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1 Introduction

Introduction

- 1.1 This Environmental Impact Assessment (EIA) Scoping Report (the “Report”) has been prepared in respect of the potential redevelopment on land to the north of the Etihad Stadium (“the Site”).
- 1.2 Manchester City Football Club Ltd (the ‘Applicant’) is undertaking feasibility studies to develop a best-in-class fan experience and a year-round entertainment and leisure destination at the Etihad Stadium. The Proposed Development could include several connected elements required to support Manchester City Football Club’s central objective of developing a best-in-class fan experience on match days and more broadly a year-round entertainment and leisure destination. A key component of the proposals is an expanded North Stand which could increase capacity of the Etihad Stadium to over 60,000.
- 1.3 A description of the Proposed Scheme is provided in Section 2. Whilst the proposals are at a feasibility stage of development and the final design, mix of uses and quantum of floorspace has not yet been fixed / continue to be reviewed, this description provides sufficient information to inform the EIA Scoping process and the preparation of this EIA Scoping Report.
- 1.4 In order to facilitate early EIA Scoping consultation with the Local Planning Authority and technical consultees on the most robust basis, this EIA Scoping Request is therefore based on a potential maximum set of parameters for the Proposed Development, acting therefore as a ‘worst case’ scenario for EIA assessment purposes. Notwithstanding, should these parameters be exceeded or otherwise materially change, then the EIA scope would be further reviewed.
- 1.5 This Scoping Report is submitted to request that Manchester City Council as Local Planning Authority (LPA) adopt a Scoping Opinion under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. In accordance with Regulation 15, paragraph 2, this report contains:
 - A plan sufficient to identify the land (included at Appendix 1); and
 - A brief description of the nature and purpose of the Proposed Development and of its possible effects on the environment.

EIA Requirements

- 1.6 The EIA process is the mechanism by which development proposals are appraised in terms of environmental criteria, in addition to socio-economic, engineering and technical considerations. The EIA process defines the context of the Proposed Development and examines the issues considered pertinent.
- 1.7 The purpose of the EIA is to establish the nature of the development and the environment on which it is likely to take place to identify likely significant effects on the environment that may arise, by comparing the existing situation at the start of the work (baseline) with the situation once the proposals are in place.

- 1.8 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 require that any proposed development falling within the description of a ‘Schedule 2 development’ within the meaning of the Regulations, will be subject to an EIA where such development is likely to have ‘significant’ effects on the environment by virtue of such factors as its nature, size or location (Regulation 4(2)).
- 1.9 The Proposed Development falls under the category of “Infrastructure Projects – Urban Development Projects” (Schedule 2, 10, (b)) as described in the Regulations. The applicable threshold above which EIA is likely to be required is (i) the development includes more than 1 hectare of urban development which is not dwellinghouse development; or (ii) the development includes more than 150 dwellings; or (iii) the overall area of the development exceeds 5 hectares.
- 1.10 The indicative thresholds and criteria state that:
- “In addition to the physical scale of such developments, consideration should be given to the potential increase in traffic, emissions and noise. EIA is unlikely to be required for the redevelopment of land unless the new development is on a significantly greater scale than the previous use, or the types of impact are of a markedly different nature or there is a high level of contamination”.
- 1.11 The Site covers an area of approximately 2.19 ha, which exceeds the threshold in relation to parts (i) listed in Schedule 2, 10, (b) of the Regulations. In addition, given that the Proposed Development results in development of a greater scale than the existing use, an EIA is therefore considered appropriate to test the likely significant effects of the Proposed Development.

Purpose of the EIA Scoping Report

- 1.12 The process of identifying likely significant effects on the environment which should be addressed by the EIA is termed ‘scoping’ and the results are presented as a Scoping Report.
- 1.13 Regulation 15 of the EIA Regulations sets out the process for obtaining a Scoping Opinion from the relevant planning authority.
- 1.14 This Scoping Report sets out the approach taken to the topic areas and information that would be contained within the Environmental Statement. Statutory consultees are invited to express their views on the proposed scope of the EIA or suggest additional issues which may be considered to be of significance. The views expressed by statutory consultees will then be used by the LPA to inform the formal EIA Scoping Opinion.
- 1.15 The LPA is requested to respond to the formal request for an EIA Scoping Opinion within five weeks of registering receipt.

