Framework (**Ref. 7.13**); and
- MCC Open Space Assessment (**Ref. 7.14**).

Site Visit

7.3.10. A Site visit was undertaken in November 2015 to investigate socio-economic receptors and connectivity through the Site. The information gathered through this Site visit has informed this assessment.

ASSESSMENT METHODOLOGY

Construction Phase

Direct, indirect and induced employment opportunities for local population

7.3.11. The assessment of direct employment opportunities has been undertaken through numerical calculations using data sources which are publicly available.

7.3.12. In order to estimate the number of jobs that would be created during the construction stage, the total cost of the Proposed Scheme has been divided by the Gross Value Added (GVA) for construction workers in the area. The average GVA per construction worker for Manchester is £80,000.

7.3.13. The anticipated total construction cost (including demolition) of the Proposed Scheme is £135,000,000 over three years and seven months (43 months in total). Based on this, it is estimated that 1,688 gross job years would be created over the construction period. Based on this, it is estimated that construction of the Proposed Scheme will create 456 direct FTE jobs. This figure has then been evaluated against the total number of employees in Sector F (Construction) within the local and regional Study Areas to determine the magnitude of change.

7.3.14. Generation of indirect employment opportunities associated with the construction phase have been calculated based on 60% of gross direct employment. The induced employment opportunities have been estimated based on 20% of indirect jobs. Therefore, based on 456 direct FTE roles/jobs, there is anticipated to be 329 indirect and induced FTE roles/jobs associated with the construction phase of the Proposed Scheme. These figures have then been evaluated against the total number of employees in all industry sectors within the local and regional Study Areas to determine the magnitude of change.

Displacement of users of the synagogue

7.3.15. The displacement of users of the synagogue is considered qualitatively using the principles set out in DMRB Part 8 (**Ref. 7.3**) and emerging Peoples and Communities guidance (**Ref. 7.4**). The focus of the assessment is on the displacement of the users of this facility and the alternatives present within the surrounding area.

Operational Phase

7.3.16. The operational employment effects are calculated based on the number of full time jobs that would be provided as a result of the Proposed Scheme. In order to calculate the net employment effects during the operational phase of the Proposed Scheme, this assessment uses the methodology set out in the HCA Employment Density Guidelines (**Ref. 7.2**). The method consists of assessing the net additional effects, i.e. after accounting for leakage, displacement, substitution and multiplier effects which are defined in **Appendix 7.1.**

7.3.17. The factors used in the assessment for these effects are outlined in **Table 7.1**.

Table 7.1: Additionality Factors

Factor	Applied %	Rationale
Leakage	25%	A reasonably high proportion of the benefits will be retained within the target area / target group.
Displacement	25%	There are expected to be some displacement effects, although only to a limited extent
Substitution	0%	No substitution is anticipated to take place.

7.3.18. These figures have then been evaluated against the total number of employees in the industry sectors which are likely to occupy the Proposed Scheme e.g. services sector excluding G and H (Whole and Retail / Transport and Storage) i.e. I, J, K, L, M, N, O, P, Q, R, S (**Ref 7.9**). These are then compared against the existing number of employees within these industry sectors within the local and regional Study Areas to determine the magnitude of change.

7.3.19. The calculation of indirect and induced employment opportunities during the operational phase is based on the Additionality Guide (**Ref. 7.1**). Given the nature of the Proposed Scheme, it is anticipated that the multiplier ratios considered to be the most appropriate is 1:1.5 for direct to indirect and induced employment opportunities at the local level (MCC) and the regional level (Greater Manchester). These figures have then been evaluated against the total number of employees in all industry sectors within the local and regional Study Areas to determine the magnitude of change.

Delivery of the high quality public realm and new infrastructure

7.3.20. The qualitative assessment of delivery of high quality public realm and new infrastructure has been undertaken in accordance with the principles set out in DMRB Part 8 (**Ref. 7.3**) and emerging Peoples and Communities guidance (**Ref. 7.4**). The focus of the assessment is on the delivery of new high quality public realm / spaces as part of the Proposed Scheme.

Improved community connectivity within and around the Site

7.3.21. The assessment of connectivity has been undertaken in accordance with the principles set out in DMRB Part 8 (**Ref. 7.3**) and emerging Peoples and Communities guidance (**Ref. 7.3**). During the operational stage, the improved connectivity within the immediate area of the Site due to the Proposed Scheme is assessed qualitatively based on anticipated reduction in journey lengths and ability of local residents / visitors to move within and around the Site.

SIGNIFICANCE CRITERIA

7.3.22. The assessment of potential effects as a result of the Proposed Scheme, has taken into account both the construction and operational phases. The construction phase includes enabling works, demolition, earthworks and construction activities as set out in **Chapter 3 - Description of the Proposed Scheme**. The significance level attributed to each effect has been assessed based on the magnitude of change due to the Proposed Scheme and the sensitivity of the affected receptor, as well as a number of other factors that are outlined in more detail in **Chapter 5 - Approach to EIA**. The sensitivity of the affected receptor is assessed on a scale of high, medium, low and negligible and the magnitude of change is assessed on a scale of large, medium, small and negligible (as shown in **Chapter 5: Approach to EIA**).

7.3.23. The overall significance of an effect has been determined by evaluating the magnitude of change in conjunction with:

- The number of receptors affected, which will consider the scale of an effect (i.e. whether it is local or regional);
- The reversibility and duration of the effect;
- The type and sensitivity of the receptor affected; and
- The type of effect.

EFFECT SIGNIFICANCE

7.3.24. The following terms have been used to define the significance of the effects identified:

- **Major effect**: where the Proposed Scheme could be expected to have a considerable effect (either positive or negative) on socio-economic receptors;
- **Moderate effect**: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on socio-economic receptors;
- **Minor effect**: where the Proposed Scheme is expected to result in a small, barely noticeable effect (either positive or negative) on socio-economic receptors; and

- **Negligible**: where no discernible effect is expected as a result of the Proposed Scheme on socio-economic receptors.

7.4 BASELINE CONDITIONS

POPULATION

7.4.1. Data from NOMIS (**Ref. 7.10**) shows that the resident population of MCC was estimated to be 530,300 in 2015. The population of Greater Manchester was 2,756,200; North West region was 7,173,800; and Great Britain was 63,258,400 in 2015.

7.4.2. The estimated population aged 16-64 as a percentage of the total resident population in 2015 in MCC, Greater Manchester, North West Region and Great Britain is shown in **Table 7.2**.

Table 7.2: Population Aged 16-64 (% of the resident population) (2015)

MCC	Greater Manchester	North West	Great Britain
70.6%	64.2%	63.0%	63.3%

Source: ONS, NOMIS (**Ref. 7.10**).

7.4.3. **Table 7.2** shows that there is a higher proportion of the population aged 16-64 in MCC (70.6%) compared with the average across Greater Manchester (64.2%), North West (63.0%) and Great Britain (63.3%).

DEPRIVATION

7.4.4. The Indices of Multiple Deprivation (**Ref. 7.11**) uses a combination of information relating to income, employment, health deprivation and disability, education, skills and training, barriers to housing, crime and living environment to create an overall score of deprivation. As a lower score indicates greater deprivation; the least deprived area is indicated by a rank of 326 and the most deprived area is indicated by a rank of 1.

7.4.5. The Indices of Multiple Deprivation 2015 identified that MCC was the fifth most deprived local authority in England based on the rank of average scores (**Ref. 7.11**). As such, MCC is classified as one of the 10 most deprived local authorities in England. Within Manchester, 40.8% of Lower Super Output Areas (LSOAs) are within the 10% most deprived LSOAs within England. This is a significant relative improvement from 2012, where 45.6% were in the most deprived 10% (**Ref. 7.10**).

EMPLOYMENT AND ECONOMY

7.4.6. Manchester is the leading professional and business services centre outside of London. The City is also the regional centre of employment and industry with diverse sectors and range of occupations with Manchester International Airport providing excellent global connectivity for business and leisure visitors. The increased global presence of Manchester as a visitor destination is reflected in a 26% increase in international visits since 2006, with 1.152 million international visitors in 2015 (**Ref. 7.12**). The predominant sectors include financial and business services with engineering, education, retail, tourism, sport and cultural related industries also significant employers and drivers of the economy. Further key sectors of employment include creative industries and the knowledge economy. Businesses are concentrated in Manchester City Centre (**Ref. 7.12**).

7.4.7. The proportion of the resident population aged 16-64 classified as 'economically active – in employment' between January 2015 – December 2015 was lower in MCC (62.8%) compared to the averages across Greater Manchester (70.2%), North West region (71.2%) and Great Britain (73.6%) levels (**Ref. 7.10**).

7.4.8. The NOMIS Job Densities Report (**Ref. 7.10**), is available on a Local Authority-wide and sub-regional level and indicates the availability of employment and labour demand. The job density levels in MCC (i.e. the ratio of jobs available divided by the resident population aged between 16 and 64) as of 2014 are substantially higher (1.05) compared with the regional (0.78) and national levels (0.83), indicating greater availability of employment and labour demand.

7.4.9. The Site is currently occupied by the Sir Ralph Abercromby Inn and the Manchester Reform Synagogue, both of which are in use. It is understood that there are ten employees associated with these existing uses. The Bootle Street Police station is no longer in use and, as such, there is no employment associated with this building.

7.4.10. As identified by NOMIS data (**Ref. 7.10**), the total jobs in MCC were 349,000 and in Greater Manchester were 1,213,000 in 2015. **Table 7.3** shows the proportion of total employees working in each industry sector in MCC, Greater Manchester, the North West and Great Britain.

Table 7.3: Proportion of Total Employees in each Industry Sector (2015)

Industry Sector	MCC	Greater Manchester	North West	Great Britain
Primary Services (A-B Agriculture and Mining)	0.00%	0.01%	0.0%	0.2%
Energy and Water (D-E)	0.3%	1.15%	1.1%	1.1%
Manufacturing (C)	3.4%	13.97%	9.7%	8.3%
Construction (F)	1.7%	3.88%	4.4%	4.6%
Services (G-S)	94.0%	80.98%	84.9%	85.8%
Wholesale and Retail, Including Motor Trades (G)	12.6%	15.36%	16.5%	15.8%
Transport and Storage (H)	6.9%	4.64%	4.7%	4.7%
Accommodation and Food Services (I)	8.6%	5.97%	7.4%	7.2%
Information and Communication (J)	4.9%	3.82%	3.3%	4.2%
Financial and Other Business Services (K-N)	29.5%	22.05%	20.4%	22.6%
Public Admin, Education and Health (O-Q)	27.8%	25.12%	28.2%	26.9%
Other Services (R-S)	3.7%	4.02%	4.4%	4.4%

Source: ONS, NOMIS (**Ref. 7.10**).

7.4.11. **Table 7.3** shows the dominant industry sector is Services (Sectors G-S), with 94.0% of jobs in MCC. This is substantially higher than the average across the North West (84.9%) and Great Britain (85.8%). The largest sub-sectors are Financial and Other Business Services (Sectors K-N) and Public Admin, Education and Health (Sectors O-Q), which combined account for 57.3% of all jobs in MCC. This compares with 48.6% across the North West region and 49.5% across Great Britain. Conversely, there are a lower proportion of jobs within the Wholesale and Retail (Sector G) in the region (16.5%) and nationally (15.8%) compared with MCC (12.6%). There is also a lower proportion of jobs in Construction (Sector F) in MCC (1.7%) compared with the regional (4.4%) and national averages (4.6%).

LAND USES AND URBAN CHARACTER

7.4.12. The Site is currently occupied by the following land uses:

- The Bootle Street City Police headquarters, which were officially opened in July 1937, and closed fully in 2014;
- The Sir Ralph Abercromby public house, which is thought to have been constructed during the early decades of the 19th century and used as a public house since this time;
- The Jackson's Row Reform Synagogue, which was opened in November 1953 and is currently still in use; and
- Car parking facilities.

7.4.13. The Site is bounded by existing buildings to the west, Southmill Street to the east, Jackson's Row to the north and Bootle Street to the South which provides both vehicular and pedestrian access. The predominant land uses surrounding the Site are a mixture of residential, commercial and leisure uses within the areas of Spinningfields, Deansgate and Albert Square.

7.4.14. The Site and immediate vicinity is dominated by the character of existing 19th / 20th century buildings. The Site is situated adjacent to areas of varying characters and architectural styles and the area has not been built comprehensively (**Ref. 7.13**). The quality of these varies widely but does include some individual buildings of high quality. There are a number of designated and non-designated heritage assets in the surrounding area, including Deansgate / Peter Street, Albert Square and St. Peter's Square Conservation Areas and Grade I Listed Manchester Town Hall. Further details regarding heritage assets are provided in Chapter 9 – Built Heritage.

7.4.15. Due to the character of the land uses present within and immediately surrounding the area, the Site lacks a sense of place which discourages footfall. In addition, the existing pedestrian amenities do not reflect 21st century users and their needs for circulation and public realm (**Ref. 7.13**). There are a limited number of active frontages within the streets that define the Site edges. This further highlights these routes as backstreets with low levels of amenity value.

7.4.16. There are a number of open spaces within the City Centre although the Site and immediate surrounding area is currently devoid of publicly accessible open space. The existing areas of open space in the city centre are noted in **Table 7.4.**

Table 7.4: Open Green Spaces within Manchester City Centre

Name	Type	Distance from Site boundary*	Direction
Piccadilly Gardens	Amenity green space	570m	North-east
St. Johns Gardens	Local park	260m	West
Parsonage Gardens	Local park	370m	North
Sackville Gardens	Local park	675m	East
Hardman Square	Amenity green space	235m	West
New Quay Street	Amenity green space	465m	West
Cathedral Gardens	Amenity green space	760m	North
Castlefield Urban Heritage Park	Amenity green space	425m	South-west
Water Street*	Amenity green space	805m	South-west
Dawson Street	Amenity green space	980m	South-west
Vimto Park	Amenity green space	820m	South-east
University of Manchester - North Campus**	Amenity green space	960m	South-east

Source: MCC, Open Space Assessment (**Ref. 7.14**)

Notes to **Table 7.4**

* Approximate distances based on nearest edge of open space resource

** Unnamed green spaces have been considered together as one.

7.4.17. In addition, there are public open spaces around the canal basins and alongside waterways, including the River Irwell, River Medlock and the Rochdale Canal. There are also areas of public realm at Albert Square (approximately 70m to the north-east), St. Peters Square (approximately 170m to the south-east), Lincoln Square (approximately 80m north), Great Northern Square (approximately 55m south west), Deansgate Square (approximately 100m north west), St. Ann's Square (approximately 345m to the north) and Exchange Square (approximately 500m to the north).

7.4.18. The influx of workers, visitors and tourists places pressure on public realm and recreational open space resources. Given the pressure from the population and visitors, tranquil places such as parks and squares are particularly valued.

7.4.19. The 'City Wide Open Spaces, Sport & Recreation Study' (**Ref. 7.14**) identified that the existing provision of city parks, local parks, children's play area, provision for young people and outdoor sports facilities does not meet the minimum standards set by MCC. However, a surplus of amenity green spaces (sufficient to accommodate an additional 1,052 residents) was noted. Whilst there is a quantitative shortfall for certain types of open space, accessibility mapping indicates that the majority of areas within the City Centre are within a 10 minute walk of such resources in surrounding neighbourhoods, meaning there is a good distribution of these facilities for residents, workers and visitors to use. In addition, the quality of open spaces is relatively high, with the average score of 84%.

CONNECTIVITY

7.4.20. The Site is in close proximity to the primary arterial north-south pedestrian routes, including Deansgate and Cross Street, and west-east routes via Oxford Road / Quay Street and John Dalton Street / Bridge Street. The Site has good links to the national motorway network, including the M56 (via the A5103) and M62 (via the A57 / M602).

7.4.21. The Site is within 800m of both Oxford Road and Deansgate railway stations. It is slightly further than 800m from the Site to Salford Central, Victoria and Piccadilly railway stations. These stations offer connections across the national train network.

7.4.22. The nearest Metrolink Stop is St. Peters Square, approximately 340m walking distance to the east of the Site boundary. Due to the existing connectivity on the Metrolink network, the Site is considered to be highly accessible by light rail to large areas of Greater Manchester.

7.4.23. There are a number of bus services / stops within 400m of the Site on A56 Deansgate, John Dalton Street and A6042 Albert Square. There is also a free Metroshuttle bus service, with all three routes stopping within 120m of the Site. These routes connect to Deansgate, Castlefield and Piccadilly Railway Station.

7.4.24. The Site is also surrounded by key pedestrian routes which follow the existing 'urban grid', including Deansgate / Spinningfields and Cross Street / Albert Square / St Peter's Square. Generally the surrounding pedestrian footways in the vicinity of the Site are well maintained and are observed to be in good condition. However, there are relatively poor provision for pedestrians (due to narrow footways), particularly along Bootle Street. The level of footfall immediately surrounding the Site is low, particularly in light of its City Centre location. This is due to the existing land uses and the orientation of the buildings on-site, which form an impermeable 'block' (**Ref. 7.12**).

FUTURE BASELINE

7.4.25. The forecasts produced by Greater Manchester Economic Forecasting Model predict that 110,000 additional jobs will be created across the area by 2024 (compared with the 2014 baseline). These higher levels of growth are predicted to be concentrated within MCC, with the area surrounding the Site expected to experience a continued increase in employment in the absence of the Proposed Scheme.

7.4.26. In the absence of the Proposed Scheme, there is not anticipated to be any significant changes to the existing land uses within the Site. The Sir Ralph Abercromby Inn Public House and Manchester Reform Synagogue will continue to be used and the Bootle Street Police Station would remain vacant.

7.4.27. In the absence of improvements to the public realm and connectivity through the Site, this will maintain existing issues with capacity of open space / public realm and connectivity between other key regeneration areas within Manchester City Centre.

7.5 SENSITIVE RECEPTORS

7.5.1. The following are the sensitive receptors which have been assessed:

- Local economic receptors, i.e. residents of working age and companies in the local area; and
- Local community receptors, i.e. users of the synagogue as well as those travelling within and using the public realm.

7.6 RELEVANT ELEMENTS OF THE PROPOSED SCHEME AND ESTABLISHING THE PRE-MITIGATION SCENARIO

CONSTRUCTION PHASE

7.6.1. During the construction phase, it is estimated that there will be a maximum of 456 people working on the Site at one time during the peak construction periods.

7.6.2. The Synagogue will be temporarily relocated during the construction period. It is assumed that the temporary facility will be available prior to demolition of the existing facilities and will be available until the new permanent Synagogue is operational. A legal agreement is in place to relocate the synagogue to a facility adjacent to the Proposed Scheme for the period of the construction works.

OPERATIONAL PHASE

7.6.3. The Proposed Scheme will incorporate two new public areas; lower street level public square, and an upper rooftop square. Lift access will lead from Jackson's Row up to the rooftop square. Both squares will be partially fronted by active frontages with food and beverage uses.

7.6.4. The Proposed Scheme will also provide new north south connections through the Site for the public.

7.7 ASSESSMENT OF EFFECTS, MITIGATION AND RESIDUAL EFFECTS

CONSTRUCTION PHASE

Direct employment opportunities for local population

7.7.1. During the construction phase, the Proposed Scheme will generate direct employment opportunities for the local population, employed in Construction (Sector F). The construction activities for the Proposed Scheme will take place over a three year, 7 month construction period (43 months). It is also assumed that direct employment opportunities associated with the Proposed Scheme would be made available to the local workforce where possible, although the installation of specialist plant may not be able to be completed by typical or local construction workforces. For the purposes of this assessment, these jobs are assumed to be created both at the local level (MCC) and the regional level (Greater Manchester).

7.7.2. As outlined in Paragraph 7.3.13, over a three year, 7 month construction period, the Proposed Scheme would create 456 direct FTE jobs. The total number of employee jobs within MCC was 349,000 as of 2015. Given the individuals employed in Sector F account for 1.7% of these jobs, this equates to approximately 6,000 jobs. Based on the anticipated number of 456 direct FTE jobs created, this would represent 7.6% of the total employee jobs in Sector F in MCC. As such, the overall magnitude of change is considered to be large due to an anticipated average increase of 5% > compared with the existing workforce employed in the relevant industry sectors.

7.7.3. The sensitivity of economic receptors within the local study area is considered to be high, given the levels of unemployment and deprivation within MCC. The magnitude of change, prior to mitigation, is large. Therefore, there is likely to be a direct, temporary, short to medium-term effect on economic receptors within the local study area of major positive significance prior to the implementation of mitigation measures.

7.7.4. The total number of employee jobs within Greater Manchester was 1,213,000 as of 2015. Given the individuals employed in Sector F account for 3.88% of these jobs, this equates to approximately 47,064 jobs. Based on the anticipated number of 456 direct FTE jobs created, this would represent a maximum of 0.96% of the total employee jobs in Sector F in Greater Manchester. As such, the overall magnitude of change is considered to be small due to an increase of < 1% compared with the existing workforce employed in the relevant industry sectors.

7.7.5. The sensitivity of economic receptors within the regional study area is considered to be medium, given the levels of unemployment and deprivation across the Greater Manchester area. The magnitude of change, prior to mitigation, is considered to be small. Therefore, there is likely to be a direct, temporary, short to medium-term effect on economic receptors within the regional study area of minor to moderate positive significance, prior to the implementation of mitigation measures.

Mitigation / enhancement

7.7.6. The effect of the Proposed Scheme in terms of employment generation will be positive. Therefore no mitigation measures are required.

7.7.6.1 Residual effects

7.7.7. The sensitivity of economic receptors within the local study area is high and the magnitude of change remains large. Therefore, there is likely to be a direct, temporary, short-term residual effect on economic receptors within local study area of major positive significance following the implementation of mitigation measures.

7.7.8. The sensitivity of economic receptors within the regional study area is medium and the magnitude of change remains medium. Therefore, there is likely to be a direct, temporary, short-term residual effect on economic receptors within the regional study area of minor to moderate positive significance following the implementation of mitigation measures.

Indirect and induced employment associated with spending in the local economy by contractors and contracts placed with suppliers

7.7.9. Activities associated with construction will lead to an increase in spending within the local economy by contractors. Such multiplier effects are anticipated in terms of the sourcing of local supplies (indirect and induced employment across wider supply chains). In addition, there is anticipated to be an increase in local spend by on-site workers within and outside their working hours.

7.7.10. Based on the estimated number of 456 direct FTE jobs created during construction, there is estimated to be an additional 329 indirect and induced FTE employment opportunities, which would account for 0.09% of total jobs in the local study area. The overall magnitude of change remains small due to an increase of <1% compared with the existing workforce employed in the relevant industry sectors.

7.7.11. The sensitivity of economic receptors within the local study area is considered to be high given the levels of unemployment and deprivation within MCC. The magnitude of change, prior to mitigation, is considered to be small. Therefore, there is likely to be an indirect, temporary, short to medium-term effect on economic receptors within the local study area of moderate positive significance prior to the implementation of mitigation measures.

7.7.12. There would be 329 indirect and induced FTE employment opportunities associated with construction phase, or 0.03% of total jobs in the regional Study Area. The overall magnitude of change is small due to an increase of <1% compared with the existing workforce employed in the relevant industry sectors.

7.7.13. The sensitivity of economic receptors within the regional study area is considered to be medium given the levels of unemployment and deprivation across Greater Manchester. The magnitude of change prior to mitigation, is considered to be small. Therefore, there is likely to be an indirect, temporary, short to medium-term effect on economic receptors within the regional study area of minor to moderate positive significance prior to the implementation of mitigation measures.

Mitigation / enhancement

7.7.14. The effect of the Proposed Scheme in terms of employment generation will be positive. Therefore no mitigation measures are required.

Residual effects

7.7.15. The sensitivity of economic receptors in the local study area is high, and the magnitude of change remains small. Therefore, there is likely to be an indirect, temporary, short to medium -term residual effect on economic receptors within the local study area of moderate positive significance.

7.7.16. The sensitivity of economic receptors in the regional study area is medium, and the magnitude of change remains small. Therefore, there is likely to be an indirect, temporary, short to medium-term residual effect on local economic receptors of minor to moderate positive significance.

Displacement of users of the synagogue

7.7.17. The Manchester Reform Synagogue is situated on the north-western side of the Site. The Synagogue was constructed in the early 1950s and has been in use ever since. As part of the Proposed Scheme, the Synagogue will be demolished in a single phase in 2018. This leads to the displacement of existing users of the Synagogue. However, as outlined above, the Synagogue will be temporarily relocated during the construction period. It is assumed at this stage that it will be housed temporarily in a facility adjacent to the Proposed Scheme, which will be available prior to the demolition of the existing facilities and will be available until the permanent new Synagogue is operational. A legal agreement is in place to relocate the synagogue to such a facility, adjacent to the Proposed Scheme for the period of the construction works. Therefore this will cause minimal disruption to the existing congregation in terms of travel time and location. Therefore, overall the magnitude of change is considered to be small given the temporary displacement of the users of this facility.

7.7.18. The sensitivity of local community receptors (users of the synagogue) is considered to be medium given this asset provides an important service to the community. The magnitude of change, prior to mitigation, is considered to be small. Therefore, there is likely to be a direct, temporary, short to medium-term effect on local community receptors (users of the synagogue) of minor to moderate negative significance prior to the implementation of mitigation measures.

Mitigation / enhancement

7.7.19. In order to reduce the effects identified the following measures should be implemented:

- The users of the Manchester Reform Synagogue should be informed of the nature, timing and duration of particular construction activities and the duration of the construction works in advance of the commencement of site securement by newsletters and liaison with the applicant.

Residual effects

The sensitivity of local community receptors (users of the synagogue) is medium, and the magnitude of change, following mitigation, is negligible to small. Therefore, there is likely to be a direct, temporary, short to medium-term residual effect on local community receptors (users of the synagogue) of negligible to minor negative significance following the implementation of mitigation measures.

OPERATIONAL PHASE

Generation of Direct employment opportunities for local population

7.7.20. Due to the mixed-use nature of the Proposed Scheme, there is likely to be new direct employment opportunities generated.

7.7.21. In terms of potential employment floorspace, the Proposed Scheme will provide non-residential floorspace, comprising non-residential institutions, restaurant and cafes / drinking establishments, office space, and two hotels as per quantum of development as defined in **Chapter 3: Description of Proposed Scheme**.

7.7.22. Based on the quantum of employment floorspace, it is possible to estimate the number of FTE employees for most types of employment based on each associated floorspace, as outlined in the Homes and Communities Agency Employment Densities Guide 3rd Edition (2015) (**Ref. 7.2**).

7.7.23. **Table 7.5** estimates the jobs created within the Proposed Scheme. Where the area per FTE is provided as a range (e.g. 15 - 20 for A1-A5 (excluding retail warehouse)), the assessment has used the average number of jobs per sqm.

Table 7.5: Proposed Land Uses, Quantum and Calculations of Gross Operational Employment

Land Use	Class Use	Quantum	Area Per FTE	Estimated FTE / Jobs
Hotel (5*) Including Assembly and Leisure (Gym) and Boutique Hotel	C1 / D2	246 beds	1 employee per bed	246
This includes Retail / Restaurants and Cafes / Drinking Establishments / Hot Food Takeaways	A1 / A3 / A4 / A5	3,228 sqm (NIA)	17.5 sqm NIA**	184
Business (Office Space)	B1	13,721 sqm. (NIA)	12 sqm NIA***	1,143
Total				1,573

Notes to **Table 7.5**

* Assumed to fall under the category of 'luxury' specified in the Employment Density Guidelines (**Ref. 7.2**). It is anticipated that the floorspace associated with the assembly and leisure uses will be limited, and therefore the employment opportunities generated by these elements are insignificant.

** Used the averaged across A1 an A3 uses as set out in Employment Density Guidelines (**Ref. 7.2**) as no specific guidance on A4 or A5 uses.

*** Based on an average of 12sqm per 1 FTE for 'Professional Services' as noted in Employment Density Guidelines (**Ref. 7.2**)

7.7.24. The proposed non-residential institutions (Synagogue) use is not included within the gross operational employment calculations as it is anticipated that the same number of employees as that currently employed will be employed within the new synagogue as part of the Proposed Scheme.

7.7.25. Based on the approach set out in the Additionality Guide (**Ref. 7.1**), the net employment calculations for the Proposed Scheme are set out in **Table 7.6**.

Table 7.6: Net Operational Employment Calculations

	FTEs
Gross Direct Jobs	1,573
Estimated Leakage (25%)	393
Direct Jobs following leakage	1,180
Displacement (25%)	295
Total Net Direct Jobs	885

7.7.26. Therefore, the total net FTE generated by the Proposed Scheme is 885.

7.7.27. The total number of employee jobs within the local Study Area (MCC) is 349,000. It is anticipated that the occupiers of the Proposed Scheme will be in Industry Sectors I, J, K-N, O-Q, and R-S. The total number of employees in these Sectors within MCC is 260,000. Based on the estimation that 885 direct FTEs will be generated per year, this represents approximately 0.34% of the total jobs in these sectors in the local study area per year. As such, the magnitude of change is considered to be small.

7.7.28. The sensitivity of economic receptors in the local study area is considered to be high due to the levels of unemployment and deprivation. The magnitude of change, prior to mitigation, is considered to be small. Therefore, there is likely to be a direct, long-term, permanent effect on economic receptors in the local study area of moderate positive significance, prior to the implementation of mitigation measures.

7.7.29. The total number of employee jobs in the regional study area (Greater Manchester) is 1,213,000. It is anticipated that the Industry Sectors will comprise Sectors I, J, K-N, O-Q, R-S. The total number of employees in these Sectors within the regional Study Area is 785,900. Based on the estimation that 885 direct FTE will be generated per year, this represents 0.11% of the total jobs in these sectors in the regional study area per year. As such, the magnitude of change is considered to be small.

7.7.30. The sensitivity of economic receptors within the regional Study Area is considered to be medium due to the levels of unemployment and deprivation. The magnitude of change, prior to mitigation, is small. Therefore, there is likely to be a direct, long-term, permanent effect on economic receptors within the regional study area of minor to moderate positive significance, prior to the implementation of mitigation measures.

Mitigation/enhancement

7.7.31. The effects of the operational phase on employment opportunities are considered to be positive, therefore, no mitigation or further enhancement is required.

Residual effects

7.7.32. The sensitivity of economic receptors within the local study area is considered to be high and the magnitude of change remains small. Therefore, there is likely to be a direct, permanent, long-term residual effect on economic receptors within the local study area of moderate positive significance.

7.7.33. The sensitivity of economic receptors within the regional study area is medium and the magnitude of change remains small. Therefore, there is likely to be a direct, permanent, long-term residual effect on economic receptors within the regional study area of minor to moderate positive significance.

Indirect and induced employment associated with spending in the local economy by employees and contracts placed with suppliers and contractors

7.7.34. The activities associated with the operational phase of the Proposed Scheme are likely to lead to an increase in spending in the local economy. Indirect jobs are likely to be created as a result of an increase in spending on goods, suppliers and services associated with the Proposed Scheme. The spending of wages by the employees of firms supplying goods and services to the Proposed Scheme will also support induced employment in shops, services and other firms.

7.7.35. In accordance with the guidelines for calculating the benefits of economic projects provided in the Additionality Guide (**Ref. 7.1**), a combined employment multiplier of 1:1.5 has been utilised, which is considered appropriate to estimate indirect and induced employment opportunities during the operational phase. By applying a multiplier of 1:1.5 FTE, suggests a total of 1,328 FTE jobs direct, indirect and induced jobs in total. As such, by taking the direct jobs off this total, it has been calculated that 443 FTE indirect and induced jobs would be generated.

7.7.36. The total number of employee jobs in the local study area (MCC) is 349,000. Based on the estimation that 443 indirect and induced FTE jobs will be generated per year, this represents 0.13% of the total jobs in these sectors in the local study area per year. As such, the magnitude of change is considered to be small due to an increase of <1% compared with the existing workforce employed in the relevant industry sectors.

7.7.37. The sensitivity of economic receptors within the local study area is high due to the levels of unemployment and deprivation in MCC. The magnitude of change prior to mitigation, is considered to be small. Therefore, there is likely to be an indirect, permanent, long-term effect on economic receptors within the local study area of moderate positive significance prior to the implementation of mitigation measures.

7.7.38. The total number of employee jobs in the regional study area (Greater Manchester) is 1,213,000. Based on the estimation that 443 indirect and induced FTE jobs will be generated per year, this represents 0.04% of the total jobs in these sectors in the regional Study Area per year. As such, the magnitude of change is considered to be small due to an increase of <1% compared with the existing workforce employed in the relevant industry sectors.

7.7.39. The sensitivity of economic receptors within the regional study area is considered to be medium, given existing levels of unemployment and deprivation across Greater Manchester. The magnitude of change, prior to mitigation, is considered to be small. Therefore, there is likely to be an indirect, permanent, long-term effect on economic receptors within the regional study area of minor to moderate positive significance prior to the implementation of mitigation measures.

Mitigation / enhancement

7.7.40. The effects of the Proposed Scheme during the operational phase on indirect and induced employment is considered to be positive, therefore no mitigation or further enhancement is required.

Residual effects

7.7.41. The sensitivity of economic receptors within the local study area is high, and the magnitude of change is small. Therefore, there is likely to be an indirect, permanent, long-term residual effect on economic receptors within the local study area of moderate positive significance.

7.7.42. The sensitivity of economic receptors within the regional study area is medium, and the magnitude of change remains small. Therefore, there is likely to be an indirect, permanent, long-term residual effect on local economic receptors of minor to moderate positive significance.

Delivery of the high quality public realm and new infrastructure

7.7.43. The Site is situated within the historic, dense urban core of Manchester City Centre. The Site is within the setting of numerous listed buildings, including the internationally significant Grade I listed Town Hall and Albert Memorial and the Grade II* listed Central Library, Town Hall Extension and Memorial Hall. Further details are presented within **Chapter 9 – Built Heritage**. However, overall, the area has not been built comprehensively, and currently consists of multi- phase streets with buildings of varied ages and architectural styles. There is a lack of active street frontages and the area lacks a ‘sense of place’ (see **Design and Access Statement** for further details).

7.7.44. Once completed, the Proposed Scheme will deliver two new public spaces - a street level square and a rooftop square. These new public areas will be connected. Both squares will be fronted by active frontages with food and beverage uses spilling out. This will enliven the public realm towards Jacksons Row, Bootle Street and Southmill Street. This external public realm will greatly improve the amenity value of the immediate surrounds compared with existing conditions. The Proposed Scheme also includes the retention of key existing buildings, including the Southmill Street elevation of the Bootle Street Police Station and the The Sir Ralph Abercromby Inn Public House. This will allow such a community asset to continue to provide public benefits and will draw visitors to the Proposed Scheme.

7.7.45. As such, the Proposed Scheme is anticipated to overcome the current problems of neglect in the area and to provide a high quality townscape to complement the surrounding regeneration zones, including Spinningfields, the Civic Quarter and the Central Business District. As such, the magnitude of change is considered to be medium.

7.7.46. The sensitivity of local community receptors (residents and visitors to the Proposed Scheme) is considered to be medium due to the limited amenity value of the existing streetscape immediately surrounding the Site and a current lack of high-quality public realm within the Site and immediate vicinity. Given the quantum and quality of the public realm proposed, the magnitude of change prior to mitigation, is considered to be medium. Therefore, there is likely to be a direct, permanent, long-term effect on community receptors (residents and visitors to the Proposed Scheme) of moderate positive significance prior to the implementation of mitigation measures.

Mitigation / enhancement

7.7.47. The effects of the Proposed Scheme during the operational phase in relation to the delivery of high quality public realm and new infrastructure is considered to be positive, therefore no mitigation or further enhancement is required.

Residual effects

7.7.48. The sensitivity of local community receptors (residents and visitors to the Proposed Scheme) is medium, and the magnitude of change remains medium. Therefore, there is likely to be a direct, permanent, long-term residual effect on local community receptors (residents and visitors to the Proposed Scheme) of moderate positive significance.

Improved community connectivity within and around the Site

7.7.49. Once completed, the Proposed Development will incorporate new public realm and infrastructure which will facilitate community connectivity within and around the Site.

7.7.50. The Site is well connected within the City Centre, and within close proximity to the national motorway network, A-roads and public transport interchanges and services (including railway stations, the Metrolink and bus services). However, the Site and its immediate surroundings currently lack a sense of place and there are minimal active frontages. Furthermore, the existing land uses and orientation of the buildings on-site form an impermeable 'block' which does not facilitate connectivity (see Design and Access Statement for further details).

7.7.51. As outlined above, once completed, the Proposed Scheme will deliver two new connected public squares which will be designed to ensure that they are accessible to all members of the community. This external public realm will greatly enhance the access and circulation through the Site and will improve the amenity value of the immediate surrounds compared with existing conditions. The range of uses proposed will attract residents and visitors to the new facilities within the Proposed Scheme, helping to reconnect the Site with the surrounding area. The creation of new routes through the Site will help to reduce journey times for residents / visitors travelling through the area. Overall, the magnitude of change is considered to be medium.

7.7.52. The sensitivity of local community receptors (local community, residents and visitors to the Proposed Scheme) is considered to be medium due to usage of the surrounding area to travel through Manchester City Centre. The magnitude of change, prior to mitigation, is also considered to be medium due to the creation of new routes through the City and associated enhancements in connectivity. Therefore, there is likely to be a direct, permanent, long-term effect on local community receptors (residents and visitors to the Proposed Scheme) of moderate positive significance prior to the implementation of mitigation measures.

Mitigation / enhancement

7.7.53. The effects of the Proposed Scheme during the operational phase on community connectivity is considered to be positive; therefore no mitigation or further enhancement is required.

Residual effects

7.7.54. The sensitivity of local community receptors (local community, residents and visitors to the Proposed Scheme) is medium, and the magnitude of change remains medium. Therefore, there is likely to be a direct, permanent, long-term residual effect on local community receptors (residents and visitors to the Proposed Scheme) of moderate positive significance.

7.8 LIMITATIONS AND ASSUMPTIONS

7.8.1. The assessment of employment effects has relied upon the use of secondary data within calculations as assumptions in order to generate an understanding of the potential direct, indirect and induced effects resulting from the construction phase of the Proposed Scheme. As such, there are limitations associated with the secondary data applied in each case.

7.9 SUMMARY

7.9.1. The Census 2011 identified that there is a higher proportion of a working age population in MCC compared to the Northwest and England averages, however, the employment rate for individuals aged 16-74 in MCC was lower than the regional and England averages. The NOMIS Job Densities Report indicates that the ratio of jobs available divided by the resident population aged between 16 and 64 in MCC are higher than the regional and national averages indicating more availability of employment and labour demand. The Indices of Multiple Deprivation, which use a combination of information relating to income, employment, education, health, skills and training, barriers to housing and services and crime to create an overall score of deprivation, ranked MCC at 5 out of 326 local authorities in England in 2015. As such, MCC is considered to be one of the most deprived local authorities in England.

7.9.2. During the construction phase of the Proposed Scheme, it is anticipated that there would be 456 direct FTE jobs created. In addition, there are likely to be an additional 329 FTE indirect and induced jobs associated with this phase. This is as a result of an increase in spending on goods, suppliers and services associated with the Proposed Scheme and employees of those firms. Overall, the effects are considered to be of minor to major positive significance.

7.9.3. During the operational phase of the Proposed Scheme, it is anticipated that approximately 885 FTE jobs will be created. Furthermore, there are likely to be additional 443 FTE indirect and induced jobs associated with this phase due to spending in the local economy by employees and contracts placed with suppliers and contractors. Overall, the effects are considered to be of minor to moderate positive significance.

7.9.4. During the construction phase, the Manchester Reform Synagogue will be demolished. This will cause the displacement of the users of this facility. In conjunction with the Synagogue, the Applicant has ensured that temporary like-for-like facilities will be available prior to the demolition of the existing building and until the Proposed Scheme is operational. As such, the effect is considered to be of negligible to minor negative significance.

7.9.5. Once completed, the Proposed Scheme will deliver high quality public realm and new infrastructure. This external public realm will greatly improve the amenity value of the immediate surrounds compared with existing conditions. The effect on local community receptors (residents and visitors to the Proposed Scheme) is considered to be of moderate positive significance.

7.9.6. The Proposed Scheme will also improve community connectivity within and around the Site by opening up new routes and providing new areas of public realm. The effect on local community receptors (residents and visitors to the Proposed Scheme) is considered to be of moderate positive significance.

7.9.7. A summary of the likely significant effects is provided in **Table 7.7** below.

Table 7.7: Summary of Effects Table for Socio-economics

Description of Effects	Receptor	Significance and Nature of Effects Prior to Mitigation / Enhancement	Summary of Mitigation / Enhancement	Significance and Nature of Effects Following Mitigation / Enhancement (Residual)
Construction Phase				
Direct employment opportunities for local population	Economic receptors within the local study area Economic receptors within the regional study area	●+ / T / D/ ST-MT ● / ●+ / T / D/ ST-MT	None.	●+ / T / D/ ST-MT ● / ●+ / T / D/ ST-MT
Indirect and induced employment associated with spending in the local economy by contractors and contracts placed with suppliers	Economic receptors within the local study area Economic receptors within the regional study area	●+ / T / I/ ST-MT ● / ●+ / T / I/ ST-MT	None.	●+ / T / I/ ST-MT ● / ●+ / T / I/ ST-MT
Displacement of users of the synagogue	Local community receptors (users of the synagogue)	● / ●- / T / D/ ST-MT	Provision of information about temporary relocation of synagogue in advance.	● /●- / T / D/ ST-MT
Operational Phase				
Direct employment opportunities for local population	Economic receptors within the local study area Economic receptors within the regional study area	● + / P / D/ LT ● / ● + / P/ D/ LT	None.	● + / P / D/ LT ● / ● + / P/ D/ LT

Description of Effects	Receptor	Significance and Nature of Effects Prior to Mitigation / Enhancement	Summary of Mitigation / Enhancement	Significance and Nature of Effects Following Mitigation / Enhancement (Residual)
Indirect and induced employment associated with spending in the local economy by employees and contracts placed with suppliers and contractors	Economic receptors within the local study area Economic receptors within the regional study area	● + / P / I / LT ● / ● + / P / I / LT	None.	● + / P / I / LT ● / ● + / P / I / LT
Delivery of the high quality public realm and new infrastructure	Local community receptors (residents and visitors to the Proposed Scheme)	●+ / P / D/ LT	None.	●+ / P / D/ LT
Improved community connectivity within and around the Site	Local community receptors (residents and visitors to the Proposed Scheme)	●+ / P / D/ LT	None.	●+ / P / D/ LT

NB: Aspects of the proposed scheme considered as part of the pre-mitigation scenario are summarised above in Section 1.6, and within Chapter 14: Summary of Environmental Statement.

Key to table:

●Major significance, ●Moderate significance, ●Minor significance, ●Negligible significance

+ / - = Positive or Negative P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term

N/A = Not Applicable

7.10 REFERENCES

- **Ref. 7.1** HCA (2014) 'Additionality Guide: A standard approach to assessing the additional impact of interventions, Method Statement', Fourth Edition
- **Ref. 7.2** HCA (2015) Employment Densities Guidelines 3rd Edition
- **Ref. 7.3** Highways England (1993) DMRB Volume 11, Section 3, Part 8 Pedestrians, Cyclists, Equestrians and Community Effects
- **Ref. 7.4** Highways England (unpublished) DMRB Volume 11 Section 3 Peoples and Communities Interim Advice Note
- **Ref. 7.5** Salford City Council (2010) Projections of Child Yield from New Residential Development
- **Ref. 7.6** Manchester City Council (2015) Report for Resolution: School Place Planning and Admissions, including specific proposals for a new secondary school
- **Ref. 7.7** NHS Choices Website (online) Available at: http://www.nhs.uk/pages/home.aspx
- **Ref. 7.8** Construction (Design and Management) Regulations 2015
- **Ref. 7.9** Police Crime Prevention Initiatives Secured by Design (online) Available at: http://www.securedbydesign.com/
- **Ref. 7.10** ONS NOMIS (online) Available at: https://www.nomisweb.co.uk/ (Accessed 01/03/2016)
- **Ref. 7.11** Indices of Multiple Deprivation (online) Available at: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015 (Accessed 01/03/2016)
- **Ref. 7.12** MCC (2016) State of the City Report: 2016
- **Ref. 7.13** Make (2015) Jackson's Row / Bootle Street Strategic Regeneration Framework
- **Ref. 7.14** MCC (2009) Open Space and Recreational Needs Assessment

8

TOWNSCAPE AND VISUAL

8 TOWNSCAPE AND VISUAL

8.1 INTRODUCTION

8.1.1. This chapter prepared by Planit-IE assesses the likely significant effects of the Proposed Scheme with respect to Townscape and Visual Amenity. This chapter also describes the methods used to assess the effects; the baseline conditions currently existing at the Site and surrounding area; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.

8.1.2. This Chapter (and its associated figures and appendices) is intended to be read as part of the wider ES, with particular reference to **Chapter 9 – Cultural Heritage**.

8.2 LEGISLATIVE FRAMEWORK AND GUIDANCE

LEGISLATION

8.2.1. The European Landscape Convention (ELC, 2000) (**Ref. 11.1**) provides a foundation for closer co-operation on landscape issues across Europe, was ratified in the UK on the 21 November 2006, and became binding on 1 March 2007. The convention identifies the need to recognise landscape in law, to develop and promote landscape policies dedicated to the protection, management and creation of landscapes, and to establish procedures for the participation of the general public and other stakeholders in the evolution and implementation of landscape policies. It also encourages the integration of landscape into all relevant areas of policy, including cultural, economic and social policies.

8.2.2. The ELC defines landscape as ‘an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’. It recognises that landscape has important cultural, ecological, environmental and social dimensions and is a key element of achieving sustainable development. In this context the use of the word ‘landscape’ is more appropriately termed ‘townscape’ though the constituent factors remain consistent.

GUIDANCE

8.2.3. The following guidance has been used in the assessment:

- Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013 (**Ref 11.2**); and
- Planning Practice Guidance (**Ref 11.3**).

NATIONAL PLANNING POLICY FRAMEWORK

8.2.4. Section 7 of the NPPF deals with the requirements of good design. The overarching statement can be found at paragraph 57, which states:

8.2.5. ‘It is important to plan positively for the achievement of high quality and inclusive design for all development, including individual buildings, public and private spaces and wider area development schemes.’

8.2.6. Key aspects of the NPPF which apply to the Townscape Assessment are the paragraphs below:

- Paragraph 56: The Government attaches great importance to the design of the built environment. Good design is a key aspect of sustainable development, is indivisible from good planning, and should contribute positively to making places better for people.
- Paragraph 61: Although visual appearance and the architecture of individual buildings are very important factors, securing high quality and inclusive design goes beyond aesthetic considerations. Therefore, planning policies and decisions should address the connections between people and places and the integration of new development into the natural, built and historic environment.

- Paragraph 128: In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, 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.'

PLACE MAKING AND DESIGN

8.2.7. In accordance with the NPPF, development in Manchester will be expected to follow the seven design principles set out below:

- Character: a place with its own identity;
- Continuity and enclosure: a place where public and private places are clearly distinguished;
- Quality of the public realm: a place with attractive and successful outdoor areas;
- Ease of movement: a place that is easy to get to and move through;
- Legibility: a place that has a clear image and is easy to understand;
- Adaptability: a place that can change easily; and
- Diversity: a place with variety and choice.

LOCAL PLANNING POLICY – MANCHESTER'S LOCAL DEVELOPMENT FRAMEWORK, CORE STRATEGY DEVELOPMENT PLAN DOCUMENT

8.2.8. Manchester's Core Strategy was adopted in July 2012. Relevant policies from the Strategy for the purposes of this chapter are outlined below.

Policy EN1 – Design principles and strategic character areas

8.2.9. All development in Manchester will be expected to follow the seven principles of urban design, as identified in national planning guidance and listed above and have regard to the strategic character area in which the development is located. Opportunities for good design to enhance the overall image of the City should be fully realised, particularly on major radial and orbital road and rail routes.

8.2.10. The City Centre contains a rich legacy, which reflects its urban evolution to the current day and includes listed buildings, conservation areas, archaeological remains and a historic street pattern. Its core area presents a particularly dense environment that accommodates a wide and closely integrated range of uses including commercial, civic and residential activities.

8.2.11. Developers will be expected to consider the City's heritage and continue the rich pattern of activity in the core area.

8.2.12. While there will be opportunities to create landmark buildings, developments should also contribute positively to the experience of all at street level.

8.2.13. Wherever possible the opportunity should be realised to enhance existing and provide new areas of meaningful open space, and the maintenance and improvements of the City's permeability should be considered in all proposals.

Policy EN3 - Heritage

8.2.14. 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.

8.2.15. 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.

8.2.16. Proposals which enable the re-use of heritage assets will be encouraged where they are considered consistent with the significance of the heritage asset.

8.2.17. Heritage impacts are discussed and evaluated in further detail in **Chapter 9 – Cultural Heritage**.

Policy CC9 – Design and heritage

8.2.18. Development in Manchester City Centre should preserve or enhance the heritage assets that have been identified, including listed buildings, conservation areas and scheduled ancient monuments.

Policy CC6 – City Centre high density development

8.2.19. City Centre development will generally be high-density. It is a location where land should be used to maximise its efficiency. The appropriate scale, massing and height of development in the City Centre will significantly exceed what is appropriate elsewhere in the City.

Policy CC7 – Mixed use development

8.2.20. The City Centre presents the most viable opportunities for mixed-use development, and in general these will be promoted as a means of using land as efficiently as possible. A range of uses should be considered for all Sites.

Policy EN9 – Green infrastructure

8.2.21. New Development will be expected to maintain existing green infrastructure in terms of its quantity, quality and multiple function. Where the opportunity arises and in accordance with current Green Infrastructure Strategies the Council will encourage developers to enhance the quality and quantity of green infrastructure, improve the performance of its functions and create and improve linkages to and between areas of green infrastructure. Where the benefits of a proposed development are considered to outweigh the loss of an existing element of green infrastructure, the developer will be required to demonstrate how this loss will be mitigated in terms of quantity, quality, function and future management.

8.2.22. The Council will seek to protect existing street trees and promote new planting, particularly where this can enhance green links in the urban area.

8.2.23. The provision of new, and improvements to the quality and accessibility of existing green infrastructure assets, to mitigate for any loss of green infrastructure.

8.3 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

8.3.1. **Table 8.1** provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 8.1: Summary of Consultation Undertaken to November 2017

Body / organisation	Individual / stat body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
Manchester City Council (MCC)	J. Armstrong, Planning	10.11.15 Pre-application email exchange	Agreement on scope of the assessment and methodology.
MCC	Dave Roscoe.	Pre-application meeting	Discussion of Verified View locations and introduction of kinetic view methodology
Historic England	Anna Boxer, Principal Inspector of Historic Buildings and Areas, and Catherine Dewar, Planning Director	11.08.16 Pre-application meeting	Review of key views and videos.
Historic England	Anna Boxer, Principal Inspector of Historic Buildings and Areas, and Catherine Dewar, Planning Director	15.09.16 Pre-application meeting	Discussion of Verified View locations; introduction of methodology and review of kinetic view baseline video tracks.

8.3.2. The principal viewpoints and kinetic tracks were identified through a process of desktop study and onsite survey in collaboration with the heritage consultants. These concluded a large number of viewpoints were required to fully assess the Proposed Scheme. Using the city model with the Proposed Scheme modelled in, these viewpoint locations were tested through the development of non-verified pre-visualisation (pre-vis) views. Non-significant viewpoints were then refined or removed following pre-application consultation with Historic England and MCC.

8.3.3. During refinement of the Scheme, the locations of static and kinetic viewpoint receptors have been reviewed and updated. The process of refinement has been careful to ensure all viewpoint receptors have been retained as agreed previously with Historic England and MCC. The process has concluded 31 static verified views in addition to two new verified kinetic videos which have been agreed again within Historic England and MCC.

SCOPE OF THE ASSESSMENT

8.3.4. An EIA Scoping Report was submitted to MCC on February 18th 2016 as presented in **Appendix 5.1**. This section highlights the scope of the assessment in relation to Townscape and Visual Impact. The text below also re-iterates the evidence base for insignificant effects following further iterative assessment since February 18th 2016; in line with the Scoping Note submitted for the succeeding iteration of the Proposed Scheme.

Insignificant Effects

- Visual receptors located further than 1km from the Site boundary are considered to be so distant (due to intervening built form, vegetation and topography) that the Proposed Scheme would not have a significant effect on the character or quality of the views. Potentially significant effects on visual receptors will be limited to within a 1km radius;
- Townscape character receptors located further than 1km from the Site boundary are considered to be so distant (primarily due to the intervening built form), that the Proposed Scheme would not have a significant effect on the character or quality of the townscape character. Potentially significant effects on townscape character will be limited to within a 1km radius; and
- The Site is dominated by man-made habitats such as buildings and hardstanding, and there are limited areas of semi-natural habitat present including ornamental shrubs and scattered trees. Such habitats are considered to be common within the local context. As a result, potential loss of vegetation is not considered to be significant and will not be assessed in the ES. Furthermore, it is considered that a tree survey to BS5837 'Trees in relation to design, demolition and construction' (2012) is not required.

Likely Significant Effects

Construction Phase

- Change to townscape receptors (including townscape character, heritage designations, urban grain, land use, building heights, topography and flood risk, movement and linkages, environmental designations/ public realm and Site character) due to the presence of machinery, hoardings, scaffolding, tower cranes, earthworks, stockpiles and construction activities within the Site; and
- Change in visual amenity.

Operational Phase

- Change to townscape receptors (including townscape character, heritage designations, urban grain, land use, building heights, topography and flood risk, movement and linkages, environmental designations/ public realm and Site character) due to new built form and landscaping; and
- Change in visual amenity.

EXTENT OF THE STUDY AREA

8.3.5. The study area is shown on **Figure 8.1** in **Appendix 8.4**. The study area is broadly defined by the city centre area. Due to the scale and prominence of the Proposed Scheme, this ensures a robust assessment of all townscape receptors.

METHOD OF BASELINE DATA COLLATION

Desk Study

8.3.6. The baseline was compiled through a combination of four main sources of data:

- Ordnance Survey mapping;
- 3D Manchester City Centre Model (verified using 3D survey data);
- Baseline information from recently completed assessments and masterplans within close proximity to the Site, including the emerging John Dalton/Lincoln Square masterplan and TVIA for the consented Circle Square (former BBC site, Oxford Road) development and Manchester Central; and
- Photographs of Principal Viewpoints defined through the 3D Manchester City Centre model.

Site Visit

8.3.7. Site visits were carried out on eight occasions between June 2016 and October 2017. These were to carry out the following tasks:

- Site familiarisation;
- Selection of long-list of viewpoint locations and initial photography;
- Briefing of photographer and photography for static verified views;
- Briefing of videographer and draft selection of kinetic tracks;
- Filming of kinetic tracks; and
- Briefing and shadowing of survey team to undertake 3D reference data surveys for key locations along all kinetic tracks.

ASSESSMENT METHODOLOGY

8.3.8. This assessment has been carried out with reference to the Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013 (referred to hereafter as “the Guidelines”).

8.3.9. A three-stage assessment process has been adopted. Firstly, the nature of receptors (sensitivity) have been assessed, and secondly, the nature of impacts (magnitude) likely to result from the Proposed Scheme have been assessed. From this, the overall significance of the identified effects on receptors has been assessed. The assessment will utilise the methodology tables set out below (**Table 8.2 – 8.9**) alongside professional judgement.

8.3.10. The baseline assessment will consider all the existing buildings at the Site in their current condition. These form the entirety of the land covered by the Jackson’s Row Strategic Regeneration Framework (SRF). The Proposed Scheme has been derived from the principles established within the approved Jackson’s Row SRF.

8.3.11. Given the construction works related to Granada House, 125 Deansgate, Grape Street, Owen Street, Axis, London Scottish House, Invicta House and Landmark have overcome a significant point of construction; they therefore have been assumed as built within the baseline assessment, with an assumption of future form.

8.3.12. This TVIA introduces the use of kinetic viewpoints (known as 'tracks') to supplement the static viewpoint assessment. These tracks provide a dynamic experience along key localised routes and approaches to the Site through adjacent Conservation Areas. These represent a closer to reality view of how pedestrians would experience the Proposed Scheme in the context of a tight-knit, dynamic and constantly changing city centre. These tracks have been selected and compiled following a rigorous methodology emanating from the accepted static viewpoint photomontage methodology as set out in the Guidelines.

8.3.13. In order to provide the most comprehensive, rounded and objective view of the Townscape and Visual Impacts of the Proposed Scheme, assessed effects have been agreed following round-table review by a team of individual assessors.

SIGNIFICANCE CRITERIA

8.3.14. An assessment of townscape value and susceptibility of townscape to change enables the overall sensitivity of townscape receptors to be determined. This forms the baseline from which the impact of the Proposed Scheme can be assessed.

Criteria for determining Sensitivity for Townscape Receptors

8.3.15. Townscapes may be valued at community, local, national level or above. Existing Townscape designations have been taken as the starting point for this assessment, as shown in **Table 8.2** below. However, the value attached to undesignated townscapes also needs to be assessed and this is considered in **Table 8.3**.

8.3.16. **Table 8.2** sets out the relative importance of generic townscape designations and descriptions.

Table 8.2: Criteria for Assessing the Value of Designated Townscapes

Value	Description
High	Sites, features or areas of national or international importance with settings of high quality such as World Heritage Site, AONB, National Parks, Grade I and Grade II* Listed buildings or Registered Parks and Gardens.
Medium	Sites, features or areas of local or regional importance with intact character such as Grade II* and Grade II Listed Buildings or Registered Parks and Gardens, Conservation Areas, Scheduled Monuments, local nature site, long distance recreational routes. Tree Preservation Orders (TPO) and local designations that exhibit wider geographic, cultural or townscape significance.
Low	Areas or features of local importance such as Tree Preservation Orders (TPO), Public Right of Way (PROW) and locally listed buildings.

8.3.17. Whilst the assessment of value is partly based on the Planning Policy importance of the townscape, other criteria used to assess townscape value in more detail, including that of undesignated townscape, are set out in **Table 8.3** below. The criteria are taken from the Planning Practice Guidance (Reference 26-015-20140306) which supports the National Planning Policy Framework.

Table 8.3: Criteria for Assessing the Value of Non-designated Townscapes

Attribute	Criteria
Functional	A building or place should be fit for purpose, designed in a way that delivers the intended function and achieves value for money in terms of lifetime costs.
Mix of uses	Mix of uses to ensure easy access to facilities and encourage a healthier environment, reducing the need to travel.
Well-designed public space	Functional and attractive hard and soft landscape elements, well orientated and designed routes, inclusion of facilities such as seats and play equipment and public art.
Buildings designed to be adaptable	Flexibility to be able to respond to a range of future needs – how easily buildings can be adapted for change of use, places that are easy and practical to manage with good access, natural surveillance and hard wearing materials that are easy to repair.
Distinctive character	Consideration of: the local pattern of street blocks and plots; building forms; details and materials; style and vernacular.
Attractive spaces	Consideration of streetscapes, landscapes, buildings and elements within them all, microclimates and views should all be considered. This is also affected by the way a townscape is perceived using the sense and the effect of transient elements such as the presence of human activity and resulting tranquillity or vibrancy.
Promotes ease of movement	All users should be able to move safely, conveniently and efficiently to and within a place, appropriate number of legible routes to and through it, good connections with each other and other destinations

8.3.18. An overall assessment of value has been made for each townscape receptor (refer to **Appendix 8.1**), based on an overview of the assessments made using each of the above criteria, in terms of high, medium and low value.

Susceptibility of Townscape Receptors to Change

8.3.19. Susceptibility of townscape receptors to change has been assessed using the criteria identified in **Table 8.4**, with reference to the baseline conditions.

Table 8.4: Townscape Receptor Susceptibility to Change

Susceptibility	Criteria
High	Little ability to accommodate the Proposed Scheme without undue harm.
Medium	Some ability to accommodate the Proposed Scheme without undue harm.
Low	Substantial ability to accommodate the Proposed Scheme without undue harm.

Overall sensitivity of Townscape receptors

8.3.20. The assessment of receptor sensitivity combines judgements on the susceptibility of the receptor to the specific type of development proposed and the value attributed to that receptor, as detailed within **Appendix 8.1**.

CRITERIA FOR DETERMINING SENSITIVITY FOR VISUAL AMENITY

8.3.21. In terms of assessing the baseline visual sensitivity, key factors to consider are the type of view and the likely numbers of viewers (the visual receptors). The type of view and the number of viewers are described in the following terms:

- Glimpsed (i.e. in passing)/ Filtered/Oblique/Framed/Open Views; and
- Few/Moderate/Many Viewers.

Value of Views

8.3.22. The value attached to views has regard to a number of factors, including:

- Recognition through planning designations or heritage assets; and
- The popularity of the viewpoint, its appearance in guidebooks, literature or art, on tourist maps and the facilities provided for its enjoyment.

8.3.23. The assessment of the value of views is summarised in **Table 8.5** below, in terms of High, Medium and Low value. These criteria are provided for guidance only and are not intended to be absolute.

Table 8.5: Value Attached to Views

Value	Criteria
High	Views from townscapes/viewpoints of national importance, or highly popular visitor attractions where the view forms an important part of the experience, or with important cultural associations.
Medium	Views from townscapes/viewpoints of regional/district importance or moderately popular visitor attractions where the view forms part of the experience, or with local cultural associations.
Low	Views from townscapes/viewpoints of minor importance or with no designations, not particularly popular as a viewpoint and with minimal or no cultural associations.

Susceptibility of visual receptors to change

8.3.24. The susceptibility of different types of visual receptor to changes in views is mainly a result of:

- The occupation or activity of the viewer at a given location; and
- The extent to which a person's attention or interest may therefore be focussed on a view and the visual amenity experienced at a given view.

8.3.25. The assessment of a visual receptor to change is specific to the Proposed Scheme. However, the Guidelines for Landscape and Visual Impact Assessment offers the generic guidance identified in **Table 8.6** as a starting point for the assessment.

Table 8.6: Visual Receptor Susceptibility to Change

Susceptibility	Type of Receptor
High	Users of public space, including users of public rights of way, whose attention is likely to be focussed on the townscape and on particular views; Visitors to heritage assets or other attractions where views of the surrounding area an important part of the experience; Communities where views contribute to the townscape setting enjoyed by residents; Travellers on scenic routes.
Medium	Travellers on road, rail or other transport routes, where the view is moderately important to the quality of the journey; Users of public space, where the view is part of the wider experience of the place.

Low	People at their place of work, where the setting is not important to the quality of working life; Travellers on road, rail or other transport routes, where the view is fleeting and incidental to the journey; People engaged in outdoor sport or recreation, or users of a public space, which does not involve appreciation of views.

8.3.26. The Guidelines for Landscape and Visual Impact Assessment qualifies the above examples as follows:

*'This division is not black and white and in reality there will be a gradation in susceptibility to change. Each project needs to consider the nature of the groups of people who will be affected and the extent to which their attention is likely to be focussed on views and visual amenity.' (**page 114, paragraph 6.35**).*

Overall Sensitivity of Visual Receptors

8.3.27. The assessment of receptor sensitivity combines judgements on the susceptibility of the receptor to the specific type of development proposed and the value attributed to that receptor, as detailed within **Appendix 8.2**.

Predicted Townscape and Visual Impacts

8.3.28. The predicted townscape and visual impacts of the Proposed Scheme are set out in **Appendices 8.1** and **8.2** respectively.

Size and Scale of Impacts

8.3.29. The size and/or scale of impacts relates to the scale of changes in the townscape, such as the loss or addition of features. This is broadly rated along the following scale:

- **No Change** – change will not be perceptible;
- **Negligible** – change will be just discernible;
- **Minor** – a small change will be perceptible;
- **Moderate** – change will be clearly noticeable; and
- **Major** – total change will occur.

Geographical Extent of Impacts

8.3.30. The geographical extent of impacts relates to:

- the area over which townscape effects are likely to be experienced, i.e. this could be at the site level, the immediate locality, across a neighbourhood or across a series of neighbourhoods (city-wide); and
- the area over which the changes are likely to be visible, i.e. viewpoint within the site, viewpoint within the immediate locality, viewpoint across/ through a neighbourhood or a vista or vantage point across neighbourhoods or the city skyline (city-wide).

Duration/Reversibility

8.3.31. Impacts may be experienced over a range of timescales. For this assessment, the following timescales are considered appropriate as detailed within **Chapter 5: Approach to the EIA**:

- **Short-term**: 1 year or below;
- **Medium-term**: Between 1 and 10 years in duration; and
- **Long-term**: Greater than 10 years in duration.

8.3.32. Impacts may be temporary, permanent or reversible over time. For example, visual impacts arising from construction activities may be limited solely to the construction period and therefore only temporary. The assessment therefore considers the practicality of impacts being reversed.

Magnitude of Impacts

8.3.33. The magnitude of a townscape or visual impact is assessed in terms of its size or scale, the geographical extent of the area influenced by that impact, and its duration and degree of reversibility and the influence these are likely to have on the baseline character of the townscape element.

8.3.34. The magnitude of change in the townscape takes into consideration the following factors:

- The extent/proportion of townscape elements lost or added;
- The contribution of that element to townscape character and the degree to which aesthetic/perceptual aspects are altered; and
- Whether the impact is likely to change the key characteristics of the townscape, which are critical to its distinctive character.

8.3.35. The terminology used to assess the magnitude of impacts (or magnitude of change) are different to those defined in **Chapter 5: Approach to the EIA**. This is due to the way in which the Townscape and Visual Assessments (**Appendix 8.1 and 8.2**) have been undertaken.

Magnitude of Townscape Impacts

8.3.36. The criteria used to assess the size and scale of townscape impacts are based upon the amount of change that will occur as a result of the proposals, as described in **Table 8.7**, below:

Table 8.7: Townscape Impacts - Magnitude

Category	Criteria
Major adverse townscape impact	The proposals will result in a total change in the key characteristics of townscape character; will introduce elements totally uncharacteristic to the attributes of the receiving townscape; and/or will result in a substantial or total loss, alteration or addition of key elements/features/characteristics.
Moderate adverse townscape impact	The proposals will result in a partial change in the key characteristics of townscape character; will introduce elements partially uncharacteristic to the attributes of the receiving townscape; and/or will result in partial loss, alteration or addition of key elements/features/characteristics.
Minor adverse townscape impact	The proposals will result in a small change in the key characteristics of townscape character; will introduce elements that are not uncharacteristic to the attributes of the receiving townscape; and/or will result in a minor loss, alteration or addition of elements/features/characteristics.
Negligible adverse townscape impact	The proposals will result in a just discernible change to townscape character/elements/features/characteristics.
Negligible townscape benefit	The proposals will result in a just discernible improvement to the townscape character/elements/features/characteristics.
Minor townscape benefit	The proposals will achieve a degree of fit with the townscape character/elements/features/characteristics and go some way towards improving the condition or character of the townscape.
Moderate townscape benefit	The proposals will achieve a good fit with the townscape character/elements/features/characteristics, or would noticeably improve the condition or character of the townscape.
Major townscape benefit	The proposals will totally accord with the townscape character/elements/features/characteristics, or would restore, recreate or permanently benefit the condition or character of the townscape.
No Change	The proposals will not cause any change to the townscape character/ elements/ features/ characteristic.

Magnitude of Visual Impacts

8.3.37. The magnitude of a visual impact is assessed in terms of its size or scale, the geographical extent of the area influenced and its duration and degree of reversibility and the impact these are likely to have on the baseline character of the view.

8.3.38. The magnitude of change in the view relates to the degree of contrast or integration likely to result from the Proposed Scheme and is influenced by the relative time over which a view is experienced and whether it is a full, partial or glimpsed view.

8.3.39. The criteria identified in **Table 8.8** are used to assess the size and scale of visual impacts, based on the degree of change to the view or composition.

Table 8.8: Visual Impacts - Magnitude

Category	Criteria
Major adverse or beneficial visual impact	The proposals will cause a dominant or complete change or contrast to the view, resulting from the loss or addition of substantial features in the view and will substantially alter the appreciation of the view.
Moderate adverse or beneficial visual impact	The proposals will cause a clearly noticeable change or contrast to the view, which would have some effect on the composition, resulting from the loss or addition of features in the view and will noticeably alter the appreciation of the view.
Minor adverse or beneficial visual impact	The proposals will cause a perceptible change or contrast to the view, but which would not materially affect the composition or the appreciation of the view.
Negligible adverse or beneficial visual impact	The proposals will cause a barely perceptible change or contrast to the view, which would not affect the composition or the appreciation of the view.
No change	The proposals will cause no change to the view.

Nature of Impacts

8.3.40. The nature of impacts may be positive or negative (beneficial or adverse) or neutral. Neutral effects recognise that there will be a change to the receptors, however this change is in keeping with the existing characteristics of the receptor.

8.3.41. Impacts may also be direct or indirect. Direct impacts are those which result directly from a development itself, whereas indirect impacts may arise as a consequential change resulting from development.

Significance of Effect

8.3.42. The scale shown in **Table 8.9** is used to guide the assessment of the significance of both townscape and visual effects, from a combination of the assessment of receptor sensitivity and the magnitude of impacts:

Table 8.9: Assessment of Townscape or Visual Significance of Effect

		Magnitude of Impacts				
		Major Impact	**Moderate Impact**	**Minor Impact**	**Negligible Impact**	**Neutral Impact**
Sensitivity of Receptor	High	Significant	Significant/ Moderately Significant	Moderately Significant	Minor Significance	Not Significant
	Medium	Moderately Significant	Moderately Significant	Minor Significance	Not Significant	Not Significant
	Low	Moderately Significant	Minor Significance	Not Significant	Not Significant	Not Significant

8.3.43. The table has regard to guidance in the Guidelines for Landscape and Visual Impact Assessment, Third Edition, 2013, at paragraph 5.56, page 92 (significance of landscape effects) and paragraph 6.44, page 116 (significance of visual effects). This matrix is used as a guide to determine significance, along with professional judgement.

8.3.44. For the purposes of this Townscape and Visual Impact Assessment, moderately significant effects are not considered to be significant in the meaning of the Town and Country Planning (EIA) Regulations 2011. Only effects deemed 'significant' are considered significant in EIA terms due to the nature, size and location of the proposed development in relation to wider ongoing contemporary development within the locality.

8.3.45. Townscape and visual impacts are assessed separately utilising this methodology.

Confidence

8.3.46. The predicted effect is assessed against the criteria set out below in order to attribute a level of confidence to the visual assessment:

- **High** – The predicted effect is either certain, or very likely to occur, based on reliable information or previous experience;
- **Medium** – The predicted effect and its level are best estimates, based on onsite and desktop study; and
- **Low** – The predicted effect and its level are best estimates, based on given knowledge and experience. More information may be needed to improve the level of confidence.

8.4 BASELINE CONDITIONS

SITE LOCATION

8.4.1. **Figure 8.1** of **Appendix 8.4** shows the location of the Site within the core of Manchester City Centre. The Site lies a single block from the primary movement corridors of Deansgate and Peter Street, as well as the key city landmarks of the Town Hall, Central Library and Albert Square.

8.4.2. The Site lies in an area regarded as the heart of Manchester. Due to its proximity to key visitor attractions, the Site has the potential to play an important role in shaping the perception of Manchester for anyone visiting, living and working in the City.

8.4.3. The Site sits within a permeable network of streets. Jackson's Row to the north, Southmill Street to the east and Bootle Street to the south. Despite its strategic location and extensive connectivity, the Site lies within a 'lost block'. Key pedestrian and vehicular routes push the majority of city users around the edge of the 'neighbourhood'. The remaining secondary and tertiary movement routes, including Jackson's Row, Southmill Street and Bootle Street are mostly devoid of activity and are therefore underutilised with low footfall as a result.

8.4.4. The assessment has considered the Proposed Scheme against the Site as it currently stands. The Site comprises of the former Bootle Street Police Station, Manchester Reform Synagogue, Sir Ralph Abercromby Inn Public House and surface car parking, as detailed within the **Chapter 2: The Existing Site and Surroundings**. The Site is limited in use, due to the vacancy of the Police Station. The existing 201 Deansgate and Onward Buildings lie outside the Site's western boundary and provide separation between the Site and Deansgate.

8.4.5. Beyond the 'neighbourhood', the Site's central location ensures it is well served by public transport. The newly refurbished St. Peter's Square tram stop located 200m to the east provides a fast and regular service to the wider Greater Manchester area. Within a 10-minute walk, Oxford Road railway station provides regular rail connectivity further afield.

URBAN MORPHOLOGY - HISTORICAL DEVELOPMENT

8.4.6. **Figure 8.2** of **Appendix 8.4** contains a series of historical maps, which chart the development of the Site from 1891 through to 1959.

8.4.7. The network of streets which enclose the Site are apparent in 1891. A finer urban grain existed within the Site, with small courtyards and routes (South Sea) connecting north-south across the Site. The Sir Ralph Abercromby Inn Public House is marked on the plan and is highlighted by the step out into Bootle Street still existing today. This is the only use on the Site which still exists from that time. The Town Hall is particularly apparent due to the scale of the building. St. Peter's Square is yet to be developed, instead marked by the St. Peter's church. The strong movement corridor of Deansgate is apparent to the west, however built form along its length is sparse at points.

8.4.8. The 1922 plan highlights relatively few changes to the streetscape surrounding the Site; however a number of key buildings are shown fronting Deansgate – strengthening this route through the heart of the city. St. Peters Square has emerged to the south-east alongside the Midland Hotel, following the demolition of St. Peter's Church in 1907; however this is yet to be supplemented by the Central Library. The 1922 map highlights a number of building uses inhabiting the city centre, including a number of theatres, offices, printing works and 'clubs'. Limited change occurred on Site between the two plan periods.

8.4.9. Post World War I, the heart of Manchester had changed a great deal to the east of the Site. The fine grain blocks around St. Peter's Square were demolished to make way for the Central Library (completed in 1934) and the Town Hall Extension (completed in 1938). These strengthened the core of the City Centre and completed the series of landmarks known today. The development of the civic core was also strengthened by the development of Central Police Station (completed in 1937) within the Site boundary. The development of the Police Station marked the end of permeability across the Site boundary.

8.4.10. Further change occurred within the core of Manchester following WWII bombing. By 1959, the final building currently on Site, the Reform Synagogue had been completed, located within the mix of finer grain development to the west of the Site. The key civic spaces of Albert Square and St. Peter's Square are both shown as key vehicular routes, placing the key civic landmarks upon islands between roadways – limiting the use of these spaces as public realm.

8.5 SENSITIVE RECEPTORS

Heritage designations

8.5.1. Although the **Heritage Statement: Significance** recognises that the buildings on Site (the Synagogue, the former Bootle Street Police Station and the Sir Ralph Abercromby Inn Public House) have some, albeit low, heritage value, they are not listed and therefore are not designated heritage assets within the definition of the National Planning Policy Framework. However, the existing buildings do contribute to the character of the Deansgate/Peter Street Conservation Area.

8.5.2. **Figure 8.3** of **Appendix 8.4** highlights the Listed Buildings and Conservation Areas within the context of the Site boundary. The Site's central location means the surrounding area is well provided for with Listed Buildings of varying grades. At the local level, these enclose the Site with Grade II listed buildings on the northern, eastern and southern boundaries.

8.5.3. Directly east of the Site, a series of key landmark buildings mark the centre of Manchester. These are the Grade II* Listed Midland Hotel, Central Library and Town Hall Extension, alongside the Grade I Listed Town Hall and its associated Grade I Listed Albert Memorial within the adjacent Albert Square. These key landmarks reflect the heart of the city and the centre of Manchester's heritage.

8.5.4. The low-rise nature of the existing Site and density of the surrounding built form limits the amount of intervisibility between the Site and wider Listed Buildings. However, a number of additional surrounding Listed Building would share intervisibility with the Proposed Scheme. This potentially includes further key landmarks such as the Grade I Listed John Rylands Library, Grade I Listed St. Ann's Church and Grade II* Listed G-Mex (former Central Station).

8.5.5. The only formal heritage designation existing on Site is the Deansgate/Peter Street Conservation Area. This designation reflects a piece of the Victorian city centre along the key north-south and east-west movement corridors of Deansgate and Peter Street. These routes are lined with key Listed Buildings and allow for long vistas through the city centre. The Site differs from this character; given that it has no direct relationship with Deansgate or Peter Street, nor does it provide any listed buildings to add to the townscape of the Conservation Area.

8.5.6. The eastern edge of the Site borders St. Peter's Square Conservation Area which is characterised primarily by civic and cultural buildings adjacent to St. Peter's Square. Currently the Site has very limited intervisibility to the square, however it does provide uses which relate to the Conservation Area.

8.5.7. Albert Square Conservation Area lies to the north of the Site. This can be characterised by a traditional use of materials to complement and emphasise the Town Hall, Town Hall Extension and Albert Square. A large amount of this conservation area is pedestrianised, making way for public spaces associated with civic use.

8.5.8. The contained nature of the Site and surrounding townscape limits a strong relationship to any of the surrounding conservation areas. However, any proposed development will need to consider the direct impact on the Deansgate/Peter Street Conservation Area and any further impact on the setting of adjacent conservation areas.

8.5.9. There are no Scheduled Ancient Monuments on the Site.

8.5.10. The townscape value of the Heritage Designations receptor within our study area is medium/high, reflecting the setting of significant Listed Buildings and Conservation Areas. Susceptibility to change is Medium, due to the dense surrounding townscape providing some ability to limit impact. The overall sensitivity of the receptor is medium/high.

Townscape character

8.5.11. The Site is located within Manchester City Centre, as defined by the Local Plan. The Core Strategy splits the City Centre into a number of neighbourhoods, each with their own distinctive townscape character. These neighbourhoods have since been updated by the City Centre Strategic Plan 2015-2018 which redefines the Site from the Central Business District to the Civic Quarter.

8.5.12. The City Centre Strategic Plan defines the Civic Quarter as being "*pivotal to the next phase of growth of the city centre economy*". The boundaries of the neighbourhoods updated by the Strategic Plan is illustrated in **Figure 8.4** of **Appendix 8.4**. The plan continues to characterise the Civic Quarter as hosting "*one of the finest collections of historic and modern civic, cultural and commercial buildings in the UK*". The Site is defined within the Quarter as a major development opportunity to support the conference quarter (through hotel and conference facilities) as well as facilitating key linkages across to Spinningfields through the provision of grade A office space and public realm.

8.5.13. The strategic prominence of the Site is not reflected by the built form that sits within it. The 'lost block' notion of the Site refers to its location along secondary and tertiary streets with limited use to support the city centre. Moving away from the grand landmark buildings to the east, the Site holds a very different character. This character is less about impressive Manchester buildings within civic space. It is not a destination. Rather, it is functional and relatively forgotten.

8.5.14. The Site shares its southern boundary with the Petersfield neighbourhood. This area is largely considered the 'Conference Quarter' of Manchester, due to the prominence of Manchester Central and the cluster of hotels which surround it. Petersfield is also defined by its mix of built form. The area can be characterised by impressive heritage buildings of the Midland Hotel, Manchester Central and the Great Northern Warehouse. The majority of these have largely been modernised internally, allowing them to sit comfortably next to potentially more prominent modern Manchester landmarks of the Beetham Tower, Great Northern Tower and Bridgewater Hall.

8.5.15. The boundaries between City Centre neighbourhoods have been tightly drawn. The Site therefore sits at a pivotal point between St. John's and Spinningfields to the west and the Central Business District to the north. The latter two are defined largely by commercial use. Spinningfields is defined further by modern commercial development which is supplemented by high quality restaurant use and public realm. The Central Business District is defined more by its historical built form. Narrow streets of a tight urban grain provide commercial use with a mix of high end retail use. St. John's to the south-west is unique in that it provides geometric low-rise residential use within the heart of the city centre, around a rare green space.

8.5.16. The Site's location at the centre of these neighbourhoods, combined with the relative disconnect from its existing neighbourhood highlights the importance for any new development to strengthen and support all the surrounding neighbourhoods. The opportunity exists to weave together neighbourhood characters, helping to develop a more coherent and legible city core.

8.5.17. The value of the Townscape Character receptor is medium, reflecting the relatively poor townscape character of the Site within the strategically important Civic Quarter. Susceptibility to change is medium, given the relative disconnect between the Site and key movement routes and spaces. The overall sensitivity of the receptor is medium.

Urban Grain

8.5.18. **Figure 8.5** of **Appendix 8.4** illustrates the urban grain on Site and around the wider area. The Site lacks a coherent structure, instead providing a mixed urban grain. The former Police Station provides a strong frontage to the Site's eastern boundary, as well as defining a building line along Jackson's Row and Bootle Street. **Figure 8.5** does however highlight the inefficient nature of the Police Station block for the majority of new uses, given that a large percentage of the block is an urban void, leaving a narrow perimeter of development which is not apparent from the street.

8.5.19. Within the west of the Site, the Synagogue and Sir Ralph Abercromby Inn Public House are equally inefficient due to their solitary nature. For a strategic city centre location, these blocks both provide a negative solid to void ratio which causes the buildings to sit within areas of 'dead' space, breaking the frontages along Bootle Street and Jackson's Row, and give way to uses such as surface car parking which is not expected so close to the centre of the city.

8.5.20. The Synagogue and Sir Ralph Abercromby Inn Public House provide some interesting townscape. The pub in particular plays with the street frontage by stepping forward into Bootle Street. This creates interest along the streetscape and creates a townscape landmark out of a building of only minor heritage value.

8.5.21. Within the wider area, a mix within the urban grain can largely be defined by larger, newer blocks to the west supporting key routes and space. This is supplemented by a tight grain to the north and east made up of mostly more historical plots set to the back of pavement along narrower streets. Landmark buildings can be easily picked out of the plan, given their unique shapes set within larger urban voids reflecting their associated public realm. It is only in these spaces which give landmark buildings 'breathing space' within the city centre where streets do not display a strong sense of enclosure on both sides – reflecting the density expected for the core of a major city.

8.5.22. Given the Site's pivotal location, it has the potential to draw from the different types of surrounding positive urban grain which support pedestrian movement, provide public realm whilst allowing for the density, enclosure and building frontage expected to tie into the surrounding streetscape beyond.

8.5.23. The townscape value of the Urban Grain receptor is low/medium, reflecting the inefficiency of the block layout and differing nature to the surrounding dense form. Susceptibility to change is medium, responding to the Site's ability to accommodate some change without undue harm. The overall sensitivity of the receptor is medium.

Land Use

8.5.24. **Figure 8.6** of **Appendix 8.4** illustrates the land use on Site and around the wider area. The Site provides an interesting mix of uses which includes a former civic use in the Police Station, religious use and a Public House. Despite the mix of uses, the Site remains largely inefficient due to the amount of 'dead' space (which has some surface parking use) which is not expected given the strategic location.

8.5.25. The pivotal location of the Site between a number of neighbourhoods of different characters highlights the mix of land uses within the surrounding area. To the north and west, large areas of commercial use reflect the Central Business District and Spinningfields clusters. Hotel uses to the south is mixed with commercial defining the conference quarter. Civic use to the east sits within the Civic Quarter at the heart of the city.

8.5.26. The land uses located within the Site do not reflect those uses found within the surrounding area, particularly the vacant Former Bootle Street Police Station. This highlights the opportunity for the Site to change – to support and enhance the Civic Quarter, but also to complement the adjacent neighbourhoods and the city centre as a whole.

8.5.27. The lack of residential use is apparent within **Figure 8.6**. St. John's to the south-west provides the vast majority of residential land within the core, with only the Great Northern Tower providing residential use close to the Site boundary. The lack of residential use may provide an opportunity, not only for new provision, but also for any proposed development to increase in height, bearing in mind this lack of proximity and the normally occurring residential amenity constraints.

8.5.28. The townscape value of the Land Use receptor is low, given the value of vacant use on Site which does not enhance the surrounding city core. Susceptibility to change is also low, as very few uses will be impacted by change. The overall sensitivity of the receptor is low.

Building Heights

8.5.29. **Figure 8.7** of **Appendix 8.4** illustrates the building heights on Site and around the wider area. Development on Site is at a scale largely alien to the majority of the city centre. The mix between 2-4 storeys is lost within the surrounding townscape. The surrounding tight grain, density and medium height 'hides' a large majority of the Site. This creates the opportunity for new height to be accommodated without harm.

8.5.30. New development within **Figure 8.7** is apparent due to gradual height increases across the city in recent years. Recent development is being brought forward at an increased scale to ensure the city is adequately densified to ensure it can operate efficiently with limited sprawl. Within the city centre, this is starting to develop a secondary cluster of tall buildings (primary cluster along west and south of city centre), drawn down from the River Irwell, through Spinningfields and to the Great Northern Tower and the Beetham Tower.

8.5.31. The gradual increase in scale across and around key approaches to the city has caused the Town Hall spire to become lost within the majority of medium and long-range views of the skyline and across the roofscape of Manchester. The city has lost the marker for the heart of the city, instead replacing it with further markers around the edge of the city centre. Marker buildings can act as useful guides for all to navigate the city and therefore the opportunity exists to define a new marker at the heart of the city centre.

8.5.32. The townscape value of this receptor is low, responding to the existing low datum which limits the density within the Site. Susceptibility to change is medium, given that increased height up to the surrounding datum will have relatively little impact, however above surrounding datum will require consideration on the setting of key city landmarks. The overall sensitivity of the receptor is low/medium.

Topography and Flood Risk

8.5.33. As **Figure 8.8** of **Appendix 8.4** illustrates, the Site is not located within or near a flood zone.

8.5.34. The Site is subject to a substantial level change. The Site falls approximately 4.2 metres from its junction with Southmill Street down towards Deansgate. The Site however does not fall in a similar vein along Bootle Street, instead falling more gradually by 2.9 m from Southmill Street down to Deansgate. Any proposed development will be expected to carefully consider the edge treatment to ensure the Site will engage with and provide new activity to the existing street network.

8.5.35. The townscape value of this receptor is low. Susceptibility to change is low. The overall sensitivity of the receptor is low.

Movement and Linkages

8.5.36. **Figure 8.9** of **Appendix 8.4** illustrates the existing movement network and linkages around the Site. Due to the Site's strategic location, it is highly accessible from a number of transport nodes. The newly orientated St. Peter's Square tram stop is located 200 m to the east of the Site, providing frequent and extensive services to the wider Greater Manchester area. This is supplemented by the Deansgate/ Castlefield tram stop 500 m to the south.

8.5.37. Oxford Road railway station lies within a 10-minute walk to the south-east, providing a regular regional and national rail service.

8.5.38. Primary vehicular and pedestrian routes within the context of the Site include Deansgate to the west, Peter Street to the south and John Dalton Street to the north. The Site is connected to these via the secondary routes of Southmill Street and Jackson's Row as well as the tertiary link along Bootle Street. Due to the prominent road connections, the Site is well serviced by bus stops.

8.5.39. In contrast to the highly accessible surroundings, the Site itself is entirely impermeable – instead pushing movement routes around its northern, eastern or southern boundaries. The lack of active use prevents these routes becoming more prominent pedestrian routes, further defining the area as a 'lost block' within the city core. Any development at the Site could potentially strengthen and activate these routes to facilitate improved permeability between Albert Square and Deansgate. It remains important however for any proposed development to acknowledge the surrounding movement hierarchy, ensuring the Proposed Development supports and animates the secondary and tertiary routes of Jackson's Row, Southmill Street and Bootle Street where possible.

8.5.40. The townscape value of this receptor is low, reflecting the Site's location along secondary and tertiary routes which are not well overlooked. Susceptibility to change is low, given the limited use of the adjacent routes for pedestrians and vehicles to cross the city. The overall sensitivity of the receptor is low.

Environmental Designations, Public Realm and Public Open Space

8.5.41. There are no formal environmental designations affecting the Site.

8.5.42. The surrounding public squares and public parks and gardens have been mapped in **Figure 8.10** of **Appendix 8.4**. No public realm exists within the current Site boundary. The Site's central location ensures it is surrounded by a network of public squares, with further public green spaces located to the west. Any development proposals must consider the relationship and impact on the surrounding public spaces, particularly Albert Square and St. Peter's Square due to their popularity and key civic use.

8.5.43. Recent public realm improvements to St. Peter's Square have altered the perception of the Civic Quarter. Due to the works, St. Peter's Square has arguably become the 'front' of the two spaces, due to its wider expanse, front of Central Library, new Metrolink stop and the development of new offices which front the space along its eastern edge. Albert Square therefore potentially forms the secondary space which is utilised more for events.

8.5.44. The townscape value of this receptor is low/medium. This takes into account the civic and townscape value of Albert Square beyond the Site, with no environmental designations or public realm existing within the Site currently. Susceptibility to change is low/medium, to reflect the potential impact within the setting of the existing surrounding public realm. The overall sensitivity of the receptor is low/medium.

Site Character

8.5.45. The Site can be characterised as a 'lost block'. Despite the Site's strategic city core location, it provides very little activity or townscape significance to merit its location. The north-east corner of the Site acts as a key gateway into the area around the Site. Currently, this gateway is poorly defined and very few city goers are drawn across Albert Square along Southmill Street towards the Site.

8.5.46. The landmarks to the east of the Site and key movement routes to the south and west cause city goers to move around this 'lost block' rather than through it via Jackson's Row or Bootle Street. This is partly due to the route hierarchy, but is also facilitated by a lack of draw into the Site or a lack of active use onto the surrounding streets.

8.5.47. Localised views tend to focus towards the key landmarks.

8.5.48. The townscape value of this receptor is low. Susceptibility to change is low. The overall sensitivity of the receptor is low.

Viewpoints

8.5.49. **Figure 8.13** and 8.14 in **Appendix 8.4** illustrates the principal viewpoints identified. A total of 31 static viewpoints and two kinetic viewpoints are detailed below:

- Viewpoint 1: View from Regent Road Bridge looking north-east;
- Viewpoint 2: View facing south along Cheetham Hill Road from the northern corner of Manchester Fort Shopping Centre;
- Viewpoint 3: View from Cathedral Gardens looking south;
- Viewpoint 4: View facing south-west from the corner of High Street and Copperas Street;
- Viewpoint 5: View facing south-west across Piccadilly Gardens from the corner of Piccadilly and Oldham Street;
- Viewpoint 6: View facing along Fairfield Street from the corner of South Pump Street;
- Viewpoint 7: View facing north-west from the corner of Oxford Street and Whitworth Street;
- Viewpoint 8: View facing north across Whitworth Street from the arches of First Street;
- Viewpoint 9: View facing north-east along Chester Road from the corner of Angela Street;
- Viewpoint 10: View facing north-east from Bridgewater Canal Tow Path;
- Viewpoint 11: View facing south-east from the bridge along Bridge Street;
- Viewpoint 12: View facing north from the platform of Deansgate/ Castlefield Tram Stop;
- Viewpoint 13: View east along Jackson's Row from its junction with Deansgate;
- Viewpoint 14: View west along Jackson's Row from its junction with Southmill Street;
- Viewpoint 15: View east along Bootle Street from its junction with Deansgate;
- Viewpoint 16: View west along Bootle Street from its junction with Southmill Street;
- Viewpoint 17: View north-east from the corner of Deansgate and Quay Street;
- Viewpoint 18: View north-east from Byrom Street;
- Viewpoint 19: View facing north along Deansgate from the corner of Tonman Street;
- Viewpoint 20: View north-west across Lower Mosley Street from the centre of Barbirolli Square;
- Viewpoint 21: View facing west along Central Street from the entrance to Library Walk;
- Viewpoint 22: View west from the centre of Library Walk;
- Viewpoint 23: View west across St. Peters Square from the northern corner of 1 St. Peter's Square;
- Viewpoint 24: View south-west along Deansgate from the junction with Wood Street;
- Viewpoint 25: View south from the centre of New Cathedral Street;
- Viewpoint 26: View north-east from the junction of Liverpool Road and Stone Street;
- Viewpoint 27: View facing south-west across Albert Square;
- Viewpoint 28: View from Oxford Street facing north-west, before the junction with Lower Mosley Street;
- Viewpoint 29: View facing west from the junction of Princess Street and Mosley Street;
- Viewpoint 30: View from Cross Street facing south, opposite junction with King Street South;
- Viewpoint 31: View from Deansgate facing north, at the junction with Camp Street;
- Track 1: Kinetic track from Princess Street, traveling north-west before turning west into St. Peters Square; and
- Track 2: Kinetic track north-west along Princess Street and turning along the western edge of Albert Square at its northern corner.

8.5.50. Further information is provided in **Appendix 8.5** in relation to static photographs and photomontages and in **Appendix 8.3** in relation to the kinetic tracks.

8.6 POTENTIAL EFFECTS

8.6.1. This section identifies the forms of 'embedded mitigation' (or primary/tertiary mitigation) to establish the potential effects (sometimes referred to as the 'pre-mitigation scenario') resulting from the Proposed Scheme. Construction and operational effects are considered separately.

8.6.2. Given the nature of the iterative design process leading to the extent of 'embedded' mitigation into the design, the requirement for supplementary (secondary) mitigation is limited. This assessment does not predict a difference in significance between potential effects and residual effects. Due to this, the assessment does not require a separate 'pre-mitigation' and residual effects assessment.

POTENTIAL EFFECTS DURING CONSTRUCTION PHASE: SHORT TO MEDIUM-TERM

8.6.3. It is anticipated that measures to control construction effects as outlined in **Chapter 3: Description of the Proposed Scheme** will be incorporated into a Construction Environmental Management Plan (CEMP). The measures relevant to townscape and visual impact are set out in **Table 8.10** and as such, form 'embedded mitigation' at the construction stage.

Table 8.10: Summary of Construction Mitigation Measures

Mitigation Measure	Result
No permanent Site compound is expected, with deliveries provided on a 'just in time basis.	Reduce potential townscape and visual impacts of general construction works on Site.
Use of directional lighting across the Site.	Reduce potential townscape and visual impacts of general construction works on Site.
Site hoarding will be used.	Potential townscape and visual impacts reduced.
Construction vehicles will adopt a 'left turn only' policy and will provide deliveries on a 'just in time' basis. Construction vehicle turning will be prohibited on Site due to the implementation of a one-way access through the Site.	Reduce/ limit townscape and visual impact of vehicles.
Stockpiles to be located on Site to limit visual impacts. These may be required to move frequently to suit the construction programme. Where possible any removed material to be retained to help avoid unnecessary construction vehicle movements.	Reduce/ limit visual impact of stockpiles.

POTENTIAL EFFECTS DURING OPERATIONAL PHASE: LONG-TERM

8.6.4. The design proposals have been formulated through an iterative process incorporating environmental assessment and consultation. This process has allowed Site constraints and opportunities to directly influence the evolution of the Proposed Scheme. As a result, mitigation measures form part of the design.

8.6.5. The Proposed Scheme has been developed in accordance with good design principles, which avoids, reduces or offsets potential effects on the townscape and views. The key design principles are incorporated into the design and are therefore 'embedded mitigation'. These are outlined in **Chapter 3: Description of the Proposed Scheme** and are summarised below:

- A single tower has been proposed to the west of the Site. This solely places the mass on the less sensitive edge within the boundary, to respond to height along Deansgate. The tower meets the ground via a podium which helps to provide a human scale to the Proposed Scheme as well as providing the opportunity to retain the Former Bootle Street Police Station and Sir Ralph Abercromby Inn Public House. The public house will interact with new public realm to provide new activity and sense of place within the Site;
- The tower is elliptic in its form, enabling a slender elevation to orientate broadly north-south. The wider elevation runs parallel with Deansgate. The form from along the wide elevation diminishes due to the elliptic shape, limiting the appearance of the mass;
- The pattern of the façade consists of regular vertical columns which are chamfered to provide depth to the fenestration. The columns follow the elliptic form of the tower and therefore will read differently depending on the viewer's orientation to the tower. The façade pattern extends down to the podium to create a shared architectural language which ties the two elements of the design together. This is interspersed with glazing, particularly at ground floor which is active along 90% of its length to animate the surrounding public realm in this quiet corner of the City Centre; and
- The use of anodised panels adds vibrancy to the façade, particularly as the chamfered columns present differently orientated planes to the sunlight. The material will react differently across the façade, and change as users move around the city, throughout the day and year. This finish will aid the expected level of finishing to the Proposed Scheme for its place within the City. The colouration directly references the tones of the surrounding historical built form of the Civic Quarter – albeit in a contemporary and unique manner.

SUPPLEMENTARY MITIGATION AND ENHANCEMENT

8.6.6. The supplementary (secondary) mitigation for the Proposed Scheme is described below. The supplementary mitigation measures identified are focussed on ensuring the management and maintenance of the Proposed Scheme limits any further adverse townscape and visual effects.

CONSTRUCTION

8.6.7. Supplementary mitigation for the Proposed Scheme includes the consideration of Site hoarding which should be coloured to be sympathetic to the surrounding environment. The nature of well-maintained Site hoarding is unlikely to alter the significance of assessed effects.

8.6.8. The implementation of good Site management, maintenance and housekeeping would ensure that the temporary deterioration to townscape character and visual amenity will be kept to a practical minimum. Despite these best practice measures, there would still remain inevitable adverse effects during construction works.

COMPLETED DEVELOPMENT

8.6.9. A management plan may be employed to provide further mitigation and maintenance of the public realm once the Site is operational. The plan would ensure the longevity of planting and the upkeep of spaces.

RESIDUAL EFFECTS

8.6.10. The assessment of residual effects assumes all forms of mitigation have been implemented at construction and operation phase, as described in Section 8.5 and 8.6 above.

CONSTRUCTION PHASE

8.6.11. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1**, **Appendix 8.2** and **Appendix 8.3**, and are summarised below. Due to the nature of the Proposed Scheme, it will be constructed in a single phase. All effects and impacts detailed below are therefore expected to be limited to the short/ medium-term and completed before 2022.

Heritage Designations

8.6.12. There are no Listed Buildings within the Site which could be impacted upon by the Proposed Scheme from a townscape perspective during the construction phase.

8.6.13. The Proposed Scheme will cause an impact on the setting of nearby Listed Buildings and the Deansgate/Peter Street Conservation Area, as well as the St. Peter's Square and Albert Square Conservation Area. Construction works are expected to be mitigated in accordance with a CEMP to limit the adverse impacts of construction works on heritage assets.

8.6.14. The proximity of valuable Grade I Listed Buildings within close proximity to the Site does accentuate construction impacts. Any predicted visual impacts will be assessed within the visual assessment. Reference should also be made to **Chapter 9 – Cultural Heritage** for a detailed assessment of heritage impact.

8.6.15. Construction works are predicted to have a minor adverse impact on heritage designations. This is expected to have a moderately significant effect.

Townscape character

8.6.16. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1**. Construction works are predicted to have a minor adverse impact on townscape character, due to the visibility of construction traffic and operations. This impact is expected to be of minor significance.

Urban Grain

8.6.17. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1**. The works will include demolition of the existing Manchester Reform Synagogue and rear portion of the former Police Station. This initial demolition stage will lead onto the gradual evolution of the proposed grain. The overall effect during the construction phase is predicted to be negligible and not significant.

Land Use

8.6.18. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1**. The Site is limited in its current use. Due to the inability of the Site to be phased, Manchester Reform Synagogue will be temporarily relocated prior to the commencement of construction works. The former Police Station building is not currently occupied. The limited number of surface car parking spaces on Site will also be lost. It is expected that the Sir Ralph Abercromby Inn Public House will remain open throughout the construction period.

8.6.19. The overall impact on land use throughout the construction phase is expected to have a minor adverse impact. This is expected to be not significant.

Building heights

8.6.20. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1**. The initial stage of construction works will result in the demolition of the existing Synagogue and rear potion of the former Police Station, currently ranging from 2-4 storeys. Construction of the Proposed Scheme will then commence. Due to the scale of the Proposed Scheme, the impact of elevated construction works is expected to be moderate adverse, resulting in a minor significant effect.

Topography and Flood risk

8.6.21. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1**. Construction will work with existing ground levels to tie into surrounding levels, therefore impacts on topography throughout the construction phase are predicted to be negligible, which is not significant. There is not predicted to be any increased flood risk as a result of the Proposed Scheme.

Movement and linkages

8.6.22. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1**. There are no existing movement routes through the Site that construction can impact. Hoarding around the construction works will allow pedestrian, vehicular and cycle movement to be retained along Jackson's Row, Southmill Street and Bootle Street, with limited closures only occurring where necessary.

8.6.23. Wider impacts to movement routes will be mitigated through a 'left turn only' policy to minimise traffic impact. This will be supplemented by a one-way construction traffic approach at the Site level – accessing the Site through Jackson's Row and leaving via Southmill Street and John Dalton Street. All roads will remain useable during construction.

8.6.24. The impact of construction works is predicted to be adverse and of minor significance which is not considered significant.

Environmental designations, public realm and public open space

8.6.25. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1.** There are no environmental designations covering the Site. The existing Site does not provide any public realm or public open space for construction to affect.

8.6.26. The impact of construction works is predicted to be minor adverse, due to the proximity of Albert Square and is therefore not significant.

8.6.27. As the superstructure of the Proposed Scheme rises above the existing surrounding roofline accompanied by cranes and other construction plant, it will have a potential impact on the visual amenity of Albert Square and St. Peter's Square. Any loss of visual amenity as a result of construction works will be considered in the visual impacts section of this report.

Site character

8.6.28. The predicted residual construction phase impacts are set out in detail in **Appendix 8.1**. The existing buildings do contribute to the character of the Site, but the lack of active frontages and the dominance of the vacant brick buildings associated with the former Police Station within the central portion of the plot, compromise the overall character. Any existing character will be disrupted. The impact is predicted to be minor adverse which is not significant.

CHANGE IN VISUAL AMENITY (static Viewpoints)

8.6.29. The predicted residual construction phase visual impacts are set out in detail in **Appendix 8.2**, and are summarised below:

- A total of 23 out of 31 views have been predicted to result in adverse impact as a result of construction works within the Site. This is broadly due to construction works being visible within sensitive viewpoints, where the works are likely to temporarily impact on the character of the view. A total of 7 views are expected to experience moderate adverse impacts due to construction works, and are described in brief below. No views are expected to experience major adverse impacts as a result of construction works.
  - **View 13**: Construction works dominate the centre of the view. The works will cause a noticeable, temporary change to the appreciation of the viewpoint;
  - **View 14**: Construction works dominate the majority of the viewpoint, due to the proximity of the viewpoint to the Site. The works will cause a noticeable, temporary change to the appreciation of the viewpoint;
  - **View 16**: Construction works dominate the majority of the viewpoint, due to the proximity of the viewpoint to the Site boundary. The works will cause a noticeable, temporary change to the appreciation of the viewpoint;
  - **View 20**: An open view of construction works will dominate the centre of the view, causing a noticeable, temporary change to the appreciation of the viewpoint;
  - **View 21**: Construction works will be clearly visible at the centre of the viewpoint, causing a noticeable, temporary changes to the appreciation of the viewpoint;
  - **View 25**: A view of construction works of the upper storeys will be visible behind the Grade I Listed St. Ann's Church. The works are likely to cause a temporary, noticeable change to the view which will impact the appreciation of the listed building; and
  - **View 27**: An open view of construction works will dominate the viewpoint behind the Grade I Listed Albert Memorial. The works are likely to cause a temporary, noticeable change to the view which will impact the appreciation of the listed building.