Structure of this Report

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

2 Site Description and Development Proposals

Planning Context

- 2.1 The Site is situated in East Manchester, an area that has been a long-term regeneration priority for MCC. The area has seen a remarkable transformation over the last 20 years, as part of the continued social, economic and physical regeneration of East Manchester.
- 2.2 At the heart of the renaissance of East Manchester has been the Etihad (formerly City of Manchester) Stadium and the complex of sporting assets on the Etihad Campus which were developed for the 2002 Commonwealth Games. Since this time, the Etihad Campus has consistently acted as a major economic driver and successive regeneration frameworks have identified it as a place to drive forward the development of a globally competitive sport, leisure and recreation offer.
- 2.3 Since March 2010, the Council has been working in partnership with the owners of Manchester City Football Club to develop a transformational plan for East Manchester focused on the area in and around the Etihad Stadium. This work has been guided by the Eastlands Regeneration Framework (ERF), which was originally approved by the Council's Executive in July 2011.
- 2.4 The ERF proposals informed the preparation of Manchester's Core Strategy (Development Plan) with Policy EC7 identifying land around the Etihad Stadium, within which the North Stand proposals fall, as the "Collar Site." Policy EC7 states:

"Land around the City of Manchester Stadium, including the "Collar Site" to the east and further land to the north and west. The "Collar Site" provides an opportunity for a leisure, recreation and entertainment visitor attraction of national significance. A landmark design will be key to delivering such a prestigious development which, together with the existing developments within Eastlands, will not only provide a sense of place but will also ensure integration with the surrounding community. Developments that are predominantly tourism / leisure based, including hotels and food and drink will be appropriate together with ancillary retail required to support the principal uses. On development sites to the north and west of the stadium, development of complementary commercial uses will be supported, particularly to accommodate economic activities associated with the growth of Manchester City Football Club."

- 2.5 In 2014, planning permission (planning application reference 104315/FO/2013/N2) was granted for expansion of the Etihad Stadium's North and South stands to a total match day capacity of up to 62,170 seats (from 47,670). To date, only the South Stand has been delivered; however, permission for the North Stand expansion also remains extant.
- 2.6 In December 2017, the Council's Executive approved a further version of the Regeneration Framework for the Eastlands area (the 2017 ERF) The document further reinforces the consistent aim of creating an Etihad Campus sports, leisure and entertainment destination of national significance.

- 2.7 Since the 2017 ERF was approved, economic growth momentum in the city has continued to grow at pace and the impacts of the positive dynamic are now clearly flowing into East Manchester and in particular the areas between the Etihad Stadium and Great Ancoats Street. There is a significant demand for new commercial floorspace, homes and sport, leisure and recreation offer of a national scale.
- 2.8 As such, there continues to be an ambition and major opportunity to maximise the destination role of the Etihad Campus, driving investment and job creation. This is reflected by the grant of planning permission for the Co-op Live Arena at the Campus in 2020 (planning permission reference: 126431/FO/2020), which will deliver a world class arena with a maximum capacity of 23,500. Development has begun on site and the arena is aiming for completion in late 2023.

Site and its Surroundings

- 2.9 The Site is located within the Regional Centre and is surrounded by existing sports and future live entertainment uses (under construction in the form of Coop Live) and associated facilities, redundant energy infrastructure (former gas holders to the north), the local highway network and transport infrastructure, public spaces, pedestrian routes, surface car parking and physical features, as described below.
- 2.10 The Site is located within Ancoats and Beswick Ward. Clayton and Openshaw Ward is located to the east of the Site along Alan Turing Way, whilst Miles Platting and Newton Heath Ward is located circa 400m to the north of the Site.
- 2.11 The Site is located in the Etihad Campus in East Manchester, as identified on the Site Plan in Appendix 1. It comprises 2.19 ha. and includes the North Stand of the Etihad Stadium and associated structural supports, the fan zone with canopies, F&B provision and Club Shop to the north of the Stadium, the landscaped area to the east of the National Squash Centre, the Etihad Stadium Metrolink queuing zone (for the west bound platform) and hardstanding.
- 2.12 The Site also includes a vehicular route to connect to Alan Turing Way to the east, which currently comprises surface car parking. A servicing route loops around the Etihad Stadium and runs through the Site east to west to the immediate north of the North Stand.
- 2.13 The Site is bound by Joe Mercer Way and the Etihad Campus tram stop to the north. The National Squash centre borders the Site to the west, whilst the area to the east of the Site comprises a surface car park. The Site is bounded to the south by the remainder of the Etihad Stadium.
- 2.14 Further to the north is the Ashton Canal, which comprises of towpath and cycle path routes linking the Site to Manchester City Centre, elsewhere in East Manchester and further afield.
- 2.15 To the north of the Ashton Canal is the under-construction Co-op Live arena, which was granted Planning Permission on 23 Oct 2020 and is scheduled to complete towards the end of 2023 (Ref. 126431/FO/2020). The Manchester Tennis and Football Centre is located further to the north-west of the Site, beyond the Ashton Canal.

- 2.16 Further to the west is the Manchester Regional Arena, with the railway line segregating this from the industrial estate further to the west.
- 2.17 Further to the east of Alan Turing Way are two nine storey residential apartment buildings, with a number of two-storey residential properties located beyond this in Clayton. The Eastlands District Centre is located further to the south-east, adding a positive contrast to and supporting the clusters of sports and entertainment facilities in this area.
- 2.18 Philips Park, with Philips Park Cemetery located to the north of the Park, are located to the north-east of the Site and Alan Turing Way and are separated by the River Medlock.
- 2.19 Ashton New Road bounds the wider Etihad Campus to the south, with the area beyond this comprising a number of residential properties in Bradford and Beswick.
- 2.20 The Site is in a highly accessible location by a range of transport including the Metrolink, car, and bus. It is approximately 1.5 miles walk from the City Centre; and is also well connected via bicycle with National Cycle Route 60 along Alan Turing Way and National and Regional Route 86 along the Ashton Canal Tow-Path.