8.6.30. Views of the ground level of the Site will be mitigated through the use of Site hoarding, sensitive siting of stockpiles within the Site boundary and delivery and removal of materials utilising a 'just in time' approach along designated one way routes to allow potential visual impacts to be reduced or avoided.

CHANGE IN VISUAL AMENITY (Kinetic Viewpoints)

8.6.31. The predicted residual construction phase kinetic impacts are set out in detail in **Appendix 8.3**, and are summarised below.

8.6.32. Both kinetic tracks experience some form of minor adverse impact as a result of construction works within the Site. This is unsurprising, given that the tracks represent the primary movement routes towards the Proposed Scheme; they are therefore in close proximity to the Site. The works are likely to cause a temporary impact to the tracks.

8.6.33. A total of three kinetic view characters (Track 1 – Character 2, Track 1 – Character 3 and Track 2 – Character 2) are likely to experience minor adverse impacts due to construction works. These impacts are considered to be moderately significant due to the sensitivity of the receptors.

8.6.34. The remaining kinetic view characters are not considered to be affected by construction works.

OPERATIONAL PHASE

8.6.35. The predicted residual operation phase impacts are set out in detail in **Appendix 8.1**, **8.2**, and **8.3** and are summarised below.

Heritage Designations

8.6.36. The predicted residual operation phase impacts are set out in detail in **Appendix 8.1**. Heritage assets dominate the immediate townscape. The presence of new development within the setting of heritage assets does not necessarily cause a negative impact. Well considered new development can enhance the setting and character of historic townscapes. This can be broadly delivered in two ways; by complementing and respecting heritage assets, or designing bold and contrasting architecture that sets a clear distinction between the old and new. The Proposed Scheme follows the latter approach.

8.6.37. The Proposed Scheme has no direct impact on Listed Buildings. There will however be indirect townscape impacts on the setting of a number of Listed Buildings of varying grades, including two Grade I listings (Manchester Town Hall and Albert Memorial). A direct townscape impact will affect the Deansgate/Peter Street Conservation Area, with further indirect impacts on the setting of the Albert Square and St. Peter's Square Conservation Areas.

8.6.38. The magnitude of townscape impacts is considered to be minor adverse. The bold and contrasting approach of the Proposed Scheme is considered to indirectly erode the surrounding heritage assets to a minor extent. The ability of the historical townscape to be appreciated without attention being drawn away will be limited, due to the scale of the Proposed Scheme dominating the immediate surrounding townscape – both due to the height of the tower, and the scale of the podium block. The proposed tower seeks to be a landmark for the heart of the city and therefore inevitably clashes with the historic landmarks in a manner which is common place in modern city centres.

8.6.39. The quality of the materials and detailing will help to mitigate these impacts, alongside the offer to activate the surrounding townscape, creating a new 'sense of place' destination to supplement the existing city centre offer. The Proposed Scheme seek to develop a high-quality building façade, broadly addressing the colour tones of the Civic Quarter, to ensure the development will age and weather appropriately and not to the detriment of the surrounding heritage. Highly durable anodised finishing will be applied to ensure the façade remains highly weather and UV resistant.

8.6.40. Whilst the scale of the impact may well be larger, careful detailed design mitigation, the boldness of this proposed landmark due to its strategic location and the mixed offer to supplement surrounding heritage has limited the magnitude of impact. A minor adverse effect on the heritage assets of the townscape is considered to be moderately significant due to the medium/ high sensitivity of the receptor.

8.6.41. **Appendix 8.2** contains detail on the visual impact on heritage assets. A detailed assessment on the direct impacts on heritage assets is included within **Chapter 9 – Cultural Heritage**.

Townscape character

8.6.42. The predicted residual operational phase impacts are set out in detail in **Appendix 8.1**.

8.6.43. The Proposed Scheme responds positively to the character of the Civic Quarter, by strengthening and enhancing the mix of uses on offer within the Quarter through the creation of a new destination. The Proposed Scheme proposes a new landmark to cluster with the existing landmarks of the Town Hall, Town Hall Extension and Central Library – albeit one which is modern and contrasting in nature.

8.6.44. MCC have defined their aspirations for the Civic Quarter to drive the growth of the next phase of the city centre economy. The quarter's central location will allow it to play an important role to facilitate the growth and strengthen the offer and relationship with the adjacent Petersfield, Spinningfields and Central Business District character areas. Jackson's Row is defined by the City Centre Strategic Plan as a major development site to achieve this.

8.6.45. The Proposed Scheme includes the provision of a new conference facility to support the facilities within the adjacent Petersfield character area, as a feature of the proposed hotel to continue to grow Manchester's international conference and business industry. The Proposed Scheme also acts as a stepping stone between the new high quality office/public realm offer at St. Peter's Square and Spinningfields. The Proposed Scheme includes office space accessed off a new square associated with the retained Sir Ralph Abercromby Inn Public House, supported by further A class uses to facilitate an active evening character. This supports and grows the character of Spinningfields as well as creating a ribbon of office development from St. Peter's Square to the east, to Spinningfields to the west and up to the Central Business District to the north.

8.6.46. The proposed mix of uses also act to tie the character areas together, supporting the development of a legible city centre with clearly identifiable neighbourhoods.

8.6.47. The proposed architectural style may well differ from the majority of Civic Quarter buildings, however the character of the quarter is defined by high quality and striking architecture – which the Proposed Scheme responds to. Due to the strategic location of the Civic Quarter, and the aspiration for Manchester to continue to grow – the Civic Quarter desires distinctive architecture to mark its core, and a new destination to counter-act its 'lost block'.

8.6.48. The Proposed Scheme is considered to provide a moderate beneficial change to Manchester's townscape character, due to direct benefits to strengthen the Civic Quarter and the wider benefits of surrounding townscape areas. This effect is considered to be moderately significant.

Urban Grain

8.6.49. The predicted residual operation phase impacts are set out in detail in **Appendix 8.1**. The Proposed Scheme seeks to maximise development quantum within the Site, whilst retaining and strengthening the existing building line. The retained buildings of the Sir Ralph Abercromby Inn Public House and former Police Station façade along Southmill Street provide familiar features from which the Proposed Scheme would arise.

8.6.50. The Proposed Scheme sits as two blocks within the Site boundary. Block A is located to the west of the Site, and includes a 6-storey mixed use podium with an additional 33 storey tower above. The tower, in this location, responds to the additional development height along Deansgate, running approximately parallel with this route.

8.6.51. Block A includes the retained Sir Ralph Abercromby Inn Public House. Block B includes the retained former Police Station frontage along Southmill Street as part of a larger new building rising to 9 storeys in height. The inclusion of the square at ground level helps to split the form of Block A and Block B north-south across the Site boundary, limiting consideration of the Proposed Scheme as one solid mass within an areas of predominantly finer grain development. The proposed grain reflects a more 'efficient' layout expected for a strategic city centre site.

8.6.52. The proposed blocks are expected to meet the ground positively to reflect the surrounding pattern of urban grain and support the existing street network and proposed new public realm. The interest along Bootle Street created by the stepping of the Sir Ralph Abercromby Inn Public House has been retained as a feature to ensure the retained forms on Site are not inundated by contemporary forms.

8.6.53. The Proposed Scheme is considered to provide a moderate beneficial change to the urban grain of Manchester's core, due to the contextual and consolidated proposed footprint. This effect is considered to be moderately significant to the wider townscape.

Land Use

8.6.54. The predicted residual operational phase impacts are set out in detail in **Appendix 8.1**. The Proposed Scheme reflects a positive change to land use. The under-utilised existing Site does not respond positively to the character and ambition of Manchester City Centre. However, the Proposed Scheme has considered the existing Synagogue and Public House uses within the design.

8.6.55. The proposals seek to re-provide Manchester Reform Synagogue within Block A, accessed from Jackson's Row as it is now. The new Synagogue will be embedded into the heart of the Proposed Scheme to provide a safe yet central place of worship. Retaining this land use within the Scheme ensures the development responds to the civic/religious use which has been long present on the Site and within the Civic Quarter.

8.6.56. In a similar vein, the Sir Ralph Abercromby Inn Public House will be retained and enhanced in-situ, as a feature of the proposed square at the centre of the Site.

8.6.57. The scale of the Proposed Scheme provides a wide range of further uses within the Site. These uses are dispersed across the two proposed blocks, with 90% of Bootle Street, Jackson's Row and Southmill Street frontages proposed with active uses. Similarly, the main entrance to the office accommodation and hotel lobby will accessed from the proposed public square, which will also be fronted by retailed uses and the retained Sir Ralph Abercromby Inn Public House.

8.6.58. The 5* hotel bedrooms and residential accommodation will be located within the tower. The podium block forming the remaining development within Block A will be mixed in use, including the replaced Synagogue and leisure and conferencing facilities associated with the hotel.

8.6.59. The Proposed Scheme seeks to support the wider desire for the city to compete on the national and international stage. The Site's strategic location between the civic heart of the city and the hotel/conference district of Petersfield places it in a strong position to help develop the city's external prospect. The Scheme seeks to develop Manchester's first purpose built 5* hotel, with associated conference facilities. These will be supported by new office space to connect Spinningfields through to St. Peters Square and the CBD to the north. New leisure use will support these, alongside retail, restaurant and further drinking establishments (including a sky lobby) to further Manchester's offer within the core of the city for tourists, residents and businesses alike.

8.6.60. A new residential offer will respond to the growth of Castlefield and St. Johns, reflecting the desire for residents to live within the heart of Manchester. Introducing residential development into Manchester's core will help to activate the Proposed Scheme and wider townscape all day long, helping the development of a 24-hour city, improving safety and in turn, improving the external prospect.

8.6.61. The proposed mix and quantum of uses reflect the Site's strategic city centre location and respond to the rare opportunity the Site presents. The proposals seek to provide an efficient mix of land uses to densify the city core. These uses respond to the surrounding character areas and help to tie the city centre together. The Proposed Scheme is therefore considered to provide a major beneficial change to land use. This effect is expected to be moderately significant.

Building heights

8.6.62. The predicted residual operation phase impacts are set out in detail in **Appendix 8.1**. The relatively fast growth of Manchester, combined with its tight city borders, has caused development height within the city to rise rapidly within the past decade. Due to these factors, the city requires its core to be dense and efficient to support the continued growth of Manchester.

8.6.63. The wider city centre is currently characterised by densely packed, medium scale buildings (in the Manchester context, up to 20 storeys in height). Taller, landmark buildings are, in the main, pepper potted around the edge of the city core – providing accents to mark key gateways or movement corridors, with the majority of new high development concentrated around the city periphery, mainly along the watercourses. This pattern of growth over the last decade has resulted in the loss of the view of the Town Hall spire as the main marker on the skyline amongst the taller surrounding townscape – both within the city core and around its periphery. The city has therefore lost its 'marker for the middle'. Instead replacing it with markers of its edge or less significant areas of townscape.

8.6.64. The approach of the Proposed Scheme clearly seeks to remark the middle of the city through a tower of significant height when compared to the surrounding townscape, rising to 39 storeys.

8.6.65. The tower of the Proposed Scheme is located beyond of the main 'arc' of new buildings clustering along the city's periphery and associated watercourses – however it is situated within the emerging 'secondary cluster' of towers, arcing down through Spinningfields to the Beetham Tower, Great Northern Tower, Axis and towards the Mancunian Way with Owen Street beyond. On the city scale, the proposed tower is not out of place in this cluster, however the Proposed Scheme will have a much greater connection with the historical core of the city and therefore a greater potential for significant effects to arise.

8.6.66. Given the growth ambition of Manchester, there is an expectation to see development of height when viewing the city from afar. The skyline is expected to evolve, however buildings of height are also required to be mitigated by high design standards, building quality and consideration of the façade and how it will be maintained into the future. These expectations are accentuated by the Proposed Scheme's historical context.

8.6.67. The Proposed Scheme will be at an entirely new scale to the immediate built form. When viewed from distance to the north and south, the tower will appear to be sleek and slender. At other points around the city, the wide elevation of the tower will be apparent. The proposal seeks to mitigate its scale through the elliptic form, which helps to reduce the mass of the wide elevation. Whilst the scale of the tower is much greater than the surrounding context, the density of Manchester's core limits the dominance of towers beyond the immediate locality. The tower alignment ensures that the majority of locations where the height is dominant will be visible in the tower's more slender form.

8.6.68. The columns of the tower of the Proposed Scheme are clad in anodised panels and respond to the broad colour tones of the materials used in the construction of the Civic Quarter. The cladding, mixed with the proportions of glazing help to lighten the weight of the tower, reducing the prominence, particularly against a typical grey Manchester sky.

8.6.69. Given the density of the City core and the number of tall buildings that are being constructed within it and along the periphery, perception and visibility of the height of the Proposed Scheme is limited beyond the immediate locality. Where the tower is visible, consideration has been given to how it responds to the immediate surrounding context and their contribution to the Manchester skyline. This is reflected by the north-south orientation of the tower. The Proposed Scheme is not intending to disappear into the townscape. From afar, where the tower is visible, it will help to orientate and guide users across Manchester. The Proposed Scheme has therefore been considered to have a moderate neutral impact on building heights, given the mix of impacts across the wider city centre. This effect is considered to be moderately significant.

Topography and Flood risk

8.6.70. The predicted residual operational phase impacts are set out in detail in **Appendix 8.1**. Minor changes to topography are expected to ensure the Proposed Scheme integrates into the existing levels of the surrounding street network.

8.6.71. The Proposed Scheme is not expected to impact on flood risk.

8.6.72. The Proposed Scheme is considered to have a Negligible impact. This effect is expected to be not significant.

Movement and linkages

8.6.73. The predicted residual operational phase impacts are set out in detail in **Appendix 8.1**. The Proposed Scheme seeks to retain and support the existing movement hierarchy within the surrounding area. The secondary movement routes of Jackson's Row, Bootle Street and Southmill Street will be activated through new ground floor uses along 90% of the perimeter.

8.6.74. The separation between Block A and Block B, afforded by the retention of the Sir Ralph Abercromby Inn Public House, has provided the opportunity for a new square to form at ground level at the heart of the Site. This space allows a new north-south route to cut through the centre of the Site, connecting Bootle Street to Jackson's Row via the new space and a route beneath the elevated grand staircase.

8.6.75. Beyond pedestrian movement, the Proposed Scheme also seeks to provide drop-off facilities for the proposed hotel and conference facilities as well as 136 car parking spaces, cycle storage and loading for the mix of uses proposed.

8.6.76. The Proposed Scheme is considered to provide a minor beneficial impact to the movement network. This effect is not significant.

Environmental designations, public realm and public open space

8.6.77. The predicted residual operational phase impacts are set out in detail in **Appendix 8.1**. The Proposed Scheme seeks to provide two new squares within the Site. The first is at ground level, between the proposed blocks and created to provide access and an appropriate setting for the retained Sir Ralph Abercromby Inn Public House. The new square will be supported by three retail units, the hotel lobby, office entrance and the retained public house.

8.6.78. The second space is the roof top square, located on top of Block B, accessed by a public lift from Jackson's Row and via a landscaped feature stair from the roof of the Block A podium. Associated terraces are proposed to provide a food and beverage offer – drawing users to the roof terrace, facilitating the potential for events and supporting general dwell time.

8.6.79. The different characters between the spaces gives the Proposed Scheme flexibility to provide differing offers to the city. The Proposed Scheme represents a complete change from the existing Site use which is considered to provide a major beneficial change to the public realm offer. This effect is considered to be moderately significant.

Site character

8.6.80. The predicted residual operation phase impacts are set out in detail in **Appendix 8.1**. The Proposed Scheme will facilitate an entirely new character for the Site, to overturn the existing 'lost block' notion. This character will be defined by the mix of uses proposed, creating a new destination within the heart of the city for a wider variety of people. This character will seek to supplement the existing city centre, and support the wider growth of the city.

8.6.81. Elements of the existing uses of the Site will be embedded into the Proposed Scheme. This includes the new Synagogue, retention of the Sir Ralph Abercromby Inn Public House as a feature of the new square at the heart of the Site and re-use of the former Police Station frontage along Southmill Street.

8.6.82. The Proposed Scheme is considered to have a moderate beneficial impact. This is expected to be of minor significance.

CHANGE IN VISUAL AMENITY (Static Viewpoints)

8.6.83. The following paragraphs are a summary of the detailed conclusions drawn in **Appendix 8.2**.

8.6.84. Given the scale of the Proposed Scheme, the visual assessment has highlighted a considerable extent of change from the baseline viewpoints. For twelve of these views, this change has been considered to have a beneficial impact (Viewpoints 1, 2, 5, 6, 9, 11, 12, 13, 14, 15, 16 and 31). The nature of change has been considered to be beneficial where visibility of the Proposed Scheme provides visible new uses to activate the surrounding townscape, provides a wayfinding marker across the city and is of a scale and massing to support the growth aspirations of the city, all mitigated through visible high quality design and materiality.

8.6.85. Five viewpoints have been assessed as experiencing neutral impacts, where the Proposed Scheme corresponds to the existing character of the view (Viewpoints 8, 10, 19, 20 and 28). Six further viewpoints assessed as no change due to existing townscape preventing visibility of the Proposed Scheme (Viewpoints 3, 4, 7, 24, 26 and 30).

8.6.86. Due to the sensitive historical setting of the Site, the scale of the Proposed Scheme has caused adverse visual effects. Of the 31 identified viewpoints, eight viewpoints have been assessed as experiencing some degree of adverse impacts (Viewpoints 17, 18, 21, 22, 23, 25, 27 and 29).

8.6.87. Of the eight viewpoints assessed with an adverse nature of effect, four are considered as moderate adverse (Viewpoint 21, 22, 25 and 29). One view has been assessed as major adverse (Viewpoint 27), with this view also experiencing the only effect deemed significant.

CHANGE IN VISUAL AMENITY (Kinetic Viewpoints)

8.6.88. The predicted residual operational phase kinetic impacts are set out in detail in **Appendix 8.3**, and are summarised below.

8.6.89. Given that the tracks represent the primary movement routes towards the Proposed Scheme, they are therefore in close proximity to the Site. The surrounding townscape of high sensitivity, caused by high heritage value and strong cultural associations has led to Track 1 to experience adverse impacts across two of the identified characters (Track 1 – Character 2 and Track 1 – Character 3) where the Proposed Scheme affects the legibility of the Town Hall buildings. Both characters were considered to experience a moderate adverse impact, of a moderately significant effect.

8.6.90. Track 2, Character 1 is expected to experience a minor neutral nature of impact due to the presence of proposed contemporary development in and amongst existing contemporary development within the view.

8.6.91. The remaining two characters are anticipated to not experience change due to the orientation of the track along movement routes towards the Site. These kinetic tracks highlight the Proposed Scheme will move into and out of view as users traverse the city, even at close proximity to the Site.

8.7 SUMMARY

8.7.1. This townscape and visual assessment has been carried out with reference to the Landscape Institute's Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013.

8.7.2. A three-stage assessment process has been adopted. Firstly, the nature of receptors (sensitivity) have been assessed, and secondly, the nature of the impacts (magnitude) likely to result from the Proposed Scheme have been assessed. From this the overall significance of the identified effects on receptors have been assessed.

8.7.3. The proposals have been formulated through an iterative process involving environmental assessment and consultation. This process has allowed Site constraints and opportunities to directly influence development proposals. As a result, mitigation measures form part of the design.

8.7.4. The results of the townscape and visual assessment are set out in full within the **Appendices 8.1**, **8.2** and **8.3**.

8.7.5. When assessed against the Landscape Institute's Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013 criteria, there are not predicted to be any 'significant' residual townscape effects. Four of the nine townscape receptors predicted beneficial impacts where the effect was deemed to be 'moderately significant'. All four of which relate to the operational phase. Only the townscape impact on heritage designations have been predicted to have a moderately adverse impact for both the construction and operational phases.

8.7.6. Of the 31 identified static viewpoints, one receptor experienced a residual significant effect. This receptor, view 27 (View facing south-west across Albert Square), was considered to experience a Major Adverse effect during the operational stage, due to the dominance of the Proposed Development over the public realm and associated Grade I Listed structure.

8.7.7. Six receptors predicted 'moderately significant' adverse residual visual effects. Viewpoint 21, 22, 23, 25 and 29 predicted moderately significant adverse effects during the operation phase. Viewpoint 21, 22, 25 and 27 predicted moderately significant adverse effects during the construction phase. One receptor (View 31 (View from Deansgate facing north, at the junction with Camp Street)), experienced moderately significant beneficial effects.

8.7.8. The two identified kinetic tracks have been assessed by splitting the track into portions considered to hold the same visual character. These characters have then been assessed using the same methodology as the static viewpoints. Within the two kinetic tracks, five individual character assessments have been carried out.

8.7.9. No additional significant residual effects are anticipated from the identified kinetic tracks.

8.7.10. Three kinetic track characters are predicted 'moderately significant' effects. Track 1 Character 2 and Track 1 Character 3 predicted moderately significant adverse effects during the construction and operational phase. Track 2 Character 2 is also anticipated to experience moderately significant adverse effects at construction phase, with moderately significant operational effects predicted to be neutral in nature.

8.7.11. Moderately significant effects, for the purposes of this Townscape and Visual Impact Assessment, are not considered to be significant in the meaning of the Town and Country Planning (EIA) Regulations 2011. This is due to the use of a methodology based upon the GLVIA 3rd edition. No townscape receptors have been predicted to experience significant effects. One static viewpoint experienced a significant residual effect during the operational phase (Viewpoint 27).

Table 8.11: Townscape and Visual Summary Table

Receptor		Construction		Operation	
Description	Sensitivity	Magnitude	Significance	Magnitude	Significance[1]
Townscape Receptors					
Heritage Designations	Medium/ High	Minor Adverse	Moderately Significant	Minor Adverse	Moderately Significant
Townscape Character Area – Civic Quarter	Medium	Minor Adverse	Minor Significance	Moderate Beneficial	Moderately Significant
Urban Grain	Medium	Negligible Adverse	Not Significant	Moderate Beneficial	Moderately Significant
Land Use	Low	Minor Adverse	Not Significant	Major Beneficial	Moderately Significant
Building Heights	Low/ Medium	Moderate Adverse	Minor Significance	Moderate Neutral	Moderately Significant
Topography & Flood Risk	Low	Negligible	Not Significant	Negligible	Not Significant
Movement & Linkages	Low	Minor Adverse	Not Significant	Minor Beneficial	Not Significant
Environmental Designations, Public Realm & Public Open Space	Low/ Medium	Minor Adverse	Not Significant	Major Beneficial	Moderately Significant
Site Character	Low	Minor Adverse	Not Significant	Moderate Beneficial	Minor Significance
[1] Refer to paragraph 8.3.44					
Static Visual Receptors					
View 1 from Regent Road Bridge looking north-east	Low	Minor Neutral	Not Significant	Minor Beneficial	Not Significant
View 2 facing south along Cheetham Hill Road from the northern corner of Manchester Fort Shopping Centre	Low	Negligible Adverse	Not Significant	Minor Beneficial	Not Significant
View 3 from Cathedral Gardens looking south	High	No Change	Not Significant	No Change	Not Significant
View 4 facing south-west from the corner of High Street and Copperas Street	Low/ Medium	No Change	Not Significant	No Change	Not Significant

View 5 facing south-west across Piccadilly Gardens from the corner of Piccadilly and Oldham Street	Low/ Medium	Negligible Adverse	Not Significant	Negligible Beneficial	Not Significant
View 6 facing along Fairfield Street from the corner of South Pump Street	Medium	Negligible Adverse	Not Significant	Minor Beneficial	Minor Significance
View 7 facing north-west from the corner of Oxford Street and Whitworth Street	Medium	No Change	Not Significant	No Change	Not Significant
View 8 facing north across Whitworth Street from the arches of First Street	Low	Minor Adverse	Not Significant	Minor Neutral	Not Significant
View 9 facing north-east along Chester Road from the corner of Angela Street	Low	Negligible Neutral	Not Significant	Negligible Beneficial	Not Significant
View 10 facing north-east from Bridgewater Canal Tow Path	Medium	Negligible Adverse/ No Change	Not Significant	Negligible Neutral/ No Change	Not Significant
View 11 facing south-east from the bridge along Bridge Street	Low	Minor Adverse	Not Significant	Moderate Beneficial	Minor Significance
View 12 facing north from the platform of Deansgate/ Castlefield Tram Stop	Medium	Minor Adverse	Minor Significance	Minor Beneficial	Minor Significance
View 13 east along Jackson's Row from its junction with Deansgate	Low	Moderate Adverse	Minor Significance	Moderate Beneficial	Minor Significance
View 14 west along Jackson's Row from its junction with Southmill Street	Low	Moderate Adverse	Minor Significance	Moderate Beneficial	Minor Significance
View 15 east along Bootle Street from its junction with Deansgate	Low	Minor Adverse	Not Significant	Minor Beneficial	Not Significant
View 16 west along Bootle Street from its junction with Southmill Street	Low	Moderate Adverse	Minor Significance	Moderate Beneficial	Minor Significance
View 17 north-east from the corner of Deansgate and Quay Street	Medium	Minor Adverse	Minor Significance	Minor Adverse	Minor Significance
View 18 north-east from Byrom Street	Medium	Negligible Adverse	Not Significant	Minor Adverse	Minor Significance

View 19 facing north along Deansgate from the corner of Tonman Street	Medium	Minor Adverse	Minor Significance	Minor Neutral	Minor Significance
View 20 north-west across Lower Mosley Street from the centre of Barbirolli Square	Low/ Medium	Moderate Adverse	Minor Significance	Moderate Neutral	Minor Significance
View 21 facing west along Central Street from the entrance to Library Walk	Medium	Moderate Adverse	Moderately Significant	Moderate Adverse	Moderately Significant
View 22 west from the centre of Library Walk	High	Minor Adverse	Moderately Significant	Moderate Adverse	Moderately Significant
View 23 west across St. Peters Square from northern corner of 1 St. Peter's Square	High	Negligible Adverse	Minor Significance	Minor Adverse	Moderately Significant
View 24 south-west along Deansgate from the junction with Wood Street	Medium/ High	No Change	Not Significant	No Change	Not Significant
View 25 south from the centre of New Cathedral Street	Medium/ High	Moderate Adverse	Moderately Significant	Moderate Adverse	Moderately Significant
View 26 north-east from the junction of Liverpool Road and Stone Street	Medium	No Change	Not Significant	No Change	Not Significant
View 27 facing south-west across Albert Square	High	Moderate Adverse	Moderately Significant	Major Adverse	Significant
View 28 facing north-west from the corner of Oxford Street and Lower Mosley Street	Medium/ High	Minor Adverse	Minor Significance	Minor Neutral	Minor Significance
View 29 facing north-west along Princess Street from the corner with Lower Mosley Street	High	Minor Adverse	Minor Significance	Moderate Adverse	Moderately Significant
View 30 facing south along Cross Street opposite the junction with South King Street	Medium	No Change	Not Significant	No Change	Not Significant
View 31 facing north along Deansgate from the corner with Camp Street	Medium	Minor Adverse	Minor Significance	Moderate Beneficial	Moderately Significant

[1] Refer to paragraph 8.3.44

Kinetic Visual Receptors					
Track 1 Kinetic track from Princess Street, traveling north-west before turning west into St. Peters Square – Character 1 Princess St.	High	No Change	Not Significant	No Change	Not Significant
Track 1 Kinetic track from Princess Street, traveling north-west before turning west into St. Peters Square – Character 2 St. Peters Square Crossing	High	Minor Adverse	Moderately Significant	Moderate Adverse	Moderately Significant
Track 1 Kinetic track from Princess Street, traveling north-west before turning west into St. Peters Square – Character 3 St. Peters Square	High	Minor Adverse	Moderately Significant	Moderate Adverse	Moderately Significant
Track 2 Kinetic track north-west along Princess Street and turning along the western edge of Albert Square at its northern corner – Character 1 Princess Street	Medium	No Change	Not Significant	No Change	Not Significant
Track 2 Kinetic track north-west along Princess Street and turning along the western edge of Albert Square at its northern corner – Character 2 Albert Square North	High	Minor Adverse	Moderately Significant	Minor Neutral	Moderately Significant

[1] Refer to paragraph 8.3.44

8.8 REFERENCES

- Department for Communities and Local Government (2012), National Planning Policy Framework, London, DCLG.
- Department for Communities and Local Government (2016), Planning Practice Guidance, London, DCLG.
- Institute of Environmental Management & Assessment (IEMA), 2015. IEMA Environmental Impact Assessment Guide to Shaping Quality Development.
- Landscape Institute, IEMA, 2013. Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, Oxon, Routledge.
- Landscape Institute, 2011. Photography and photomontage in landscape and visual impact assessment, Landscape Institute Advice Note 01/11, London, Landscape Institute.
- Environmental Impact Assessment EU Directive and UK Regulations, (85/337/EEC).

9

BUILT HERITAGE

9 BUILT HERITAGE

9.1 INTRODUCTION

9.1.1. This Chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Scheme upon built heritage. In terms of built heritage, the physical and visual impact of the Proposed Scheme is assessed.

9.1.2. The Chapter describes the assessment methodology, the baseline conditions at the Site and in the surrounding area, any primary and tertiary mitigation adopted for the purposes of the assessment, a summary of the likely significant effects taking into account national legislation, policy and guidance, the further mitigation measures required to prevent, reduce or offset any significant negative effects, and the likely residual effects after these measures have been employed.

9.1.3. This Chapter (and its associated figure) is intended to be read as part of the wider ES, with particular reference to **Chapter 8: Townscape and Visual** and the **Heritage Statement: Significance** and **Heritage Statement: Impact**, Core Documents submitted to support the planning application.

9.2 LEGISLATIVE FRAMEWORK AND GUIDANCE

LEGISLATIVE FRAMEWORK

9.2.1. The applicable legislative framework is summarised as follows:

- Planning (Listed Buildings and Conservation Areas) Act 1990 (**Ref 9.1**);

9.2.2. As the Site is within the Deansgate/Peter Street Conservation Area, Section 72 of the Act (**Ref 9.2**) is of relevance as it requires the Local Planning Authority to pay special attention to the 'desirability of preserving or enhancing the character and appearance' of the designated area. Consequently, it is important to consider the Site as a contributor to the townscape character of the conservation area and the impact of the Proposed Scheme on this aspect of the wider historic environment.

9.2.3. The Site is also adjacent to a number of listed buildings. Section 66 of the Act (**Ref 9.3**) requires the Local Planning Authority to "*have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses*" when considering whether to grant planning permission.

GUIDANCE

9.2.4. The following guidance documents have been used during the preparation of this Chapter:

- Highways Agency. 2007. Design Manual for Roads and Bridges, Volume 11, Section 3, Part 2 HA 208/07 – Cultural Heritage (**Ref 9.4**);
- DCMS's Principles of Selection for Listing Buildings (2010) (**Ref 9.5**);
- Historic England's Conservation Principles, Policies and Guidance (2008) (**Ref 9.6**);
- Historic England's Seeing the History in the View (May 2011) (**Ref 9.7**);
- Historic England's Good Practice Advice Note 2: Managing Significance in Decision-Taking in the Historic Environment (2015) (**Ref 9.8**);
- Historic England's Good Practice Advice Note 3: The Setting of Heritage Assets (2015) (**Ref 9.9**); and
- Historic England's Good Practice Advice Note 4: Tall Buildings (2016) (**Ref 9.10**).
- Historic England's Advice Note 1: Conservation Areas (2016) (**Ref 9.10a**);
- Historic England's Advice Note 2: Making Changes to Heritage Assets (2016) (**Ref 9.10b**); and
- Historic England's Advice Note 4: Tall Buildings (2015) (**Ref 9.10c**).

9.3 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

9.3.1. **Table 9.1** provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 9.1: Summary of Consultation Undertaken to Date

Body/organisation	Individual/stat body/organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
Historic England	Anna Boxer, Principal Inspector	19th March 2015	Initial meeting to discuss the Site and agree Historic England involvement
Historic England	Anna Boxer, Principal Inspector	23 June 2015	Meeting to discuss the draft Heritage Appraisal report for the Site to agree baseline
Historic England	Anna Boxer, Principal Inspector	14 October 2015	Meeting to discuss the draft Strategic Regeneration Framework document and incorporate Historic England comments
Historic England	Anna Boxer, Principal Inspector	10 December 2015	Site visit to allow Historic England to understand nature of the existing buildings within the Site
Historic England	Anna Boxer, Principal Inspector	17 December 2015	Review of emerging design, particularly landscaping treatment to the north-east corner of the site in response to links with Albert Square
Historic England	Anna Boxer, Principal Inspector	20 January 2016	Review of emerging design and the massing/ height of the proposed towers. This led to need for review of key viewpoints for visual impact appraisal
Historic England	Anna Boxer, Principal Inspector	9 February 2016	Meeting to discuss key viewpoints for appraising potential visual impact agreed.
Historic England	Anna Boxer, Principal Inspector	11 March 2016	Workshop to review design development and key issues such as design treatment to Bootle Street elevation at street level to increase activity and interest
Historic England	Expert Advisory Group	4 May 2016	Site Visit and workshop to review design development of the scheme
Historic England	Anna Boxer, Principal Inspector, and Catherine	11 August 2016	Meeting to review key views and videos

	Dewar, Planning Director		
Historic England	Anna Boxer, Principal Inspector, and Catherine Dewar, Planning Director	15 September 2016	Meeting to review key views and videos and discuss planning submission
Historic England	Chris Smith, Head Planning Director	18 April 2017	Review of MAKE's scheme following review by Stephen Hodder
Historic England	Catherine Dewar, Planning Director	22 May 2017	Initial meeting following the appointment of Hodder & Partners as project architects
Historic England and Manchester City Council	Catherine Dewar, Planning Director	1 June 2017	Discussion of emerging revised scheme
Historic England	Catherine Dewar, Planning Director, and Nigel Barker. Head Planning Director	21 June 2017	Discussion of emerging revised scheme
Historic England	Nigel Barker, Head Planning Director	22 August 2017	Presentation of emerging scheme
Historic England	Catherine Dewar, Planning Director	25 September 2017	Review of scheme
Historic England	Catherine Dewar, Planning Director	9 October 2017	Review of revised design to tower

SCOPE OF THE ASSESSMENT

9.3.2. An EIA Scoping Report was submitted to MCC on February 18 2016, as presented in **Appendix 5.1**.

Potentially Significant Effects

Construction Phase

- Change in setting of listed buildings and Conservation Areas in the vicinity of the Proposed Scheme; and
- Demolition of non-designated heritage assets within the Site.

Operation Phase

- Change in setting of listed buildings and Conservation Areas in the vicinity of the Proposed Scheme.

EXTENT OF THE STUDY AREA

9.3.3. For the purposes of this assessment, consideration has been given to the relevant parts of Manchester and Salford that surround the Site. For the purposes of establishing a baseline, a study area of 250m has been used. The study area provides a focus for assessment but is not intended to be prescriptive; buildings outside this 'boundary' are considered where relevant.

9.3.4. A zone of visual influence (ZVI) covers a much wider area (2km) and has been utilised for the purposes of the visual impact assessment to identify key views only. Upon review of the key views, with Historic England, it was confirmed that only short-range views were required to be assessed and consequently the 250m study area was considered sufficient to establish the baseline. In the interests of proportionality, any additional heritage assets outside of the 250m study area are addressed within the impact assessment contained within the **Heritage Statement: Impact**.

METHOD OF BASELINE DATA COLLATION

Desk Study

9.3.5. The Historic Environment Record (HER) provided information on all the designated heritage assets within the 250m study area.

9.3.6. Identification and description of the baseline environment has involved a combination of desk-based review of plans, maps, records and other documents, consultation with Historic England and non-intrusive surveys.

9.3.7. The characterisation appraisal of the study area, which informed the selection of key views for the visual impact assessment, took into account the following factors regarding character and distinctiveness of the area surrounding the Site: open spaces, public realm, materials, views into and from the Site, current and historic uses and the urban grain.

9.3.8. A desk based assessment has included utilising information from the following sources:

- Historic Environment Record (HER);
- National Heritage List for England;
- Archives within the Police Museum, Manchester;
- Archives +, Manchester Central Library;
- Manchester City Council online images collection and conservation area appraisals; and
- John Rylands Library online historic mapping resource.

Site Visit

9.3.9. A visual inspection of the Site and surrounding areas was conducted in April 2016. Consideration has also been given to the historical development, non-designated heritage assets, building types and materials, key views to the notable historic buildings which contribute to the identification of the built form and the understanding of the special architectural and historic interest of the area.

ASSESSMENT METHODOLOGY

9.3.10. The assessment methodology for built heritage is a synthesis of established guidance, best practice and professional judgement. In accordance with an adapted form of the methodology set out in the Department for Transport's Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 2 Cultural Heritage HA 208/07, all receptors identified in the baseline which might be affected by the Proposed Scheme are valued and the impact on them is assessed in order to give a significance of effect. The following Historic England (formerly English Heritage) guidance has also been utilised for the assessment:

- DCMS's Principles of Selection for Listing Buildings (2010) (**Ref 9.11**);
- Historic England's Conservation Principles, Policies and Guidance (2008) (**Ref 9.12**);
- Historic England's Good Practice Advice Note 2: Managing Significance in Decision-Taking in the Historic Environment (2015) (**Ref 9.13**);
- Historic England's Good Practice Advice Note 3: The Setting of Heritage Assets (2015) (**Ref 9.14**);
- Historic England's Advice Note 1: Conservation Areas (2016) (**Ref 9.15**);
- Historic England's Advice Note 2: Making Changes to Heritage Assets (2016) (**Ref 9.16**); and
- Historic England's Advice Note 4: Tall Buildings (2015) (**Ref 9.17**).

SIGNIFICANCE CRITERIA

9.3.11. The assessment of potential effects as a result of the Proposed Scheme has taken into account both the construction and operational phases. The construction phase includes enabling works, demolition, earthworks and construction activities as set out in **Chapter 3: Description of the Proposed Scheme**. The significance level attributed to each effect has been assessed based on the magnitude of change due to the Proposed Scheme and the sensitivity of the affected receptor. The sensitivity of the affected receptor is assessed on a scale of high, medium and low, and the magnitude of change is assessed on a scale of large, medium, small and negligible as shown in **Table 9.2** and **Table 9.3**. Criteria have been established to appraise a heritage asset's significance.

9.3.12. Statutory criteria, as set out in the 'Principles of Selection for Listing Buildings', DCMS, 2010 (**Ref 9.11**), provide a list of principles of assessing significance based on architectural and historic interest, age and rarity, aesthetic merits, selectivity and national interest. Historic England's criteria outlined in 'Conservation Principles, Policies and Guidance' (**Ref 9.12**), are also considered in this assessment.

9.3.13. Evaluation of significance has been informed primarily by the designation of the heritage assets at an international, national, regional or local level, as well as their ability to contribute to an understanding of the past. This value rating has been applied when considering sensitivity of views containing heritage assets. Indicative definitions for each of these ratings are outlined in **Table 9.2**.

Table 9.2 Criteria for determining the sensitivity of heritage assets

Sensitivity	Definition
High	Grade I and Grade II* listed buildings Other buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade Conservation Areas containing very important buildings
Medium	Grade II listed buildings Historic buildings that can be shown to have exceptional qualities in their fabric or historical associations Conservation areas containing buildings that contribute significantly to its historic character
Low	Locally listed buildings Historic buildings of modest quality in their fabric or historical association

9.3.14. If the Proposed Scheme will enhance heritage values or the ability to appreciate them, then the effect on heritage significance will be deemed to be positive; however, if they fail to sustain heritage values or impair their appreciation then the effect will be deemed to be negative.

9.3.15. **Table 9.3** summarises the criteria used when assessing the magnitude of change. The criteria are not intended to be prescriptive and the weighting to be accorded to each requires professional judgement.

Table 9.3: Criteria for determining magnitude of change

Rating	Factors in the assessment of magnitude of change
Large positive	The development considerably enhances the heritage values of the heritage assets, or the ability to appreciate those values.
Medium positive	The development enhances to a clearly discernible extent the heritage values of the heritage assets, or the ability to appreciate those values.
Small positive	The development enhances to a minor extent the heritage values of the heritage assets, or the ability to appreciate those values.
Negligible	The development does not affect the heritage values of the heritage assets in the view, or the ability to appreciate those values.

Small negative	The development erodes to a minor extent the heritage values of the heritage assets, or the ability to appreciate those values.
Medium negative	The development erodes to a clearly discernible extent the heritage values of the heritage assets, or the ability to appreciate those values.
Large negative	The development severely erodes the heritage values of the heritage assets, or the ability to appreciate those values.

Effect significance

9.3.16. Derived by combining the sensitivity of the resource with the magnitude of change for each asset, **Table 9.4** illustrates how the significance of effect has been determined. The matrix is not intended to 'mechanise' judgment of the significance of effect but act as a check to ensure that judgments regarding value, magnitude of change and significance of effect are reasonable and balanced.

9.3.17. The following terms have been used to define the significance of the effects identified:

- **Major effect**: where the Proposed Scheme could be expected to have a very significant effect (either positive or negative) on receptors;
- **Moderate effect**: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on receptors;
- **Minor effect**: where the Proposed Scheme could be expected to result in a small, barely noticeable effect (either positive or negative) on receptors; and
- **Negligible**: where no discernible effect is expected as a result of the Proposed Scheme on receptors.

Table 9.4: Significance of effect matrix

Magnitude of Change		Sensitivity		
		High	Medium	Low
	Large	Major	Major – Moderate	Moderate - Minor
	Medium	Moderate	Moderate - Minor	Minor
	Small	Moderate – Minor	Minor	Minor - Negligible
	Negligible	Negligible	Negligible	Negligible

9.4 BASELINE CONDITIONS

9.4.1. A summary of the Site and surrounding area is provided below; further details are provided in the **Heritage Statement: Significance**, a Core Document submitted to support the planning application.

HISTORICAL CONTEXT

9.4.2. The area bounded by Jackson's Row to the north, Bootle Street to the south, Deansgate to the west and Southmill Street to the east was largely developed by 1787 with tightly-packed slum dwellings.

9.4.3. By the mid-19th century the open land surrounding the Site had been fully developed with back-to-backs. A Quakers meeting house and churchyard occupied the western end of Jackson's Row. This southern end of Deansgate remained partially occupied by slums until the c1880s when most the buildings facing Deansgate, and indeed some leading off into more minor roads, such as Bootle Street and Jacksons Row, were replaced with commercial buildings such as office blocks, small-scale industrial sites and shops.

9.4.4. The site of the Jackson's Row Synagogue is situated where the former No 1 Court, Munday's Square, Royle's Square, Brown's Yard and Cottage Court were once positioned. No 1 Court backed onto a small back lane called Bootle Alley which ran between Jackson's Row and Bootle Street. Bootle Alley was originally partially located at the rear of the Jackson's Row Synagogue site.

9.4.5. It is unknown when the back-to-back houses within the Site were demolished but some of the courts had been redeveloped by the late 1880s and replaced with small-scale industrial sites, with other courts being removed during the nation-wide slum clearance programme of the early 1930s. The slum clearances would have also coincided with the construction of the police headquarters in 1934-7.

9.4.6. As an area within the city centre of Manchester, perhaps the key historical event that took place was the Peterloo Massacre; eleven people died and over 400 were injured at St Peter's Fields on 16 August 1819 when soldiers charged through the crowd of 60,000 demonstrating peacefully for parliamentary reform. Contemporary plans of the location of the crowds on the day illustrate the demonstration and ensuing massacre took place in and around the Site.

LISTED BUILDINGS

9.4.7. The Listed Buildings within 250m of the Site are provided in **Table 9.5**. **Table 9.5** identifies which Listed Buildings will potentially be impacted by the Proposed Scheme; this assessment has been made through consideration of the urban form of the area and the potential for visual impact by a development of height that extends beyond the established skyline. **Table 9.5** demonstrates that 29 of the 55 listed buildings, identified within the baseline, will potentially be impacted by the Proposed Scheme. Further information on the sensitivity of the settings of the identified listed buildings is provided in **Heritage Statement: Significance**, a Core Document submitted to support the planning application.

Table 9.5 Sensitivity of the setting of the identified listed buildings within 250m

Map Id.	Building Name and Location	Listing grade	Conservation Area	Potential to be affected	Sensitivity of setting
1	Royal London House, Deansgate (west side) Nos.188 to 202,	Grade II	Deansgate/ Peter St	**Yes**	Medium
2	Rylands Library, Deansgate (west side),	Grade I	Deansgate/ Peter St	No	High
3	Sawyers Arms Public House, No.138 Deansgate (west side),	Grade II	Deansgate/ Peter St	No	Medium
4	Nos.184 & 186 Deansgate	Grade II.	Deansgate/ Peter St	No	Medium
5	Onward Buildings, Nos.205 to 209 Deansgate (east side),	Grade II	Deansgate/ Peter St	**Yes**	Medium
6	Elliot House, Deansgate (east side)	Grade II	Deansgate/ Peter St	**Yes**	Medium
7	Former entrance to Deansgate Goods Station Nos.223 to 233 Deansgate (east side),	Grade II	Deansgate/ Peter St	**Yes**	Medium
8	Opera House Theatre, Quay Street (north side)	Grade II	Deansgate/ Peter St	No	Medium
9	Sunlight House, Quay Street (north side)	Grade II	Deansgate/ Peter St	**Yes**	Medium
10	Masonic Temple, Bridge Street	Grade II	Deansgate/ Peter St	No	Medium
11	Albert Hall, No.27 Peter Street (north side),	Grade II	Deansgate/ Peter St	**Yes**	Medium
12	Harvester House, No.37 Peter Street (north side)	Grade II.	Deansgate/ Peter St	**Yes**	Medium
13	Lancashire House, No.47 Peter Street (north side), (Includes No.9 Southmill Street)	Grade II	Deansgate/ Peter St	**Yes**	Medium
14	Free Trade Hall, Peter Street (south side)	Grade II*	Deansgate/ Peter St	No	High
15	Former Theatre Royal, Peter Street (south side) (now listed as Royale Club)	Grade II	Deansgate/ Peter St	No	Medium

16	Former Young Men's Christian Association, No.56 to 58 Peter Street (south side), [Includes: Nos.14 to 18 Mount Street]	Grade II	Deansgate/ Peter St	No	Medium
17	The Midland Hotel, Peter Street (south side)	Grade II*	St Peter's Square	**Yes**	High
18	Friends' Meeting House, Mount Street	Grade II	St Peter's Square	**Yes**	Medium
19	Albert Chambers, 16 Albert Square (South Side)	Grade II	Albert Square	**Yes**	Medium
20	Carlton House, Nos.17 and 18 Albert Square	Grade II	Albert Square	**Yes**	Medium
21	St Andrew's Chambers, Nos.20 and 21 Albert Square	Grade II	Albert Square	**Yes**	Medium
22	Manchester Town Hall, Albert Square	Grade I	Albert Square	**Yes**	High
23	Fraser's statue, Bright's statue, Heywood's statue, Gladstone's statue & Jubilee Fountain, Albert Square	Grade II	Albert Square	**Yes**	High
24	Albert Memorial, Albert Square	Grade I	Albert Square	**Yes**	High
25	Abraham Lincoln statue, Brazennose Street (formerly in Platt Fields park)	Grade II	Albert Square	No	Medium-to-low
26	Roman Catholic Church of St. Mary (The Hidden Gem), Mulberry Street	Grade II	Albert Square	No	Medium
27	G-MEX, Windmill Street. (Formerly listed as former Central Station.)	Grade II*	Not in CA	**Yes**	High
28	Lawrence Buildings, No.7 Central Street, and 2 & 4 Mount Street	Grade II*	Albert Square	**Yes**	High
29	Central Public Library, St Peter's Square (west side)	Grade II*	St Peter's Square	**Yes**	High
30	No.1 Albert Square	Grade II	Albert Square	**Yes**	High
31	Town Hall Extension	Grade II*	Albert Square	**Yes**	High
32	11-17 St John Street (south side)	Grade II	St John St	**Yes**	Medium
33	Great Northern Warehouse	Grade II*	Not in CA	No	High

34	Lloyd's House, 16-22 Lloyd Street	Grade II	Albert Square	**Yes**	Medium
35	Memorial Hall, 1 & 3 Southmill Street	Grade II*	Albert Square	**Yes**	High
36	1-5 Central Street (north side)	Grade II	Albert Square	**Yes**	Medium
37	Anglia House, 86 Cross Street	Grade II	King Street	**Yes**	Medium
38	Eagle House, King Street (south side), Cross Street. Nos.62-68	Grade II	King Street	No	Medium
39	Prudential Assurance Buildings, 76-80 King Street	Grade II	King Street	No	Medium
40	Northern Assurance Building, 9-21 Princess Street (north east)	Grade II	Albert Square	**Yes**	Medium
41	10 Kennedy Street (south west side)	Grade II	Not in CA	No	Medium
41	Manchester Law Library, 14 Kennedy Street (south west side)	Grade II*	Not in CA	No	High
42	31 Princess Street (north-east side)	Grade	Not in CA	No	Medium
43	32 and 34 Kennedy Street (south west side)	Grade II	Not in CA	No	Medium
44	Vine Inn, 42 and 44 Kennedy Street (south west side)	Grade II	Not in CA	No	Medium
45	65-71 Princess Street (north east side)	Grade II	Not in CA	**Yes**	Medium
46	73 & 75 Princess Street	Grade II	Albert Square	**Yes**	Medium
47	City Art Gallery, Mosley Street (east side)	Grade I	Deansgate/ Peter St	No	High
48	The Athenaeum, 81 Princess Street (north east side)	Grade II*	Deansgate/ Peter St	No	High
49	14-16 Princess Street (79 Mosley Street)	Grade II	George St	**Yes**	Medium
50	Memorial Cross, St Peter's Square	Grade II	Deansgate/ Peter St	**Yes**	High
51	War Memorial, St Peter's Square	Grade II*	St Peter's Square	**Yes**	High
52	St John's Street	Grade II	St John St	**Yes**	High

53	322-330 Deansgate	Grade II	Castlefield	No	High
54	235-291 Deansgate	Grade II	Not in a Conservation Area	**Yes**	High
55	St Ann's Church, St Ann's Square	Grade I	St Ann's Square	**Yes**	High

CONSERVATION AREAS

9.4.8. A summary of the Conservation Areas within the study area, which have the potential to be impacted by the Proposed Scheme are provided below. Consideration of the size, location and urban form has informed which Conservation Areas could be impacted by the Proposed Scheme.

9.4.9. Further information is provided in Section 6.4 of the **Heritage Statement: Significance**, a Core Document submitted to support the planning application.

Deansgate/Peter Street Conservation Area

9.4.10. The focus of the Deansgate/Peter Street Conservation Area is on the high architectural interest of the commercial development of these two principal streets during the Victorian period. The centre of the Conservation Area is the busy intersection of Peter Street, Quay Street and Deansgate. These streets make up a large portion of Manchester City Centre's commercial district which was capitalised during the late-Victorian and Edwardian periods with the construction of many large, tall, highly decorative office buildings. Some smaller Victorian and Edwardian buildings along Deansgate occupy older building plots. Many buildings of architectural interest are located within the Conservation Area, with a large portion of these consisting of late Victorian and Edwardian buildings. Bridge Street, in particular, is a well-preserved example of a Victorian and Edwardian shopping street primarily of small grain late 19th century red-brick buildings. The completeness of the street wall with individual buildings of architectural quality, especially along Deansgate is a prominent feature. Deansgate is a good example of a multi-phase streetscape, with individual, elaborately decorated buildings sitting harmoniously side by side. The character of the Deansgate area is historically one of commercial development. Today this character continues with redevelopment and expansion to adjoining areas such as Spinningfields.

9.4.11. The sensitivity of the Deansgate/Peter Street Conservation Area is High.

St Peter's Square Conservation Area

9.4.12. The main characteristic of St Peter's Square conservation area is primarily one of civic grandeur, but it also contains some commercial property. The area contains a highly diverse mix of building styles, periods, heights and materials which create interesting aesthetic juxtapositions such as the large industrial Manchester Central building alongside the highly-decorated Edwardian Baroque Midland Hotel. Later 20th Century developments have restored and reused former commercial and industrial buildings which complement the existing historic fabric of the area and enhance its public use and enjoyment.

9.4.13. The sensitivity of the Deansgate/Peter Street Conservation Area is High.

Albert Square Conservation Area

9.4.14. Albert Square is the civic heart of the City and the main characteristic of the conservation area is its civic grandeur. The Town Hall and Town Hall Extension are the most dominant buildings in the area, and any proposals should respect these landmark buildings.

9.4.15. The sensitivity of the Albert Square Conservation Area is High.

St John Street Conservation Area

9.4.16. The St John Street Conservation Area has been designated due to the high architectural interest of the buildings on St John Street which is the only surviving Georgian terraced street in central Manchester. The St John's Character Area contains, at its heart, a small but almost complete example of a Georgian terraced street. St John Street's Georgian terraces do not form a unified scheme as plots were sold off piecemeal. The eastern end of the street contained a large timber and stone yard which was not built upon until the mid-20th Century.

9.4.17. The sensitivity of the St John Street Conservation Area is High.

St Ann's Square Conservation Area

9.4.18. St. Ann's Square was laid out in the Georgian period, early in the 18th century, and is one of the main public spaces in the City centre. The church, which dominates the southern end of the Square is the only surviving building of that time in the area, the remainder being later replacements which continue to enclose the Square in a satisfactory and coherent manner. As these buildings were constructed in various styles over a long period, they create a rich tapestry of built form.

9.4.19. The sensitivity of the St Ann's Square Conservation Area is High.

NON-DESIGNATED HERITAGE ASSETS

9.4.20. Non-designated assets, such as buildings of good local character, are of heritage significance but not at a level that would pass the threshold for statutory designation. Such assets can singularly and collectively make an important positive contribution to the built environment.

9.4.21. Assessment of the existing buildings within the Site must be made to ascertain if they should be defined as non-designated heritage assets. Buildings outside of the Site have not been assessed as they will not be physically impacted by the Proposed Scheme.

9.4.22. The Site is located within the Deansgate/Peter Street Conservation Area. The existing buildings within the Site consist of:

- The remodelled late 18th century Sir Ralph Abercromby Inn Public House;
- The 1937 former Police Station by City Architect, Noel Hill; and
- The 1953 Reform Synagogue by Cumming and Levy.

The Sir Ralph Abercromby Inn Public House

9.4.23. The rear of the early-19th Century Inn retains a former slum back-to-back dwelling from the same period. This forms the last fragment of this former slum area of Manchester City centre and is of historic value but retains no plan form.

9.4.24. The building occupies a prominent position in the streetscape, projecting forward from the back of pavement line of Bootle Street, consequently it is of local townscape value.

9.4.25. The rear and west elevations have been much altered following bomb damage during the Second World War, and subsequently reconstructed. The ground floor internal plan form has been much altered with the extension into the former No. 1 Syer's Court to the rear and the construction of modern kitchen and toilet facilities. The internal spaces retain no fixtures and fittings of note. The rear of the building is largely modern in date and of no significance.

9.4.26. The inn may be of some local architectural and historic interest, but is considered not to be of sufficient national interest to warrant listing.

9.4.27. However, it should be considered to be a non-designated heritage asset and a positive contributor to the character and appearance of the conservation area. The sensitivity of the Sir Ralph Abercromby Inn Public House is low.

Bootle Street Police Station

9.4.28. Designed by City Architect G. Noel Hill, who also designed the Grade II Listed Charles Street Police Station in Leicester, and the Grade II* Listed Wythenshawe Bus Depot, Manchester, which are considered to be more complete examples of the architects' work. The Manchester Headquarters and Police Station building is therefore considered to be of local architectural interest at best. It is a multi-purpose building, which was advanced in its state-of-the-art design, functions and capacity for future aerial wars; it is of historic and communal interest.

9.4.29. The elevations are of quality in terms of design and materiality; however, the building does not retain its original windows, plan form or any internal fixtures or fittings of note.

9.4.30. The building has a high streetscape value to Southmill Street and occupies a pivotal site in the City centre which may provide opportunities of greater public benefit.

9.4.31. Rear "A" Division building was designed to be utilitarian in design and materials and has no notable streetscape value.

9.4.32. The building is of local historic and architectural interest and is therefore considered to be a non-designated heritage asset due to its position within the Conservation Area and relationship with the Town Hall complex.

9.4.33. The building should be considered as a positive contributor to the character and appearance of the conservation area. The sensitivity of the Police Station is low.

The Manchester reform Synagogue

9.4.34. The Manchester Reform Synagogue is an example of an early 1950s modernist religious building.

9.4.35. The building retains almost all its original fixtures and fittings and its original plan form. The fittings are considered to be of greater significance than the building.

9.4.36. The building has been extended at roof level and to the east with low quality c1960s extensions which has undermined the architectural value of the building.

9.4.37. The authoritative "Jewish Heritage in England", by Sharman Kadish (2nd Edition), does not accord any meaningful significance to the building.

9.4.38. In February 2017 the building was subject to a spot listing application. Assessment by Historic England confirmed that the building does not fulfil the criteria for listing.

9.4.39. The building is considered to be a non-designated heritage asset due to its local historic and architectural interest, largely due to its interior. The sensitivity of the Synagogue is low.

9.5 SENSITIVE RECEPTORS

9.5.1. The Site is comprehensively surrounded by highly graded listed buildings and conservation areas, including the Grade I/II* Town Hall complex, Albert Square Conservation Area and St Peter's Conservation Area. These buildings/areas form the civic heart of the City and yield significant historic and architectural interest and are all of high sensitivity.

9.5.2. Whilst the Bootle Street Police Station and Southmill Street streetscape can be understood and appreciated as being part of the civic complex, the Sir Ralph Abercromby Inn Public House and The Manchester Reform Synagogue are located on tertiary streets which suffer from the presence of gap sites, inactivity and poor pedestrian environments; these are negative elements that adversely affect the character and appearance of the Deansgate/Peter Street Conservation Area.

9.5.3. The existing buildings within the Site contribute positively to the character and appearance of the Deansgate/Peter Street conservation area. It is considered that the existing buildings within the Site are of sufficient historic and or architectural interest to be considered as non-designated heritage assets and of low sensitivity.

9.5.4. The following are the key sensitive receptors which have been assessed:

- Existing buildings within the Site (non designated heritage assets):
  - The Sir Ralph Abercromby Inn Public House;
  - The Manchester Reform Synagogue;
  - Bootle Street Police Station;
- Conservation Areas:
  - Deansgate/Peter Street Conservation Area;
  - St Peter's Square Conservation Area;
  - Albert Square Conservation Area;
  - St John Street Conservation Area;
  - St Ann's Square Conservation Area;

This chapter has been updated - please refer to the Environmental Statement Addendum (Volumes 1 and 2) (2019)

- Listed Buildings (please refer to **Table 9.5**):
  - 1, 5-9, 11-13; 17-24; 27-32; 34-37; 40; 45-46; 49; 50-52; and 55.

9.5.5. All key sensitive receptor locations are shown on **Figure 9.1: Conservation Areas and Listed Buildings.**

9.6 RELEVANT ELEMENTS OF THE PROPOSED SCHEME AND ESTABLISHING THE PRE-MITIGATION SCENARIO

CONSTRUCTION PHASE

9.6.1. **Chapter 3: Description of the Proposed Scheme** details the protective measures that will be put in place to ensure any potential adverse impacts of the construction phase will be minimised. Recommended measures include:

- Regular cleaning of roads and the public realm surrounding the Site which is anticipated to be part of the commitment to the Considerate Constructors Scheme as outlined in 3.7.46 of the **Chapter 3: Description of the Proposed Scheme**; and
- Implementation of construction access/haulage routes and traffic measures as outlined in 3.7.11 to 3.7.14 of **Chapter 3: Description of the Proposed Scheme**.

OPERATIONAL PHASE

9.6.2. The assessment of heritage assets has been based on the description of the Proposed Scheme as detailed within **Chapter 3: Description of the Proposed Scheme**.

9.7 ASSESSMENT OF EFFECTS, MITIGATION AND RESIDUAL EFFECTS

CONSTRUCTION PHASE

Change in setting of listed buildings and conservation areas

9.7.1. The construction phase will result in visual impact/intrusion on the setting of listed buildings within the immediate vicinity of the Site due to the presence of cranes. The receptors that will be impacted are 34, 35 and 36, as outlined in **Table 9.5**.

9.7.2. The sensitivity of the settings of the identified receptors, all of which are in the Albert Square Conservation Area, is high, due to their collective architectural and historic interest, and the magnitude of change of prior to mitigation, is considered to be small negative due to the localised nature of the construction works. Therefore, there is likely to be an indirect, temporary, short-term effect on listed buildings 34-36 of **minor** significance prior to the implementation of mitigation measures.

9.7.3. The construction phase will not result in any impacts on the character and appearance of any of the identified conservation areas as a whole.

Demolition and partial demolition of non-designated heritage assets within the Site

9.7.4. The construction phase will result in the demolition of the Manchester Reform Synagogue and partial demolition of the former Bootle Street Police Station The Abercromby Inn Public House will remain as existing.

9.7.5. The sensitivity of the Manchester Reform Synagogue is considered to be low, due to its value being of limited architectural and historic interest. The magnitude of change prior to mitigation is considered to be moderate negative due to the proposed total demolition of the building. Therefore, there is likely to be a direct, permanent, long-term effect of **moderate** significance prior to the implementation of mitigation measures.

9.7.6. The sensitivity of the former Bootle Street Police Station is considered to be low, due to its value being of limited architectural and historic interest. The magnitude of change prior to mitigation is considered to be small-to-medium negative due to the proposed partial demolition of the building. Therefore, there is likely to be a direct, permanent, long-term effect of **minor** significance prior to the implementation of mitigation measures.

9.7.7. The sensitivity of the Sir Ralph Abercromby Inn Public House is considered to be low, due to its value being of limited architectural and historic interest. The magnitude of change prior to mitigation is considered to be small negative due to the proposed demolition works of the former Bootle Street Police Station and Manchester Reform Synagogue within its setting. Therefore, there is likely to be an indirect, short-term effect of **negligible to minor** significance prior to the implementation of mitigation measures.

Mitigation/enhancement

9.7.8. Undertaking historic building records of the two buildings within the Site, prior to the proposed demolition/ partial demolition works, will advance understanding of the significance of the non-designated heritage assets and will be publicly accessible.

9.7.9. The fixtures and fittings of significance within the Reform Synagogue will be reused and retained within the Proposed Scheme.

9.7.10. The principal frontage of the former Bootle Street Police Station, and incorporation of this part of the building into the Proposed Scheme, will enhance the ability to understand and appreciate the building by putting it back into active use.

Residual effects

9.7.11. The sensitivity of the setting of listed buildings 34-36 ((refer to **Table 9.5**) is high and the magnitude of change following mitigation is small negative. Therefore, there is likely to be an indirect, temporary, short-term residual effect on listed buildings 34-36 of **minor** significance following the implementation of mitigation measures.

9.7.12. The sensitivity of the setting of the non-designated Sir Ralph Abercromby Inn Public House within the Site is low and the magnitude of change following mitigation is small negative. Therefore, there is likely to be an indirect, short-term residual effect on this non-designated heritage asset of **negligible to minor** significance following the implementation of mitigation measures.

9.7.13. The sensitivity of the Bootle Street Police Station, within the Site, is considered to be low and the magnitude of change following mitigation is considered to be medium negative. Therefore, there is likely to be a direct, permanent, long-term residual effect on this non-designated heritage asset of **minor** significance following the implementation of mitigation measures.

9.7.14. The sensitivity of the Manchester Reform Synagogue within the Site is considered to be low and the magnitude of change following mitigation is considered to be medium negative. Therefore, there is likely to be a direct, permanent, long-term residual effect on this non-designated heritage asset of **moderate** significance following the implementation of mitigation measures.

OPERATIONAL PHASE

Change in setting of listed buildings and conservation areas

9.7.15. The potential visual impacts of the operational phase have been assessed using verified photography.

9.7.16. Utilising the baseline information, key views were identified and agreed with Historic England. Reference should be made to Section 2 of the **Heritage Statement: Impact**, a Core Document submitted to support the planning application. The sensitivity of the receptor 24 (refer to **Table 9.5**) is considered to be high, due to its architectural and historic interest as a Grade I listed building, and the magnitude of change prior to mitigation is considered to be large negative due to the visual intrusion on the setting of this receptor. Therefore, there is likely to be an indirect, permanent, long-term effect on this receptor of **moderate to major** significance prior to the implementation of mitigation measures.

9.7.17. The sensitivity of the receptors 7, 22, 31, 35, 54 and 55 (refer to **Table 9.5**) is considered to be high, due to their collective architectural and historic interest as Grade I and Grade II* listed buildings, and the magnitude of change prior to mitigation is considered to be medium negative due to the visual intrusion on the setting of these receptors. Therefore, there is likely to be an indirect, permanent, long-term effect on these receptors of **moderate** significance prior to the implementation of mitigation measures.

9.7.18. The sensitivity of the receptors 5, 6, 12, 13, 18, 23, 27, 32, 34, 36 (refer to **Table 9.5**) is considered to be medium, due to their architectural and historic interest as Grade II listed buildings, and the magnitude of change prior to mitigation is considered to be small negative due to the visual intrusion of the setting of these receptors. Therefore, there is likely to be an indirect, permanent, long-term effect on these receptors of **minor** significance prior to the implementation of mitigation measures.

9.7.19. The sensitivity of the receptors 1, 9, 11, 17, 19-21, 28-30, 37, 40, 45-46, and 49-52 (refer to **Table 9.5**) is considered to be high/medium, due to their architectural and historic interest as listed buildings, and the magnitude of change prior to mitigation is considered to be **negligible**. Therefore, there is not likely to be any effect on these receptors.

9.7.20. The sensitivity of the Albert Square, Deansgate/Peter Street and St Ann's Square Conservation Areas is considered to be high, due to the architectural and historic interest of the areas. The magnitude of change prior to mitigation is considered to be large adverse, due to the visual intrusion on the character and appearance of the areas. Therefore, there is likely to be an indirect, permanent, long-term effect on these receptors of **moderate** significance prior to the implementation of mitigation measures.

9.7.21. The sensitivity of the St John's Conservation Area and St Peter's Square Conservation Area is considered to be high, due to the architectural and historic interest of the area. The magnitude of change prior to mitigation, is considered to be negligible. Therefore, there is not likely to be any effect on this receptor.

Mitigation/enhancement

9.7.22. The Proposed Scheme will provide opportunities for interpretation of the historic interest of the area. Proposals include:

- Retain and incorporate the Sir Ralph Abercromby Inn Public House, enhancing its setting by integrating the building into an area of new public realm;
- Allow for required repair works to the Sir Ralph Abercromby Inn Public House;
- Retain the principal range of the former Police Station and through conversion to a hotel, provide sustainable long-term use for the building;
- Retain and reuse the fixtures and fittings of significance within the Synagogue;
- Allow for interpretation boards and or public art installations to provide an understanding and appreciation of the history of the site, including the Peterloo Massacre; and
- Provide new viewpoints/views of the surrounding heritage assets allowing heritage values to be revealed and understood and appreciated within a new context.

Residual effects

9.7.23. The sensitivity of the receptor 24 (refer to **Table 9.5**) is considered to be high, and the magnitude of change following mitigation remains large negative. Therefore, there is likely to be an indirect, permanent, long-term residual effect on these receptors of **moderate-to-major** significance following the implementation of mitigation measures.

9.7.24. The sensitivity of the receptors 7, 22, 31, 35, 54 and 55 (refer to **Table 9.5**) is considered to be high, and the magnitude of change following mitigation remains medium negative. Therefore, there is likely to be an indirect, permanent, long-term effect on these receptors of **moderate** significance following the implementation of mitigation measures.

9.7.25. The sensitivity of the receptors 5, 6, 12, 13, 18, 23, 27, 32, 34, and 36 (refer to **Table 9.5**) is considered to be medium, and the magnitude of change following mitigation remains small negative. Therefore, there is likely to be an indirect, permanent, long-term effect on these receptors of **minor** significance following the implementation of mitigation measures.

9.7.26. The sensitivity of the receptors 1, 9, 11, 17, 19-21, 28-30, 37, 40, 45-46, and 49-52 (refer to **Table 9.5**) is considered to be high/medium, and the magnitude of change following mitigation remains negligible. Therefore, there is not likely to be any effect on these receptors.

9.7.27. The sensitivity of the Albert Square and Deansgate/Peter Street and St Ann's Conservation Areas is considered to be high and the magnitude of change following mitigation is considered to remain large adverse. Therefore, there is likely to be an indirect, permanent, long-term residual effect on these receptors of **moderate** significance following the implementation of mitigation measures.

9.7.28. The sensitivity of the St John's Conservation Area and St Peter's Square Conservation Area is considered to be high, and the magnitude of change following mitigation remains negligible. Therefore, there is not likely to be any effect on this receptor.

9.8 SUMMARY

9.8.1. The Proposed Scheme will result in permanent effect of moderate to major negative significance effect on the setting of the Grade I Albert Memorial.

9.8.2. The Proposed Scheme will result in permanent effect of moderate negative significance effect on the setting of the Grade I St Ann's Church and Town Hall and the Grade II* Memorial Hall and Town Hall Extension and the Grade II 23-233 Deansgate and 235-291 Deansgate.

9.8.3. Due to the negative significant effects on these highly-graded buildings, which are fundamental to the character and appearance of the conservation areas in which they are located, the Proposed Scheme will also have a permanent effect of moderate negative significance effect on the character and appearance of the Albert Square Deansgate/ Peter Street and St Ann's Square Conservation Areas.

9.8.4. Reference to Core Documents submitted to support the planning application, such as the **Heritage Report**: Impact and the **Planning Statement**, should be made which conclude that although there will be some "less than substantial" effects upon heritage significance (in NPPF terms) the public benefits of the scheme outweigh the impacts.

9.8.5. **Table 9.6** below presents a summary of the significant effects.

Table 9.6: Summary of Effects Table for Built Heritage

Description of Effects	Receptor	Significance and Nature of Effects Prior to Mitigation/ Enhancement	Summary of Mitigation / Enhancement	Significance and Nature of Effects Following Mitigation / Enhancement (Residual)
Construction Phase				
Visual impact on settings of listed buildings	Listed Buildings 34-36	●- / T / I/ ST-MT	n/a	●- / T / I/ ST
Visual impact on settings of listed buildings	Listed Buildings 1-33 and 37-55	n/a	n/a	n/a
Visual impact on character and appearance of conservation areas	St Peter's Square, Albert Square, Deansgate/ Peter Street, St Johns and St Ann's	n/a	n/a	n/a
Demolition of existing buildings	Non-designated heritage assets (Manchester Reform Synagogue and partial demolition of Bootle Street Police Station)	●- / P / D/ LT	Historic Building Records; and identified heritage benefits	●- / P / D/ LT
Operational Phase				
Visual impact on setting of listed buildings	Listed Buildings 24.	●●- / P/ I / LT	Identified heritage and public benefits	●●- / P/ I / LT

Visual impact on setting of listed buildings	Listed Buildings: 7, 22, 31, 35, 54 and 55	●- / P/ I / LT	Identified heritage and public benefits	●- / P/ I / LT
Visual impact on setting of listed buildings	Listed Buildings: 5, 6, 12, 13, 18, 23, 27, 32, 34 and 36	●- / P/ I / LT	Identified heritage and public benefits	●- / P/ I / LT
Visual impact on setting of listed buildings	Listed Buildings: 1, 9, 11, 17, 19-21, 28-30, 37, 40, 45-46, and 49-52	●- / P/ I / LT	Identified heritage and public benefits	●- / P/ I / LT
Visual impact on character and appearance of conservation areas	Albert Square, St Ann's	●- / P/ I / LT	Identified heritage and public benefits	●- / P/ I / LT
Visual impact on character and appearance of conservation areas	St Johns, St Peter's Square, Deansgate/ Peter Street	●- / P/ I / LT	Identified heritage and public benefits	●- / P/ I / LT

NB: Aspects of the proposed scheme considered as part of the pre-mitigation scenario are summarised above in Section 1.6, and within **Chapter 14: Summary of Environmental Statement**.

Key to table:

●Major significance, ●Moderate significance, ●Minor significance, ●Negligible significance

+ / - = Positive or Negative P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term

N/A = Not Applicable

9.9 REFERENCES

- **Ref. 9.1** Planning (Listed Buildings and Conservation Areas) Act 1990;
- **Ref. 9.2** Planning (Listed Buildings and Conservation Areas) Act 1990;
- **Ref. 9.3**: Planning (Listed Buildings and Conservation Areas) Act 1990;
- **Ref 9.4:** Highways Agency. 2007. Design Manual for Roads and Bridges, Volume 11, Section 3, Part 2 HA 208/07 – Cultural Heritage;
- **Ref 9.5:** DCMS's Principles of Selection for Listing Buildings (2010);
- **Ref 9.6**: Historic England's Conservation Principles, Policies and Guidance (2008);
- **Ref 9.7:** Historic England's Seeing the History in the View (May 2011);
- **Ref 9.8:** Historic England's Understanding Place: Conservation Area Designation, Appraisal and Management (2011);
- **Ref 9.9:** Historic England's Good Practice Advice Note 3: The Setting of Heritage Assets (2015);
- **Ref 9.10**: Historic England's Good Practice Advice Note 4: Tall Buildings (2016).
- **Ref 9.11**: DCMS's Principles of Selection for Listing Buildings (2010);
- **Ref 9.12**: Historic England's Conservation Principles, Policies and Guidance (2008);
- **Ref 9.13**: Historic England's Seeing the History in the View (May 2011);
- **Ref 9.14**: Historic England's Good Practice Advice Note 3: The Setting of Heritage Assets (2015);
- **Ref 9.15**: Historic England's Understanding Place: Conservation Area Designation, Appraisal and Management (2011);
- **Ref 9.15**: Historic England and CABE's Guidance on Tall Buildings (July 2007);
- **Ref 9.16**: DCMS, Principles of Selection for Listing Buildings, 2010;
- **Ref 9.17**: Historic England, Conservation Principles, Policies and Guidance (2008).

10

WIND

10 WIND

10.1 INTRODUCTION

10.1.1. This Chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Scheme on the local wind environment in the context of the Site and its surroundings.

10.1.2. The wind environment for purposes of this assessment is defined as the wind flow experienced by pedestrians and the subsequent influence it has on their activities. It is concerned primarily with wind characteristics at pedestrian level. Other likely wind effects such as wind pressure loading on building facades and natural ventilation are unrelated to the pedestrian wind environment and do not fall within the scope of this assessment.

10.1.3. The likely significant effects of the Proposed Scheme on the local wind environment have been assessed against best practice criteria for pedestrian comfort and safety. Where appropriate this Chapter identifies proposed secondary mitigation measures to prevent, minimise or control likely negative effects arising from the Proposed Scheme, alongside subsequent anticipated residual effects.

10.1.4. This Chapter (and its associated figures and appendices) is intended to be read as part of the wider ES, with particular reference to **Chapter 3: Description of the Proposed Scheme** and **Appendices 10.1 to 10.4**.

10.2 LEGISLATIVE FRAMEWORK AND GUIDANCE

LEGISLATIVE FRAMEWORK

10.2.1. There is no applicable legislation of relevance to this assessment.

LOCAL PLANNING POLICY

MANCHESTER'S LOCAL DEVELOPMENT FRAMEWORK (LDF), CORE STRATEGY DEVELOPMENT PLAN DOCUMENT. 2012 (REF 10.1)

10.2.2. Policy EN2 for Tall Buildings of the Manchester Local Development Framework (LDF) (**Ref. 10.1**) states that 'proposals for tall buildings will be supported where it can be demonstrated that they":

"By their very size tall buildings can have a significant impact on the local environment and its micro-climate. It is therefore expected that this impact be modelled and that submissions for tall buildings also include appropriate measures to create an attractive, pedestrian friendly local environment."

GUIDANCE

The Lawson Criteria

10.2.3. The Lawson Criteria (**Ref. 10.2)** are well-established in the UK for quantifying wind conditions in relation to built development and, although not a UK 'standard', the criteria are recognised by local authorities as a suitable benchmark for wind assessments. The Lawson Criteria (London Dockland Development Criteria, LDDC) have been adopted.

The Best Practice Guidelines for Computational Fluid Dynamics Simulation of Flows in the Urban Environment

10.2.4. The Best Practice Guidelines for the Computational Fluid Dynamics [CFD] Simulation of Flows in the Urban Environment (**Ref. 10.3**) have been used as a technical reference for this assessment. These are the most comprehensive set of technical guidance for the application of computer fluid dynamics for wind flows in the urban environment.

Planning Practice Guidance

10.2.5. The Department for Communities and Local Government (DCLG) web based Planning Practice Guidance resource (**Ref. 10.4**) includes a section on design and sets out how a building's size and shape can affect the wind microclimate. The section addressing design (relating to the spacing and scale of buildings) Paragraph O26, states that:

"Account should be taken of local climatic conditions, including daylight and sunlight, wind, temperature and frost pockets."

Historic England Advice Note 4, Tall Buildings (2015)

10.2.6. The Guidance on Tall Buildings (**Ref. 10.5**) updates previous guidance by English Heritage and Commission4) sets out how HE evaluates proposals for Architecture and Built Environment (CABE), produced in 2007. It seeks to guide people involved in planning for and designing tall buildings so that they may be delivered in a sustainable and successful way through the development plan and development management process:.

4.7 "Planning applications for tall buildings are likely to require an environmental impact assessment (EIA), which would be expected to address matters in respect of both. Paragraph 4.10 under the criteria for evaluation states that applicants seeking planning permission should ensure that the proposed building and its cumulative impact, including following criteria are addressed:
e. Other relevant environmental issues, particularly sustainability and environmental performance, e.g the street level wind environment;"
4.10 "…"Consideration of the impact on the local environment environmental is also important, including microclimate, overshadowing……and the impact on the pedestrian experience...The effect on the local environment, including microclimate, overshadowing, night-time appearance, light pollution, vehicle movements, and the environment and amenity of those in the vicinity of the building, and the impact on the pedestrian experience."…"

10.3 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

10.3.1. An Environmental Scoping Report was submitted to MCC in February 18th 2016, as presented in **Appendix 5.1**. This section provides an update on the scope of the assessment and re-iterates the evidence base for insignificant effects following further iterative assessment since February 18th 2016; in line with the Scoping Note submitted for the succeeding iteration of the Proposed Scheme. In the absence of an Environmental Scoping Opinion from MCC it is assumed that the methodology adopted is sufficient.

SCOPE OF THE ASSESSMENT

10.3.2. The purpose of this study is to determine the effect of the Proposed Scheme on the local pedestrian wind environment and on the surrounding areas as compared to the baseline conditions. The assessment follows the guidance given in Lawson Criteria which is discussed below.

Insignificant Effects

Sensitive receptors

10.3.3. Effects on receptors beyond 500 m from the Site have been considered insignificant in line with Best Practice Guidelines for assessments of wind microclimate using CFD modelling (**Ref 10.3**).

Demolition and Construction Phase

10.3.4. The design has been subject to numerous preliminary studies which have been used to inform the Proposed Scheme as it developed into its current form.

10.3.5. The effects on the wind microclimate on the Site are a function of the massing of the Proposed Scheme which would progressively vary during the construction phase. Wind speeds are likely to increase during periods of demolition as the Site will become relatively free of obstructions and winds are likely to gather speed in open areas. As construction develops, the potential effects during various stages of construction will vary and may be of lesser magnitude than those that will be experienced once the Proposed Scheme has been completed. Any undesirable wind conditions during construction are temporary and the areas within the immediate vicinity of the Site will not be open to the public. As construction of the Proposed Scheme proceeds, the wind conditions at the Site would gradually vary, approaching those of the completed development.

10.3.6. Based on the above, it is considered that the construction phase effects do not warrant consideration and will therefore not be not considered further within this Chapter.

Likely Significant Effects

10.3.7. Some buildings and terrain affect the speed and direction of wind flows. Over a ground surface of uniform roughness, the wind speed increases with height. Relative shelter near ground level is a result of friction over the ground. Wind speeds amongst buildings of uniform height are generally very low compared with upper-level wind speeds or those experienced at ground level in large open areas between buildings. Localised zones of acceleration can result in pedestrian discomfort. These effects will vary according to the intended use for each area. For example, an area designed to function as an outdoor café should have a wind environment which is suitable for the more sedentary activities of sitting and standing. Negative wind effects can result from large flanking facades facing the prevailing wind which can cause downwash effects. Buildings of high massing will also tend to create increased windiness around its corners extending to the opposite side from the wind direction, due to pressure differences. Narrow passageways at the ground level of a building can cause funnelling of wind which can be uncomfortable for users and passers-by. Based on iterative modelling of the Proposed Scheme the above effects need to be taken into account.

10.3.8. The effects assessed in this Chapter are:

OPERATIONAL PHASE

- Pedestrian discomfort as a result of localised zones of acceleration; and
- Reduction in pedestrian safety as a result of an increase in wind speeds.

DESCRIPTION OF THE STUDY AREA

10.3.9. A 3d model of the Proposed Scheme and surroundings was constructed for the assessment. The 3d model includes the built area within a radius of approximately 500m around the Site. Buildings beyond this have been represented in the model if their distance from the region of interest is less than 6 times their height, in line with Best Practice Guidelines for CFD (**Ref 10.3**).

10.3.10. The existing Site and the Proposed Scheme are included in the assessments and quantitatively assessed as part of the study.

10.3.11. The following properties currently that are under construction and within a 500 m radius from the Site have been included as part of the existing surrounding buildings baseline as these will be completed prior to the construction of the Proposed Scheme:

- 110078/FO/2015/C1 123 Deansgate;
- 112455/FO/2016 London Scottish House;
- 109246/FO/2015/C1 Granada House Atherton Street;
- 109466/FO/2015/C1 Former Studio Space; and
- 102859/FO/2013/C2 Former Odeon Cinema Building Oxford Street.

10.3.12. All other schemes currently under construction in the area that are not programmed to be completed prior to the Proposed Scheme have been omitted from the baseline scenario. These schemes are, however, included within the cumulative assessment as detailed in **Chapter 13**.

10.3.13. The wind flow develops from the boundary of the flow domain over the terrain approaching the Site. The model increases refinement in areas closer to the Site to capture the effect of geometry on the incoming wind in greater detail.

10.3.14. The model excludes both soft and hard landscaping (trees, street furniture etc.), which is a representation of the worst case scenario since landscaping will generally improve the wind environment.

ASSESSMENT METHODOLOGY

10.3.15. A quantified assessment of the existing wind environment at the Site was used to establish the 'Baseline Scenario', which comprises existing buildings and those schemes currently under construction but due to be completed prior to the Proposed Scheme. This was followed by an assessment of the Site with the Proposed Scheme modelled in addition to the 'Baseline Scenario' in order to determine the effect of the 'Proposed Scenario'.

10.3.16. The methodology adopted for the assessment combines the use of CFD to predict air flow patterns and wind velocities around the Site, the use of wind data from the nearest suitable meteorological station and the recommended comfort and safety standards (the Lawson Criteria).

10.3.17. The assessment took into account the following factors:

- The effect of the geometry, height and massing of the Proposed Scheme and existing surroundings on local wind speed and direction;
- The effects of location and ground roughness (open field, inner city, etc.); topography, and nearby obstructions (buildings, bridges, etc.);
- Orientation of the buildings relative to the prevailing wind direction; and
- The pedestrian activity to be expected (sitting, standing, leisure and business walking). It should be noted that effects on pedestrian comfort and safety are only considered externally to the building.

10.3.18. The results of the assessment are presented in the form of wind velocity contours at 1.5m altitude above the ground level to represent pedestrian level.

10.3.19. The wind analysis focuses on the likely variation of the wind velocities from the reference wind data arising as a result of the Proposed Scheme. The assessment of the effects was conducted based on a comparison of the wind modelling results between the baseline and the Proposed Scheme scenarios.

10.3.20. The assessment of wind effects has considered pedestrian-level winds, which are those expected to be experienced at ground level. These have been carried out utilizing summer and winter data so as to analyse the seasons of the year during which more people are expected to be outdoors or higher wind speeds are recorded.

Wind Climate Analysis

10.3.21. Ten-year hourly wind data from the Manchester Airport Weather Station was used to assess the local wind conditions surrounding the Site. For this region, the most frequent wind directions are the south and south-south-east quadrants blowing with the highest frequency at Beaufort Force below 3 and 4 (i.e. 3.35 - 5.60 m/s) as shown in **Figure 10.2**.The wind speeds exceed Beaufort Force 6 for 0.1% of the time. The summary of the wind data at the station can be found in **Table 10.1**.

Table 10.1 - Directional Frequency of Wind Speed at the Manchester Airport Weather Station

Beaufort Force	Percentage of Wind Frequency by Direction (%)												
	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°	Total
Below 3	2.0	1.3	2.3	2.8	2.8	4.9	5.9	4.0	2.9	3.7	3.2	1.9	37.7
3	0.8	1.5	1.7	1.8	1.3	3.6	6.1	3.7	2.4	3.5	3.0	1.0	30.4
4	0.4	1.2	1.3	0.9	0.7	2.2	4.3	3.3	2.4	3.0	1.6	0.4	21.7
5	0	0.2	0.3	0.1	0.1	0.4	0.8	0.9	0.8	0.8	0.2	0	4.5
6	0	0	0	0	0	0.1	0.1	0.2	0.2	0.2	0	0	0.8

Above 6	0	0	0	0	0	0	0	0	0	0	0	0	0.1
Calm	-	-	-	-	-	-	-	-	-	-	-	-	4.6
Total	3.2	4.3	5.7	5.7	4.8	11.1	17.2	12.1	8.7	11.1	8.1	3.2	100

Wind Data Adjustments for Site Terrain

10.3.22. In order to adapt the data from the weather station to the Site and account for the difference in topography and terrain, a procedure to 'transpose' the wind data from the weather station onto the Site was undertaken using the software BREVe 3.2 which provides roughness factors and other terrain characteristics for the specific site. The software provides design wind speeds for any national grid reference within the UK determining the input parameters from databases of ground roughness and maximum/minimum altitude. Based on this method, adjustment factors have been applied to the reference wind data to adapt the meteorological conditions from the weather station onto the Site. Further details of this process and software output are given in Appendix 10.1.

Criteria for Pedestrian Safety and Comfort

10.3.23. The Lawson Criteria (LDDC Method) have been applied to determine the acceptability of wind conditions for pedestrian safety and comfort in the Baseline and Proposed scenarios. The Lawson Criteria provide wind speed and frequency ranges for pedestrian comfort and safety. It stipulates that for the comfort and safety assessment of wind effects, it is not only the velocity of wind that is considered but also the frequency of occurrence of these velocities.

10.3.24. The results for the pedestrian comfort assessment are presented for winter and summer separately. This is because more people are expected to linger outdoors and use open spaces during summer and it is therefore important to ensure that the wind environment especially for recreational spaces is suitable during this period. However, generally wind speeds and frequencies are calmer during summer than during other seasons of the year. Therefore, the significance of effect is also determined for winter months where conditions are most critical in terms of wind speeds and frequency. The assessment for different seasons is carried out by extracting the relevant wind data from the annual output.

10.3.25. In terms of pedestrian safety, the assessment is carried out for the whole year as the criteria is dependent on a percentage of time and on unpredictable and infrequently strong wind events.

10.3.26. The frequency of occurrences is used as an indicator of the likely duration of certain wind speeds. The Lawson Comfort Criteria provides wind speed thresholds that should not be exceeded for more than 5% of the time in a season to be acceptable for the stated pedestrian activity. The frequency of occurrences is used as an indicator of the likely duration of certain wind speeds. The Lawson Comfort Criteria provides wind speed thresholds that should not be exceeded for more than 5% of the time in a season to be acceptable for the stated pedestrian activity (**Tables 10.2 – 10.4**).

Table 10.2 - Beaufort Scale

Beaufort Force	Hourly Average Wind Speed (m/s)	Description of Wind
0	< 0.45	Calm
1	0.45 - 1.55	Light
2	1.55 - 3.35	Light
3	3.35 - 5.60	Light
4	5.60 - 8.25	Moderate
5	8.25 - 10.95	Fresh

6	10.95 -1 4.10	Strong
7	14.10 - 17.20	Strong
8	17.20 - 20.80	Gale
9	20.80 - 24.35	Gale
10	24.35 - 28.40	Strong Gale
11	28.40 - 32.40	Storm
12	>32.40	Hurricane

Table 10.3 - Lawson's Comfort Assessment Criteria (LDDC Method)

Comfort Category	5% Exceedance Threshold	Description
Sitting	4 m/s	Light breezes desired for outdoor restaurants and seating areas where one can read a paper or comfortably sit for long periods.
Pedestrian Standing	6 m/s	Gentle breezes suitable for main building entrances, pick-up/drop-off points and bus stops.
Pedestrian Leisure Walk	8 m/s	Moderate breezes that would be appropriate for strolling along a city/town centre street, plaza or park.
Business Walk	10 m/s	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering.
Uncomfortable	>10 m/s	Winds of this magnitude are considered a nuisance for most activities, and wind mitigation is typically recommended.

10.3.27. The Lawson method also provides safety criteria to identify those areas where someone could find walking difficult, or even stumble and fall. These criteria are used to assess wind conditions under periods of strong winds which are infrequent but which would present a risk to some pedestrians. The assessment is carried out for the whole year as the criteria is dependent on annual percentage of time and on unpredictable and infrequently strong wind events.

10.3.28. Lawson specifies a strong wind threshold when winds exceed 15m/s for more than two hours per annum. Exceedance of this threshold indicates a need for remedial measures and careful assessment of the expected use of that location. Wind speeds that exceed 20m/s for more than two hours per year represent a safety issue for all members of the population, which would require mitigation to provide an appropriate wind environment.

10.3.29. In the UK, areas with strong winds are areas which would be classified as being suitable only for walking or are uncomfortable for pedestrian use. In a mixed-use, urban development scheme, conditions suitable for walking would not usually form part of the 'target' wind environment and would usually require mitigation due to pedestrian comfort considerations. Mitigation applied to improve pedestrian comfort would also reduce the frequency of, or even eliminate, safety issues.

10.3.30. In accordance with Lawson's methodology this assessment reports incidence of wind speeds exceeding 15m/s or 20m/s for more than two hours per annum. **Table 10.4** indicates the threshold wind speeds that should not be exceeded more than 0.025% of the time for pedestrian safety according to the Lawson's Criteria in relation to the intended use of the area.

Table 10.4 - Lawson's Safety Assessment Criteria

Safety Rating	Threshold Mean-hourly Wind Speed Exceeded Once Per Annum (0.025%)	Qualifying Comments	Interested categories
Unsuitable for the general public (S15)	>15 m/s	Less able and cyclists find conditions physically difficult.	Areas accessible to the general public: sitting areas, standing areas, leisure walking areas.
Unsuitable for the able-bodied (S20)	>20 m/s	Able-bodied persons find conditions difficult. Physically impossible to remain standing during gusts.	Areas with limited public access, maintenance areas, carparks, Motorways.

CFD Simulation and Interpretation of Data

10.3.31. Since the Lawson Criteria are based on frequency of occurrence of wind speeds rather than absolute wind speeds alone, a procedure to combine all wind speeds and directions is required. This process involves the following key steps:

- A reference wind speed from the meteorological station, generally measured at 10m height is used to generate a wind velocity profile taking into account the roughness of the site and its surroundings;
- Using the generated velocity profile, twelve different wind directions are simulated (Appendix 10.2), spaced at 30° intervals to represent all wind directions. The results are generated in the form of CFD contour plots at 1.5 m above the ground level and the magnitude of the wind velocity at each measurement point is extracted;
- A wind speed factor is derived from the simulated wind directions at each measurement point;
- The wind speed factor is scaled up by the hourly weather data measured at the meteorological station to derive the resulting wind speed experienced at each measurement point;

- A statistical frequency distribution of all hourly wind speeds throughout the 10-year period is performed for each measurement point and a classification made based on the Lawson pedestrian safety and comfort criteria; and
- The resulting combined wind speed frequencies for the 10-year period are integrated into a single combined wind contour map and classified by pedestrian activity.

General Target wind conditions

10.3.32. The wind assessment for each of these criteria has been tested taking into account the season and expected activity on the Site based on the following general target wind conditions:

- Pedestrian thoroughfares: Leisure walking during windiest season;
- Building entrances, bus stops, drop off areas: Standing throughout the year; and
- Outdoor amenity and seating areas: Sitting during the summer season.

SIGNIFICANCE CRITERIA

10.3.33. The assessment of significance refers to the Lawson Criteria. To determine the significance of the effect of the Proposed Scheme on the wind environment, a comparison can be made with the existing conditions on the Site. However, because the pedestrian use of a Site can change between the existing and proposed uses, the assessment should also be based upon the suitability of the Site for the desired pedestrian use. The likely significance of effects is therefore based on the following parameters and illustrated in Plate 10.1:

- The change of the wind environment in the 'Proposed Scenario' from the baseline;
- Compliance with the Lawson Criteria; and
- Sensitivity of the receptor.

Magnitude of Change

10.3.34. **Table 10.5** and **Table 10.6** present the influence of each parameter in categorising the magnitude of change (or impact magnitude) with respect to the Lawson Criteria on comfort (**Table 10.5**) and safety (**Table 10.6**).

10.3.35. There are two scales of magnitude for assessing the change in pedestrian comfort, depending on whether the predicted windspeed for the receptor area is within the exceedance threshold of the Lawson Criteria, or not i.e. above 10m/s. For example, where the predicted windspeed exceeds the exceedance threshold criteria for pedestrian comfort (10m/s), the 'Outside Lawson Criteria' scale of magnitude is applied; where the predicted windspeed is within any of the exceedance thresholds, the 'Within Lawson Criteria' scale of magnitude is applied.

10.3.36. The aim has been to take a number of parameters into account when assigning significance levels, keeping a balance between the frequency of extreme / infrequent wind conditions, what is acceptable for the sensitive receptors (compliance with the Lawson Criteria) and the change from the 'Baseline Scenario'.

10.3.37. The magnitude of change for pedestrian comfort has been categorised as large, medium, small and negligible using professional judgement based on the change in velocity observed from the 'Baseline Scenario'.

Table 10.5: Matrix for Determining the Magnitude of Change for Pedestrian Comfort

		Pedestrian Comfort Magnitude of Change	
Change in Comfort Status	**Change in Lawson Comfort Criteria Category**	**Outside Lawson Criteria (>10m/s)**	**Within Lawson Criteria (<10m/s)**
	Increase/decrease by 2 categories	Large	Medium

Moves from suitable to unsuitable or from unsuitable to suitable.	Increase/decrease by 1 categories	Medium	Medium
Remains within original status (suitable or unsuitable)	Increase/decrease by 3 categories	Medium	Medium
	Increase/decrease by 2 categories	Medium	Small
	Increase/decrease by 1 categories	Small	Negligible
	No change	No Change	No Change

10.3.38. The change in magnitude for pedestrian safety is based on the Lawson Criteria for pedestrian safety, taking account of the windspeeds above which it would be unsuitable for safe pedestrian activity.

Table 10.6: Matrix for Determining the Magnitude of Change for Pedestrian Safety

Lawson Safety Criteria		
Safety Rating	**Acceptability Criteria**	**Magnitude**
S20 – Unsuitable for all Pedestrians	> 20 m/s	Large
S15 – Unsuitable for general public	> 15 m/s	Large
Safe for all pedestrians	Below 15 m/s	Negligible

Sensitivity of Receptors

10.3.39. The sensitivity of receptors reflects the fact that different activities will expose pedestrians differently to winds. For example, sedentary activities will accentuate the perception of the environment while more transient activities, such as walking, would tolerate stronger winds. In line with these considerations, the following criteria have been used to assign levels of sensitivity to receptors:

- High Sensitivity: areas intended for sitting (e.g. benches, restaurants and bars) and for standing (e.g. building entrances);
- Medium Sensitivity: areas intended for leisure walking (i.e. commercial or residential streets) and business walking (e.g. streets leading to back-of-the-house or maintenance entrances); or
- Low Sensitivity: areas intended for car parks and roads.

Effect Significance

The significance of effects reflects the sensitivity of the affected receptor(s) and the nature and magnitude of the predicted changes as detailed in **Tables 10.5** and **10.6**. For example, a moderate impact magnitude on an area of low importance / sensitivity will be of lesser significance than the same impact magnitude on a feature or site of high sensitivity. **Table 10.7** presents the criteria used to finally determine the significance of wind effects according to sensitivity.

Table 10.7 - Matrix for Determining the Significance of Effects by Sensitivity of Receptor

Impact Magnitude	Sensitivity of Receptor		
	High	Medium	Low
Large	Major	Moderate to Major	Minor to Moderate
Medium	Moderate	Moderate	Negligible to Minor
Small	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible
No Change	No effect	No effect	No effect

10.3.40. The following terms have been used to define the significance of the effects identified:

- **Major effect**: where the Proposed Scheme could be expected to have a very significant effect (either positive or negative) on the safety or comfort condition of the receptor;
- **Moderate effect**: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on the safety or comfort condition of the receptor;
- **Minor effect**: where the Proposed Scheme could be expected to result in a small, barely noticeable effect (either positive or negative) on the safety or comfort condition of the receptor; and
- **Negligible**: where no discernible effect is expected as a result of the Proposed Scheme on the safety or comfort condition of the receptor.

10.4 BASELINE CONDITIONS

A view of the baseline model used for the assessment is shown in **Figure 10.3** and sensitive receptors are illustrated on **Figure 10.4**.

PEDESTRIAN COMFORT

10.4.1. The results of this baseline assessment indicate that the existing wind environment of the Site is generally suitable for the intended pedestrian activities.

10.4.2. The assessment of the baseline condition (**Appendix 10.3**) identifies some zones of the surrounding areas where wind speeds tend to accelerate, particularly in the winter months, such as some areas on Deansgate (receptors 13 and 14); Quay Street (receptor 15); Windmill Street (receptors 21, 22, 24); Peter Street (receptors 20, 23 and 27); Watson Street (receptor 61); Southmill Street (receptor 25). These localised areas are however mostly suitable for standing and leisure walking with some areas of exceedance only suitable for business walking. The results for the rest of the surrounding area of the Site show a relatively calm wind environment that is suitable for general pedestrian use, pedestrian circulation and accessing buildings.

PEDESTRIAN SAFETY

10.4.3. In addition to the comfort assessment above, an assessment of wind effects during strong wind events has also been carried out. The wind maps of the pedestrian safety assessment (i.e. the wind environment under strong wind conditions) are presented in **Appendix 10.3** and in **Table 10.10**. These are short term and infrequent strong winds which can affect the safety of pedestrians, particularly in areas close to roads, and pose other potential hazards for pedestrians. The safety criteria are defined in terms of an average wind speed which is exceeded on average only during one wind event per year. In this City area, this annual extreme wind event is most likely to occur during the winter. They are prescribed to cover situations where people might have difficulty walking during winds occurring once a year.

10.4.4. The results of the pedestrian safety assessment for the baseline scenario show that most of the Site and surrounding areas are within the criteria. The exceptions are localised areas of increased windiness, around the corner of Peter Street and Windmill Street onto Watson Street (receptors 20, 23, 61, 21 and 22), and at the intersection of Quay Street and Little Quay Street towards Deansgate (receptors 13, 14 and 15). These areas are in exceedance of the safety criteria where strong winds can be expected during windy weather.

10.5 SENSITIVE RECEPTORS

10.5.1. Sensitive receptor locations for the wind assessment are all pedestrian circulation routes, building entrances and leisure open areas within the Site and in neighbouring adjacent areas.

10.5.2. Specific receptor locations are shown in **Table 10.8** and **Figure 10.1**.

Table 10.8 – Receptor Locations for Wind Assessment

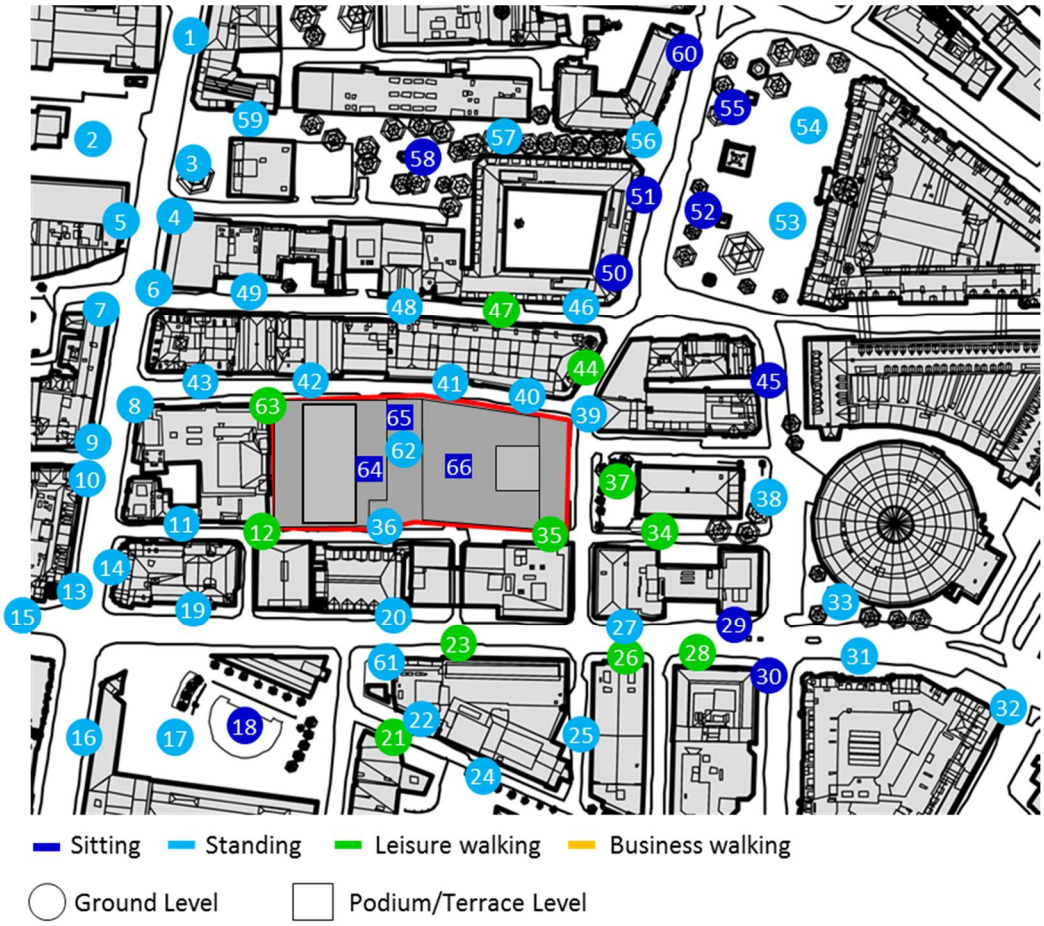
Receptor	Location	Pedestrian Use	Sensitivity
1	Pavement on Deansgate	Leisure Walking	Medium
2	Public Square on Deansgate	Standing	High
3	Public Square / Bus Stop on Deansgate	Standing	High
4	Corner Deansgate & Queens Street	Standing	High
5	Building Entrance on Deansgate	Standing	High
6	Building Entrance on Deansgate & Lloyd Street	Standing	High
7	Building Entrance on Deansgate & Hardman Street	Standing	High
8	Building Entrance on Deansgate & Jackson's Row	Standing	High

9	Building Entrance on Deansgate & Atkinson Street	Standing	High
10	Building Entrance on Deansgate & Atkinson Street	Standing	High
11	Building Entrance on Bootle Street	Standing	High
12	Pavement on Bootle Street	Leisure Walking	Medium
13	Corner Deansgate & Quay Street	Standing	High
14	Building Entrance on Deansgate & Peter Street	Standing	High
15	Pavement on Quay Street	Standing	High
16	Pavement on Deansgate	Standing	High
17	Public Square Peter Street	Standing	High
18	Public Square Peter Street (seating area)	Sitting	High
19	Pavement/Building Entrance on Peter Street	Standing	High
20	Pavement/Building Entrance on Peter Street	Standing	High
21	Pavement on Windmill Street	Leisure Walking	Medium
22	Pavement/Building entrance on Windmill Street	Standing	High
23	Pavement on Peter Street	Leisure Walking	Medium
24	Pavement/Building entrance on Windmill Street	Standing	High
25	Pavement/Building entrance on Southmill Street	Standing	High
26	Pavement Royale Theatre	Leisure Walking	Medium
27	Pavement/Building Entrance on Peter Street	Standing	High
28	Pavement on Peter Street	Leisure Walking	Medium
29	Pavement/Outdoor Café on Peter Street	Sitting	High
30	Pavement/Outdoor Café on Peter Street	Sitting	High
31	Pavement/Building entrance on Windmill Street	Standing	High
32	Pavement/Building entrance on Lower Mosley Street	Standing	High
33	Public Square Library	Standing	High
34	Pavement on Bootle Street	Leisure Walking	Medium
35	Pavement on Bootle Street	Leisure Walking	Medium

36	Pavement on Bootle Street	Leisure Walking	Medium
37	Pavement on Southmill Street	Leisure Walking	Medium
38	Pavement/Building entrance on Jackson's Row	Standing	High
39	Pavement/Building entrance on Jackson's Row	Standing	High
40	Pavement/Building entrance on Jackson's Row	Standing	High
41	Pavement/Building entrance on Jackson's Row	Standing	High
42	Pavement/Building entrance on Jackson's Row	Standing	High
43	Pavement/Building entrance on Jackson's Row	Standing	High
44	Pavement on Southmill Street	Leisure Walking	Medium
45	Pavement/Outdoor Café on Mount Street	Sitting	High
46	Pavement/Building entrance on Lloyd Street	Standing	High
47	Pavement on Lloyd Street	Leisure Walking	Medium
48	Pavement/Building entrance on Lloyd Street	Standing	High
49	Pavement/Building entrance on Lloyd Street	Standing	High
50	Pavement/Outdoor Café on Albert Square	Sitting	High
51	Pavement/Outdoor Café on Albert Square	Sitting	High
52	Pedestrian area Albert Square	Sitting	High
53	Pedestrian area Albert Square	Standing	High
54	Pedestrian area Albert Square	Standing	High
55	Pedestrian area Albert Square	Sitting	High
56	Pavement/Building entrance on Brazennose Street	Standing	High
57	Pavement/Building entrance on Brazennose Street	Standing	High
58	Public Square on Queen Street	Sitting	High
59	Pavement/Building entrance on Brazennose Street	Standing	High
60	Pavement/Outdoor Café on Albert Square	Sitting	High
61	Pavement on Watson Street	Leisure Walking	Medium

62	Passage between the tower and the office building	Standing	High
63	Gap between the Proposed Scheme and the adjacent property to the west	Business Walking	Medium
Receptors within the Proposed Development			
64	Podium amenity area at Tower	Sitting/Standing	High
65	Stairs between Upper and Lower podium	Sitting/Standing	High
66	Podium amenity area at Office Building	Sitting/Standing	High

Figure 10.1 Sensitive Receptor Locations



10.6 ASSESSMENT OF EFFECTS, MITIGATION AND RESIDUAL EFFECTS

OPERATIONAL PHASE

10.6.1. The results of the wind assessment showing the effect of the Proposed Scheme are presented in **Appendices 10.2** and **10.3**.

10.6.2. The results of the assessment indicate a slight general increase in windiness in some areas in the vicinity of the Site. This is due to the position, massing and orientation of the Proposed Scheme relative to the wind direction on the local environment.

10.6.3. The wind environment at pedestrian level has been assessed on the basis of frequency accounting for all directions based on the recommended criteria discussed in Section 10.4. These effects are discussed below.

Pedestrian discomfort as a result of localised zones of acceleration

Assessment of Pedestrian Comfort (Summer)

10.6.4. The results of the summer assessment show a general increase in windiness of the Site and its surrounding areas from the baseline scenario mainly along Jackson's Row (receptors 49, 48, 62, 63) and Bootle Street and Southmill Street (receptors 35 and 36). However, the results indicate that the area remains generally suitable for the intended pedestrian activities as the appropriate criteria are not exceeded. Most other areas remain largely unchanged and, in some cases, an improvement can be observed. For example, to the south and south-west of the Site, wind acceleration is locally reduced on Deansgate (receptor 14) and Peter Street (receptors 61).

10.6.5. The open amenity and predominantly pedestrian circulation areas in the surroundings of the Site also remain suitable for all pedestrians activities including sitting, these are: Deansgate Square (receptor 2), Great Northern Square (receptor 17-18), Albert Square (receptor 51-55) and Lincoln Square (receptor 58).

10.6.6. The external amenity areas proposed within the Site at podium level are generally suitable for standing and sitting with some areas of wind acceleration only suitable for leisure walking. Windiness is mainly registered at the corners of the Tower and at the northwest corner of the top podium. This is mainly due to the height of the amenity areas compared to the surrounding buildings, which therefore are not sheltered from prevailing winds, as well as, acceleration at the corner of the tower. This assessment however is a representation of the worst case scenario as it excluded all pergolas with overhead greenery, landscaping (including trees and shrubs) and furniture that will reduce unwelcome winds. Results at balcony and roof terrace levels indicate similar suitability ranges.

10.6.7. The sensitivity of the identified receptor locations range from high to medium and based on the above findings and on the criteria outlined in **Table 10.6** either no change is registered or the magnitude of change is negligible. Therefore the assessment either registered no change in the wind environment or identified the wind effects to be direct, permanent, long term and of negligible significance.

Assessment of Pedestrian Comfort (Winter)

10.6.8. The results of the winter assessment show that the Site remains largely suitable for sitting and standing with the exception of some areas that are only suitable for leisure walking and business walking. However, these latter areas where standing criteria are exceeded are also found to have these conditions in the baseline scenario and the conditions are therefore not attributed to the Proposed Scheme. The main changes with respect to the baseline conditions are registered on Jackson's Row (receptors 43-39), Bootle Street (receptors 11, 35-36) and Southmill Street (receptor 37, 39, 44) where most areas previously suitable for sitting become suitable for standing only. Along the same streets, some localised areas exceed standing criteria but remain suitable for leisure walking, which is the intended use. Similar situations occur further from the site on Queen Street, for example, however all areas remain suitable for pedestrian circulating and accessing the surrounding buildings.

10.6.9. The external amenity areas within the Proposed Scheme at podium level will remain generally suitable for a variety of intended uses expected during winter months including sitting, standing and leisure walking. Windiness mainly increases at the south-west corner of the top podium and at the northern and southern corners of the tower where suitability is shifted to business walking with a localised area of exceedance at the southern corner. This assessment, however, is a representation of the worst case scenario as it excluded all pergolas with overhead greenery, landscaping (including trees and shrubs) and furniture that will contribute to reduce unwelcome winds. Results at balcony and roof terrace levels indicate similar suitability ranges.

10.6.10. Therefore, based on the above findings and on the criteria outlined in **Table 10.5**, the results for each receptor location are summarised in **Table 10.9**.

10.6.11. The results shown in **Table 10.9** are representative of the worst case wind conditions over the year and have been used to determine the significance of effects.

Table 10.9 - Summary of Wind Assessment Results for Pedestrian Comfort in the Worst Case (Winter)

Receptor	Location	Sensitivity	Lawson Category		Magnitude of Change	Within / Outside Criteria	Effect
			Baseline	Proposed			
1	Pavement on Deansgate	Medium	Sitting	Sitting	No change	Within	No effect
2	Public Square on Deansgate	High	Sitting	Sitting	No change	Within	No effect
3	Public Square / Bus Stop on Deansgate	High	Sitting	Sitting	No change	Within	No effect
4	Corner Deansgate & Queens Street with Shop Entrance	High	Standing	Standing	No change	Within	No effect
5	Building Entrance on Deansgate	High	Standing	Standing	No change	Within	No effect
6	Building Entrance on Deansgate & Lloyd Street	High	Sitting	Sitting	No change	Within	No effect
7	Building Entrance on Deansgate & Hardman Street	High	Sitting	Sitting	No change	Within	No effect
8	Building Entrance on Deansgate & Jackson's Row	High	Sitting	Standing	Negligible	Within	Negligible
9	Building Entrance on Deansgate & Atkinson Street	High	Sitting	Standing	Negligible	Within	Negligible
10	Building Entrance on Deansgate & Atkinson Street	High	Sitting	Sitting	No change	Within	No effect
11	Building Entrance on Bootle Street	High	Sitting	Standing	Negligible	Within	Negligible

12	Pavement on Bootle Street	Medium	Sitting	Standing	Negligible	Within	Negligible
13	Corner Deansgate & Quay Street	High	Leisure Walking	Standing	Negligible	Within	Negligible
14	Building Entrance on Deansgate & Peter Street	High	Standing	Standing	No change	Within	No effect
15	Corner Deansgate & Quay Street	High	Business Walking	Business Walking	No change	Within	No effect
16	Pavement on Deansgate	High	Standing	Standing	No change	Within	No effect
17	Public Square Peter Street	High	Sitting	Sitting	No change	Within	No effect
18	Public Square Peter Street (seating area)	High	Standing	Standing	No change	Outside	No effect
19	Pavement/Building Entrance on Peter Street	High	Sitting	Sitting	No change	Within	No effect
20	Pavement/Building Entrance on Peter Street	High	Leisure Walking	Leisure Walking	No change	Outside	No effect
21	Pavement on Windmill Street	Medium	Leisure Walking	Leisure Walking	No change	Outside	No effect
22	Pavement/Building entrance on Windmill Street	High	Leisure Walking	Leisure Walking	No change	Outside	No effect
23	Pavement on Peter Street	Medium	Sitting	Sitting	No change	Within	No effect
24	Pavement Windmill Street	High	Sitting	Sitting	No change	Within	No effect
25	Pavement/Building entrance on Southmill Street	High	Leisure Walking	Standing	Negligible	Within	Negligible

26	Pavement Royale Theatre	Medium	Sitting	Sitting	No change	Within	No effect
27	Pavement/Building Entrance on Peter Street	High	Sitting	Sitting	No change	Within	No effect
28	Pavement on Peter Street	High	Sitting	Sitting	No change	Within	No effect
29	Pavement/Outdoor Café on Peter Street	High	Sitting	Sitting	No change	Within	No effect
30	Pavement/Outdoor Café on Peter Street	High	Sitting	Sitting	No change	Within	No effect
31	Pavement/Building entrance on Windmill Street	High	Sitting	Sitting	No change	Within	No effect
32	Pavement/Building entrance on Lower Mosley Street	High	Standing	Standing	No change	Within	No effect
33	Public Square Library	High	Standing	Standing	No change	Within	No effect
34	Pavement on Bootle Street	Medium	Sitting	Sitting	No change	Within	No effect
35	Pavement on Bootle Street	Medium	Sitting	Leisure Walking	Small	Within	**Minor Negative**
36	Entrance to Pub on Bootle Street	Medium	Sitting	Standing	Negligible	Within	No effect
37	Pavement/Building entrance on Southmill Street	Medium	Sitting	Standing	Negligible	Within	Negligible
38	Pavement/Building entrance on Jackson's Row	High	Sitting	Sitting	No change	Within	No effect
39	Pavement/Building entrance on Jackson's Row	High	Sitting	Standing	Negligible	Within	Negligible
40	Pavement/Building entrance	High	Sitting	Sitting	No change	Within	No effect

	on Jackson's Row						
41	Pavement/Building entrance on Jackson's Row	High	Sitting	Standing	Negligible	Within	Negligible
42	Pavement/Building entrance on Jackson's Row	High	Standing	Leisure Walking	Medium	Within	**Moderate Negative**
43	Pavement/Building entrance on Jackson's Row	High	Standing	Standing	No change	Within	No effect
44	Pavement on Southmill Street	Medium	Sitting	Sitting	No change	Within	No effect
45	Pavement/Outdoor Café on Mount Street	High	Standing	Standing	No change	Within	No effect
46	Pavement/Building entrance on Lloyd Street	High	Sitting	Sitting	No change	Within	No effect
47	Pavement on Lloyd Street	Medium	Sitting	Sitting	No change	Within	No effect
48	Pavement/Building entrance on Lloyd Street	High	Sitting	Standing	Negligible	Within	Negligible
49	Pavement/Building entrance on Lloyd Street	High	Sitting	Standing	Negligible	Within	Negligible
50	Pavement/Outdoor Café on Albert Square	High	Sitting	Standing	Negligible	Within	Negligible
51	Pavement/Outdoor Café on Albert Square	High	Sitting	Sitting	No change	Within	No effect
52	Pedestrian area Albert Square	High	Sitting	Sitting	No change	Within	No effect
53	Pedestrian area Albert Square	High	Sitting	Sitting	No change	Within	No effect

54	Pedestrian area Albert Square	High	Sitting	Sitting	No change	Within	No effect
55	Pedestrian area Albert Square	High	Sitting	Sitting	No change	Within	No effect
56	Pavement/Building entrance on Brazennose Street	High	Sitting	Sitting	No change	Within	No effect
57	Pavement/Building entrance on Brazennose Street	High	Sitting	Standing	Negligible	Within	Negligible
58	Public Square on Queen Street	High	Sitting	Standing	Negligible	Within	Negligible
59	Pavement/Building entrance on Brazennose Street	High	Standing	Standing	No change	Within	No effect
60	Pavement/Outdoor Café on Albert Square	High	Sitting	Sitting	No change	Within	No effect
61	Pavement on Watson Street	High	Leisure Walking	Leisure Walking	No change	Within	No effect
62	Passage on Site between the Tower and office building	Medium	Sitting	Leisure Walking	Small	Within	**Minor Negative**
63	Alley between Proposed Development and adjacent building to the left on Jackson's Row	Medium	Sitting	Leisure Walking	Small	Within	**Minor Negative**

10.6.12. In summary, all of receptor locations are considered of high to medium sensitivity and the magnitude of change ranges from no change to negligible with most receptor locations complying with the Lawson comfort criteria. Therefore, in the majority of cases there is likely to be no wind effects on pedestrian comfort. At a range of receptor locations, effects of negligible significance on pedestrian comfort are considered likely.

10.6.13. Receptor locations 35, 42, 62 and 63 are the only exceptions to the above.

10.6.14. Receptor locations 35, 62 and 63 are areas of medium sensitivity where the magnitude of change, prior to mitigation, is considered to be small. Therefore, in line with the criteria illustrated in **Table 10.5** and **Table 10.7**, there is likely to be a direct, permanent, long-term negative effect on pedestrian comfort in receptor locations 35, 62 and 63 of minor significance prior to the implementation of mitigation measures since the Lawson Criteria for the expected use (i.e. leisure walking) is not exceeded by the change.

10.6.15. Receptor location 42 is an area of high sensitivity where the magnitude of change, prior to mitigation, is considered to be medium. Therefore, in line with the criteria illustrated in **Table 10.5** and **Table 10.7**, there is likely to be a direct, permanent, long-term, negative effect on receptor location 42 of moderate significance prior to the implementation of mitigation measures since the Lawson Criteria for the expected use is not exceeded by the change.

10.6.16. On Site, receptor locations 64, 65 and 66 are high sensitivity, as these include sitting and amenity areas. However, because these areas and their uses do not exist in the Baseline scenario, it is not possible to compare the difference between the baseline scenario and Proposed Scheme scenario; it is not therefore possible to assess an effect for these receptors.

Mitigation / enhancement

10.6.17. In line with the results reported above, the Proposed Scheme does not deteriorate the local wind environment to the extent that any receptors are exceeding the pedestrian comfort thresholds and therefore no additional mitigation measures are required. Furthermore, both existing trees and furniture in the surrounding area and the proposed trees/pergodas (to be confirmed in the post planning detailed design stage) within the Proposed Scheme will provide further improvement of the wind environment as they filter the incoming wind, reducing the speeds locally, especially during periods when trees are in full foliage. For example, the existing gates between the Proposed Scheme and the adjacent development to the west is likely to decrease wind funnelling effects along the alley and therefore reduce wind speeds at receptor location 42. To further improve wind conditions in that area, the gates could be substituted with taller and more porous elements.

10.6.18. Within the Proposed Scheme at podium and terrace level, the pergolas with overhead greenery, landscaping (including trees and shrubs), furniture and screens will contribute to reduce unwelcome winds. Further quantitative testing is recommended at a more detailed design stage, to refine the position, dimension and characteristics of the proposed landscaping design. Likewise, secondary mitigation elements such as perimeters screens, subject to further testing at detailed design stage, are recommended at balcony and roof terrace levels.

Residual effects

10.6.19. Following the application of mitigation (gates at either end of the alley between the Proposed Scheme and the adjacent building), there is likely to be a direct, permanent, long-term, negative residual effect at Receptor 42 of minor significance. The remaining residual effects remain unchanged from the effects identified in the assessment, as presented in **Table 10.9**. Therefore, there is likely to be a direct, permanent, long-term, negative residual effect of negligible to minor significance.

ASSESSMENT OF PEDESTRIAN COMFORT (SUMMER)

10.6.20. The sensitivity of the identified receptor locations range from high to medium and the impact magnitude remains negligible. Therefore the assessment identified the wind effects to be direct, permanent, long term and of negligible significance following the implementation of mitigation measures (public realm planting and features proposed as part of the Scheme).

10.6.21. All receptors are considered of high to medium sensitivity and the magnitude of change ranges from no change to negligible following the implementation of mitigation measures (public realm planting and features proposed as part of the Scheme), with the exception of receptors 35, 42, 62 and 63. Therefore, in the majority of cases the winds effects are likely to be direct, permanent, long term and of no effect, prior to the implementation of mitigation. At a range of receptors, negligible significance is considered likely.

10.6.22. Receptors 35, 42, 62 and 63 are area of medium sensitivity where the magnitude of change, prior to mitigation, is considered to be small. Therefore, in line with the criteria illustrated in **Table 10.6**, there is likely to be a direct, permanent, long-term effect on receptors 35, 62 and 63 of minor negative significance since the comfort criteria for the expected use is not exceeded.

Reduction in pedestrian safety as a result of an increase in wind speeds

10.6.23. The results of the pedestrian safety assessment show that, whilst some areas within the Proposed Scheme and its surrounding areas exceed safety criteria, overall there is a positive impact on the wind environment. Areas of exceedance are identified around the corner of Peter Street and Windmill Street (receptor locations 20, 21, 22 and 61) and at the intersection of Quay Street and Little Quay Street (receptor location 15), however, this represents an improvement when compared with the baseline scenario as the affected areas are reduced in size. This is mainly due to the massing of the Proposed Scheme which obstructs high-speed westerly and south-westerly winds blowing and therefore reduces the pressure created along Deansgate and Peter Street.

10.6.24. Within the Proposed Scheme higher wind speeds are recorded across the ground floor passageway between the Office building and the Tower (receptor location 62) and to the west of the Site between the Tower's podium and the neighbouring building towards Jackson's Row (receptor location 63). These are small localised areas where strong winds would be expected, especially during winter; however, exceedance of safety criteria is registered only at receptor location 63. This is mainly due to prevailing westerly and south-westerly winds being directed downwards when intercepting the Proposed Scheme's western façade and accelerating at corners. At podium and terrace level, large areas exceeding safety criteria are identified mainly due to the lack of sheltering from neighbouring buildings, as well as, winds being directed downwards when obstructed by the tower. However, the assessment results are a representation of the worst case scenario as the assessment excluded consideration of all pergolas with overhead greenery, landscaping (including trees and shrubs) and furniture that will contribute to reduce unwelcome winds and provide shelter. Results at balcony and roof terrace levels indicate similar safety conditions.

10.6.25. Therefore, based on the above findings and on the criteria outlined in **Table 10.6** and **Table 10.7**, the results for each receptor location are summarised in **Table 10.10**.

Table 10.10: Summary of Wind Assessment Results for Pedestrian Safety

Receptor	Location	Sensitivity	Baseline	Proposed	Magnitude of Change	Within / Outside Criteria	Effect
			Lawson Category Safety				
1	Pavement on Deansgate	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
2	Public Square on Deansgate	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
3	Public Square / Bus Stop on Deansgate	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
4	Corner Deansgate & Queens Street with Shop Entrance	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
5	Building Entrance on Deansgate	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
6	Building Entrance on Deansgate & Lloyd Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
7	Building Entrance on Deansgate & Hardman Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
8	Building Entrance on Deansgate & Jackson's Row	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
9	Building Entrance on Deansgate & Atkinson Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect

10	Building Entrance on Deansgate & Atkinson Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
11	Building Entrance on Bootle Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
12	Pavement on Bootle Street	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
13	Corner Deansgate & Quay Street	High	S1	Safe for all pedestrians	Large	Within	**Major Positive**
14	Building Entrance on Deansgate & Peter Street	High	Warning	Safe for all pedestrians	Negligible	Within	Negligible
15	Corner Deansgate & Quay Street	High	S1	S1	No change	Within	No effect
16	Pavement on Deansgate	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
17	Public Square Peter Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
18	Public Square Peter Street (seating area)	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
19	Pavement/Building Entrance on Peter Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
20	Pavement/Building Entrance on Peter Street	High	S1	S1	No change	Within	No effect
21	Pavement on Windmill Street	Medium	S1	S1	No change	Within	No effect

22	Pavement/Building entrance on Windmill Street	High	S1	S1	No change	Within	No effect
23	Pavement on Peter Street	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
24	Pavement Windmill Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
25	Pavement/Building entrance on Southmill Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
26	Pavement Royale Theatre	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
27	Pavement/Building Entrance on Peter Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
28	Pavement on Peter Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
29	Pavement/Outdoor Café on Peter Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
30	Pavement/Outdoor Café on Peter Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
31	Pavement/Building entrance on Windmill Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
32	Pavement/Building entrance on Lower Mosley Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
33	Public Square Library	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect

34	Pavement on Bootle Street	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
35	Pavement on Bootle Street	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
36	Pavement on Bootle Street	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
37	Pavement/Building entrance on Southmill Street	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
38	Pavement/Building entrance on Jackson's Row	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
39	Pavement/Building entrance on Jackson's Row	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
40	Pavement/Building entrance on Jackson's Row	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
41	Pavement/Building entrance on Jackson's Row	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
42	Pavement/Building entrance on Jackson's Row	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
43	Pavement/Building entrance on Jackson's Row	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect

44	Pavement on Southmill Street	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
45	Pavement/Outdoor Café on Mount Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
46	Pavement/Building entrance on Lloyd Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
47	Pavement on Lloyd Street	Medium	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
48	Pavement/Building entrance on Lloyd Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
49	Pavement/Building entrance on Lloyd Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
50	Pavement/Outdoor Café on Albert Square	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
51	Pavement/Outdoor Café on Albert Square	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
52	Pedestrian area Albert Square	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
53	Pedestrian area Albert Square	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
54	Pedestrian area Albert Square	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
55	Pedestrian area Albert Square	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
56	Pavement/Building entrance on Brazennose Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect

57	Pavement/Building entrance on Brazennose Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
58	Public Square on Queen Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
59	Pavement/Building entrance on Brazennose Street	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
60	Pavement/Outdoor Café on Albert Square	High	Safe for all pedestrians	Safe for all pedestrians	No change	Within	No effect
61	Pavement on Watson Street	High	S1	Safe for all pedestrians	No change	Within	No effect
62	Passage on Site between the Tower and office building	Medium	Safe for all pedestrians	Warning	Small	Within	**Minor Negative**
63	Alley between Proposed Development and adjacent building to the left on Jackson's Row	Medium	Safe for all pedestrians	S1	Large	Outside	**Moderate to Major Negative**

10.6.26. In summary, all of the receptor locations are considered of high to medium sensitivity. For the majority of receptor locations there is no change to the wind conditions with the Proposed Scheme. Therefore, in the majority of cases there is likely to be no effect on pedestrian safety. At a range of receptor locations, negative effects of negligible significance are considered likely.

10.6.27. Receptor locations 13, 62 and 63 are the only exceptions to the above.

10.6.28. Receptor location 62 is an area of medium sensitivity where the magnitude of change is considered to be small. Therefore, in line with the criteria illustrated in **Table 10.6** and **Table 10.7**, there is likely to be a direct, permanent, long-term, negative effect at receptor location 62 of minor significance prior to the implementation of mitigation measures since the area remains safe for pedestrian use.

10.6.29. Receptor location 13 is an area of high sensitivity where the magnitude of change is considered to be large. Therefore, in line with the criteria illustrated in **Table 10.6** and **Table 10.7**, there is likely to be a direct, permanent, long-term, positive effect at receptor location 13 of major significance since the area becomes safe for pedestrian use.

10.6.30. Receptor location 63 is an area of medium sensitivity where the magnitude of change, prior to secondary mitigation, is considered to be large. Therefore, in line with the criteria illustrated in **Table 10.6** and **Table 10.7**, there is likely to be a direct, permanent, long-term, negative effect at receptor location 63 of major to moderate significance prior to the implementation of mitigation measures since the area becomes unsafe for pedestrian use.

10.6.31. On Site, receptor locations 64, 65 and 66 are considered of high sensitivity, as these include sitting and amenity areas. Considering the significant difference between the required uses of the existing and Proposed Scheme it is not relevant to compare the wind environments.

Enhancement/Mitigation

10.6.32. In line with the results reported above, the Proposed Scheme does not deteriorate the local wind environment for most locations and therefore no additional mitigation measures are required in the main. Furthermore, the existing landscaping in the surrounding area and the trees (to be confirmed in the post planning detailed design stage) within the Proposed Scheme will provide further improvement of the wind environment as they filter the incoming wind reducing the speeds locally.

10.6.33. The only exception is for the area between the Proposed Scheme and the adjacent building to the west (receptor location 63), which becomes unsafe to the general public. However, this will be an area inaccessible by the public and the existing gates between the Proposed Scheme and the adjacent development to the west is likely to decrease wind funnelling effects along the alley; therefore reducing wind speeds at receptor location 63. To further improve wind conditions in that area, the gates could be substituted with taller and more porous elements.

10.6.34. Within the Proposed Scheme, at podium and terrace level, the pergolas with overhead greenery, landscaping (including trees and shrubs), furniture and screens will contribute to reduce unwelcome winds. Further quantitative testing is recommended at a more detailed design stage, to refine the position, dimension and characteristics of the proposed landscaping design. Likewise, secondary mitigation elements such as perimeters screens, subject to further testing at detailed design stage, are recommended at balcony and roof terrace levels.

Residual Effect

10.6.35. The residual effects remain largely unchanged from the effects identified in the assessment, as presented in **Table 10.10**. Therefore, for the majority of receptor locations (except those identified below) there is no or negligible magnitude of change following the implementation of mitigation measures. Therefore, for these receptors, there is likely to be a direct, permanent, long term residual effect of negligible significance, of a negative nature for the majority, but positive for others, on pedestrian safety following the implementation of mitigation measures. At a range of receptors, it is likely that there will be no effect on pedestrian safety. There will be a direct, permanent, long term residual effect of a positive nature of major significance at Receptor 13 (corner of Quay Street and Deansgate).

10.6.36. Furthermore, both existing trees in the surrounding area and the trees (to be confirmed in the post planning detailed design stage) within the Proposed Scheme will provide further improvement of the wind environment as they filter the incoming wind reducing the speeds locally, especially during periods when trees are in full foliage.

10.6.37. Receptor locations 62 and 63 are areas of medium sensitivity where the magnitude of change, following the implementation of mitigation, is considered to be small. Therefore, in line with the criteria illustrated in **Table 10.6** and **Table 10.7**, there is likely to be a direct, permanent, long-term, negative effect on pedestrian safety at receptor locations 62 and 63 of minor significance, following the implementation of mitigation (gates to prevent public access to the alley between the Proposed Scheme and the adjacent building).

10.7 LIMITATIONS AND ASSUMPTIONS

MODELLING ASSUMPTIONS AND LIMITATIONS

10.7.1. The models and calculations for the wind assessment have been based on the drawings and models of existing properties provided by the architects, and surveys of existing surroundings.

10.7.2. The wind speeds on the Site and surrounding area have been calculated through CFD. CFD is a widely recognised method for modelling airflows both, internal and external, and as computer power develops, it increasingly improves its applicability.

10.7.3. CFD as a tool for pedestrian wind modelling is well validated against wind tunnel tests and real world data and is often considered advantageous due to the sophisticated visualisation and domain wide measurements characteristics. It has limitations in the same way that any other tool will have limitations. For example, CFD uses time-averaged data for its analysis which does not capture the effect of short term gusts, and it models turbulence rather than calculating it explicitly. However, the mean hourly analysis adopted in CFD provides a detailed understanding of the wind distribution across the flow domain, to determine the suitability of open spaces with regards to pedestrian comfort, and provides a good indication of the areas of high speeds and wind acceleration to help identify suitable mitigation measures. Also, CFD is performed at full scale with a mesh made out of several millions of cells where speeds are calculated at each cell point of the mesh, allowing for a much larger amount of data to be used for the comfort and safety analyses. Technical assumptions of the CFD modelling are presented in **Appendix 10.4**.

10.7.4. The Lawson criteria for pedestrian comfort focus on the effect of wind force on people's activities but do not factor in other environmental variables such as air temperature, solar radiation and relative humidity which also affect people's perception of comfort.

10.7.5. Overlaying all these climatic factors would be a complex process and Lawson's method presents the best available methodology for anticipating wind effects in the built environment.

10.8 SUMMARY

10.8.1. In conclusion, the results of the baseline assessment indicated that the existing wind environment of the Site is generally suitable for the current intended pedestrian activities. The assessment identified some areas where wind speeds tend to accelerate and exceed sitting criteria, particularly in the winter months. However all areas are suitable for standing, leisure and business walking which, in most cases, are the primary intended pedestrian activity. In addition to the comfort assessment, an assessment of wind effects during strong wind events was carried out.

10.8.2. The results of the wind assessment indicate that the local wind environment once the Proposed Scheme is complete would change, improving in some areas and becoming windier in others. This is due to the position, massing and orientation of the building relative to the wind direction that create localised areas of wind acceleration particularly around corners, narrow areas where wind can channel through and accelerate, and areas where tall elements of the building deflect the wind flow down to ground level. Overall, the area remains suitable for the intended uses throughout the year with stronger winds being registered during winter months. In particular, the main changes are registered on Jackson's Row and Bootle Street where most areas previously suitable for sitting become suitable for standing. However, these do not exceed the Lawson criteria for the intended use with the exception of the entrance at receptor location 42 where a localised area exceeding the criteria for standing is identified.

10.8.3. In terms of pedestrian safety, while the area in front of the junction between Deansgate and Quay Street (receptor location 13) is brought within the safely criteria as a result of the Proposed Scheme, an additional localised area in exceedance of safety criteria is registered to the west of the Proposed Scheme on Jackson's Row (receptor location 63). The existing or replacement gates between the Proposed Scheme and the adjacent development to the west will decrease wind funnelling effects along the alley and therefore reduce wind speeds both at receptor locations 63 and 42.

10.8.4. Areas of windiness are identified within the Site, at podium, terrace level and on Jackson's Row (receptor location 63), however, the assessment considered a worst case scenario and thus excludes the proposed pergolas, landscaping (including trees and shrubs), furniture and screens which will contribute to reduce unwelcome winds. Further quantitative testing is therefore recommended at a more detailed design stage to refine the position, dimension and characteristics of the proposed landscaping design, as well as identifying the most suitable areas to designate to specific activities in terms of the wind environment and identifying mitigation measures to include at balcony and roof terrace level.

10.8.5. Therefore, the assessment identified that the wind effects on pedestrian comfort and safety in the absence of any additional mitigation measures, are not significant for the majority of the receptor locations assessed. Effects on pedestrian safety were identified as a result of the Proposed Scheme at Jackson's Row (receptor location 63). This effect is however anticipated to reduce with the inclusion of taller and more porous gates in this location. Furthermore, the assessment identified that the Proposed Scheme has a major positive effect on pedestrian safety on Deansgate and Quay Street (receptor location 13).

Table 10.11- Summary of Effects Table for Wind Assessment

Description of Effects	Receptor	Significance and Nature of Effects Prior to Mitigation / Enhancement	Summary of Mitigation / Enhancement	Significance and Nature of Effects Following Mitigation / Enhancement (Residual)
Operational Phase				
Pedestrian discomfort as a result of localised zones of acceleration	All receptors except (35, 62 and 63)	🟢 -/ P / D / LT	N/A	🟢 / P / D / LT
	Passage on Site between the Tower and office building (62); Pavement on Bootle Street (35); and Alley between Proposed Development and adjacent building to the left on Jackson's Row (63).	🟡 -/ P / D / LT	No additional mitigation required over and above the public realm planting and infrastructure inherent in the Scheme.	🟢 / P / D / LT
Reduction in pedestrian safety as a result of an increase in wind speeds	All Receptors except receptor 13, 62 and 63.	🟢 -/ P / D / LT	N/A	🟢 / P / D / LT
	Passage on Site between the Tower and office building (62)	🟡 -/ P / D / LT	N/A	🟡 / P / D / LT
	Alley between Proposed Development and adjacent building to the left on Jackson's Row (63).	🟡🔴 -/ P / D / LT	The model does not include the existing gates at both end of the alley way. These are likely to reduce wind energy and therefore speed. Further improvement of this area could be achieved if the existing gates were substituted with taller and	🟡 -/ P / D / LT

			more solid gates (approx. 50% porosity).	
	Corner Deansgate & Quay Street (13)	●+/ *P* / *D* / *LT*	N/A	●+/ *P* / *D* / *LT*

NB: Aspects of the proposed scheme considered as part of the pre-mitigation scenario are summarised above in Section 10.6, and within **Chapter 14: Summary of Environmental Statement.**

Key to table:

●Major significance, ●Moderate significance, ●Minor significance, ●Negligible significance

+ / - = Positive or Negative P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term

N/A = Not Applicable

10.9 REFERENCES

- **Ref. 10.1** Manchester City Council. Manchester's Local Development Framework (LDF), Core Strategy Development Plan Document, 2012.
- **Ref. 10.2** T.V. Lawson (2001) Building Aerodynamics, Imperial College Press.
- **Ref. 10.3** J. Franke, A.Hellsten, H. Schlunzen, B. Carrisimo (2007). Best Practice Guideline for the CFD Simulation of flows in the Urban Environment – Cost Action 73
- **Ref. 10.4** Department of Communities and Local Government (2012), National Planning Policy Framework- available at: http://planningguidance.planningportal.gov.uk/
- **Ref. 10.5** Commission for Architecture and the Built Environment, English Heritage. (July 2007). Guidance on tall buildings. Available online at: http://webarchive.nationalarchives.gov.uk/

11

DAYLIGHT, SUNLIGHT AND OVERSHADOWING

11 DAYLIGHT, SUNLIGHT AND OVERSHADOWING

11.1 INTRODUCTION

11.1.1. This Chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Scheme on the sunlight and daylight availability to windows of existing and consented surrounding properties. The assessment also examines daylight, sunlight and overshadowing within selected units and open spaces of the Proposed Scheme. Full details of the results are provided in **Appendices 11.1 – 11.6**.

11.1.2. The Chapter describes the methods used to assess the effects, the baseline conditions currently existing at the Site and surroundings and the effects of the Proposed Scheme in relation to daylight, sunlight and overshadowing.

11.1.3. This Chapter (and its associated figures and appendices) is intended to be read as part of the wider ES.

11.2 LEGISLATIVE FRAMEWORK AND GUIDANCE

LEGISLATIVE FRAMEWORK

11.2.1. There is no applicable legislation of relevance to this assessment.

LOCAL PLANNING POLICY

MANCHESTER'S LOCAL DEVELOPMENT FRAMEWORK (LDF), CORE STRATEGY DEVELOPMENT PLAN DOCUMENT. 2012 (REF 11.1)

11.2.2. Policy DM1 of the Manchester Local Development Framework LDF states that 'all development should have regard to the following specific issues for which more detailed guidance may be given with 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.'

11.2.3. Policy EN4 states that in order to reduce CO2 emissions:

"All development must follow the principle of the Energy Hierarchy, being designed: to reduce the need for energy through design features that provide passive heating, natural lighting and cooling"

MANCHESTER CITY COUNCIL, SAVED POLICIES FROM THE MANCHESTER UNITARY DEVELOPMENT PLAN (UDP), 2007 (REF 11.2)

11.2.4. Policy H2 of the Manchester UDP states that the objective of the council is to:

'…..To maintain and where necessary improve the quality of the housing stock and residential environments….'

11.2.5. Policy H2.2 states that:

'…..The Council will not allow development which will have an unacceptable impact on residential areas….'

MANCHESTER CITY COUNCIL, GUIDE TO DEVELOPMENT IN MANCHESTER SUPPLEMENTARY PLANNING DOCUMENT (SPD) AND PLANNING GUIDANCE (PG), ADOPTED APRIL 2007

11.2.6. Paragraph 4.5 of the SPD (Manchester City Council, 2007) states that the following design principle will assist developers in achieving energy efficiency targets:

'…..Site layout and building design principles should maximise the capture and use of daylight and passive solar energy, while avoiding excessive solar gain in summer.'

11.2.7. The SPD provides guidelines on Development Quality and states that new developments will be expected to contribute positively to the identity and quality of the City Centre. Paragraph 12.8 states that:

'…..Schemes will be considered on an individual basis, by reference to their appearance, their impact on the immediate area and the effect on the City's skyline. Key questions will be the quality and interest of the roofline; the design of the lower floors; the relationship to the surrounding streets; the impact of servicing and parking requirements; the microclimate, including overshadowing and air turbulence effects, created by the relationship of the building to those adjacent; and the quality and usability of the spaces surrounding the building.'

GUIDANCE

Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice

11.2.8. The BRE Guide: Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice (**Ref. 11.3**) is recognised as the most appropriate method for daylight, sunlight and overshadowing assessments. These guidelines were first published in 1991, and superseded the 1971 Department of the Environment document Sunlight and Daylight (**Ref. 11.4**). The latest edition was published in 2011 and an addendum was published in 2012 (**Ref. 11.5**).

11.2.9. Whilst the BRE Guide provides numerical guidelines for daylight, sunlight and overshadowing, it is not an instrument of planning policy, therefore some level of flexibility should be applied where appropriate. This is particularly relevant in a city environment where it would be unrealistic to expect strict compliance with the recommendations due to the presence of densely built up areas. In addition, the BRE Guide advises that daylight and sunlight levels should be assessed at the main habitable rooms of neighbouring residential properties. Habitable rooms in residential properties are defined as kitchens, living rooms and dining rooms. Bedrooms are less important as they are mainly occupied at night-time.

11.2.10. The BRE document also includes advice for interior daylight although the recommendations contained within the guide are referred from the BS 8206-2 Code of practice for daylighting (**Ref 11.7**), and in the CIBSE publication Daylighting and window design (**Ref 11.6**) which give guidance on the design of buildings for good interior daylighting. The advice given in the BRE Guide is intended to be used in conjunction with these two documents as these focus on interior daylighting while the BRE Guide complements them by providing advice on the planning of the external environment.

Planning Practice Guidance

11.2.11. The Department for Communities and Local Government (DCLG) web based Planning Practice Guidance resource (**Ref. 11.8**) includes a section on design and sets out how a building's size and shape can affect microclimate. The section addressing Design (relating to the spacing and scale of buildings), Paragraph 026, states that:

"Account should be taken of local climatic conditions, including daylight and sunlight, wind, temperature and frost pockets."

Historic England Advice Note 4, Tall Buildings (2015)

11.2.12. The Guidance on Tall Buildings (**Ref. 11.9**) updates previous guidance by English Heritage and the Commission for Architecture and Built Environment (CABE), produced in 2007. It seeks to guide people involved in planning for and designing tall buildings so that they may be delivered in a sustainable and successful way through the development plan and development management process:

"Planning applications for tall buildings are likely to require an environmental impact assessment (EIA), which would be expected to address matters in respect of both the proposed building and its cumulative impact…Consideration of the impact on the local environment is also important, including microclimate, overshadowing night-time appearance, light pollution, vehicle movements and, the environment and amenity of those in the vicinity of the building and the impact on the pedestrian experience."

11.3 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

11.3.1. An EIA Scoping Report was submitted to MCC on February 18th 2016, as presented in **Appendix 5.1**. An EIA Scoping Note was prepared for the succeeding iteration of the Proposed Scheme in accordance with best practice. The note is provided in **Appendix 5.2**. In the absence of an Environmental Scoping Opinion from MCC it is assumed that the methodology adopted is sufficient. In addition to daylight and sunlight effects to the buildings and windows the overshadowing of open spaces has also been included within the assessment for completeness.

SCOPE OF THE ASSESSMENT

11.3.2. This section provides an update on the scope of the assessment outlined within the EIA Scoping Report and re-iterates the evidence base for insignificant effects following further iterative assessment since.

Sensitive receptors

11.3.3. Effects on the following receptors have been considered insignificant based on the preliminary studies carried out during the design stage and have therefore not been considered further within the ES:

- Properties beyond Mulberry Street / Princess Street to the north of the Site;
- The Manchester Town Hall;
- Properties beyond Deansgate to the west of the Site;
- Properties beyond Mount Street to the east of the Site; and
- Properties beyond St John to the south of the Site.

Insignificant Effects

11.3.4. The following daylight and sunlight effects have been considered insignificant based on the preliminary studies carried out during the design stage:

11.3.4.1 Construction

- There is potential for significant effects during construction, in practice these will be of a similar nature to that anticipated during operation. Effects during construction are anticipated to be of a lesser degree than those during operation (because the Proposed Scheme will not be fully complete until the end of the construction phase), so construction effects have not been considered separately. After demolition of some of the existing buildings, there will be a period when levels of daylight and sunlight are actually greater than baseline levels, although this will be temporary and relatively short-lived compared to the overall construction period. In practice, the assessment of operational effects can be considered to also cover a worst-case scenario during construction. The effects on daylight and sunlight during the construction period will be temporary and therefore have not been considered further.

Overshadowing to Open Spaces

- Overshadowing to open spaces was anticipated to be insignificant at the scoping stage, as detailed in the EIA Scoping Report (Appendix 5.1). Notwithstanding this, an assessment of overshadowing of opens spaces including Amenity Space at the J. Rylands Library, Lincoln Square, Albert Square, and Great Northern Square has been undertaken to support the design process. This identified that the open spaces would receive adequate sunlight in accordance to the BRE criteria with the Proposed Scheme in place. The results of the assessment have therefore confirmed that the significance of effects is considered to be negligible but have been included in this Chapter for transparency given concern raised during consultation (see Core Document, Consultation Statement).

Likely Significant Effects

11.3.5. Operation Phase

- Loss of natural light (daylight) to adjacent properties; and
- Loss of natural light (sunlight) to adjacent properties.

EFFECTS NOT CONSIDERED

Daylight, Sunlight and Overshadowing Studies within the Site

11.3.6. The following assessments have also been carried out to verify compliance with recommended BRE Criteria:

- Daylight and sunlight within the Proposed Scheme for future occupants;

11.3.7. The results are presented in **Appendices 11.3** and **11.4** but are not considered as part of the EIA because there is no baseline to compare the future situation to (i.e. future occupants of the scheme are, by definition, not currently receptors so there can be no assessment of how their situation has changed). Nevertheless, all assessments presented highly favourable results considering the size of the Proposed Scheme. It has been possible to achieve a relatively high level of compliance with the BRE criteria through a series of analyses and design refinements in close collaboration with the architects' team.

EXTENT OF THE STUDY AREA

11.3.8. A 3d model of the Proposed Scheme and surroundings was constructed for the assessment. The 3d model includes the built area within a radius of approximately 300m around the Site. The model includes the windows of existing properties in the surroundings of the Site, as well as, properties currently under construction.

ASSESSMENT METHODOLOGY

Loss of natural light (Daylight) to adjacent properties

11.3.9. The methodology for the assessment of effects to the existing adjacent surroundings is based on a direct comparison between the baseline conditions and the conditions that will occur as a result of the Proposed Scheme.

11.3.10. For the purposes of this assessment the baseline conditions have been assumed to be the existing building on the Site and the existing surrounding properties fronting the Site which are likely to experience a change in the level of natural light, as well as those properties that are currently under construction.

11.3.11. In the 'proposed scenario' the Proposed Scheme is placed on the Site replacing the existing building for a direct comparison. This approach allows determination of the impact that the Proposed Scheme will have on the surrounding properties in terms of daylight.

11.3.12. The methodology adopted for the assessment follows that set out in BRE Guide which gives criteria and methods for calculating daylight and sunlight.

11.3.13. The BRE Guide uses a set of parameters to quantify the potential effect on light levels. For the assessment the following methods have been used including:

- Obstruction Angle (25 degree) method; and

- Vertical Sky Component (VSC) method.

Obstruction Angle

11.3.14. The obstruction angle is a useful initial indicator of the availability of daylight and also of the potential effect of the Proposed Scheme on surrounding buildings. This initial check involves drawing a plane from the bottom window of the building to be assessed with an angle of 25° from the horizontal. If, for any part of the Proposed Scheme, this angle is more than 25°, more detailed analysis is needed to find the loss of daylight to the existing building.

Vertical Sky Component

11.3.15. The Vertical Sky Component (VSC) calculation is the ratio of the direct sky illuminance falling on the outside of a window, to the simultaneous horizontal illuminance under an unobstructed sky. The standard CIE (Commission Internationale d'Éclairage) Overcast Sky model is used and the ratio is expressed as a percentage (see glossary at **Appendix 11.5** for further explanation). The maximum VSC value is close to 40% for a completely unobstructed vertical wall.

11.3.16. The BRE Guide also sets out two guidelines for the VSC:

- If the VSC at the centre of the existing window exceeds 27% with the Proposed Scheme in place, then enough sky light should still be reaching the existing window; and
- If the VSC with the Proposed Scheme in place is both less than 27% and less than 0.8 times its former value, then the reduction in light to the window is likely to be noticeable. This means that a reduction in the VSC value of up to 20% its former value would be acceptable and thus the effect would be considered to be of negligible significance.

Loss of natural light (sunlight) to adjacent properties

Sunlight Calculations

11.3.17. Access to sunlight is measured from the windows of habitable rooms, facing within 90° of due south. The Probable Sunshine Hours (PSH) calculation method measures the proportion of the window assessed that is sunlit for a period of time. In new developments each dwelling should have at least one main living room within 90° of due south to receive a reasonable amount of sunlight. The BRE Guide and BS 8206-02 recommend that the PSH is calculated for the whole year, and for the winter months (21st September to 21st March). In addition:

- If the window reference point can receive more than 25% of annual PSH, including at least 5% of Annual Probable Sunshine Hours (APSH) during winter months (WPSH), then the room should still receive enough sunlight and the impact would be considered to be of negligible significance; and
- However, if the available sunlight hours are both less than the amount given above and less than 0.8 times their former value, either over the whole year or during the winter, then the occupants of the existing building will notice the loss of sunlight.

Increased overshadowing to open spaces;

11.3.18. For gardens or amenity areas, the BRE Guide suggests that at least half the area should receive at least two hours of sunlight on 21st March (sunlight at an altitude of 10o or less is excluded). If as a result of a Proposed Scheme, an existing garden or amenity area does not meet the above criteria and the area which can receive two hours of sunlight on 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be significant.

Assessment Modelling

11.3.19. The daylight and sunlight impact calculations have been undertaken using the specialist software Ecotect 2011 by AutoDesk in which a three dimensional model comprising the existing building on the Site, the existing surrounding properties and the Proposed Scheme on the Site based on models and drawings provided by Hodder and Partners Architects in October 2017.

Significance Criteria

11.3.20. The significance level attributed to each effect has been assessed based on the magnitude of change due to the Proposed Scheme and the sensitivity of the affected receptor, as well as a number of other factors that are outlined in more detail in **Chapter 5: Approach to EIA**. The sensitivity of the affected receptor is assessed on a scale of high, medium, low and negligible (as shown in Section 11.4 Sensitive Receptors). The magnitude of change is assessed on a scale of large, medium, small and negligible (as shown in **Chapter 5: Approach to EIA**).

Determining the magnitude

11.3.21. The BRE Guide provides criteria and methods for calculating daylight and sunlight levels. These criteria have been used to assess the likely levels of light to habitable rooms of the surrounding properties. Compliance with the BRE Guide is achieved if the levels of daylight / sunlight within the habitable spaces of the surrounding properties are equal to or over the values established by the Guide. Compliance with the BRE Guide is also achieved for the habitable spaces of the surrounding properties if the ratio of impact between the baseline and the Proposed Scheme is 0.80 or higher, i.e. the reduction in daylight or sunlight hours is 20% or less. An additional criterion of overall annual loss for APSH values also needs to be satisfied to comply with the recommended BRE Guidelines. A negligible magnitude of change is established if compliance with the BRE criteria is met.

11.3.22. For the affected receptors that lie below the recommended BRE Guidelines, the magnitude of change has been classified using professional judgement depending on the ratio of impact between the baseline conditions and the proposed scenario. The criteria used for determining the magnitude of change for daylight within existing buildings (VSC) and Sunlight within Existing Buildings (APSH and WPSH) results has been detailed below (**Table 11.1** to **Table 11.3**).

Loss of natural light (daylight) to adjacent properties / Loss of natural light (sunlight) to adjacent properties

Table 11.1: Magnitude of Change for Vertical Sky Component (VSC) Results

VSC Values	Ratio of Impact		Magnitude of Change
	Ratio as decimal	Ratio as %	
VSC ≥ 27%	n/a	n/a	Negligible
VSC < 27%	> 0.8	> 80	Negligible
VSC < 27%	0.7 – 0.8	70 - 80	Small
VSC < 27%	0.6 – 0.7	60 – 70	Medium
VSC < 27%	< 0.6	< 60	Large

Table 11.2: Magnitude of Change for Annual Probable Sunlight Hours (APSH) Results

APSH Values	Ratio of Impact		Absolute reduction in APSH	Magnitude of Change
	Ratio as decimal	Ratio as %		
APSH ≥ 25%	n/a	n/a	n/a	Negligible
APSH < 25%	>0.8	> 80	≤ 4%	Negligible
APSH < 25%	<0.8	< 80	≤ 4%	Small

APSH < 25%	>0.7	> 70	>4%	Small
APSH < 25%	0.6 – 0.7	60 – 70	>4%	Medium
APSH < 25%	< 0.6	< 60	>4%	Large

Table 11.3: Magnitude of Change for Winter Probable Sunlight Hours (WPSH) Results

WPSH Values	Ratio of Impact		Magnitude of Change
	Ratio as decimal	Ratio as %	
WPSH ≥ 5%	n/a	n/a	Negligible
WPSH < 5%	>0.8	> 80	Negligible
WPSH < 5%	0.7 – 0.8	70 - 80	Small
WPSH < 5%	0.6 – 0.7	60 – 70	Medium
WPSH < 5%	< 0.6	< 60	Large

Increased overshadowing to open spaces

Table 11.4 Magnitude of Change for Overshadowing to Open Spaces

Ground Area Receiving ≥2 hours of direct Sunlight on the 21st of March	Ratio of Impact		Magnitude of Change
	Ratio as decimal	Ratio as %	
Area ≥ 50%	n/a	n/a	Negligible
Area ≤ 50%	>0.8	> 80	Negligible
Area ≤ 50%	0.7 – 0.8	70 - 80	Small
Area ≤ 50%	0.6 – 0.7	60 – 70	Medium
Area ≤ 50%	< 0.6	< 60	Large

Sensitivity of Receptors

11.3.23. The BRE guidelines focus mostly on residential buildings and the emphasis throughout the guide is on safeguarding natural light to existing dwellings, although other building types are not explicitly excluded.

11.3.24. A receptor sensitivity rating has been developed using professional judgement, which is described above and categorised into high, medium, low and negligible based on the function or use of the space being assessed, as follows:

- Residential buildings require good levels of daylight to render them more enjoyable and adequate to their function. Windows to such building types are classified as having high sensitivity to daylight and sunlight. Schools and hospitals are also associated with good levels of natural light and have been classified as having high sensitivity to daylight and sunlight;
- Office buildings tend to rely on supplementary artificial lighting and have been classified as having a medium sensitivity to daylight and sunlight;
- Hotel rooms are mostly used during evenings and night time and have been classified as having a medium sensitivity to daylight and sunlight; and
- Retail units usually rely on mechanical control and are not considered spaces with an expectation of daylight or sunlight by the user. Thus windows to such spaces can be classified as having a low sensitivity.

EFFECT SIGNIFICANCE

11.3.25. The BRE Guide includes the following suggested guidance for significance of effects:

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

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 area 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.

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

- *Only a small number of windows or limited area of open space are affected;*
- *The loss of light is only marginally outside the guidelines;*
- *An affected room has other sources of skylight or sunlight;*
- *The affected building or open space only has a low level requirement for skylight or sunlight; and*
- *There are particular reasons why an alternative, less stringent, guideline should be applied.*

Factors tending towards a major adverse impact include:

- *A large number of windows or large area of open space are affected;*
- *The loss of light is substantially outside the guidelines;*
- *All the windows in a particular property are affected; and*
- *The affected indoor or outdoor spaces have a particularly strong requirement for skylight or sunlight, e.g. a living room in a dwelling or a children's playground.*

Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space.

An adverse impact on one property cannot be balanced against negligible or beneficial impacts on other properties. In these situations it is more appropriate to quote a range of impacts.

The provision of new dwellings, or commercial or industrial buildings, or private gardens that meet the skylight or sunlight guidance in this book should not be classified as a beneficial daylight or sunlight impact on the local environment. However, the provision of community buildings or public open spaces with good skylight and or sunlight could be classed as a beneficial impact."

11.3.26. The significance of effect reflects the sensitivity of the affected receptor(s) and the nature and magnitude of the predicted changes experienced, which are as detailed in **Table 11.5**. For example, a moderate impact on an area of low importance / sensitivity will be of lesser significance than the same impact magnitude on a feature or site of high sensitivity. Table presents the criteria used to determine the significance of wind effects.

Table 11.5 - Matrix for Determining the Significance of Effects by Sensitivity of Receptor

Impact Magnitude	Sensitivity of Receptor		
	High	**Medium**	**Low**
Large	Major	Moderate to Major	Minor to Moderate
Medium	Moderate	Moderate	Negligible to Minor
Small	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible
No Change	No effect	No effect	No effect

11.3.27. The following terms have been used to define the significance of the effects identified:

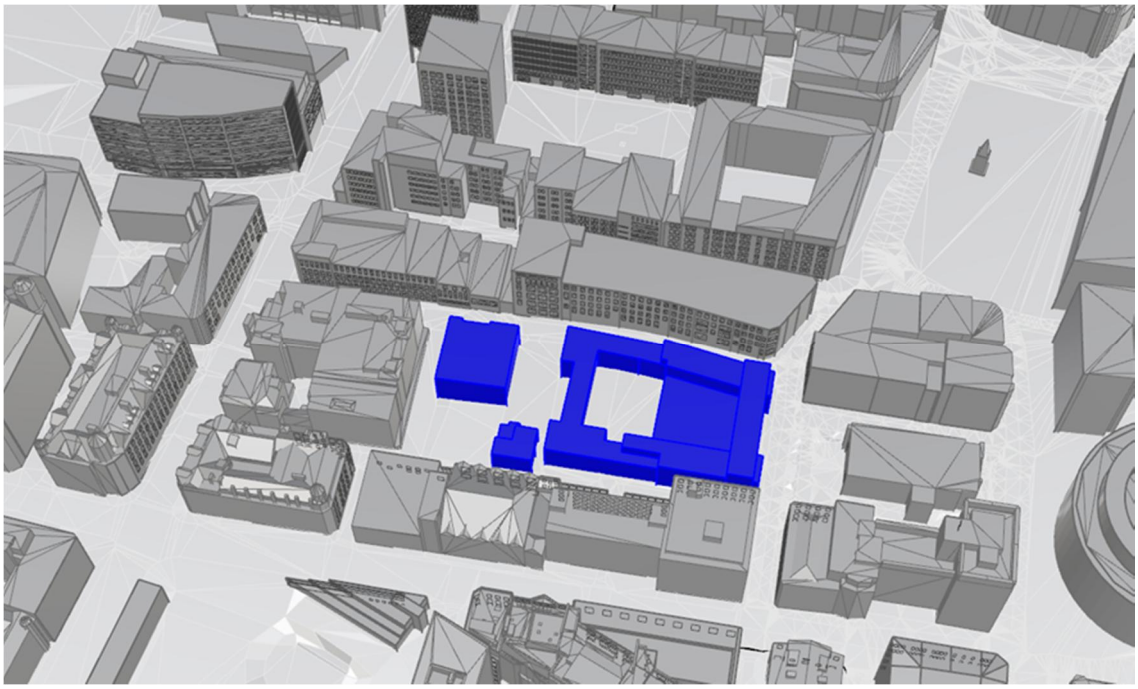
- Major effect: where the Proposed Scheme could be expected to have a considerable effect (either positive or negative) on daylight, sunlight or overshadowing of sensitive receptors;
- Moderate effect: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on daylight, sunlight or overshadowing of sensitive receptors;
- Minor effect: where the Proposed Scheme is expected to result in a small, barely noticeable effect (either positive or negative) on daylight, sunlight or overshadowing of sensitive receptors; and
- Negligible: where no discernible effect is expected as a result of the Proposed Scheme on daylight, sunlight or overshadowing of sensitive receptors.
-

11.4 BASELINE CONDITIONS

11.4.1. An assessment of the baseline conditions has been carried out as described in Section 11.3. The baseline conditions have been assumed to be the existing buildings on the Site and the existing properties surrounding the Site including buildings currently under construction.

11.4.2. The 3d model of the baseline scenario has been used to determine the baseline levels of daylight and sunlight to the surrounding properties. A view of the baseline model is shown in **Plate 11.1**. The baseline condition is characterised by buildings of relatively limited and comparable heights, with the exception of the Radisson Blu Hotel and the Great Northern Tower to the south of the Site.

Plate 11.1: View of the Baseline Model



11.4.3. The detailed daylight (VSC) baseline levels, sunlight (APSH and WPSH) baseline levels for each receptor are given in **Table A11.4.1**, **Table A11.4.2** respectively in **Appendix 11.4.**

11.4.4. In summary, in the baseline scenario, adequate levels of daylight and sunlight are generally available for the top and middle floor windows of most existing buildings, while lower floors tend to be penalized.

11.4.5. Consistently, the external amenity areas identified are generally marginally obstructed and receive enough sunlight. Lincoln Square is the only external amenity space closely bound by relatively tall buildings; however, it still receives the recommended two consecutive hours of sunlight for at least half of its area.

11.4.6. The receptors for the assessment are selected on the basis of their location relative to the Site, anticipating the receptors whose level of daylight or / and sunlight are likely to change as a result of the Proposed Scheme and also depending on their sensitivity to natural light.

11.4.7. All key sensitive receptor locations are shown on **Plate 11-2** and listed in **Table 11.6.**

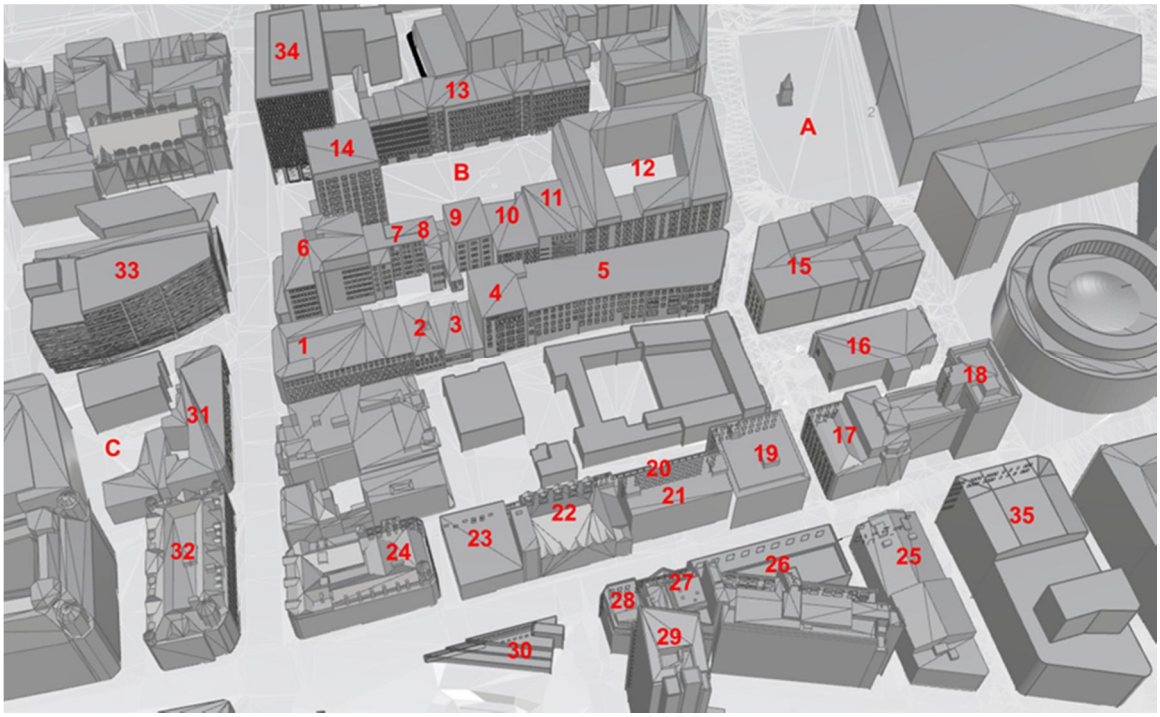
Table 11.6: Receptors for Daylight and Sunlight

Building	Description	Function	Sensitivity	Number of Windows
1	Elliot House	Chamber Of Commerce	Medium	67
2	The Old Nags Head	Residential	High	15
3	19 Jackson's Row	Office	Medium	1
4	Croxley House	Offices +Night Club	Medium	23
5	Lloyds House	Offices, Restaurant,	Medium	95

		Offices		
6	St John's House	Offices and Cafe GF	Medium	72
7	Sovereign House	Offices	Medium	58
8	The Rising Sun	Pub	Medium	3
9	Queens Court	Offices	Medium	30
10	Alexandra Buildings	Offices and Commercial	Medium	40
11	Queens House	Offices and Commercial	Medium	16
12	Heron House	Manchester City Council, Restaurants, Maybe Some Residential	Med/High	120
13	Brazennose House	Commercial and Offices	Medium	323
14	Centurion house	Offices and Commercial	Medium	72
15	1 Central Street	Offices	Medium	18
16	6 Mount St.	Martial Art School, Meeting, Training And Art Gallery	High	2
17	75 Southmill St	Offices	Medium	59
18	Television House	Offices	Medium	9
19	37 Peter Street	Offices	Medium	48
20	11-13 Bootle Street	Offices	Medium	13
21	Marron Place Building	Office	Medium	60
22	Albert Hall	Concert Hall	High	30
23	23 St Peter	Residential	High	8
24	2 Bootle St/Jerusalem Place	Offices, Restaurant and maybe some Residential	Med/High	51

25	Theatre Royal	Unused Theatre and Night Club	Low	14
26	Radisson Blu Edwardian Manchester	Hotel	Medium	86
27	44 Peter Street	Offices	Medium	27
28	Fourth Church Of Christ Scientists	Church	Medium	14
29	Great Northern Tower	Residential	High	64
30	De Kuyper	Commercial	Medium	10
31	Oddfellows House	Offices	Medium	45
32	Oddfellows House (office)	Offices	Medium	64
33	1 Scott Street	Offices and Commercial	Medium	45
34	123 Deansgate	Offices	Medium	204
35	Scottish House	Offices	Medium	86
Total				1892

Plate 11-2: View of the Baseline Model with Sensitive Receptors



RELEVANT ELEMENTS OF THE PROPOSED SCHEME AND ESTABLISHING THE PRE-MITIGATION SCENARIO

OPERATIONAL PHASE

11.4.8. The full extent of the building massing, including roof terraces, of the Proposed Scheme has been used as the basis for the assessment of the effects of daylight, sunlight and overshadowing. For the assessment of effects to existing surrounding properties, all windows and open spaces potentially affected in terms of light loss have been included in the assessment. For the assessment of the daylight, sunlight and overshadowing within the Proposed Scheme, both windows to sensitive spaces such as the residential units and the terraces at ground level have been assessed.

11.5 ASSESSMENT OF EFFECTS, MITIGATION AND RESIDUAL EFFECTS

OPERATIONAL PHASE

Loss of natural light (daylight) to adjacent properties

11.5.1. The first set of analyses identifies the windows below and above the BRE criteria. The VSC calculations were conducted on the sensitive receptors identified and the ratio of impact from the baseline scenario derived. The detailed output tables of this stage are presented in **Table A11.1** in **Appendix 11.2**. The results were then used to determine compliance against the BRE criteria (**Table 11.**7).

11.5.2. The 3d model of the Proposed Scenario has been used to determine the baseline levels of daylight and sunlight to the surrounding properties. A view of the model used for the assessment is shown in **Plate 11-3**.

11.5.3. The results are tabulated for each receptor in **Appendix 11.2** and summarised in **Table 11.7**.

Plate 11-3: View of the Proposed Model

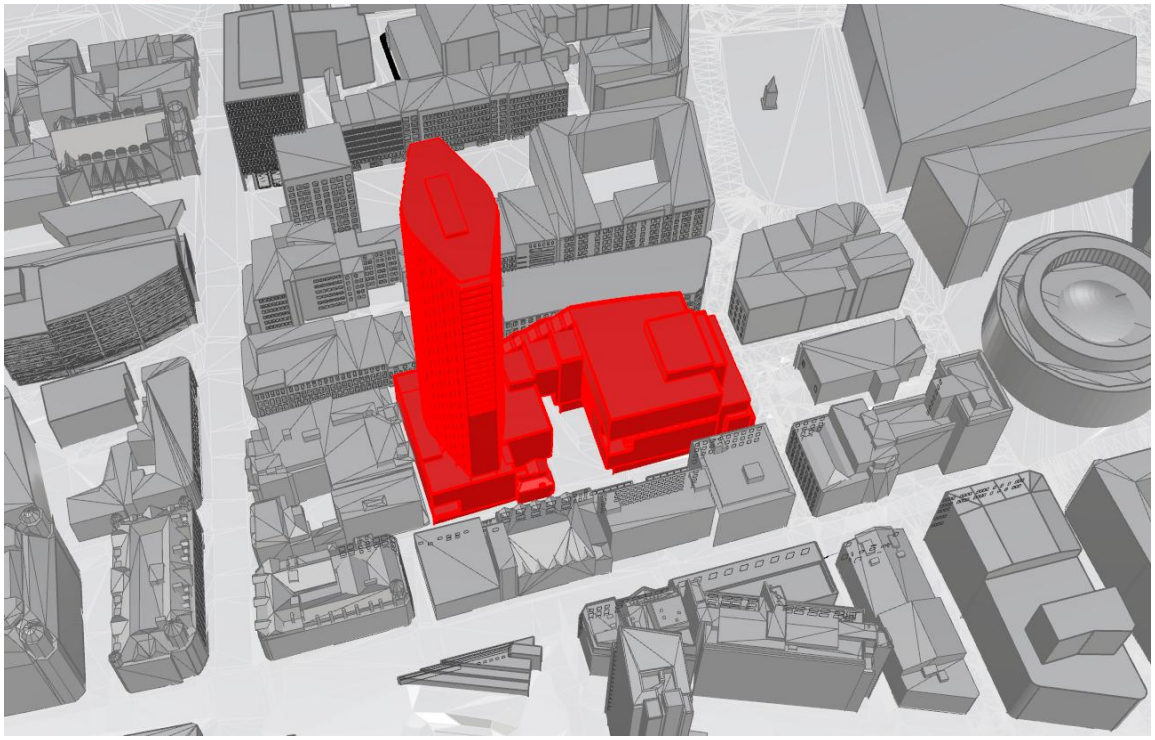


Table 11.7 - Summary of Daylight Assessment Results

Ref.	Receptors	Windows	Windows Above BRE Criteria		Magnitude of Change by Window						Overall Magnitude of Change by Receptor	Sensitivity	Effect
					Below BRE (Small)		Below BRE (Medium)		Below BRE (Large)				
			No.	%	No.	%	No.	%	No.	%			
1	Elliot House	67	12	17.9	18	26.9	16	23.9	21	31.3	Large	Medium	Moderate to Major Negative
2	The Old Nags Head	15	0	0	0	0	0	0	15	100	Large	High	Major Negative
3	19 Jackson's Row	1	0	0	0	0	0	0	1	100	Large	Medium	Moderate to Major Negative
4	Croxley House	23	0	0	0	0	0	0	23	100	Large	Medium	Moderate to Major Negative
5	Lloyds House	95	4	4.5	0	0	0	0	91	95.8	Large	Medium	Moderate to Major Negative
6	St John's House	72	63	87.5	9	12.5	0	0	0	0	Small	Medium	Minor Negative
7	Sovereign House	58	22	37.9	33	56.9	3	5.2	0	0	Large	Medium	Moderate to Major Negative
8	The Rising Sun	3	0	0	1	33.3	2	66.7	0	0	Large	Medium	Moderate to Major Negative

9	Queens Court	30	26	86.7	3	10	1	3.3	0	0	Small	Medium	Minor Negative
10	Alexandra Buildings	40	40	100	0	0	0	0	0	0	Negligible	Medium	Negligible
11	Queens House	16	10	62.5	6	37.5	0	0	0	0	Medium	Medium	Moderate Negative
12	Heron House	120	118	98.3	2	1.67	0	0	0	0	Small	Med/High	Minor Negative
13	Brazennose House	323	323	100	0	0	0	0	0	0	Negligible	Medium	Negligible
14	Centurion house	72	72	100	0	0	0	0	0	0	Negligible	Medium	Negligible
15	1 Central Street	18	0	0	3	16.3	13	72.3	2	11.1	Large	Medium	Moderate to Major Negative
16	6 Mount St.	2	0	0	1	50	1	50	0	0	Large	High	Major Negative
17	75 Southmill St	59	48	81.4	6	10.2	5	8.5	0	0	Small	Medium	Minor Negative
18	Television House	9	5	55.6	4	44.4	0	0	0	0	Medium	Medium	Moderate Negative
19	37 Peter Street	48	2	4.2	2	4.2	4	8.3	40	83.3	Large	Medium	Moderate to Major Negative
20	11-13 Bootle Street	13	0	0	0	0	0	0	13	100	Large	Medium	Moderate to Major Negative
21	Marron Place Building	60	0	0	0	0	0	0	60	100	Large	Medium	Moderate to Major Negative
22	Albert Hall	30	0	0	0	0	0	0	30	100	Large	Low	Minor to Moderate Negative

23	23 St Peter	8	0	0	0	0	0	0	8	100	Large	High	Major Negative
24	2 Bootle St/Jerusalem Place	51	11	21.6	19	37.3	16	31.4	5	9.8	Large	Med/High	Moderate to Major Negative
25	Theatre Royal	14	14	100	0	0	0	0	0	0	Negligible	Low	Negligible
26	Radison Blu Edwardian Manchester	86	84	97.7	2	2.3	0	0	0	0	Negligible	Medium	Negligible
27	44 Peter Street	27	18	66.7	9	33.3	0	0	0	0	Medium	Medium	Negligible
28	Fourth Church Of Christ Scientists	14	12	85.7	2	14.3	0	0	0	0	Small	Medium	Minor Negative
29	De Kuyper	10	8	80	2	20	0	0	0	0	Medium	Medium	Moderate Negative
30	Great Northern Tower	64	64	100	0	0	0	0	0	0	Negligible	High	Negligible
31	Oddfellows House	45	25	55.6	20	44.4	0	0	0	0	Medium	Medium	Moderate Negative
32	2 Oddfellows House	64	41	64.1	23	35.9	0	0	0	0	Medium	Medium	Moderate Negative
33	1 Scott Street	45	43	95.6	1	2.2	0	0	1	2.2	Negligible	Medium	Negligible
34	123 Deansgate (FB)	204	204	100	0	0	0	0	0	0	Negligible	Medium	Negligible
35	Scottish House (FB)	86	86	100	0	0	0	0	0	0	Negligible	Medium	Negligible

Total		1892	1355	71.6	166	8.8	61	3.2	310	16.4			

11.5.4. The assessment found that there were a range of receptors that might be affected by the Proposed Scheme. Residential receptors are considered to be high sensitivity and most office properties are considered to be of medium sensitivity, due to the relative levels of benefit of natural light derived by the users. Hotels are mainly used by guests in the evening and night, so these are considered to be medium sensitivity. Retail and similar properties where there is not an expectation of natural light are considered to be of low sensitivity.

11.5.5. The effect of the Proposed Scheme is defined as large for 16.4% of total windows assessed (i.e. 1892), medium for 3.2%, small for 8.8% and finally negligible for the remaining 71.6% of receptors.

11.5.6. As described, a range of changes in magnitudes were found, from negligible to large, depending on the degree of overshadowing. This range, combined with varying degrees of receptor sensitivity, means that a full range of effect significances as found, from **negligible** to **major negative**. Ten receptors were predicted to experience negligible effects; five receptors were predicted to experience minor effects; one receptor was predicted to experience minor to moderate effects; five receptors were predicted to experience moderate effects; 11 were predicted to experience moderate to major effects; and three receptors were predicted to experience major effects.

11.5.7. In all cases the effects are direct, permanent and long term.

Mitigation / enhancement

11.5.8. Given the scale of the Proposed Scheme suitable mitigation measures are limited. There may still be sufficient natural light to some of the affected rooms and windows if the particular characteristics are taken in to account for example room layout, room depth, internal surface colours and materials, room use etc. This would require internal surveys of such properties to allow a more detailed assessment of the actual remaining daylight conditions within the properties.

Residual effects

11.5.9. Given the limitations of mitigating the effects as referred to above, the residual effects remain unchanged from the effects identified in the assessment.

11.5.10. The sensitivity of receptors range from high to low, and the magnitude of change, following mitigation, remain as assessed in **Table 11.7** (negligible to large). Therefore, there is likely to be a direct, permanent, long-term residual effect varying from **negligible** to **major negative** significance following the implementation of mitigation measures.

Loss of natural light (sunlight) to adjacent properties

11.5.11. The sunlight assessment focused on the receptors that have windows facing 90° of due south and which are sensitive to direct sunlight, in line with BRE Guide. The results of the sunlight assessment are summarised in **Table 11.8**. The table identifies the number and location of windows where the sunlight criteria are achieved both for the annual and winter assessments.

Table 11.8 – Summary of Sunlight Assessment Results

Ref.	Receptor	Windows	Above BRE Criteria		Magnitude of Change by Window						Overall Magnitude of Change by Receptor	Sensitivity	Effect
					Below BRE (Small)		Below BRE (Medium)		Below BRE (Large)				
		No.	No.	%	No.	%	No.	%	No.	%			
1	Elliot House (Chamber of Commerce)	67	5	7.46	3	4.48	1	1.49	58	86.57	Small	Medium	Minor Negative
2	The Old Nags Head	15	0	0	0	0	0	0	15	100	Large	High	Major Negative
3	19 Jackson's row	1	0	0	0	0	0	0	1	100	Large	Medium	Moderate to Major Negative
4	Croxley House	23	2	8.7	0	0	0	0	21	91.3	Large	Medium	Moderate to Major Negative
5	Lloyds House	95	12	12.63	0	0	1	1.05	82	86.32	Large	Medium	Moderate to Major Negative
6	St John's House	72	60	83.33	7	9.72	4	5.56	1	1.39	Medium	Medium	Moderate Negative
7	Sovereign House	58	39	67.24	1	1.72	7	12.07	11	18.97	Medium	Medium	Moderate Negative
8	The Rising Sun	3	0	0	0	0	0	0	3	100	Large	Medium	Moderate to Major Negative
9	Queens Court	30	26	86.67	0	0	0	0	4	13.33	Small	Medium	Minor Negative
10	Alexandra Buildings	40	40	100	0	0	0	0	0	0	Negligible	Medium	Negligible
11	Queens House	16	16	100	0	0	0	0	0	0	Negligible	Medium	Negligible

12	Heron House	120	120	100	0	0	0	0	0	0	Negligible	Medium	Negligible
13	Brazennose House	323	323	100	0	0	0	0	0	0	Negligible	Medium	Negligible
14	Centurion house	72	72	100	0	0	0	0	0	0	Negligible	Medium	Negligible
15	2 Bootle St/Jerusalem Place	24	24	100	0	0	0	0	0	0	Negligible	Medium	Negligible
16	Theatre Royal	2	2	100	0	0	0	0	0	0	Negligible	Medium	Negligible
17	Oddfellows House	45	32	71.11	11	24.44	2	4.44	0	0	Medium	Medium	Moderate Negative
18	Oddfellows House	64	64	100	0	0	0	0	0	0	Negligible	Medium	Negligible
19	1 Scott Street	45	45	100	0	0	0	0	0	0	Negligible	Medium	Negligible
20	123 Deansgate	204	204	100	0	0	0	0	0	0	Negligible	Medium	Negligible
Total		1319	1086	82.34	22	1.67	15	1.14	196		-	-	

11.5.12. The assessment found that there were a range of receptors that might be affected by the Proposed Scheme. Residential receptors are considered to be high sensitivity and most office properties are considered to be of medium sensitivity, due to the relative levels of benefit of natural light derived by the users. Hotels are mainly used by guests in the evening and night, so these are considered to be medium sensitivity. Retail and similar properties where there is not an expectation of natural light are considered to be of low sensitivity.

11.5.13. In terms of sunlight and daylight, the effect of the Proposed Scheme on surrounding buildings is considered of moderate significance. In particular, the impact of the Proposed Scheme on the sunlight levels is considered large for 38% of all windows facing 90° of due south (i.e.1319), medium for 1.1%, small for 1.7% and negligible for the remaining 82.3%.

11.5.14. In terms of building units, changes in magnitudes were found, from negligible to large, depending on the degree of overshadowing. This range, combined with varying degrees of receptor sensitivity, means that a full range of effect significances as found, varying from **negligible** to **major negative**. Ten receptors were predicted to experience negligible effects; two receptors were predicted to experience minor effects; three receptors were predicted to experience moderate effects; four receptors were predicted to experience moderate to major effects; and one receptor was predicted to experience a major effect. In all cases the effects are direct, permanent and long term.

Mitigation / enhancement

11.5.15. Given the scale of the Proposed Scheme mitigation measures are limited.

Residual effects

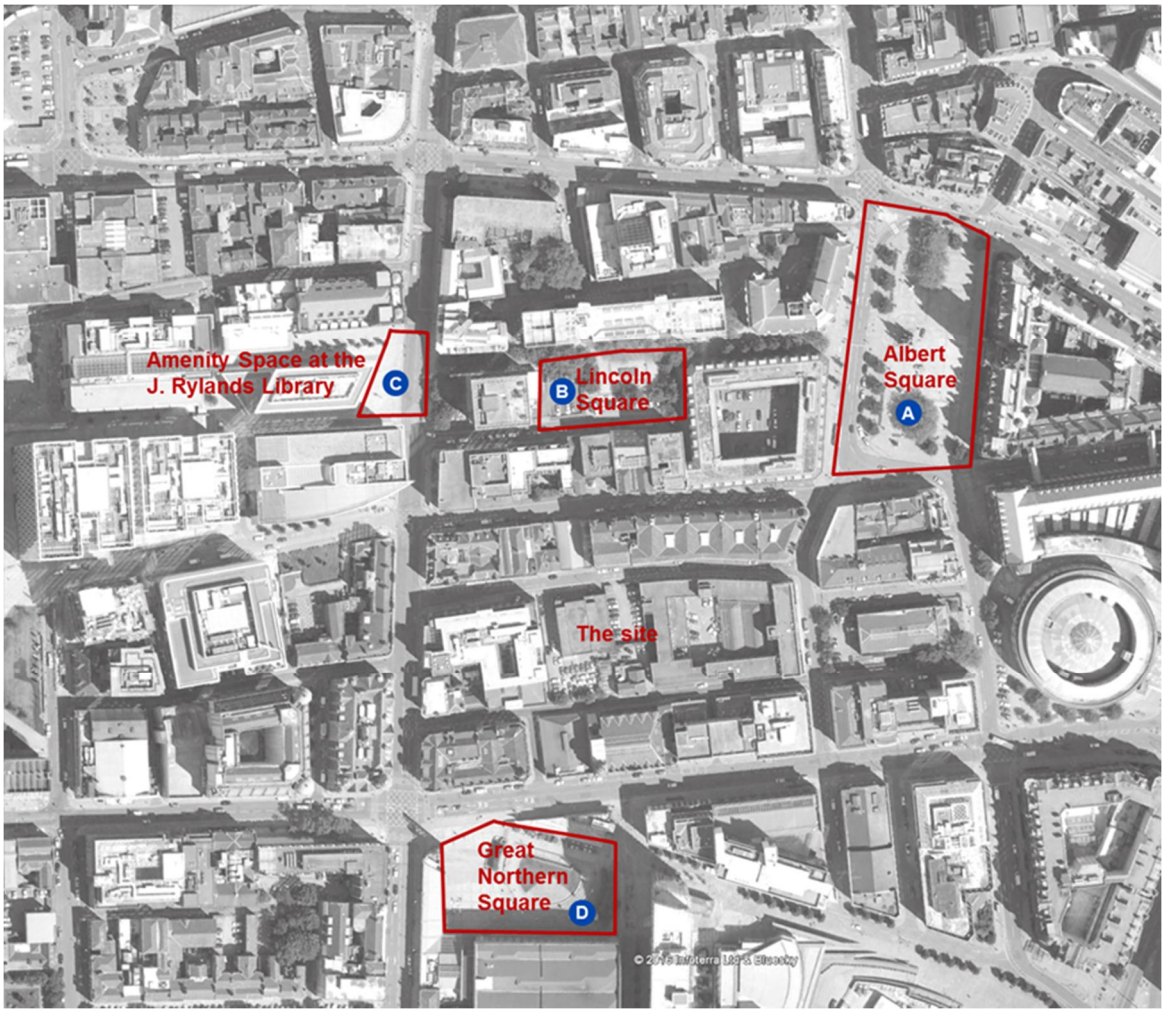
11.5.16. Given the limitations of mitigating the effects as referred to above, the residual effects remain unchanged from the effects identified in the assessment.

11.5.17. The sensitivity of receptors range from high to low, and the magnitude of change, following mitigation, remains as assessed in **Table 11.7** (negligible to large). Therefore, there is likely to be a direct, permanent, long-term residual effect of **negligible** to **major negative** significance following the implementation of mitigation measures.

Increased overshadowing to open spaces

11.5.18. The overshadowing assessment results are summarised below for the sensitive receptors identified in **Figure 11.4**. Numerical and graphical results are reported in **Appendix 11.6** including the details of the magnitude of change.

Figure 11.4: Open Spaces Assessed for Overshadowing within the Proposed Scheme



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11.5.19. **Open Space A: Albert Square at the Manchester Town Hall** has been modelled as part of the overshadowing assessments. The results indicate that the square is not affected by the Proposed Scheme and will continue to receive adequate sunlight in accordance to the BRE criteria. The detailed shadowing analysis indicates that more than half the space is likely to remain sunlit for at least two hours on 21st March and therefore in accordance with the criteria in **Table 11.4** the magnitude of change is considered to be negligible.

11.5.20. **Open Space B**: **Lincoln Square** is located on Queens Street to the north of the Site. This open space does not receive much sunlight throughout the day in the baseline scenario. The results of the shadowing analysis show that the impact of the Proposed Scheme is negligible and the space remains within the recommended criteria on the basis since more than half the space is likely to remain sunlit for at least two hours on 21st March and therefore in accordance with the criteria in **Table 11.4** the magnitude of change is considered to be negligible.

11.5.21. **Open Space C**: **Amenity Space at the J. Rylands Library** is the forecourt to Centurion House located to the north west of the Site on Deansgate. Due to the orientation of the buildings relative to the space, in the baseline scenario it experiences shadowing in the morning hours but receives sunlight between 12:00 to 14:00. The results of the impact shadowing analysis from the Proposed Scheme indicate that the space remains within the recommended criteria for sunlight on open spaces, on the basis more than half the space will remain sunlit for at least two hours on 21st March and therefore in accordance with the criteria in **Table 11.4** the magnitude of change is considered to be negligible.

11.5.22. **Open Space D**: **Great Northern Square**, located on Quay Street on the south of the Site, has been included in the overshadowing assessment due to its importance as an open space in the surrounding areas of the Site. The square does not receive much sunlight due to its orientation relative to the surrounding existing buildings. However the proposed building does not affect this area in terms of sunlight and shadowing.

Table 11.9 - Results of Overshadowing Analysis for Open Spaces

Square Name	Ground Area Receiving >2hr sunlight		Ratio
	Baseline	Proposed	
A- Albert Square	96%	96%	1.00
B- Lincoln Square	66%	64%	0.98
C - Amenity Space at the J. Rylands Library	98%	95%	0.98
D– Great Northern	53%	53%	1.00

11.5.23. The results of the overshadowing assessment within the Proposed Scheme indicate the open spaces identified and assessed meet the recommended criteria for overshadowing. The sensitivity of receptors A, B, C and D is considered to be medium, and the magnitude of change, prior to mitigation, is considered to be negligible. Therefore, there is likely to be a direct, permanent, long-term effect on receptors A, B, C and D of **negligible** significance.

Mitigation / enhancement

11.5.24. No mitigation is required.

Residual effects

11.5.25. Given that no mitigation is necessary and thus none is proposed, the magnitude of change remains as assessed. Therefore, there is likely to be a direct, permanent, long-term residual effect of negligible significance following the implementation of mitigation measures.

11.5.26.

11.6 LIMITATIONS AND ASSUMPTIONS

11.6.1. The daylight, sunlight and overshadowing calculations have been based on drawing information of the Proposed Scheme and existing properties provided by the architects and external surveys of existing surroundings. Where data has not been available, reasonable assumptions have been made.

11.6.2.

11.7 SUMMARY

11.7.1. The baseline condition is characterised by buildings of relatively limited and comparable heights, with the exception of the Radisson Blue Hotel and the Great Northern Tower to the south of the Site. Adequate levels of daylight and sunlight are therefore generally available for the top and middle floor windows of most existing buildings, while lower floors tend to be penalised. Consistently, the external amenity areas identified are generally marginally obstructed and receive enough sunlight. Lincoln Square is the only external amenity space closely bound by relatively tall buildings; however, it still receives the recommended two consecutive hours of sunlight for at least half of its area.

11.7.2. In terms of daylight, the magnitude of change as a result of the Proposed Scheme is defined as large for 16.4% of total windows assessed (i.e. 1892), medium for 8.8%, small for 3.2% and finally negligible for the remaining 71.6% of receptors. Given the limitations in the available mitigation measures and the range in sensitivity of receptors from high to low, the residual effect of the Proposed Scheme ranges from **negligible** to **major** negative.

11.7.3. In terms of sunlight the magnitude of change as a result of the Proposed Scheme on surrounding buildings is considered large for 14.9% of all windows facing 90° of due south (i.e.1319), medium for 1.1%, small for 1.7% and negligible for the remaining 82.3%. Given the limitations in the available mitigation measures and the range in sensitivity of receptors from high to low, the residual effect of the Proposed Scheme ranges from negligible to major negative.

11.7.4. In terms of overshadowing, the results obtained for amenity areas surrounding the Proposed Scheme indicate the four open spaces identified meet the recommended criteria for overshadowing. Therefore, based on the above findings and considering the overshadowing impact assessment of the Proposed Scheme overall, there is likely to be a direct, permanent and long term effect of **negligible** significance.

Table 11.10 - Summary of Effects Table for Daylight, Sunlight and Overshadowing

Description of Effects	Receptor	Significance and Nature of Effects Prior to Mitigation / Enhancement	Summary of Mitigation / Enhancement	Significance and Nature of Effects Following Mitigation / Enhancement (Residual)
Operational Phase				
Loss of natural light (daylight) to adjacent properties	The Old Nags Head (2), Croxley House (4), Lloyds House (5), 6 Mount St.(16), 23 St Peter (23)	🔴 - / P / D / LT	Consideration of room layout, room depth, internal surface colours and materials, room use etc. Internal surveys of properties to allow a more detailed assessment of the actual remaining daylight conditions within the properties.	🔴 - / P / D / LT
	Elliot House (1), 19 Jackson's Row (3), Sovereign House (7), The Rising Sun (8), 1 Central Street (15), 37 Peter Street (19) 11-13 Bootle Street (20), Marron Place Building (21) 2 Bootle St/Jerusalem Place (24)	🟠🔴 - / P / D / LT		🟠🔴 - / P / D / LT
	Queens House (11) , Television House (18) De Kuyper (29) Oddfellows House (31), 2 Oddfellows House (32)	🟠 - / P / D / LT		🟠 - / P / D / LT
	Albert Hall (22)	🟡🟠 - / P / D / LT	N/A	🟡🟠 - / P / D / LT
	St John's House (6), Queens Court (9), Heron House (12) 75 Southmill St (17), Fourth Church Of Christ Scientists (28)	🟡 - / P / D / LT		🟡 - / P / D / LT
	Alexandra Buildings (10), Brazennose House (13) Centurion house (14), Theatre Royal (25)	🟢 / P / D / LT		🟢 / P / D / LT

	Radison Blu Edwardian Manchester (26), 44 Peter Street (27), Great Northern Tower (30), 1 Scott Street (33),123 Deansgate (FB) (34), Scottish House (FB) (35)			
Loss of natural light (sunlight) to adjacent properties	The Old Nags Head (2)	● - / P / D / LT	N/A	● - / P / D / LT
	19 Jackson's Row (3), Croxley House (4), Lloyds House (5), The Rising Sun (8)	●● - / P / D / LT		●● - / P / D / LT
	St John's House (6), Sovereign House (7), Oddfellows House (31),	● - / P / D / LT		● - / P / D / LT
	Elliot House (1), Queens Court (9)	● - / P / D / LT		● - / P / D / LT
	Alexandra Buildings (10), Queens House (11) , Brazennose House (13), Centurion house (14), Theatre Royal (25), 1 Scott Street (33), 2 Oddfellows House (32), 123 Deansgate (FB) (34), Scottish House (FB) (35)	● / P / D / LT		● / P / D / LT
Overshadowing (reduced level of direct sunlight)	Deansgate (1) Lincoln Square (2) Albert Square (3) Great Northern Square (4)	● / P / D / LT	N/A	● / P / D / LT

Key to table:

●Major significance, ●Moderate significance, ●Minor significance, ●Negligible significance

+ / - = Positive or Negative P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term

N/A = Not Applicable

11.8 REFERENCES

- **Ref. 11.1**: Manchester City Council. Manchester's Local Development Framework (LDF), Core Strategy Development Plan Document, 2012.
- **Ref. 11.2**: Manchester City Council. Saved Policies from the Manchester Unitary Development Plan (UDP), 2007.
- **Ref. 11.3** Littlefair, P.J. (1995) Site Layout and Planning for Daylight and Sunlight: a guide to good practice. BRE Construction Research Communications, Garston, UK. 2011 edition.
- **Ref. 11.2** Department of the Environment (1971), Sunlight and daylight: Planning Criteria and Design of Buildings, London, UK.
- **Ref. 11.3** Littlefair, P.J. (2012) Site Layout Planning for Daylight: Information Paper IP 23/12. BRE Construction Research Communications, Garston, UK.
- **Ref. 11.4**: British Standards Institution (2008). British Standard 8206-02: Code of practice for daylighting. BSI, London;
- **Ref. 11.5**: The Chartered Institution of Building Services Engineers London (1999). CIBSE Guide 'A'. Yale Press ltd. London;
- **Ref. 11.6**: Department for Communities and Local Government (2014), Planning Practice Guidance and
- **Ref. 11.7**: Historic England (2015) Guidance on Tall Buildings: Historic England Advice Note4 Available online at: https://historicengland.org.uk/images-books/publications/tall-buildings-advice-note-4/

12

ARCHAEOLOGY

12 ARCHAEOLOGY

12.1 INTRODUCTION

12.1.1. This Chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Scheme upon below-ground archaeology which comprise non-designated heritage assets. In particular, it considers the potential effects of the construction of the Proposed Scheme (site preparation, earthworks and building works) on the known and potential archaeological remains.

12.1.2. The Chapter describes the assessment methodology, the baseline conditions at the Site and surrounds, any primary and tertiary mitigation inherent to the design and adopted for the purposes of the assessment, a summary of the potential likely significant effects taking into account national legislation, the further mitigation measures (secondary) required to prevent, reduce or offset any significant negative effects, and the likely residual effects after these secondary mitigation measures have been employed.

12.1.3. This Chapter (and its associated appendices) is intended to be read as part of the wider ES, with particular reference to **Chapter 3: Description of the Proposed Scheme** and the Archaeological Desk-based Assessment (**Appendix 12.1**).

12.2 LEGISLATIVE FRAMEWORK AND GUIDANCE

LEGISLATIVE FRAMEWORK

12.2.1. The applicable legislative framework is summarised below;

- Burial Act 1857 (**Ref 12.1**). Under Section 25 of the 1857 Act, it is a criminal offence to remove human remains from any place of burial without appropriate license issued by the Ministry of Justice (MoJ), although recent legislative changes indicate that some cases are exempt from this requirement; and
- Treasure Act 1996 (**Ref. 12.2**). The Act defines what constitutes Treasure and states that any finds of treasure and objects found in association with treasure must be reported to the local coroner.

GUIDANCE

12.2.2. The following guidance documents have been used during the preparation of this Chapter:

- Chartered Institute for Archaeologists (CIfA) 2014, Standard and Guidance for Historic Environment Desk-based Assessment (**Ref 12.3**);
- CIfA, 2014a, Code of Conduct (**Ref 12.4**); and
- CIfA, 2014b, Standards and Guidance for Consultancy Advice (**Ref 12.5**).

12.2.3. In addition, this Chapter has been prepared in accordance with the Government's National Planning Practice Guidance (NPPF; **Ref. 12.6**) and the principles of the National Planning Policy Framework (**Ref 12.7**) which states:

'National planning policies on the conservation of the historic environment are set out in the NPPF, which was published by the Department of Communities and Local Government (DCLG) in 2012. Sites of archaeological or cultural heritage significance that are valued components of the historic environment and merit consideration in planning decisions are grouped as 'heritage assets'. The NPPF states that "heritage assets are an irreplaceable resource" the conservation of which can bring "wider social, cultural, economic and environmental benefits." (DCLG 2012, Section 12, paragraph 126). It also states that the "significance of any heritage assets affected including any contribution made by their setting should be understood in order to assess the potential impact (op cit, 128). In addition to standing remains, heritage assets of archaeological interest can comprise sub-surface remains and, therefore, assessments should be undertaken for a site with potential below-ground archaeological deposits.

It is normally accepted that non-designated heritage assets will be preserved by record, in accordance with their significance and the magnitude of the harm to or loss of the asset as a result of the proposals to "avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposals." (op cit, 129). Non-designated heritage assets of archaeological interest will also be subject to the policies reserved for designated heritage assets if they are of equivalent significance to Scheduled Monuments (op cit, 132).'

12.3 CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

12.3.1. **Table 12.1** provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 12.1: Summary of Consultation Undertaken to Date

Body / organisation	Individual / stat body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
Greater Manchester Archaeological Advisory Service	Norman Redhead	Meeting with GMAAS 29th January 2016	Agreement of study area, scope of assessment and methodology agreed for DBA
Greater Manchester Archaeological Advisory Service	Norman Redhead	Written Scheme of Investigation for Archaeological Evaluation submitted for comments September 2016	Written Scheme of Investigation for Archaeological Evaluation approved September 2016

12.3.2. Since the above consultation took place, there have been no changes to the assumptions on which the assessment on below ground archaeology was based. Therefore, it is considered that the Written Scheme of Investigation is still appropriate and requires no further comment.

SCOPE OF THE ASSESSMENT

12.3.3. An EIA Scoping Report was submitted to MCC on February 18th 2016, as presented in **Appendix 5.1**. An EIA Scoping Note was prepared for the succeeding iteration of the Proposed Scheme in accordance with best practice. The note is provided in **Appendix 5.2**. This section provides an update on the scope of the assessment and re-iterates / updates the evidence base for insignificant effects following further iterative assessment since February 2016.

Insignificant Effects

12.3.4. The following effects have been considered insignificant and have therefore not been considered, or have been assessed elsewhere, within the ES:

12.3.5. It is anticipated the surface water strategies would ensure there is no net change in the water content of top / subsoil across the Site or in the wider area. Therefore, the likelihood of effects on buried archaeological assets beyond the Site boundary are low and insignificant and will not be assessed within the ES; and

12.3.6. All potential effects to buried archaeological remains would be entirely mitigated for in advance of, or during the course of, the construction phase. As such there will be no additional effect upon buried archaeological remains once the development is operational.

Potentially Significant Effects

Construction Phase

- Loss or disturbance of potential buried archaeological remains.

EXTENT OF THE STUDY AREA

12.3.7. This assessment has focused on the Proposed Scheme, although historic information for the immediate surrounding area was considered in order to provide an essential contextual background. A study area of approximately 250m extending out from the limits of the Site was applied for the identification of all archaeological asset types (designated, non-designated and potential). The study area was agreed in consultation with Greater Manchester Archaeological Advisory Service (GMAAS). **Figure 2** of the **Archaeological Desk-based Assessment** in **Appendix 12.1** illustrates the location of all below-ground assets.

12.3.8. METHOD OF BASELINE DATA COLLATION

Desk Study

12.3.9. This Chapter is supported by an Archaeological Desk Based Assessment. The desk-based assessment (**Appendix 12.1**) consisted of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely archaeological assets and their significance. In order to do this the character of the study area and known or potential archaeological, historic, architectural and artistic interest was considered. The sensitivity or importance of the assets was judged in a local, regional, national or international context as appropriate (**Ref 12.3**).

12.3.10. The assessment concluded with a consideration of the potential harm to the significance of the identified archaeological assets. This was based upon the predicted effect of the Proposed Scheme, and offered a mitigation strategy as necessary (based on design data available to date).

12.3.11. The principal sources of information consulted were historical and modern maps, although published and unpublished secondary sources were also reviewed. The following sources were consulted during the data gathering process:

- Greater Manchester Historic Environment Record (HER);
- Historical maps including Ordnance Survey; and
- Online sources.

Site Visit

12.3.12. The Site was visited in February 2016 in order to assess its character, identify any visible archaeological assets and assess possible factors which may affect the survival or condition of known or potential assets.

ASSESSMENT METHODOLOGY

12.3.13. In order to assess the level of harm or potential effect of any future development on buried archaeological remains the following methodology has been adopted:

- A qualitative assessment has drawn upon the Archaeological Desk Based Assessment outlined above. Potential effects resulting from the construction phase of the Proposed Scheme has been assessed and reported in terms of their significance on the archaeological resource; and
- The assessment has been undertaken in accordance with the NPPF (**Ref. 12.7**).

SIGNIFICANCE CRITERIA

- The assessment of potential effects as a result of the Proposed Scheme has taken into account the construction phase. The construction phase includes enabling works, demolition, earthworks and construction activities as set out in **Chapter 3: Description of the Proposed Scheme**.
- For the purposes of this Chapter, significance can be defined as the value of an archaeological asset to this and future generations because of its heritage interest, which may be communal, aesthetic, evidential or historical (**Ref 12.8**). The significance level attributed to each effect has been assessed based on the magnitude of change from the current baseline due to the Proposed Scheme and the sensitivity of the affected receptor, as well as a number of other factors that are outlined in more detail in **Chapter 5: Approach to EIA**.
- Although the effect is assessed in terms of the sensitivity of the asset to the magnitude of change (or potential scale of harm) during the Proposed Scheme, consideration is afforded to the heritage values of the assets. The magnitude of change or scale of an effect is often difficult to define. However, the definitions (see **Appendix 12.1**) used have been altered to fit with the significance terminology of the ES and are provided in **Table 12.2**.

Table 12.2: Criteria Used to Determine the Magnitude of Change / Scale of Effect (Harm)

Magnitude of Change / Scale of Effect (Harm)	Description
Large (Substantial harm)	Complete destruction of the asset or its setting (i.e. total loss of significance); change to the asset or its setting resulting in loss to significance which fundamentally changes our ability to understand and appreciate the resource. Minor works which adversely impact on heritage values which are intrinsic to the significance of the asset/setting have the potential to cause substantial harm.
Medium (Moderate harm)	Change to the asset or setting (some loss of significance) resulting in an appreciable change in ability to understand and appreciate the resource. Some heritage interest remains unaffected.
Small (Minor harm)	Change to the asset or setting (some loss of significance) resulting in a slight change in ability to understand and appreciate the resource. Overall, the heritage interests remain unaffected.
Negligible (Negligible harm)	Negligible change or no material changes to the asset or setting. No real change in our ability to understand and appreciate the resource. The heritage interests remain unaffected.

12.3.14. The sensitivity or importance of the heritage asset is judged in a neighbourhood, local, regional, national and international context, which results in the cultural sensitivity of the asset being determined as outlined in **Table 12.3.**

Table 12.3: Criteria Used to Determine Importance / Sensitivity of Heritage Assets

Cultural Importance/Sensitivity	Criteria
Statutory Designated Assets	
Very high (International)	· World Heritage Sites; · Sites of International Importance.
High (National)	· Scheduled Monuments; · All Grades of Listed Buildings; · Registered Parks and Gardens; · Conservation Areas; · Areas of Archaeological Importance; · Protected wreck sites; · Registered battlefields; · Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments
Non-designated Assets	
Medium (Regional / County)	· Locally listed buildings; · Archaeological sites and remains which contribute to regional research objectives; · Historic buildings/structures that contribute to regional character either through architectural interest or a specific function. · Assets which contribute to regional or cultural understanding of the area.
Low (Local / Borough)	· Archaeological sites and remains with a local or borough interest for education, cultural appreciation; · Assets which contribute to local or cultural understanding of the area.
Negligible (Neighbourhood)	· Relatively numerous types of remains, of some local importance; · Isolated findspots with no context; · Areas in which investigative techniques have revealed no, or minimal, evidence of archaeological remains, or where previous large-scale disturbance or removal of deposits can be demonstrated.
Uncertain / Potential	· Potential archaeological sites for which there is little information. It may not be possible to determine the importance of the site based on current knowledge. Such sites are likely isolated findspots, place names or cropmarks identified on aerial photographs.

12.3.15. The interaction of the potential magnitude of change / scale of effect (**Table 12.2**) and the sensitivity of the heritage asset (**Table 12.3**) produce the significance of effect. This may be determined by using the matrix shown in **Table 12.4** as well as professional judgement. The matrix is included to allow an objective assessment to be presented.

Table 12.4: Effect Significance Matrix

Magnitude of Change Scale of Effect (Harm)	Sensitivity / Importance				
	Very high	High	Medium	Low	Negligible
Large	Major	Major	Moderate to major	Minor to moderate	Negligible
Medium	Major	Moderate to Major	Moderate	Minor	Negligible
Small	Moderate to major	Moderate	Minor to moderate	Negligible to Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

Effect Significance

12.3.16. The following terms have been used to define the significance of the effects identified:

- Major effect: where the Proposed Scheme could be expected to have a very significant effect (either positive or negative) on archaeological assets;
- Moderate effect: where the Proposed Scheme could be expected to have a noticeable effect (either positive or negative) on archaeological assets;
- Minor effect: where the Proposed Scheme could be expected to result in a small, barely noticeable effect (either positive or negative) on archaeological assets; and
- Negligible: where no discernible effect is expected as a result of the Proposed Scheme on archaeological assets.

12.4 BASELINE CONDITIONS

12.4.1. A detailed historical and archaeological background and context for the Proposed Scheme is presented in the Archaeological Desk-based Assessment in **Appendix 12.1**; a summary of the known and potential archaeological assets is provided below.

12.4.2. A total of 27 archaeological assets were identified as part of the baseline assessment. Of these, six non-designated assets were identified from the analysis of historical mapping which are in addition to those listed in the HER. The location of all assets are shown on **Figure 2** of the Archaeological Desk-based Assessment in **Appendix 12.1.**

Table 12.5: Non-designated Archaeological Assets within the 250m Study Area

HER Number	Name / Description	Historic Period
12421.1.0	Bale Street Glass Works (site of)	Industrial
9858.1.0	Windmill (site of) on Windmill Street	Industrial
9886.1.0	Site of Peter's Field (Peterloo Massacre)	Industrial
1715.1.0	Manchester and Salford Junction Canal Tunnel section under Manchester Central	Industrial
129.1.1	Cheshire Lines Railway Goods Shed (site of) (Area of Roman Manchester)	Industrial
415.4.6	Coins (Roman) at New Goods Station (Area of Roman Manchester)	Romano-British
8431.1.0	Princes Chambers	Industrial
16257.1.0	Post-pit at Plot 106 Spinningfields	Early Medieval
11240.1.0	Northcliffe House	Industrial
414.1.0	Flint Flake (Neolithic)	Prehistoric
11264.1.0	New Magistrates' Courthouse site (formerly Cumberland House)	Industrial
15267.1.0	Manchester Poor House/Duke of Cumberland Public House (site of)	Industrial
16079.1.0	Bowers' House (site of)	Industrial
16081.1.0	Hat Manufactory (site of)	Industrial
16080.1.0	Housing on Hardman Street and Tivoli Street (site of)	Industrial
16082.1.0	Soda Water Manufactory (site of)	Industrial
415.2.0	Castlefield Roman Vicus (site of) (Area of Roman Manchester)	Romano-British
14.1.0	Manchester to Ribchester Roman Road (Area of Roman Manchester)	Romano-British
16050.1.0	Area of Medieval Manchester	Early-Late Medieval
9911.1.0	Gaiety Theatre (site of)	Industrial
9922.1.0	Reiss Brothers Shipping Warehouse (site of)	Industrial
WSP | PB1	Site of late 19th century commercial properties including a packing warehouse and beer store, previously workers' housing	Industrial
WSP | PB2	A row of workers' housing, a coal yard and rags store (WSP|PB2) survive below-ground, previously workers' housing	Industrial
WSP | PB3	Site of fire brigade station and two passages (South Sea and Rodgers Row), previously workers housing	Industrial
WSP | PB4	Site of a packing warehouse previously cotton dye works and workers' housing.	Industrial
WSP | PB5	Site of a late nineteenth century warehouse in addition to a plumbers and printers premises, previously workers housing	Industrial

WSP | PB6	Site of late 18th/early 19th century workers' housing	Industrial

FUTURE BASELINE

12.4.3. If the Proposed Scheme did not proceed it is envisaged that there would be little change in the future baseline as the ground on the Site will not be further affected than the current baseline.

12.5 SENSITIVE RECEPTORS

12.5.1. **Table 12.6** below present those receptors which are at risk of direct physical harm as a result of construction related excavation associated with geotechnical trial pitting, boreholes, foundations, landscaping, services, and ground levelling. These assets are located within the Site boundary and are associated with the occupation of the Site in the eighteenth and nineteenth centuries.

Table 12.6: Sensitive Receptors

HER Number	Name / Description	Historic Period
WSP | PB2	A row of workers' housing, a coal yard and rags store (WSP|PB2) survive below-ground, previously workers' housing.	Industrial
WSP | PB3	Site of fire brigade station and two passages (South Sea and Rodgers Row), previously worker's housing.	Industrial
WSP | PB4	Site of a packing warehouse previously cotton dye works and workers' housing.	Industrial
WSP | PB5	Site of a late nineteenth century warehouse in addition to a plumbers' and printers' premises, previously workers housing.	Industrial
WSP | PB6	Site of late 18th/early 19th century workers' housing.	Industrial

12.5.2. Due to the ground disturbance caused by the construction of these Industrial period assets it is unlikely that assets associated with earlier historical periods will survive below ground.

12.6 RELEVANT ELEMENTS OF THE PROPOSED SCHEME AND ESTABLISHING THE PRE-MITIGATION SCENARIO

CONSTRUCTION PHASE

12.6.1. The depth of excavation below ground level will be an average of 4.0m across the sloping Site.

12.6.2. As detailed in the Phase 1 Preliminary Geo-environmental Risk Assessment (**Appendix 2.1**) the proposed intrusive works will include excavations up to 13.5m below ground level (bgl) across the Site. The construction of the Proposed Scheme will include piling including a propped contiguous or secant bored pile wall will likely be required to support the basement excavation.

12.6.3. The Geo-environmental risk assessment (**Appendix 2.1**) concluded that due to the presence of shallow bedrock the most appropriate foundation type for the development will be a raft foundation. This will comprise a concrete slab extending under each building in order to support a number of columns and walls.

12.7 ASSESSMENT OF EFFECTS, MITIGATION AND RESIDUAL EFFECTS

CONSTRUCTION PHASE

Loss or disturbance of potential buried archaeological remains

12.7.1. The Proposed Scheme will include intrusive groundworks prior to construction and excavation and excavations and foundation works as part of the construction phase. These activities will necessitate considerable earth-moving activities and have the potential to disturb or truncate any surviving archaeological remains including the buried remains of 19th century coal yard, rags store and a row of workers' housing (WSP | PB2); a 19th century fire station and two former passages (WSP|PB3); a 19th century packing warehouse (WSP | PB4), a small late 19th century warehouse, a plumbers' and printers' premises (WSP | PB5), and late 18th/early 19th century workers' housing (WSP | PB6) as well as any hitherto Industrial unknown buried archaeology.

12.7.2. The sensitivity of the 19th century coal yard, rags store and a row of workers' housing (WSP | PB2) and late 18th/early 19th century workers' housing (WSP | PB6) is considered to be medium as they are considered to be of regional significance. A 19th century fire station and two former passages (WSP|PB3); a 19th century packing warehouse (WSP | PB4) and a small late 19th century warehouse, a plumbers' and printers' premises (WSP | PB5) are considered to be of low sensitivity as they are considered to be of local importance.

12.7.3. The magnitude of change for any surviving archaeological remains prior to mitigation is considered to be large i.e. the complete destruction of the assets during construction works.

12.7.4. Therefore, in line with the criteria illustrated in **Table 12.2** and **Table 12.3**, there is likely to be a direct, permanent, long-term effect on (WSP | PB2) and (WSP | PB6) as above of moderate to major negative significance, prior to mitigation. There is likely to be a direct, permanent, long-term effect on (WSP|PB3, 4 and 5) (as above) of minor to moderate negative significance, prior to mitigation.

12.7.5. Hitherto unknown buried archaeology is likely to comprise of remains associated with residential and commercial properties in the Industrial period. Any remains of workers' housing identified will be considered to be of potentially regional significance and therefore of medium sensitivity. The magnitude of change prior to mitigation, is also considered to be large for the reasons outlined above.

12.7.6. Therefore, in line with the criteria illustrated in **Table 12.2** and **Table 12.3**, there is likely to be a direct, permanent, long-term effect on hitherto unknown buried archaeology of moderate to major negative significance, prior to mitigation.

Mitigation / enhancement

12.7.7. The full archaeological potential of the Site remains unclear at present. A Written Scheme of Investigation for an archaeological investigation has been prepared in consultation with the Heritage Management Director at GMAAS (**Appendix 12.2**). This fieldwork is intended to determine the extent, depth, function, chronology and relative significance of any archaeological deposits, and if necessary will serve to inform further stages of more detailed archaeological mitigation and appropriate recording of significant remains.

12.7.8. Mitigation for effects to buried archaeology of regional or lesser significance is generally preservation by record, where preservation in situ cannot be achieved.

Residual effects

12.7.9. The sensitivity of the 19th century coal yard, rags store and a row of workers' housing (WSP | PB2), late 18th/early 19th century workers' housing (WSP | PB6) and hitherto unknown buried archaeology is medium and the magnitude of change, following mitigation, is considered to be negligible.

12.7.10. The sensitivity of the 19th century fire station and two former passages (WSP | PB3); a 19th century packing warehouse (WSP | PB4) and a small late 19th century warehouse, a plumbers and printers premises (WSP | PB5) are considered to be low. Through a programme of preservation by record, the magnitude of change is considered to be negligible.

12.7.11. Therefore, there is likely to be a direct, permanent, long-term residual effect on all archaeological assets of **negligible** significance following the implementation of mitigation measures.

12.8 SUMMARY

12.8.1. There are 27 non-designated assets within the study area, of these five have been identified within the Site and comprise the buried remains of a coal yard, rags store and a row of workers' housing (WSP | PB2); a fire station and two former passages (WSP | PB3); a packing warehouse (WSP | PB4), a small late nineteenth century warehouse, a plumbers' and printers' premises (WSP | PB5), and late 18th/early 19th century workers' housing (WSP | PB6).

12.8.2. There is a potential for previously unknown buried archaeology to be present within the Site and a programme of intrusive investigative fieldwork will be undertaken in consultation with the Heritage Management Director at GMAAS to better inform this potential. This will in turn inform an appropriate mitigation strategy for the buried archaeology present within the Site. With the implementation of these mitigation measures the residual effects are considered to be negligible.

Table 12.7: Summary of Effects Table for Archaeology

Description of Effects	Receptor	Significance and Nature of Effects Prior to Mitigation / Enhancement	Summary of Mitigation / Enhancement	Significance and Nature of Effects Following Mitigation / Enhancement (Residual)
Construction Phase				
Loss or disturbance of potential buried archaeological remains	The buried remains of a coal yard, rags store and a row of workers' housing (WSP | PB2); late 18th/early 19th century workers' housing (WSP | PB6) and hitherto unknown buried archaeology	●●- / P / D / LT	Programme of investigative fieldwork and (where required) a scheme of preservation by record as devised with the Heritage Management Director at GMAAS.	●/ P / D / LT
	A fire station and two former passages (WSP|PB3); a packing warehouse (WSP | PB4), a small late nineteenth century warehouse, a plumbers and printers premises (WSP | PB5)	●●- / P / D / LT	Programme of investigative fieldwork and (where required) a scheme of preservation by record as devised with the Heritage Management Director at GMAAS.	●/ P / D / LT
Operational Phase				
N/A	-		-	N/A

NB: Aspects of the proposed scheme considered as part of the pre-mitigation scenario are summarised above in Section 12.6, and within Chapter 14: Summary of Environmental Statement.

Key to table:

●Major significance, ●Moderate significance, ●Minor significance, ●Negligible significance

+ / - = Positive or Negative P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term

N/A = Not Applicable

REFERENCES

- **Ref. 12.1**: Burial Act, 1857
- **Ref. 12.2**: Treasure Act, 1996
- **Ref. 12.3**: Chartered Institute for Archaeologists (CIfA) 2014, Standard and Guidance for Historic Environment Desk-based Assessment, Reading [online] available at http://www.archaeologists.net/sites/default/files/CIfAS&GDBA_2.pdf
- **Ref. 12.4**: CIfA, 2014, Code of Conduct, Reading [online] available at http://www.archaeologists.net/sites/default/files/CodesofConduct.pdf
- **Ref. 12.5**: CIfA, 2014, Standards and Guidance for Consultancy Advice, Reading http://www.archaeologists.net/sites/default/files/CIfAS&GCommissioning_1.pdf
- **Ref 12.6**: DCLG Planning practice guidance http://planningguidance.communities.gov.uk/blog/guidance/
- **Ref. 12.7**:, 2012 National Planning Policy Framework, London [online] available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf
- **Ref. 12.8**: Historic England, 2008 Conservation Principles, Policies and Guidance, Swindon

13

CUMULATIVE EFFECTS

13 CUMULATIVE EFFECTS

13.1 INTRODUCTION

13.1.1. There is a requirement to undertake an assessment of cumulative effects of the Proposed Scheme through Schedule 4 of the EIA Regulations 2011 (as amended 2015) (**Ref. 13.1** and **13.2**). This Chapter presents an assessment of the potential for significant cumulative environmental effects of the Proposed Scheme. Cumulative effects comprise the combined effects of reasonably foreseeable human induced changes within a specific geographical area over time, and can be both direct and indirect. Assessment of the significance of cumulative effects needs to be undertaken in the context of characteristics of the existing environment.

13.1.2. The cumulative effects assessment aims to ensure that all of the developments considered are:

- Mutually compatible;
- Consistent with guidance on sustainable development and good practice; and
- Any identified effects remain within the environmental capacity of the area and its surroundings.

13.1.3. In 2014 the Department for Communities and Local Government (DCLG) launched the Planning Practice Guidance web-based resource (**Ref. 13.3**) which refers to the need for cumulative effects to be assessed. The cumulative effects that are considered in this Chapter are:

- **Effect Interactions**: The interaction and combination of environmental effects of the Proposed Scheme affecting the same receptor either within the Site or in the local area (e.g. increased recreational access to and dust deposition into a woodland area, or noise and air quality impacts affecting the same residential receptor); and
- **In-Combination Interactions**: The interaction and combination of environmental effects of the Proposed Scheme with other committed projects and activities affecting the same receptor (e.g. residents along a road experiencing changes in local air quality and noise levels due to a cumulative increase in road traffic from new developments in the area).

13.1.4. The potential effect interactions and in-combination interactions associated with the Proposed Scheme have been considered for each environmental topic and set of receptors and are provided in this Chapter. At present, there is no widely accepted methodology or best practice for the assessment of cumulative effects although there are a number of various guidance documents available. The following approach is based on previous experience, the types of receptors being assessed, the nature of the Proposed Scheme and the information available to inform the assessment.

13.2 SCOPE AND METHODOLOGY FOR ASSESSMENT

ASSESSMENT OF POTENTIAL CUMULATIVE EFFECTS ARISING FROM EFFECT INTERACTIONS

13.2.1. The approach to the assessment of effect interactions considers the changes in baseline conditions at common sensitive receptors. The common sensitive receptors considered within this Chapter are those which are assessed within two or more of the technical **Chapters 6 – 12**. A matrix of residual effect interactions has been formulated corresponding to the construction and operational phase of the Proposed Scheme.

13.2.2. Sensitive receptors are identified throughout the ES. Their residual effects are outlined in technical **Chapters 6 – 12** with summaries provided at the end of each chapter, and an overall summary presented in **Chapter 14: Summary of ES**. The common receptors assessed are:

- Users of existing residential, commercial and other properties;
- Future Site users, including residents, employees, leisure / retail users, hotel users, and users of the new Manchester Reform Synagogue (operational phase only);
- Users of the road network and other public space (operational phase only); and
- Heritage and townscape assets (Listed Buildings and Conservation Areas).

13.2.3. Other receptors were also considered, but only by one specialism in each case. As such there is no scope for effect interactions for these receptors, which for example include buried archaeological remains (considered in Archaeology only) and local economic receptors (considered in Socio-economics only).

13.2.4. An overall qualitative assessment of the cumulative effect on the common sensitive receptors identified above has been made using professional judgement and the technical information provided in **Chapters 6 - 12.**

ASSESSMENT OF POTENTIAL CUMULATIVE EFFECTS ARISING FROM IN-COMBINATION INTERACTIONS

13.2.5. The EIA Scoping Report **(Appendix 5.1)** submitted to MCC in February 2016, contained six committed developments (and other proposed developments for which planning applications have been submitted and which may have common receptors and phases) to be considered. However, no response from MCC was received regarding the inclusion of these developments in the ES. An EIA Scoping Note (**Appendix 5.2)** was prepared for the succeeding iteration of the Proposed Scheme in accordance with best practice. The list of committed (and other proposed developments) was updated as part of this exercise, to account for changes in the status of these other schemes i.e. to discount those that are now operational, or to include new schemes submitted since early 2016. It is for this reason that the numbering in Table 13.1 is not consecutive.

13.2.6. Therefore, the following criteria have been adopted to select the appropriate projects for consideration of in-combination effects:

- Projects that are under construction;
- Permitted application(s) not yet implemented;
- Submitted applications(s) not yet determined;
- All refusals subject to appeal procedures not yet determined; and
- Projects identified in the relevant development plan (and emerging development plans).

13.2.7. The projects will then be assessed as to whether they meet all of the following criteria:

- Concurrent construction or / and operational phase with the Proposed Scheme;
- Located within a relevant geographical boundary to the Proposed Scheme; and
- They have common sensitive receptors.

13.2.8. To identify relevant developments for inclusion within the assessment of in-combination cumulative effects, research on the MCC online planning application portal (October 2017) was undertaken, from which nineteen committed developments were identified. These developments are presented in **Table 13.1**, and their location is outlined in **Figure 13.1: Location of Committed Developments**. A further eight developments identified on MCC online planning application portal were considered as being part of the future baseline when applied to the criteria shown above.

13.2.9. The approach to the assessment of in-combination effects will consider the deviation from the baseline conditions at common sensitive receptors. There needs to be sufficient environmental reporting for the projects considered to ensure a robust qualitative assessment. For some projects, information available may be limited. As such, assumptions based on professional judgement may be required to inform the assessment. Any assumptions and the degree of uncertainty are clearly outlined.

13.2.10. An overview of the committed developments is presented in **Table 13.1**. Where environmental information is not presented within the available documents supporting the planning application for the committed development, a high level appraisal using publically available sources has been undertaken to supplement the available information in order to enable an assessment of in-combination effects. If insufficient information in the public domain has not been identified, this is clearly outlined.

13.2.11. The discussion of cumulative effects has been approached on a topic by topic basis, dependent on the availability of relevant information. The assessment of in-combination effects has been based upon the residual effects that have been identified in the technical **Chapters 6 – 12**.

Table 13.1: Summary of Committed Developments

Location on map and distance from Proposed Scheme	Address	Planning Ref Date Received Status	Proposal
3 440 m north-east	11 York Street Manchester M2 2AW	109161/FO/2015/C1 10 Jun 2015 Application Approved	Demolition of existing building and redevelopment of the site for the erection of an eight storey building comprising offices (class B1), with shop (Use Class A1), financial and professional institution (Use Class A2) or restaurant/cafe (Use Class A3) uses on the ground floor, together with basement car and cycle parking, related highway works, public realm improvements and associated works.
4 480 m south	10-12 Whitworth Street West Manchester M1 5WY	111003/FO/2016/C1 22 Apr 2015 Application Approved	Demolition of existing building at 10 - 12 Whitworth Street West, and redevelopment of the site for a new 35 storey residential building (Use Class C3) comprising 327 apartments, with associated residents' services, facilities and communal spaces: servicing, highways, public realm and associated works.
5 510 m south-west	Bonded Warehouse Grape Street Manchester M3 3JE	109241/FO/2015/C1 18 Jun 2015 Application Approved	Demolition of outbuildings, the adjoining former stables building and external fire escape (as shown on drawing ref. 901 PLS-03) to facilitate the conversion and refurbishment of the lower ground, upper ground and first floors of the Bonded Warehouse for the following uses: retail (Class A1), market (Class A1), restaurant (Class A3), bar (Class A4) offices (Class B1); and refurbishment of the second, third and fourth floors for continued office use (Class B1); along with the installation of roof plant with enclosure, minor external alterations to the building to facilitate new entrances, creation of three external lightwells to facilitate use of the lower ground floor, façade lighting, landscaping, cycle parking and associated works.
7 600 m south-west	2 - 4 Chester Road Manchester M15 4QG	113870/FO/2016 08 Sep 2016 Approved	12 and 21 storey development. Construction of two residential apartment buildings with ancillary amenity facilities for residents including a gym, landscaped terrace and swimming pool, new public realm and landscaping including two new pedestrian connections to the Castlefield basin from Chester Road, basement car parking and related highway, access, servicing and associated works.

8 660 m south west	Deansgate South Land At Chester Road (A56)/ Bridgewater Viaduct Manchester M3 4LB	110730/FO/2015/C1 16 Dec 2015 Application Approved	Erection of a 13-storey building (plus basement level) comprising 53 no. one and two bedroom apartments (Use Class C3), a commercial unit (Use Classes A1/ A2/ A3/ A4/ B1/D1), associated car parking, landscaping and vehicular and pedestrian access.
12 740 m east	Kampus Former Manchester Metropolitan University Aytoun Campus Aytoun Street Manchester M1 3GH	112034/FO/2016/C2 03 Jun 2016 Application Approved	Creation of approximately 478 residential units (160 x 1 bed and 318 x 2 bed) and commercial space comprising (a) Conversion and extension of existing 12 storey building to 15 storeys (The Tower) comprising residential accommodation (Class C3 123 units) above ground and first floor (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), B1 (Offices), D1(Non-residential Institutions creche, nursery, clinic and health centre, art gallery only) and D2 (Assembly and Leisure - Gymnasium, indoor sport and recreation only), (b) Erection of 2 x 14-16 storey buildings (Blocks C and F comprising residential accommodation (Class C3 -136 units (C) and 209 units (F)) above ground and first floor (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), B1 (Offices), D1(Non-residential Institutions creche, nursery, clinic and health centre, art gallery only) and D2 (Assembly and Leisure - Gymnasium, indoor sport and recreation only), Building F and Tower to be linked by podium; and (c) change of use of existing 1 storey building on stilts (The Bungalow) to (Class A1 (shop), A2 (Financial and Professional Services), A3 (Restaurant and Cafe), A4 (Drinking Establishment), B1 (Offices), D1(Non-residential Institutions creche, nursery, clinic and health centre, art gallery only) and D2 (Assembly and Leisure - Gymnasium, indoor sport and recreation only) (d) and hard and soft landscaping comprising central public square, commercial and retail terraces, private residents terrace and public/ private roof top gardens with car parking for 69 vehicles located at ground and first floor levels and associated works to facilitate servicing and access following demolition to existing teaching and library buildings
14 210 m north-west	Invicta House 2-4 Atkinson Street Manchester M3 3HH	116164/FO/2017 Mon 05 Jun 2017	Redevelopment of Invicta House for Use Class C1 hotel development comprising 145 no. guestrooms, with ground floor ancillary facilities. Partial demolition of

		Application Approved	existing building with retention and refurbishment of main facade and erection of a nine storey building to the rear.
15 910 m south west	Land Bounded By The River Irwell To The North & West, Water Street To The East And The A6402 & A57 To The South Manchester	115107/FO/2017 Mon 06 Mar 2017 Application Unknown	Construction of a mixed use development comprising two podiums of three storeys and five residential (Class C3) towers of 26, 26, 37, 41 and 67 storeys (including podium heights) connected by a new pedestrian bridge. Retail, commercial, leisure (gym and boat club) and community uses (community gallery and events space)(Use Classes A1, A2, A3, A4 or D2), workspace facilities (Class B1) and an educational facility (Class D1) within the lower floors and podium level together with new riverside walkway, public realm and landscaping (including podium level parks). Two levels of parking for 581 cars and 2,532 bicycles and 200 cycle spaces within the public realm areas.
16 380 m south	Former Bauer Millet Site Albion Street Manchester	115871/FO/2017 Thu 06 Apr 2017 Application Approved	Erection of a 40 storey building to form 375 residential apartments (Use Class C3a) and the erection of a 14 storey building for offices (Use Class B1) (31,756 sqm) together with ground floor commercial space (Use Class A1, A3 or A4) (1010 sqm) with associated enclosed service yard, public realm including staircase and lift to connect with viaduct, car parking, landscaping and other associated works
17 270 m south-west	3 St John Street Manchester M3 4DN	115233/FO/2017 Mon 13 Feb 2017 Application Approved	Change of use of the existing ground plus two-storey building (but excluding the existing ground floor retail unit) and development of an additional two storey roof level extension, and external improvements, to create 12 residential apartments (Class C3), with storage provision at basement level.
18 670 m south-east	Princess Street / Whitworth Street Manchester M1 3PE	114585/FO/2016 Tue 20 Dec 2016 Application Approved	Erection of three residential buildings (Building 1 comprising 15 storeys plus plant space, Building 2 comprising 11 storeys plus plant space and Building 3 comprising 14 storeys plus plant space) to provide 351 residential units (Use Class C3) 117 x 1 bed, 218 x 2 bed and 16 x 3 bed) al with ground floor commercial uses (Class A1 (Shop), A3 (Restaurant and Cafe) and D1 (Non Residential Institution Use- Art Gallery) and new public space with related access, servicing, landscaping and associated works with parking for 254 vehicles, 224 cycles within 4 levels of existing basement car park.

19 670 m south-east	3 St Peters Square Manchester M1 4LF	116189/FO/2017 28 July 2017 Application Validated	Demolition of an existing building to enable construction of a 20 storey building (and basement) comprising a 328 bedroom hotel (Use Class C1) (with ancillary food and drink uses) on Ground Floor to 8th Floor and 108 residential apartments (Class C3) (25 x 1 bedroom, 71 x 2 bedroom and 12 x 3 bedroom) on Floors 9-20.
20 530 m west	Land Bounded By Water Street And The V&A Hotel To The West, The Bonded Warehouse And Railway Viaducts To The South, Atherton Street & Granada House To The East And Quay Street & The Globe & Simpson Building To The North Manchester;	09 Mar 2017 Application Approved	Demolition of existing buildings and structures to enable construction of a 36 storey residential building (Class C3) with retail uses at ground floor (Classes A1/A2/A3/A4), an 8 storey mixed use building comprising workspace (B1), with retail uses (Classes A1/A2/A3/A4) and residential live/work uses, and two levels of basement parking for 465 cars and cycle hub storage, together with new public realm, landscaping, provision of external seating areas, access and other associated works.
21 590 m west	Starlight Theatre Water Street Manchester;	16/01/2017 Approved	City Council Development of a new flexible arts and events space comprising a range of activities including theatre, music, dance, art, other performance and non-performance related events, exhibitions and conferences (Sui Generis) with ancillary facilities including retail exhibitions and conferences (Sui Generis) with ancillary facilities including retail and bar uses (Use Classes A1 and A3), offices, administrative and back of house functions (Use Class B1), training and educational facilities (Use Class D1), servicing and access arrangements, highways works, creation of new public realm, cycle parking and provision of new plant and associated works. Demolition of the Starlight Theatre, existing workshop and other structures and perimeter wall, removal of four existing trees and alterations to the Grade II listed Colonnaded Railway Viaduct
22 400 m west	Land Bounded By Quay Street & Manchester College To The North, Gartside Street &	109660 21 Oct 2016 Approved	Demolition of existing buildings and structures, including Albert Shed and Globe and Simpson Building, to enable the construction of four buildings comprising : hotel use (Class C1) and residential use (Class C3) within building 1 (ground floor plus 51 storeys); hotel use (Class C1) within building 2 (ground floor plus 7 storeys); residential use (Class C3) within building 3 (ground floor plus 17

	Quay Street To The East, Granada House & Studios & The Victoria & Albert Marriott Hotel To The South & Water Street & The River Irwell To The West Manchester;		storeys); and, residential use (Class C3) within building 4 (ground floor plus 3 storeys), providing a total of 387 residential units; retail use (Class A1) or Financial and Professional Services use (Class A2) or Restaurant and Cafe use (Class A3) or Drinking Establishment use (Class A4) at the lower floors of all buildings, together with associated external seating areas; creation of new public realm and landscaping, riverside walkway, car and cycle parking, access arrangements and highways works, rooftop plant, and other associated works.
23 250m north west	Land Adjacent Manchester Hall 44 - 48 Bridge Street Manchester M3 3BW;	115200 02 Jun 2017 Approved	Erection of an 8 storey building to form ground floor commercial (619 sqm) (Use Classes A1, A2, A3, A4 or A5) and upper offices (4055 sqm) (Use Class B1) with associated car parking, plant and other associated work
29 780 m south	Olympia Trading Estate Great Jackson Street Manchester M15 4NP;	01/09/2017	Demolition of the existing buildings on the site and construction of three residential buildings, 32, 26 and 18 storeys in height, comprising a total of 399 residential units (C3) and 50 retirement living units (C2) with roof top ancillary restaurant; 675 sq.m of commercial floor space (Use Classes A1, A2, A3, A4, B1 or D2); associated car and cycle parking within a basement level; public realm and landscaping; access and servicing arrangements; and other associated works.
30 640 m west	New Bailey	09/57950/EIAHYB	09/57950/EIAHYB | Outline application for a comprehensive phased regeneration of Salford Central, including selective demolition, for a mixed-use development of new, improved, altered and replacement buildings, for offices/commercial use (use classes A2 and B1, maximum 197,010sq.m), retail, food and drink and entertainment (use classes A1, A3, A4 and A5, maximum 24,255sq.m), leisure (class D1), hotels (class C1 maximum 140 and 250 bedrooms) and residential use (maximum 849 dwellings) together with associated car parking, landscaping and infrastructure. Detailed application for highway and associated works to Chapel Street (between Oldfield Rd and Trinity Way) and the laying out of public space at Stanley Street.
31 710 m west	Middlewood Locks;	Numerous	Outline application (access only) for mixed use development comprising 142,697 sqm residential use (Class C1 and C3); 67,773 sqm commercial use (Class B1);

			and 27,191 sqm leisure/retail use (Class A1,A2,A3,A4 and D2) together with associated uses, car parking, landscaping and infrastructure

This chapter has been updated - please refer to the Environmental Statement Addendum (Volumes 1 and 2) (2019)

13.3 ASSESSMENT OF POTENTIAL CUMULATIVE EFFECTS ARISING FROM EFFECT INTERACTIONS

Construction Phase

13.3.1. **Table 13.2** provides a summary matrix for the construction phase of the Proposed Scheme showing the residual effect interactions, following the implementation of the recommended mitigation measures set out in technical **Chapters 6 - 12** of this ES. This enables a qualitative assessment of the interactions of residual effects outlining the overall significance to the identified common sensitive receptors.

13.3.2. For the purposes of this assessment, residual effects that have been identified in the technical **Chapters 6 – 12** that do not affect the common sensitive receptors identified, have not been presented below as no effect interactions are anticipated. In addition, negligible residual effects on common receptors have not been considered during the assessment of interactions but are included in **Table 13.2** for some topics for information purposes.

Table 13.2: Matrix of Effect Interactions during the Construction Phase

Technical Topic	Common Sensitive Receptors	
	Users of existing residential, commercial and other properties	Listed Buildings and Conservation Areas
Noise and Vibration		
Noise generated by on-site (non-traffic) construction activities	Major negative (Residents of Old Nags Head Pub and Radisson Blu) during the night time, but limited to minor during daytimes and evenings.	N/A
Vibration generated by on-site (non-traffic) construction activities	Moderate negative (Residents of Old Nags Head Pub and Radisson Blu) Minor negative (201 Deansgate, Sir Ralph Abercromby Inn and the Friends' Meeting House)	N/A
Socioeconomics		
Displacement of users of the synagogue	Negligible to minor negative (users of Synagogue)	N/A
Townscape and Visual		
Change to townscape receptors	Minor adverse (townscape character area)	Moderate adverse effect (Listed Buildings and the Deansgate / Peter Street Conservation Area, as well as the St. Peter's Square and Albert Square Conservation Area)
Change in visual amenity	Minor adverse (Deansgate/Castlefield tram stop, Jacksons Row, Bootle Street, Deansgate/Quay Street, Deansgate, St Peters Square, Oxford Street/Lower Mosley Street, Princess Street/Lower Mosley Street; kinetic view characters Track 1 – character 2 and 3 and Track 2 – character 2).	N/A

Technical Topic	Common Sensitive Receptors	
	Users of existing residential, commercial and other properties	Listed Buildings and Conservation Areas
	Moderate adverse (Jacksons Row, Bootle Street, Lower Mosley Street, Central Street, New Cathedral Street, Albert Square).	
Built Heritage		
Built Heritage	N/A	Minor negative (Grade II Listed Buildings: Lloyd's House, Memorial Hall and 1-5 Central Street) No impact (Conservation Areas)
Wind		
N/A		
Daylight, Sunlight, Overshadowing		
N/A		
Archaeology		
N/A		
Overall		
Overall interaction of effects	Major negative	Moderate negative

13.3.3. The effect interactions during the construction phase will vary dependent on the particular activity, the exact location of works, the duration of works and the extent of the activities being undertaken. Although these effects are mainly temporary, they are predicted to be short to medium-term in nature due to the anticipated 43 month duration of the construction phase.

13.3.4. It is anticipated that negative effects on users of existing residential, commercial and other properties are limited to those within the local vicinity, particularly along Jackson's Row which will experience negative effects from construction noise and vibration (major negative effects), displacement due to the Proposed Scheme (minor negative effects) and negative visual effects (minor to moderate adverse effects). This would particularly be the case if the temporary Synagogue facility would also experience construction effects from the Proposed Scheme. However, it is not currently known where the temporary Synagogue facility will be located during construction, so it is not possible to be definite about this potential effect. The overall interaction of effects on users of existing residential, commercial and other properties in the immediate vicinity of the Site is therefore considered to be of **major negative** significance.

13.3.5. Effects on heritage assets (Listed Buildings and Conservation Area) are predicted due to change in the townscape (moderate adverse effects) and setting (minor negative). This is due to a change in the use of the Site from the existing use to one of a construction site. It is considered that the effect interaction on surrounding Listed Buildings and Conservation Areas is **moderate negative.**

13.3.6. The effect interactions discussed above are based on the residual effects identified assuming the mitigation measures presented in technical **Chapters 6 - 12** and the assumptions made in relation to construction methods on-site as detailed **Chapter 3: Description of the Proposed Scheme** are implemented. Therefore, no additional mitigation over and above that already stated has been considered necessary.

OPERATIONAL PHASE

13.3.7. **Table 13.3** provides a summary matrix for the operational phase of the Proposed Scheme showing the residual effect interactions between environmental topics, following the implementation of the recommended mitigation measures set out in technical **Chapters 6 - 12** of this ES. This enables a qualitative assessment of the interactions of residual effects outlining the overall significance to the identified common sensitive receptors.

13.3.8. For the purposes of this assessment, residual effects that have been identified in the technical **Chapters 6 - 12** that do not affect the common sensitive receptors identified have not been presented below as no effect interactions are anticipated. In addition, negligible residual effects on common receptors have not been considered during the assessment of interactions but are included in **Table 13.3** for some topics for information purposes.

Table 13.3: Matrix of Effect Interactions during the Operational Phase

Technical Topic	Common Sensitive Receptors			
	Users of existing residential, commercial and other properties	Future Site users, including residents, employees, leisure / retail users, hotel users, and users of the new Manchester Reform Synagogue	Users of the road network and other public space	Listed Buildings and Conservation Areas
Noise and Vibration				
Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the proposed fixed plant / goods delivery noise	Direct, long-term residual effect of negligible to minor negative significance	Direct, long-term residual effect of minor negative significance	N/A	N/A
Disturbance to existing sensitive receptors and future proposed noise sensitive users from entertainment noise	Minor Negative	Negligible	N/A	N/A
Existing baseline noise levels on future proposed noise sensitive users	N/A	Negligible	N/A	N/A
Predicted noise levels on the proposed external residential balconies	N/A	Majority of time: moderate negative for users of balconies During typical and occasional event use of rooftop terrace: minor negative	N/A	N/A
Socioeconomics				

Technical Topic	Common Sensitive Receptors			
	Users of existing residential, commercial and other properties	Future Site users, including residents, employees, leisure / retail users, hotel users, and users of the new Manchester Reform Synagogue	Users of the road network and other public space	Listed Buildings and Conservation Areas
Delivery of the high quality public realm and new infrastructure	N/A	Moderate positive	N/A	N/A
Improved community connectivity within and around the Site	N/A	N/A	Moderate positive	N/A
Townscape and Visual				
Change to townscape receptors	Moderate beneficial (Townscape Character Area)	Moderate beneficial (land use)	Moderate beneficial (Public realm and Public Open Space)	Moderate adverse (Listed Buildings and Deansgate/ Peter Street, Albert Square and St. Peter's Square Conservation Areas)
Change in visual amenity	Significant adverse (Alberts Square) Moderate adverse (Central Street, Library Walk, New Cathedral Street, Princess Street/Mosley Street; Track 1 – character 2 and Track 1 – character 3). Minor adverse (Deansgate/Quay Street; Bryrom Street).	N/A	Significant adverse (Alberts Square) Moderate adverse (Central Street, Library Walk, New Cathedral Street, Princess Street/Mosley Street; Track 1 – character 2 and Track 1 – character 3). Minor adverse (Deansgate/Quay Street; Bryrom Street).	N/A

Technical Topic	Common Sensitive Receptors			
	Users of existing residential, commercial and other properties	Future Site users, including residents, employees, leisure / retail users, hotel users, and users of the new Manchester Reform Synagogue	Users of the road network and other public space	Listed Buildings and Conservation Areas
	Minor beneficial (Fairfield Street, Bridge Street, Deansgate/Castlefield tram stop, Jackson's Row, Bootle Street).		Minor beneficial (Fairfield Street, Bridge Street, Deansgate/Castlefield tram stop, Jackson's Row, Bootle Street).	
Built Heritage				
Built Heritage	N/A	N/A	N/A	Minor to major negative (surrounding Listed Buildings) Moderate negative (Albert Square, Deansgate / Peter Street, and St Ann's Conservation Areas)
Wind				
Pedestrian discomfort as a result of localised zones of acceleration	Minor negative (building entrances on Bootle Street); negligible (all other receptors in this category)	Minor negative (alley between Onward Buildings and Block A) – certain employees only	Minor negative (entrance of public square off Jackson's Row)	N/A
Reduction in pedestrian safety as a result of an increase in wind speeds	Negligible (building entrances)	Minor negative (alley between Onward Buildings and Block A) – certain employees only	Major positive (pavement, corner of Deansgate and Quay Street); minor negative (entrance of	N/A

Technical Topic	Common Sensitive Receptors			
	Users of existing residential, commercial and other properties	Future Site users, including residents, employees, leisure / retail users, hotel users, and users of the new Manchester Reform Synagogue	Users of the road network and other public space	Listed Buildings and Conservation Areas
			public square off Jackson's Row)	
Daylight, Sunlight, Overshadowing				
Loss of natural light (daylight) to adjacent properties	Negligible to major negative (major negative at Old Nags Head, 23 St Peter, 6 Mount Street and moderate to major negative at Elliot House, 19 Jackson's Row, Croxley House, Lloyds House, Sovereign House, The Rising Sun, 1 Central Street, 37 Peter Street, 11-13 Bootle Street, Marron Place Building, Albert Hall and 2 Bootle St/Jerusalem Place)	N/A	N/A	N/A
Loss of natural light (sunlight) to adjacent properties	Negligible to major negative (major negative at Old Nags Head and moderate to major negative for 19 Jackson's Row, Croxley House,	N/A	N/A	N/A

Technical Topic	Common Sensitive Receptors			
	Users of existing residential, commercial and other properties	Future Site users, including residents, employees, leisure / retail users, hotel users, and users of the new Manchester Reform Synagogue	Users of the road network and other public space	Listed Buildings and Conservation Areas
	Lloyds House and The Rising Sun)			
Increased overshadowing to open spaces	N/A	N/A	Negligible	N/A
Archaeology				
N/A				
Overall				
Overall interaction of effects	Moderate negative	Negligible	Minor negative	Major negative

13.3.9. The effects associated with users of the existing residential, commercial and other properties relate to townscape, visual amenity, wind and sunlight, daylight and overshadowing on Jackson's Row and Quay Street. Beneficial effects with regards to townscape are considered moderate beneficial due to direct benefits to strengthen the Civic Quarter. With regards to visual amenity the effects range from significant adverse to moderate beneficial visual effects. Adverse effects are considered to occur due to the sensitive historical setting of the Site whilst other views are considered to be beneficial due to the provision of visible new uses to activate the surrounding townscape, providing a wayfinding marker across the City and being of a scale and massing to support the growth aspirations of the City. Minor negative wind effects are limited to building entrances on Bootle Street, and one (maintenance) employee only area of the Proposed Scheme, due to an increase in windiness as a result of the Proposed Scheme. Negative effects are also predicted due to a loss of natural light (sunlight and daylight). The effects resulting from the operational phase are long-term in duration and are applicable throughout the life span of the Proposed Scheme. Overall, the effect interactions are considered to be of moderate negative significance.

13.3.10. Future Site users considered include residents using their balconies and the same residents using the public realm. However, it is unlikely that both of these uses will occur concurrently and therefore an effect interaction is unlikely. This is the justification for an effect interaction of negligible significance as detailed in **Table 13.3**.

13.3.11. Effects on users of the road network and public spaces are limited to areas of public realm in terms of changes to the townscape and the wind environment and to pavements of the surrounding road network as a result of improved connectivity within and around the Site and changes to visual amenity and the wind environment as a result of the Proposed Scheme on pavements along the local road network. Positive effects on pavements on the surrounding road network include an increase in connectivity (moderate positive) and visual amenity (moderate to minor beneficial). Pedestrian safety from high winds is also improved (major positive) although this is limited to the corner of Deansgate and Quay Street. However, there are also negative effects in relation to visual amenity due to the proximity of historical designations (minor to significant adverse) and due to an increase in windiness on Jackson's Row in terms of pedestrian safety and on the public space within the Proposed Scheme in terms of pedestrian comfort (both minor negative) (although wind safety criteria is still met). Moderate beneficial effects on public realm are considered in terms of the improvement to the townscape but are offset to a certain extent due to an increase in windiness. The effects resulting from the operational phase are generally long-term in duration and are applicable throughout the life span of the Proposed Scheme. Overall, the effect interactions are considered to be of minor negative significance.

13.3.12. Effects on heritage assets (Listed Buildings and Conservation Area) are predicted due to change in the townscape (moderate adverse effects), and setting (minor to major negative). This is due to an increase in the scale and massing of the Site. It is considered that the effect interaction on surrounding Listed Buildings and Conservation Areas is major negative.

13.3.13. The effect interactions discussed above are based on the residual effects identified assuming the mitigation measures presented in technical **Chapters 6 - 12** and the assumptions made in relation to construction methods on-site as detailed **Chapter 3: Description of the Proposed Scheme** are implemented. Therefore, no additional mitigation over and above that already stated has been considered necessary.

13.4 ASSESSMENT OF POTENTIAL CUMULATIVE EFFECTS ARISING FROM IN-COMBINATION INTERACTIONS WITH OTHER DEVELOPMENTS

13.4.1. For the purposes of this assessment, as phasing details relating to the construction of the identified committed (and other) developments are largely unknown, it is robustly assumed that construction activities would overlap. It is assumed that all developments would be operational concurrently.

13.4.2. **Table 13.4** below presents the findings of the assessment of potential cumulative effects arising from in-combination interactions. For the purposes of this assessment, only the residual effects of

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minor to major significance that have been identified in the technical **Chapters 6 - 12** have been considered below as no in-combination effects are anticipated where there are not likely to be significant effects as a result of the Proposed Scheme.

Table 13.4: Cumulative Effects from In-Combination Interactions

Technical Topic	Potential In-combination Effects
3) 11 York Street (109161/FO/2015/C1)	
Noise	The Preliminary Acoustic Design Report by AEC Ltd (July 2015) refers to noise sensitive receivers on King Street / Spring Gardens and Milk Street. There are therefore no common receptor locations and no in-combination effects are likely to occur.
Socioeconomics	No socioeconomic assessment has been undertaken to support this development and therefore the in-combination effects are difficult to quantify. However, there is likely to be a positive in-combination effect on direct, indirect and induced employment opportunities associated with temporary construction employment as described above assuming concurrent construction with the Proposed Scheme. Details regarding the construction cost of the committed development are not known. However, due to the increase in direct and indirect / induced employment there is likely to be a positive in-combination effect of greater significance than that detailed in Chapter 7 – Socio-economics. The development includes for offices, financial and professional institution or restaurant/cafe uses. As no assessment was required to support this committed development there is insufficient information to quantify the in-combination effect. However, given the proposed uses there is likely to be a positive in-combination effect on direct and indirect/induced employment during the operational phase of greater significance than that detailed in Chapter 7 – Socio-economics.
Townscape and Visual	Planit confirm that due to the scale of the committed development, it is not considered that there will be an in-combination effect.
Built Heritage	Stephen Levrant Heritage Architecture Ltd confirms that there are no common receptors and therefore no in-combination effects are considered likely to occur.
Wind	No in-combination effects are considered to occur due to a combination of distance from the Site and this committed development, position with respect to and distance from the receptors and small to medium changes to existing massing as a result of this committed development.
Daylight, Sunlight, Overshadowing	No in-combination effects are considered to occur due to a combination of distance from the Site and this committed development, position with respect to and distance from the receptors and small to medium changes to existing massing as a result of this committed development.

Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
4) 10-12 Whitworth Street (111003/FO/2016/C1)	
Noise	The ES (Deloitte, January 2016) identifies sensitive receptors within a 50 m radius of the scheme. Given the distance to the Proposed Scheme (480 m), there are no common receptors and therefore no in-combination effects are considered likely to occur.
Socioeconomics	An ES (Deloitte, January 2016) has been undertaken for this committed development. However, socio-economics was scoped out of the ES and therefore it is assumed that the socio-economic effects of this committed development are considered to be insignificant / negligible and the in-combination effects are likely to remain as assessed within Chapter 7 – Socio-economics.
Townscape and Visual	Planit confirm that 10-12 Whitworth Street, Axis and Owen Street committed developments have the potential to form the backdrop to the sensitive historical townscape within the civic core of the City. The impact of this committed development could deteriorate the sense of place within the sensitive historic setting, particularly during construction phases. Additional committed development may therefore cause an in-combination minor adverse effect on the townscape setting of sensitive heritage assets. Due to their height, the same developments also cause a cumulative effect on the building height receptor. Axis, 10-12 Whitworth Street and Owen Street developments are all located along the emerging 'secondary cluster' of towers, found within the City centre rather than surrounding it. These developments support the Proposed Scheme by placing it within a wider arc of towers, of which two of the four are taller than the Proposed Scheme. The cumulative development of these towers is likely to have an in-combination minor beneficial impact on the building heights receptor, ensuring height is accommodated within specific areas of the city. No in-combination effects with regards to visual amenity are considered to occur.
Built Heritage	Stephen Levrant Heritage Architecture Ltd confirms that there are no common receptors and therefore no in-combination effects are considered likely to occur.
Wind	The ES (Deloitte, January 2016) presents an assessment of effects on receptors in the immediate vicinity of the committed development. Given the distance to the Proposed Scheme (approximately 480 m) there are no common receptors and therefore no in-combination effects are considered likely to occur.
Daylight, Sunlight, Overshadowing	The ES (Deloitte, January 2016) presents an assessment of effects on receptors in the immediate vicinity of the committed development. Given the distance to the Proposed Scheme (approximately 480 m) there are no common receptors and therefore no in-combination effects are considered likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.

5) Bonded Warehouse Grape Street (109241/FO/2015/C1)	
Noise	An acoustic planning report by Sandy Brown Associates (June 2015) has been provided but this did not specifically address likely effects at named receptors. However, given the distance to the scheme (510 m) it is unlikely there would be any common receptors and therefore it is considered that in-combination effects are unlikely to occur.
Socioeconomics	No socioeconomic assessment was undertaken for the committed development. Similarly to other committed developments, should construction works occur at the same time there is potential for an increase in direct / indirect and induced employment which is likely to result in a positive in-combination effect. However, given the scale and nature of the development, the in-combination effects are unlikely to be greater than those assessed within Chapter 7: Socio-economics. The proposals include for bars / restaurants and office use and therefore there is potential for a positive in-combination effect on operational employment levels of greater significance than that assessed in Chapter 7: Socioeconomics.
Townscape and Visual	Planit confirm that due to the scale of the committed development, it is not considered that there will be an in-combination effect.
Built Heritage	Stephen Levrant Heritage Architecture Ltd confirms that the common receptors are St John's Conservation Area and Listed Buildings 32 and 52, but that due to the location and scale of the committed development, it is not considered that there will be an in-combination effect.
Wind	The Bonded Warehouse development has been modelled in conjunction with the Proposed Scheme (as well as committed developments 1: 123 Deansgate, 6: Former Studio Space and 11: London Scottish House) due to their proximity to the Proposed Scheme. The in-combination effect of these committed developments is considered negligible due to a combination of distance from the Site, position with respect to and distance from the receptors; and small to medium changes to the existing massing. Therefore the cumulative effects on the wind environment are overall considered to be negligible and the effects will remain as assessed within Chapter 10: Wind.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
7) 2-4 Chester Road (113870/FO/2016)	
Noise	The ES (Deloitte, September 2016) identified receptors on Chester Road, Deansgate and Castle Street. None of these receptors were considered in this ES given the distance from the Proposed Scheme to this committed development (approximately 600 m). As there

	are no common receptors it is considered that in-combination effects are unlikely to occur as a result of the construction or operation of this committed development.
Socioeconomics	An ES (Deloitte, September 2016) has been undertaken for this committed development. However, socio-economics was scoped out of the ES and therefore it is assumed that the socio-economic effects of this committed development are considered to be insignificant / negligible and the in-combination effects are likely to remain as assessed within Chapter 7 – Socio-economics.
Townscape and Visual	The committed development and proposed Scheme experience common receptors within Petersfield and Castlefield Zones including Chester Road, Deansgate, Quay Street and Lower Mosely Street. The ES (Deloitte, September 2016) identified the residual effects of these receptors, following the implementation of mitigation to be negligible to moderate beneficial. Additional to this, views between the schemes are mostly limited by a separation or intervening screening from other developments, obscuring views. Therefore no in-combination effects with regards to visual amenity are considered to occur between the committed scheme and the Proposed Development.
Built Heritage	Stephen Levrant Heritage Architecture Ltd confirms that there are no common receptors and therefore no in-combination effects are considered likely to occur.
Wind	The ES (Deloitte, September 2016) presents an assessment of effects on receptors in the immediate vicinity of the committed development. Given the distance to the Proposed Scheme (approximately 600 m) there are no common receptors and therefore no in-combination effects.
Daylight, Sunlight, Overshadowing	No daylight, sunlight, overshadowing assessment was undertaken within the ES (Deloitte, September 2016) and therefore it is assumed that daylight, sunlight and overshadowing was scoped out of the ES as insignificant. In addition, given the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
8) Deansgate South (110730/FO/2015/C1	
Noise	The residential noise assessment (Enzygo, December 2015) did not identify specific external receptors. However, given the distance to the Proposed Scheme (approximately 600 m) it is unlikely that there would be any common receptors and therefore no in-combination effects are considered likely to occur.
Socioeconomics	No socioeconomic assessment was undertaken for this committed development.

	Assuming that construction of the development occurs at the same time as the Proposed Scheme, there is likely to be a positive in-combination effect on direct / indirect and induced employment. Given the scale of the committed development it is likely that there will be a positive in-combination effect of greater significance than assessed within Chapter 7: Socioeconomics. During operation the development includes for predominantly residential use with a commercial unit and there is therefore potential for a positive in-combination effect on direct / in direct and induced employment. However, given that the development predominantly consists of residential use the significance of the in-combination effect on direct / in direct and induced employment, although positive, is likely to remain as assessed in Chapter 7 – Socio-economics.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur.
Built Heritage	Stephen Levrant Heritage Architecture Ltd confirms that there are no common receptors and therefore no in-combination effects are considered likely to occur.
Wind	No in-combination effects are considered to occur due to a combination of distance from the Site, position with respect to and distance from the receptors and small to medium changes to existing the massing.
Daylight, Sunlight, Overshadowing	A daylight and sunlight amenity study (Watts, November 2015) assessed effects on receptors in the immediate vicinity of the committed development. Given the distance to the Proposed Scheme (approximately 600 m) there are no common receptors therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
12) Kampus (112034/FO/2016/C2)	
Noise	The ES (Deloitte, May 2016) identified a number of sensitive receivers. However due to the distance to the Proposed Scheme (approximately 720 m) there are no common receptors and therefore no in-combination effects are likely to occur.
Socioeconomics	An ES (Deloitte, May 2016) has been undertaken for this committed development. However, socio-economics was scoped out of the ES and therefore it is assumed that the socio-economic effects of this committed development are considered to be insignificant / negligible and the in-combination effects are likely to remain as assessed within Chapter 7 – Socio-economics.

Townscape and Visual	Planit have confirmed that this committed development includes a proposed building of significant height with potential to impact wider townscape receptors. Therefore, there is potential for an in-combination effect of greater significance on townscape than that detailed in Chapter 8: Townscape and Visual.
Built Heritage	Stephen Levrant Heritage Architecture Ltd confirms that there are no common receptors and therefore no in-combination effects are considered likely to occur.
Wind	The ES (Deloitte, May 2016) presents an assessment of effects on receptors in the immediate vicinity of the committed development only. Given the distance to the Proposed Scheme (approximately 720 m) there are no common receptors and therefore no in-combination effects are likely to occur.
Daylight, Sunlight, Overshadowing	The ES (Deloitte, May 2016) presents an assessment of effects on receptors in the immediate vicinity of the committed development only. Given the distance to the Proposed Scheme (approximately 720 m) there are no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
14) Invicta House (116164/FO/2017)	
Noise	The noise assessment that was carried out for the development of Invicta House did not model any future noise level predictions or specifically address any likely effects at named receptors. However, both the stated glazing and ventilation would be expected to control the levels of noise ingress and limit set for noise levels by MCC, included within the planning conditions, would make in combination effects between Invicta House and the Proposed Scheme unlikely. It should be noted that the noise assessment did not consider noise created by construction traffic, but a CTMP would be submitted with the planning documents.
Socioeconomics	No socioeconomic assessment was undertaken for this committed development. Assuming that construction of the development occurs at the same time as the Proposed Scheme, there is likely to be a positive in-combination effect on direct / indirect and induced employment. Given the scale of the committed development it is likely that there will be a positive in-combination effect of greater significance that assessed within Chapter 7: Socioeconomics. During operation the development includes for predominantly residential use with a commercial unit and there is therefore potential for a positive in-combination effect on direct / in direct and induced employment. However, given that the development predominantly consists of residential use the significance of the in-combination effect on direct / in direct and induced employment, although positive, is likely to remain as assessed in Chapter 7 – Socio-economics.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other

	committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. The Design and Access Statement, written by ICA, refers to the retention of the Invicta House Atkinson Street front, for which, the design is in keeping within the surrounding area. The Heritage report Stephen Levrant Heritage Architecture Ltd. concluded a negligible cumulative impact on the surrounding architectural integrity and appreciation of listed buildings. However views towards and on Deansgate will be impacted by two considerable increases in current building height.
Built Heritage	There is potential for common receptors as there is a direct view between properties from Atkinson street and Deansgate, although it is minimal. Stephen Levrant Heritage Architecture Ltd. considered the current view between these streets, the Deansgate/Peter Street Conservation Area, to be of medium value and for the changes to result in negligible impacts as the building facades would remain unchanged. Therefore, in-combination effects are unlikely.
Wind	No wind assessment has been undertaken to support this development and therefore the in-combination effects are difficult to quantify. However, it can be assumed that given the permission granted by MCC, the committed development was not considered to have negative impacts on the surrounding wind environment, therefore in-combination effects are considered to be unlikely.
Daylight, Sunlight, Overshadowing	Invicta House has been identified within the Daylight, Sunlight and Overshadowing assessment of the Proposed Scheme, and therefore no in-combination effects are likely.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
15) Land Bounded By The River Irwell To The North & West, Water Street To The East And The A6402 & A57 To The South Manchester (115107/FO/2017)	
Noise	The ES (Deloitte, March 2017) Noise chapter states that due to the requirement of Continuous Flight Auger (CFA) piling and concrete pumps there may be some moderate to major adverse effects during the construction phase. However, with the implementation of mitigation measures and construction best practise included in the CEMP for the development, there will be strict controls on the timings in which the noise levels are increased. Operational noise levels are predicted to not be significant and will meet the requirements of the planning conditions, the management of the sports facilities usage would ensure this. With the exception of during certain specific construction activities, which will be subject to controls and noise monitoring, no in combination effects are considered to occur. However, the distance between the committed development and the Proposed Scheme is large enough that even this exception is unlikely to result in in-combination effects.
Socioeconomics	The ES (Deloitte, March 2017) included a cumulative assessment for the surrounding committed developments that concluded all effects, with the exception of healthcare facilities and education which would be negligible following mitigation, would be beneficial. It is

	therefore unlikely that the committed development would result in negative in-combination effects; as such no additional mitigation is required.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. The visual assessment has highlighted a need for cumulative impacts consideration as the impacts of the committed development were found to be ranging from moderate beneficial to adverse, such as many views around the station building, Liverpool Road, depending on the area being viewed, due to the disparate and varied townscape of the city. The distance of this committed development from the Proposed Scheme, approximately 910 m, means it is unlikely for residents and pedestrians to experience significant in combination effects. However, from viewpoints at a distance from the city, the committed development and the Proposed Scheme will contribute to a secondary cluster of core towers in Manchester City Centre.
Built Heritage	The committed development is expected to introduce minor to moderate adverse harm to the visual impact of the area, when considering the setting of local heritage. It is likely the committed development and the Proposed Scheme will both contribute to a changing skyline and will have a permanent significant effect on the surrounding areas of conservation. Although there is approximately 910 m between the developments and no common receptors are considered in the Heritage Statement (Stephen Levrant, February 2017), therefore, in-combination affects are unlikely.
Wind	Due to the distance between the committed development and the Proposed Scheme (approximately 910 m), in-combination effects are unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
16) Former Bauer Millet Site (115871/FO/2017)	
Noise	Although the cumulative assessment within the ES (Deloitte, March 2017) had not considered the Proposed Scheme within their list of committed developments, it was stated that as the residential buildings and ones under construction were a sufficient distance from each construction to experience a level of noise that would not be expected to exceed noise limits.

	Operational noise due to the Proposed Scheme and the committed developments in the surrounding area would include mechanical services noise, noise egress due to leisure activities and changes in road traffic noise levels due to changes in traffic flows. The change in traffic is expected to have negligible/minor effects on the noise levels. Due to the distance from sensitive receptors, the development is expected to have negligible impacts on the noise levels due to mechanical services. During both construction and operation the site is expected to have negligible impacts on noise and vibration, even so they have suggested a range of mitigation methods which would further reduce the magnitude and potential of any increases in noise levels. This means in combination effects are unlikely with regards to noise.
Socioeconomics	The ES (Deloitte, March 2017) socioeconomics chapter completed a cumulative assessment for the surrounding committed developments that concluded all effects would be beneficial, other than healthcare facilities which is expected to be have a moderate adverse impact, prior to mitigation, and negligible following mitigation. It is unlikely that the committed development would result in negative in-combination effects with the exception of potential in-combination stress on healthcare facilities. This latter effect was scoped out of the socioeconomic assessment of the Proposed Scheme, due to the fact that this can be mitigated. In combination effects are therefore unlikely.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. A total of eight out of 17 viewpoints were considered to be moderately significant and there were no significant townscape resources predicted (townscape character, building heights and movement and linkages were considered to be moderately beneficial).
Built Heritage	It is stated within the ES (Deloitte, March 2017) Heritage chapter that, during construction the Grade II listed Castleford Viaduct and the setting of the Grade II Manchester Central, with the change in the setting potentially resulting in a permanent minor adverse impact due to the loss of historic fabric. The physical interventions of the Viaduct due to the development will result in minor adverse impacts, affecting the significance of the listed structure. Although the impacts are expected to be minor adverse due to the change in setting, the operation of the development will result in repairs and maintenance of the Viaduct and therefore minor beneficial impacts. Due to the distance, potential beneficial effects and intervening building acting as screening, in combination effects are unlikely.

Wind	The ES (Deloitte, March 2017) concludes the committed development to have negligible effects on all locations, with the exception of Deansgate Lock. This is not a common receptor between the committed development and the Proposed Scheme and therefore in-combination effects are considered to be unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
17) 3 St John Street (115233/FO/2017)	
Noise	The noise assessment completed only concluded the likelihood of the internal environment of the proposed residential apartments meeting the acceptable noise level limits, and did not consider the Proposed Scheme in the assessment. There is therefore potential for combination effects for the future users of the committed development, especially during the construction phases due a small distance of 270 m between them. However, no common receptors were identified and construction noise levels would be limited by restrictions set by MCC, therefore, in-combination effects are unlikely.
Socioeconomics	An assessment of the socioeconomic effects was not completed for the committed development, therefore it can be assumed that MCC did not consider any significant socioeconomic effects to be likely. Considering this, in-combination effects are therefore unlikely to occur.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. In combination effects cannot be predicted due to insufficient assessment by the committed development. As the development was approved by MCC without the assessment of townscape and visual impacts, it can be assumed that no effects were considered to be significant. Therefore, also taking account of the height of the committed development (5 storeys), it is unlikely there will be in combination effects.
Built Heritage	The Heritage statement concluded that the committed development would have less than significant indirect impacts on the surrounding setting, achieving this by working to comply with local guidance in order to preserve the local historic setting. It is therefore unlikely the will be in combination effects.

Wind	No wind assessment has been undertaken to support this development and therefore the in-combination effects are difficult to quantify. However, it can be assumed that given the permission granted by MCC, the committed development was not considered to have negative impacts on the surrounding wind environment, therefore in-combination effects are considered to be unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there would be a possibility of in-combination effects, as the committed development is within 300 m of a common receptor. However, the nature of the development being an addition of two storeys to a current building would not significantly affect the baseline. Additional to this, intervening screening present would further reduce any possible changes to the baseline, therefore no in-combination effects are not likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
18) Princess Street / Whitworth Street (114585/FO/2016)	
Noise	The Noise and Vibration assessment determined that the noise level 1 m from the worst affected window, of the closest noise sensitive receptor, would be 5 dB below the typical background noise levels. Therefore the committed development is expected to meet the limits set by MCC. However, the assessment was completed without the availability of a detailed construction plan, although the distance of the committed development from other developments and the control measures in place results in in-combination effects being unlikely.
Socioeconomics	An ES (Deloitte, November 2016) has been undertaken for this committed development. However, socio-economics was scoped out of the ES and therefore it is assumed that the socio-economic effects of this committed development are considered to be insignificant / negligible and the in-combination effects are likely to remain as assessed within Chapter 7 – Socio-economics.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. The visual impact assessment, within the Heritage Statement determined that one, Viewpoint 6 looking south along Princess Street, short range visual receptor would be expected to be negligible and three others, two looking north east along Whitworth Street and another north towards the development along Princess Street, to be minor to moderate beneficial with regards to the impact of the committed development. The development is expected to add to the character of the area, with the potential to become a local landmark. The conclusions from the visual assessment and the distance, with intervening screening, between the committed development and the Proposed Scheme make it unlikely that there will be in combination effects. A townscape assessment was not included in the application, however, it could then be assumed that MCC did not think the committed development would have a significant impact, giving permission without a formal assessment.

Built Heritage	The site for the committed development is within a conservation area, known as Whitworth Street Conservation Area, but has no built form. The Heritage Statement concluded that the committed development would enhance the character and appearance of the identified heritage asset, whilst restoring lost streetscape. The setting of listed buildings including Lancaster House (Grade II), Regency House (Grade II), 3 Brazil Street (Grade II), The New Union PH (Grade II), and Central House (Grade II) are expected to improve, due to the previous neglected nature of the site. In combination effects are therefore not likely.
Wind	Due to the distance between the committed development and the Proposed Scheme (approximately 670 m), in-combination effects are unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
19) St Peters Square (116189/FO/2017)	
Noise	An environmental noise assessment concluded that the noise level requirements would be met for all the noise sensitive receptors with exception of the balconies. Construction noise was not assessed and so it is not known if in combination effects are likely, however, the application for the committed development has since been withdrawn.
Socioeconomics	An assessment of the socioeconomic effects was not completed for the committed development, therefore it can be assumed that the local authority did not consider any significant socioeconomic effects to be likely. Considering this, in-combination effects are therefore unlikely to occur and the application has since been withdrawn.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. The visual impact of the committed development was subject to review by Places Matter, who concluded the committed development would be suitable and have minimal impact on the surrounding area with minor changes. A townscape assessment was not included in the application, however, it could then be assumed that MCC did not think the committed development would have a significant impact, giving permission without a formal assessment.
Built Heritage	The Heritage Assessment, within the ES, determined low to minor beneficial impacts within the George Street Conservation Area and moderate beneficial impacts within St Peter's Square as the area has such high importance. During construction the short term impacts

	due to construction activities are expected to be negligible. However, the application has since been withdrawn so in combination effects are unlikely.
Wind	The Wind Assessment Report (WSP, 2017) does consider some common sensitive receptors, such as Lower Mosely Street and the entrance to Peter Street; however, these receptors are not considered to be negatively impacted by the Proposed Scheme. Therefore, in-combination effects are considered to be unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
20) Land Bounded By Water Street And The V&A Hotel To The West, The Bonded Warehouse And Railway Viaducts To The South, Atherton Street & Granada House To The East And Quay Street & The Globe & Simpson Building To The North Manchester; (114385)	
Noise	The ES (Deloitte, May 2016) identified a number of sensitive receivers, especially during the construction phase. However due to the distance to the Proposed Scheme (approximately 530 m) and the intervening screening from buildings, there are no common receptors and therefore no in-combination effects are likely to occur.
Socioeconomics	The ES (Deloitte, May 2016) identified a number of beneficial effects the committed development would have on Manchester City Centre and the surrounding area, introducing 927 FTE jobs during construction and 2067 FTE during operation. Potential adverse effects on the local healthcare services due to the increase in residential properties, and therefore population increase, were identified. This was scoped out of the socioeconomic assessment of the Proposed Scheme, due to the fact that this can be mitigated. In combination effects are therefore unlikely.
Townscape and Visual	Deloitte and reports completed by Chris Burnet Associates have confirmed that this committed development includes proposed buildings of significant height with potential to impact wider townscape receptors. Therefore, there is potential for an in-combination effects of greater significance on townscape than that detailed in Chapter 8: Townscape and Visual. However, Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur.

Built Heritage	The ES (Deloitte, May 2016) identifies the effect the committed development will have on the Deansgate / Peter Street Conservation area, though only a negligible impact will be experienced. However, for the Proposed Scheme it has been suggested that the impact could be long term impacts of major significance. Therefore there is potential for an in-combination effect, although it is unlikely to be greater than that detailed in Chapter 9: Built Heritage.
Wind	Due to the distance between the committed development and the Proposed Scheme (approximately 530 m), in-combination effects are unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
21) Starlight Theatre (114294)	
Noise	The ES (Deloitte, May 2016) identified three sensitive receptors. However due to the distance to the Proposed Scheme (approximately 720 m) there are no common receptors and therefore no in-combination effects are likely to occur.
Socioeconomics	An ES (Deloitte, September 2016) has been undertaken for this committed development. However, socio-economics was scoped out of the ES and therefore it is assumed that the socio-economic effects of this committed development are considered to be insignificant / negligible and the in-combination effects are likely to remain as assessed within Chapter 7 – Socio-economics.
Townscape and Visual	Planit have confirmed that this committed development includes a proposed building of significant height with potential to impact wider receptors. Therefore, there is potential for an in-combination effect of greater significance on townscape than that detailed in Chapter 8: Townscape and Visual. However, as the impacts of the committed development were considered to be of minor beneficial to negligible significance, alongside the distance between the Proposed Scheme and the site (approximately 510 m) and intervening screening, in-combination effects are therefore unlikely. Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur.
Built Heritage	Stephen Levrant Heritage Architecture Ltd confirms that there are no common receptors and therefore no in-combination effects are considered likely to occur.

Wind	Due to the distance between the committed development and the Proposed Scheme (approximately 590 m), in-combination effects are unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
22) Land Bounded By Quay Street & Manchester College To The North (109660/FO/2015/C1)	
Noise	The ES (Deloitte, December 2016) states that the noise egress for both the construction and the operational phase of the development would be restricted by conditions secured by the planning conditions and would be based on the requirements of MCC. Due to the distance between the development and the Proposed Scheme and no common sensitive receptors, in-combination effects are therefore unlikely.
Socioeconomics	The ES (Deloitte, December 2016) socioeconomics chapter identified a number of beneficial effects the committed development would have on Manchester City Centre and the surrounding area, introducing 927 FTE jobs during construction and 1,621 FTE during operation. Potential adverse effects on the local healthcare and education, services due to the increase in residential properties and therefore population increase, were identified. This was scoped out of the socioeconomic assessment of the Proposed Scheme, due to the fact that this can be mitigated. In combination effects are therefore unlikely.
Townscape and Visual	Planit have confirmed that this committed development includes a proposed building of significant height with potential to impact wider receptors. Therefore, there is potential for an in-combination effect of greater significance on townscape than that detailed in Chapter 8: Townscape and Visual for the Proposed Scheme. However the assessment stated that the committed development would have the majority beneficial impacts on the surrounding townscape and visual, with the minimal negative impacts diminishing with other development in the area. Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur.
Built Heritage	The ES (Deloitte, December 2016) determined a moderate/minor adverse impact on the historic built resource. However, for the Proposed Scheme, Stephen Levrant Heritage Architecture has suggested that this impact could be long term and of major significance.

	Therefore there is potential for an in-combination effect, although it is unlikely to be greater than that detailed in Chapter 9: Built Heritage.
Wind	The ES (Deloitte, December 2016) did not include an assessment of any common receptors, most likely due to the distance between the committed development and the Proposed Scheme (approximately 400 m). Therefore in-combination effects are considered to be unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors. The committed development lies just under 300 m from the sensitive receptors identified within the assessment of the Proposed Scheme, however, with intervening screening no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
23) Land Adjacent Manchester Hall (115200/FO/2017)	
Noise	The Noise Impact Assessment (Sandy Brown Associates, November 2016) assessed the impacts of the committed development on a number of sensitive receivers, although they were not identified individually. However, due to the distance to the Proposed Scheme (approximately 530 m) there are no common receptors and therefore no in-combination effects are likely to occur.
Socioeconomics	An assessment of the socioeconomic effects was not completed for the committed development, therefore it can be assumed that the local authority did not consider any significant socioeconomic effects to be likely. Considering this, in-combination effects are therefore unlikely to occur.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. A Townscape and Visual Assessment was not completed for the committed development, however the effect on townscape was discussed within the Heritage Statement. The committed development is two storeys higher than the surrounding buildings, but it is considered the townscape can accommodate due to the current variety of the wider townscape area.
Built Heritage	The Heritage Statement (Architectural Historic Practice, January 2017) states that the site's development will result in reinstating the urban grain and building line. The committed development is expected to have an effect on the setting of listed buildings, however it is also stated that the benefits of the development are expected to outweigh the negatives. Therefore it is unlikely for there to be in-combination effects.

Wind	No wind assessment has been undertaken to support this development and therefore the in-combination effects are difficult to quantify. However, it can be assumed that given the permission granted by MCC, the committed development was not considered to have negative impacts on the surrounding wind environment, therefore in-combination effects are considered to be unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there would be a possibility of common receptors. However, within the qualitative opinion regarding daylight and sunlight amenity, provided by Gray Scanlan Hill, it is stated that the committed development will have no adverse impact on the daylight and sunlight within surrounding habitable room provisions. Additionally intervening screening between the committed development and the Proposed Scheme would further reduce any potential impacts, and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
29) Olympia Trading Estate (116850/FO/2017)	
Noise	The Noise Impact Assessment (REC, June 2017) determines that there will be no adverse effects on the closest receptors, however this focussed on the noise sources already in operation, such as road networks, rather than the effects of the committed development. It is unlikely for any in-combination effects due to the distance (approximately 780 m) between the two developments.
Socioeconomics	An assessment of the socioeconomic effects was not completed for the committed development, therefore it can be assumed that MCC did not consider any significant socioeconomic effects to be likely. Considering this, in-combination effects are therefore unlikely to occur.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. The ES (De Trafford Estates Group, July 2017) stated that there will be a limited change in the character and amenity of the views from a small number of receptors, with views of the site being limited, resulting in a negligible to minor adverse effect on the surrounding environment. The tall nature of the committed development is believed to be in keeping with the logical progression and development of the local area. This, along with the approximate 780 m between the committed development and the Proposed Scheme, mean in-combination effects are unlikely to occur.

Built Heritage	The ES (De Trafford Estates Group, July 2017) concluded that there will be no significant impacts on the heritage assets, with the exception of some minor changes in setting. Considering this and with no shared sensitive receptors between the committed development and the Proposed Scheme, it is unlikely that there will be in-combination effects.
Wind	The committed development will have a minimal impact on the surrounding environment, with some positive effects arising from the Proposed Scheme. Due to the distance between the committed development and the Proposed Scheme (approximately 780 m), it is therefore unlikely in-combination effects will occur.
Daylight, Sunlight, Overshadowing	The NTS states that the impacts on sunlight and daylight are expected to be negligible and negligible to minor adverse respectively. This alongside the distance between (approximately 780 m) the Proposed Scheme and the committed development, means in-combination effects are therefore unlikely.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
30) New Bailey 09/57950/EIAHYB	
Noise	The Salford Central ES (Arup, July 2009) stated that the potential noise emitted from the site would be controlled to acceptable levels through good design and mitigation. It was considered that no other developments in the surrounding area would act in-combination with the committed development, and therefore in-combination effects are unlikely.
Socioeconomics	The Salford Central ES (Arup, July 2009) indicated that the committed development and the Proposed Scheme did not have any common receptors and the cumulative impact on the local population, across many socioeconomic topics, was considered to be beneficial. This was scoped out of the socioeconomic assessment of the Proposed Scheme, due to the fact that this can be mitigated. In combination effects are therefore unlikely.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur.
Built Heritage	The Salford Central ES (Arup, July 2009) indicates the committed development and the Proposed Scheme do not have any common sensitive receptors, therefore, in-combination effects are unlikely.

Wind	Due to the distance between the committed development and the Proposed Scheme (approximately 760 m), in-combination effects are unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.
Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.
31) Middlewood Locks (06/52762/OUT)	
Noise	The ES (Waterman, May 2006) states that an Environmental Management Plan (EMP) will limit the construction noise level impact to, at worst case scenario, temporary, local and minor adverse impacts. All impacts from the committed development should be limited to negligible, with the exception of the noise emitted from the increased levels of traffic on East Ordsall Lane. The committed development and the Proposed Scheme do not have any shared receptors and the distance between them (approximately 760 m) results in in-combination effects being unlikely.
Socioeconomics	The ES (Waterman, May 2006) indicates that there would be positive impacts regarding employment opportunities and that the committed development would be in keeping with the current regeneration plans for Central Salford and Manchester. In-combination effects are therefore unlikely.
Townscape and Visual	Planit have confirmed that though 12 viewpoints experience cumulative development, it is not considered that this will result in further impact. This is because of the separation between the Scheme and the committed developments, a minimal scale of visibility or other committed developments obscuring the Proposed Scheme. In these cases, it was deemed unlikely that further in-combination effects resulting from the Proposed Scheme were likely to arise. Therefore, no further effects are expected to arise as a result of the kinetic cumulative assessment due to limited views of committed development. No in-combination effects with regards to visual amenity are considered to occur. Additional to this, the impacts from the committed development are also expected to be substantially beneficial for the area, so in-combination effects are unlikely.
Built Heritage	The ES (Waterman, March 2006) states that there were no buildings of built heritage or listed building that could be affected by the development so Built Heritage was scoped out of the EIA, therefore in-combination effects are unlikely.
Wind	Due to the distance between the committed development and the Proposed Scheme (approximately 640 m), in-combination effects are unlikely.
Daylight, Sunlight, Overshadowing	Due to the distance between the Site and the committed development it is considered that there will be no common receptors and therefore no in-combination effects are likely to occur.

Archaeology	Chapter 12: Archaeology confirms that the residual effects of the Proposed Scheme are considered to be negligible. Therefore, in line with the assessment methodology outlined in paragraph 13.4.2 no in-combination effects with other proposed developments are considered to occur.

13.4.3. **Table 13.4** above illustrates that other committed developments in the area are generally too far from the Proposed Scheme for any common receptors to be assessed. The exception to this is:

- Socio-economics: The in-combination effects for socio-economics are limited to the committed developments 3: 11 York Street, 5: Bonded Warehouse Grape Street, 8: Deansgate South, 14: Invicta House and16: Former Bauer Millet Site.
  - For all these committed developments, with the exception of 16: Former Bauer Millet Site, there is the potential for a positive in-combination effect in relation to direct, indirect and induced employment during the construction phase (assuming concurrent construction phases), and for 3: 11 York Street and 5: Bonded Warehouse Grape Street during operation as well. **Chapter 7: Socio-economics** considered that the Proposed Scheme would have an effect of minor to major positive significance in terms of direct employment opportunities and an effect of minor to moderate positive significance in relation to indirect and induced employment during both construction and operation.
  - As no socio-economic assessments for the construction phase have been undertaken for any of the committed developments the in-combination effects cannot be quantified. However, it is considered that there would overall be a positive direct / indirect, temporary, short – medium term in-combination effect of greater significance on direct / indirect and induced employment opportunities than that assessed within **Chapter 7: Socio-economics**. As no socio-economic assessments have been undertaken for the operational phase of any of the committed developments the in-combination effects cannot be quantified. However, it is considered that there would be overall a positive direct / indirect, permanent, long term in-combination effect of greater significance than that assessed within **Chapter 7: Socio-economics.**
  - For 16: Former Bauer Millet Site there is the potential for a moderate adverse impact in relation to stress on health facilities, but this could be mitigated through a planning condition if necessary.

- Townscape and Visual: Planit confirm that the in-combination effects include further adverse effects to the historical townscape and further beneficial effects to the building heights receptor. The significance of effects with regards to in-combination visual effects is considered to remain as assessed within **Chapter 8: Townscape and Visual.**

13.4.4. No in-combination effects are considered likely in relation to noise, wind, sunlight, daylight and overshadowing, built heritage or archaeology.

13.5 LIMITATIONS AND ASSUMPTIONS

13.5.1. The assessment of effect interactions and in-combination effects resulting from the Proposed Scheme has focused on the residual effects from the construction phase and the operational phase following the implementation of mitigation measures. There is an assumption that mitigation measures identified in the individual technical **Chapters 6 - 12** have been incorporated or adopted to mitigate any negative effects resulting from the Proposed Scheme.

13.5.2. The assessment of in-combination effects has been limited to publically available information obtained from the relevant planning applications on the MCC planning portal. For some of the committed developments, relevant information to inform this assessment has not been available. As a result, qualitative statements have been based upon assumptions and professional judgement.

REFERENCES

- **Ref 13.1**: Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (as amended 2015) – Statutory Instrument 2015 No. 660
- **Ref 13.2**: Statutory Instrument 2015 No.660 Town and Country Planning, England 'The Town and Country Planning (Environmental Impact Assessment) (Amendment) Regulations 2015'.
- **Ref 13.3**: Department for Communities and Local Government, National Planning Practice Guidance, (March 2014).

14

SUMMARY OF ENVIRONMENTAL STATEMENT

14 SUMMARY OF ENVIRONMENTAL STATEMENT

14.1.1. **Table 14.1** overleaf presents a summary of the residual effects, together with any recommended commitments, for each environmental topic assessed within the ES (**Chapters 6 – 13**).

14.1.2. Specifically, the summary presents relevant design solutions and assumptions for the Proposed Scheme, any recommended mitigation measures, the residual effects (for construction and operation) and whether the effects are considered to be significant or insignificant.

Table 14.1 – Summary of Residual Effects

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
Noise and Vibration				
Construction Disturbance to sensitive receptors from noise generated by on-site (non-traffic) construction activities	A number of assumptions have been made in the calculations of noise and vibration levels resulting from activities and plant during construction. Such assumptions relate to the type, location and number of plant as well as their duration of operation. Deliveries will be programmed to arrive on a "just in time" basis and will be routed so as to minimise disturbance to local residents. A Construction Environmental Management Plan (CEMP) will be implemented.	The sensitivity of receptors (residents above Old Nag Head and Radisson Blu Hotel) is high and the magnitude of change following mitigation during the daytime is medium to small. Therefore, there is likely to be a direct, temporary, short to medium term residual effect of minor to moderate negative significance during the daytime. During the night-time the magnitude of change is considered to be large for the residential use above the Old Nag Head and medium for the Radisson Blu Hotel. Therefore, there is likely to be a direct, temporary, short to medium term residual effect of major negative significance during the night-time.	Erection of solid perimeter site hoarding. Implementation of Best Practicable Means as defined in Section 72 of the Control of Pollution Act. Implementation of guidance given in BS 5228-1 (Section 8 - Control of noise and Annex B - Noise sources, remedies and their effectiveness). Use of electrically powered plant and use of silencers if possible. Plant to be shut down when not in use. Careful selection of construction methods and consideration of the construction of temporary noise barriers.	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
Construction Disturbance to sensitive receptors from vibration generated by on-site (non traffic) construction activities	A neighbourhood liaison will be implemented. Rotary piling techniques will be adopted rather than impact piling.	The sensitivity of the nearest existing residential receptor is high, and the magnitude of impact following mitigation, is considered to be medium at worst. Therefore, there is likely to be a direct, temporary, short to medium term of moderate negative significance. The sensitivity of the nearest existing receptor within the commercial premises / offices (such as the Friends' Meeting House) is medium, and the magnitude of impact is considered to be small for the majority of the construction phase and medium when works are at their closest. Therefore, there is likely to be a direct, temporary, short to medium term effect of minor negative significance.	Vibration generating plant should be used sparingly. Equipment should be started or stopped at least 30 metres away from any vibration sensitive receptors wherever possible. Where possible during the construction of the foundations, rotary piling techniques are to be adopted. Implementation of vibration monitoring and protocols.	Significant
Operation Disturbance to existing sensitive receptors and future proposed noise sensitive uses from noise generated by the proposed fixed plant/goods delivery noise.	Existing site levels will be incorporated as far as possible. Sound from externally mounted plant will be mitigated through design measures, such as equipment selection, location of equipment,	None		Insignificant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
Operation Disturbance to existing sensitive receptors and future proposed noise sensitive uses (internal hotel and residential spaces) from proposed entertainment noise.	installation of attenuators or enclosure of equipment. Any proposed fixed externally mounted building services plant will be designed such that the derived Rating Level for the operational plant is at least 5 dB below the existing background (L90) sound levels in each of the octave bands at the nearby noise sensitive receptors.	The sensitivity of existing receptors (Radisson Blu Hotel) is considered to be high, and the magnitude of impact is considered to be small. Therefore, there is likely to be a direct, permanent, long-term effect of minor negative significance. The sensitivity of some of the future users of the Proposed Scheme (residential and hotel) is considered to be high, and the magnitude of impact is considered to be small. Therefore, there is likely to be a direct, permanent, long-term residual effect of minor negative significance.	In order to reduce the potential noise levels from the rooftop public square to the proposed residential apartments and hotel rooms, restrictions may need to be applied to its use. The requirements will be specified by MCC. Installation of acoustic screening along the south side of the roof terrace. Further detailed modelling of noise emissions relating to specific sensitive receptors, such as the Friends' Meeting House, can be undertaken during detailed design of the Scheme, when more detail about potential noise emissions is available.	Significant
Operation Existing baseline noise levels on proposed noise sensitive users	Residential and hotel rooms are mechanically ventilated.	None	Implementation of suitable glazing following detailed design.	Insignificant
Operation Predicted noise levels specifically on the proposed external residential balconies, from ambient noise and proposed use of the roof terrace		The sensitivity of the north, east and south facades of the tower is high. During use of the rooftop terrace for occasional music and sports events the magnitude of change is medium, at the worst affected level. Therefore, there is likely to be a direct, permanent, long-term residual effect of moderate negative significance. The sensitivity of the residents of the Proposed Scheme at the balconies on the west facade is	Careful detailed building design and the use of screens on balconies. Restrictions to use of rooftop terrace to be implemented through an Operational Management Plan which will be discussed and agreed with MCC.	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		high, and the magnitude of change is considered to be negligible, from the existing ambient noise levels and typical use of the rooftop publically accessible terrace. Therefore, there is likely to be a direct, permanent, long-term residual effect of negligible significance.		
Socio-economics				
Construction Direct employment opportunities for local population	It is assumed that employment opportunities would be made available to the local workforce where possible.	The sensitivity of economic receptors (i.e. residents of working age and companies) within the local study area is high and the magnitude of change is large. Therefore, there is likely to be a direct, temporary, short term residual effect of major positive significance. The sensitivity of economic receptors within the regional study area is medium and the magnitude of change is medium. Therefore, there is likely to be a direct, temporary, short term residual effect of minor to moderate positive significance.	None	Significant
Construction Indirect and induced employment associated with spending in the local economy by	N/A	The sensitivity of economic receptors in the local study area is high, and the magnitude of change is small. Therefore, there is likely to be an indirect, temporary, short to medium -term	None	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
contractors and contracts placed with suppliers		residual effect of moderate positive significance. The sensitivity of economic receptors in the regional study area is medium, and the magnitude of change is small. Therefore, there is likely to be an indirect, temporary, short to medium-term residual effect of minor to moderate positive significance.		
Construction Displacement of users of the synagogue	Assumes the Synagogue will be temporarily relocated and will be available prior to demolition of the existing facilities and will be available until the new permanent Synagogue is operation. It is assumed that the current synagogue facilities and capacity will be provided within the temporary Synagogue which will be located in close proximity.	The sensitivity of local community receptors (users of the synagogue) is medium, and the magnitude of change is negligible to small. Therefore, there is likely to be a direct, temporary, short to medium-term residual effect of negligible to minor negative significance.	The users of the Manchester Reform Synagogue should be informed of the nature, timing and duration of particular construction activities and the duration of the construction works in advance of the commencement of site securement by newsletters and liaison with the applicant.	Significant
Operation Generation of direct employment opportunities for local population	None	The sensitivity of economic receptors within the local study area is considered to be high and the magnitude of change is small. Therefore, there is likely to be a direct, permanent, long-term residual effect of moderate positive significance.	None	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		The sensitivity of economic receptors within the regional study area is medium and the magnitude of change is small. Therefore, there is likely to be a direct, permanent, long-term residual effect of minor to moderate positive significance.		
Operation Indirect and induced employment associated with spending in the local economy by employees and contracts placed with suppliers and contractors	None	The sensitivity of economic receptors within the local study area is high, and the magnitude of change is small. Therefore, there is likely to be an indirect, permanent, long-term residual effect of moderate positive significance. The sensitivity of economic receptors within the regional study area is medium, and the magnitude of change is small. Therefore, there is likely to be an indirect, permanent, long-term residual effect of minor to moderate positive significance.	None	Significant
Operation Delivery of the high quality public realm and new infrastructure	Assumes implementation of public realm and pedestrian access through the Site.	The sensitivity of local community receptors (residents and visitors to the Proposed Scheme) is medium, and the magnitude of change is medium. Therefore, there is likely to be a direct, permanent, long-term residual effect of moderate positive significance.	None	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
Operation Improved community connectivity within and around the Site		The sensitivity of local community receptors (local community, residents and visitors to the Proposed Scheme) is medium, and the magnitude of change is medium. Therefore, there is likely to be a direct, permanent, long-term residual effect of moderate positive significance.	None	Significant
Townscape and Visual				
Construction Change to townscape receptors due to the presence of machinery, hoardings, scaffolding, tower cranes, earthworks, stockpiles and construction activities within the Site	Implementation of a CEMP	Construction works are predicted to have a moderate adverse impact on heritage designations. This is expected to have a moderately significant impact. Construction works are predicted to have a minor adverse impact on townscape character, due to the visibility of construction traffic and operations. This impact is expected to be of minor significance. The overall effect during the construction phase on urban grain is predicted to be negligible and not significant. The overall impact on land use throughout the construction phase is expected to have a minor adverse impact. This is expected to be not significant. Due to the scale of the Proposed Scheme, the impact of elevated construction works on building	Supplementary mitigation for the development includes the consideration of Site hoarding which should be coloured to be sympathetic to the surrounding environment. The nature of Site hoarding is unlikely to alter the significance of assessed receptors. The implementation of good Site management, maintenance and housekeeping would ensure that the temporary deterioration to townscape character and visual amenity will be kept to a practical minimum. Despite these better practice measures, there would still remain inevitable adverse effects during construction works	Insignificant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		heights is expected to have a moderate adverse impact, resulting in a minor significant effect. The impact of construction works on movement and linkages is predicted to have a minor adverse impact, resulting in a not significant effect. The impact of construction works on public realm and public open space is predicted to have a minor adverse impact, due to the proximity of Albert Square. This is expected to be not significant. The impact on site character is predicted to be minor adverse which is not significant		
Construction Change in visual amenity due to construction works being visible with the view	Implementation of a CEMP.	A total of 7 views are expected to experience moderate adverse impacts due to construction works A total of three kinetic view characters (Track 1 – Character 2, Track 1 – Character 3 and Track 2 – Character 2) are likely to experience minor adverse impacts that are moderately significant due to construction works.	As above	Insignificant
Operation Change to townscape receptors due to new built form and landscaping	A single tower has been proposed to the west of the Site. This solely places the mass on the less sensitive edge within the boundary,	Whilst the scale of the impact may well be larger, careful detailed design mitigation, the boldness of this proposed landmark due to its strategic location and the mixed	A management plan may be employed to provide further mitigation and maintenance of the public realm once the Site is operational. The plan would	Insignificant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
	to respond to height along Deansgate. The tower meets the ground via a podium which helps to provide a human scale to development proposals as well as providing the opportunity to retain the Former Bootle Street Police Station and Sir Ralph Abercromby Inn Public House. The public house will interact with new public realm to provide new activity and sense of place within the Site. The single tower has been designed to reduce massing through orientation and shape. The pattern and glazing of the façade help to tie together the new elements of the Proposed Scheme and provide a feeling of public realm. Preparation and implementation of a masterplan on the implementation and maintenance of the public realm.	offer to supplement surrounding heritage has limited the magnitude of impact. A minor adverse effect on the heritage assets of the immediate townscape is considered to be moderately significant due to the medium/high sensitivity of the receptor. The Proposed Scheme is considered to provide a moderate beneficial change to Manchester's townscape character, due to direct benefits to strengthen the Civic Quarter and the wider benefits of surrounding townscape areas. This effect is considered to be moderately significant. The Proposed Scheme is considered to provide a moderate beneficial change to the urban grain of Manchester's core, due to the contextual and consolidated proposed footprint. This effect is considered to be moderately significant to the wider townscape. The proposed uses respond to the surrounding character areas and help to tie the city centre together. The Proposed Scheme is therefore considered to provide a major beneficial change to land use. This effect is expected to be moderately significant. Given the density of the City core and the number of tall buildings	ensure the longevity of planting and the upkeep of spaces	

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		that are being constructed within it and along the periphery, perception and visibility of the height of the Proposed Scheme is limited beyond the immediate locality. From afar, where the towers are visible, they will be a marker for the middle of Manchester which has been long lost within the city. The Proposed Scheme has therefore been considered to have a moderate neutral impact on building heights, given the mix of impacts across the wider city centre. This effect is considered to be moderately significant. The Proposed Scheme represents a complete change from the existing Site use which is considered to provide a major beneficial change to the public realm offer. This effect is considered to be moderately significant. The Proposed Scheme is considered to have a moderate beneficial impact on site character. This is expected to be of minor significance.		
Operation Change in visual amenity		For twelve of the viewpoints, the change has been considered to have a beneficial impact (Viewpoints 1, 2, 5, 6, 9, 11, 12,		Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		13, 14, 15, 16 and 31). The nature of change has been considered to be beneficial where visibility of the Proposed Scheme provides visible new uses to activate the surrounding townscape, provides a wayfinding marker across the city and is of a scale and massing to support the growth aspirations of the city, all mitigated through visible high quality design and materiality. Of the eight viewpoints assessed with an adverse nature of impact, four are considered as moderate adverse (Viewpoint 21, 22, 25 and 29). One view has been assessed as major adverse (Viewpoint 27), with this view (Albert Square) also experiencing the only effect deemed significant. Given that the tracks represent the primary movement routes towards the Proposed Scheme, they are therefore in close proximity to the Site. The surrounding townscape of high sensitivity, caused by high heritage value and strong cultural associations has led to Track 1 to experience adverse impacts across two of the identified characters (Track 1 – Character 2 and Track 1 – Character 3) where the Proposed Scheme impacts		

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		affects the legibility of the Town Hall buildings. Both characters were considered to experience a moderate adverse impact, of a moderately significant effect.		
Built Heritage				
Construction Change in setting of listed buildings (34-36 – Lloyds House, Memorial Hall and 1-5 Central Street (north side) in the Albert Square Conservation Area) in the vicinity of the Proposed Scheme both inside and outside the Deansgate/Peter Street Conservation Area	Implementation of a CEMP.	The sensitivity of the setting of listed buildings 34-36 is high and the magnitude of change following mitigation is small adverse. Therefore, there is likely to be an indirect, temporary, short-term residual effect on listed buildings 34-36 of minor significance.	None proposed.	Insignificant
Construction Demolition and partial demolition of non-designated heritage assets within the Deansgate/Peter Street Conservation Area – Synagogue and Police Station	Implementation of a CEMP.	The sensitivity of the two non-designated heritage assets within the Site are considered to be low and the magnitude of change following mitigation, is considered to be medium adverse. Therefore, there is likely to be a direct, permanent, long-term residual effect on the two non-designated heritage assets of minor to moderate significance following	Undertaking historic building records of the three buildings within the Site, prior to their demolition, will advance understanding of the significance of the non-designated heritage asset and will be publicly accessible. The fixtures and fittings of significance within the Reform Synagogue will be reused and retained within the Proposed Scheme	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		the implementation of mitigation measures. The sensitivity of the Sir Ralph Abercromby Inn Public House is considered to be low. The magnitude of change following mitigation is considered to be small negative. Therefore, there is likely to be an indirect, short-term effect of minor/negligible significance following the implementation of mitigation measures.		
Operation Change in setting of listed buildings (Receptors 1, 6, 9, 11-13, 17-24, 27-32, 34-37, 40, 45-46, 49-52 and 55) in the vicinity of the Proposed Scheme both inside and outside the Deansgate/Peter Street Conservation Area – see Chapter 9: Built Heritage, 9.5	See mitigation measures	The sensitivity of the receptor 24 (Albert Memorial, Albert Square) is considered to be high, and the magnitude of change following mitigation is large adverse. Therefore, there is likely to be an indirect, permanent, long-term residual effect on this receptor of moderate to major significance following the implementation of mitigation measures. The sensitivity of the receptors 7 (Former entrance to Deansgate Goods Station Nos.223 to 233 Deansgate), 22 (Manchester Town Hall), 31 (Town Hall Extension), 35 (Memorial Hall), 54 (235-291 Deansgate) and 55 (St Ann's Church) is considered to be high, and the magnitude of change following mitigation is	The Proposed Scheme will provide opportunities for interpretation of the historic interest of the area. Proposals include: · Retain and reuse the fixtures and fittings of significance within the Synagogue; · Allow for interpretation boards to provide an understanding and appreciation of the history of the site, including the Peterloo Massacre; · Allow for the opportunity to reuse the Portland stone from the Police Station and incorporate it into the Proposed Development; and · Provide new viewpoints/ views of the surrounding heritage assets allowing the heritage values to be revealed and	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		medium adverse. Therefore, there is likely to be an indirect, permanent, long-term effect on these receptors of moderate significance following the implementation of mitigation measures. The sensitivity of the receptors 5, 6, 12, 13, 18, 23, 27, 32, 34 and 36 is considered to be medium, and the magnitude of change following mitigation is small adverse. Therefore, there is likely to be an indirect, permanent, long-term effect on these receptors of minor significance following the implementation of mitigation measures. The sensitivity of the receptors 1, 9, 11, 17, 19-21, 28-30, 37, 40, 45-46, and 49-52 is considered to be high/medium, and the magnitude of change following mitigation is negligible. Therefore, there is not likely to be any effect on these receptors. The sensitivity of the Albert Square and Deansgate/Peter Street and St Ann's Conservation Areas is considered to be high and the magnitude of change following mitigation is considered to be large adverse. Therefore, there is likely to be an indirect, permanent, long-term residual	understood and appreciated within a new context.	

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		effect on these receptors of moderate significance following the implementation of mitigation measures. The sensitivity of the St John's Conservation Area and St Peter's Square Conservation Area is considered to be high, and the magnitude of change following mitigation remains negligible. Therefore, there is not likely to be any effect on this receptor.		
Wind				
Operation Pedestrian discomfort as a result of localised zones of acceleration (Receptors, 35 – Pavement on Bootle Street, 62 - Passage between the tower and the office building, and 63 - Gap between the Proposed Scheme and the adjacent property to the west)		The sensitivity of the identified receptors range from high to medium. In winter the magnitude of change at all receptors (with the exception of receptors 35, 62 and 63) ranges from no change to negligible. Therefore, there is likely to be a direct, permanent, long term and of negligible significance or no effects. Receptors 35, 62 and 63 are of medium sensitivity and the magnitude of change in winter at these receptors is small. Therefore, there is likely to be a direct, permanent, long-term effect of minor negative significance.	Inclusion of landscaping (trees within the Site), the detail of which to be confirmed in the post planning detailed design stage. Public access to the strip of land between Block A of the Proposed Scheme and the existing Onward Buildings is prevented by the use of screens and/or gates. This area is not a public right of way and it is not currently publically accessible.	Insignificant
Operation Reduction in pedestrian safety as a		The sensitivity of receptors 62 and 63 is considered to be medium, and the magnitude of change is		Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
result of an increase in wind speeds (Receptors 13 - Corner Deansgate & Quay Street, 62 - Passage between the tower and the office building, and 63 - Gap between the Proposed Scheme and the adjacent property to the west)		considered to be small as the wind speed will not exceed safety criteria but the area will remain windy. Therefore, there is likely to be a direct, permanent, long-term residual effect on receptors 62 and 63 of minor negative significance. The sensitivity of receptor 13 is considered to be high, and the magnitude of change is considered to be large as the area is brought within safety criteria. Therefore, there is likely to be a direct, permanent, long-term effect on receptor 13 of major positive significance.		
Sunlight, Daylight and Overshadowing				
Operation Loss of natural light (daylight) to adjacent properties	N/A	The sensitivity of receptors (residential, hotels, offices and commercial buildings) range from high to low, and the magnitude of change, is negligible to large. Therefore, there is likely to be a direct, permanent, long-term residual effect of negligible to major negative significance.	Further detailed assessment including internal surveys of properties to determine actual remaining daylight conditions.	Significant
Operation Loss of natural light (sunlight) to adjacent properties		The sensitivity of receptors (residential, hotels, offices and commercial buildings) range from high to low, and the magnitude of change is negligible to large.	None	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		Therefore, there is likely to be a direct, permanent, long-term residual effect of negligible to major negative significance.		
Operation Increased overshadowing to open spaces		There are no residual effects.	There is no mitigation required.	Insignificant
Archaeology				
Construction Loss or disturbance of potential buried archaeological remains	Assumes average depth of excavation is 4m with a maximum depth of 13.5m below ground level across the Site.	There are no residual effects following the application of mitigation.	Written Scheme of Investigation and appropriate mitigation following investigations (generally preservation by record, where preservation in situ cannot be achieved).	Insignificant
Cumulative				
Construction Effect interactions on common sensitive receptors	Mitigation measures proposed by individual topic assessments are implemented.	It is anticipated that negative effects on users of existing residential, commercial and other properties are limited to those within the local vicinity, particularly along Jackson's Row which will experience negative effects from construction noise and vibration (major negative effects), displacement due to Proposed Scheme (minor negative effects) and negative visual effects (minor adverse effects). The overall interaction of effects on users of existing residential, commercial and other properties in the	None.	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		immediate vicinity of the Site is therefore considered to be of **major negative** significance. Effects on heritage assets (Listed Buildings and Conservation Area) are predicted due to change in the townscape (moderate adverse effects) and setting (minor negative). This is due to a change in the use of the Site from the existing use to one of a construction site. It is considered that the effect interaction on surrounding Listed Buildings and Conservation Areas is moderate negative.		
Construction In-combination interactions arising with other developments		Planit confirm that the in-combination effects include further adverse effects to the historical townscape. The significance of effects with regards to in-combination visual effects is considered to remain as assessed within Chapter 8: Townscape and Visual. As no socio-economic assessments have been undertaken for the construction phase of any of the committed developments the in-combination effects cannot be quantified. However, it is considered that	None.	Insignificant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		there would overall be a positive direct / indirect, temporary, short – medium term in-combination effect of greater significance on direct / indirect and induced employment opportunities than that assessed within Chapter 7: Socio-economics.		
Operational Effect interactions on common sensitive receptors	Mitigation measures proposed by individual topic assessments are implemented.	The effects associated with users of the existing residential, commercial and other properties relate to townscape, visual amenity, wind and sunlight, daylight and overshadowing on Jackson's Row and Quay Street. The effects resulting from the operational phase are long-term in duration and are applicable throughout the life span of the Proposed Scheme. Overall, the effect interactions are considered to be of major negative significance. Effects on users of the road network and public spaces are limited to areas of public realm in terms of changes to the townscape and the wind environment and to pavements of the surrounding road network as a result of improved connectivity within and around the Site and	None.	Significant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		changes to visual amenity and the wind environment as a result of the Proposed Scheme on pavements along the local road network. The effects resulting from the operational phase are generally long-term in duration and are applicable throughout the life span of the Proposed Scheme. Overall, the effect interactions are considered to be of minor negative significance. Effects on heritage assets (Listed Buildings and Conservation Area) are predicted due to change in the townscape (moderate adverse effects), and setting (minor to major negative). This is due to an increase in the scale and massing of the Site. It is considered that the effect interaction on surrounding Listed Buildings and Conservation Areas is major negative.		
Operational In-combination interactions arising with other developments		Planit confirm that the in-combination effects include further adverse effects to the historical townscape and further beneficial effects to the building heights receptor. The significance of effects with regards to in-combination visual effects is		Insignificant

Potential Effect Considered in the ES	Design Solutions and Assumptions	Residual Effects	Mitigation Measures	Significant / Insignificant
		considered to remain as assessed within Chapter 8: Townscape and Visual. As no socio-economic assessments have been undertaken for the operational phase of any of the committed developments the in-combination effects cannot be quantified. However, it is considered that there would be overall a positive direct / indirect, permanent, long term in-combination effect of greater significance than that assessed within Chapter 7: Socio-economics.		



The Victoria
150-182 The Quays
Salford
M50 3SP

wsp.com