Site Specific Environmental Designations

Air Quality

- 2.21 The Site is not located within the Greater Manchester Air Quality Management Area (AQMA), albeit Alan Turing Way, to which the Site connects to, is located to the east of the Site.

Ecology

- 2.22 The Ashton Canal SBI is located 50 m to the north of the Site; separated from the canal by the metrolink tracks. Clayton Vale Local Nature Reserve is located 734 m to the northeast of the Site but separated by Alan Turing Way.

Flood Risk and Drainage

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

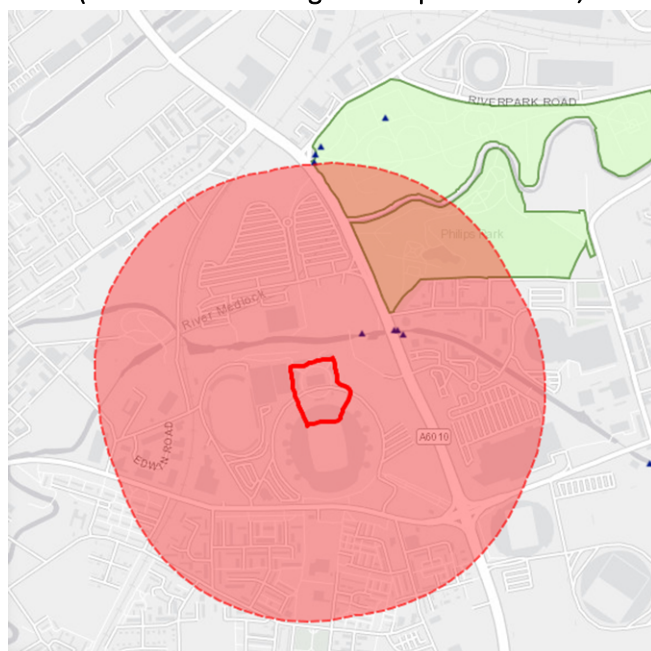
Heritage

- 2.24 The Site does not contain any listed buildings and is not located within a Conservation Area. There are a number of listed structures within a 500 metres buffer zone. This assessment zone is based on best practice and professional experience :
 - 1. Ashton Canal Lock Number 6 Immediately East of Forge Lane – Grade II
 - 2. Ashton Canal Lock Keepers Cottage on South Side of Lock Number 7 of Ashton Canal – Grade II
 - 3. Ashton Canal Lock Number 7 with Roving Bridge Immediately East of Mill Street Bridge – Grade II

4. Ashton Canal Bridge Number 9 Over Ashton Canal (Mill Street Bridge) at West End of Lock Number 7 – Grade II
5. Philips Park – Grade II

2.25 These are shown on Figure 2.1:

Figure 2.1 500m buffer zone of the Site with blue triangles indicating heritage assets (Source: Historic England Map Search Tool, Accessed October 2022)



Proposed Development

- 2.26 The proposals are at a feasibility stage of development and the final design, mix of uses and quantum of floorspace has not yet been fixed and continue to be reviewed. In order to facilitate early EIA Scoping consultation with the Local Planning Authority and technical consultees on the most robust basis, this EIA Scoping Request is therefore based on the potential maximum parameters of the Proposed Development, acting as a 'worst case' scenario for EIA assessment purposes. Notwithstanding, should these parameters be exceeded or otherwise materially change, then the EIA scope would be further reviewed.
- 2.27 The feasibility study is considering a potential mix of uses required to support a central objective of developing a best-in-class fan experience on match days and more broadly a year-round entertainment and leisure destination. A key component of the potential proposals is an expanded North Stand which could increase capacity of the Etihad Stadium to over 60,000. An alternative design to that approved as part of the extant consent (105367/JO/2014/N2) is currently being explored, albeit it at a stadium capacity that does not exceed the approved capacity (62,170) or the maximum height approved (117.42 m AOD (this is the south stand mast height too)).
- 2.28 The feasibility study is also exploring an expanded and covered 'City Square' fan zone adjacent to the North Stand with associated development components (which could comprise food and drink facilities (up to 3,093 sq. m), workspace, a new club shop and club museum (up to 3,505 sq. m), and a hotel (up to 15,306 sq. m)) to support activity levels and the wider amenity offer of the Etihad Campus.

- 2.29 The Etihad Campus is well served by public transport and the Proposed Development will be supported by a sustainable transport strategy including a Framework Travel Plan, which builds on the Club's progress to date. No additional car parking is proposed at the Etihad Campus as part of the Proposed Development and it is proposed that servicing will take place via the route that currently loops around the Etihad Stadium. In addition, a new vehicular access route could be included from Alan Turing Way, to provide a drop-off point as required for the operation of the hotel.
- 2.30 The proposals under consideration will need to establish a public realm which will functionally manage the large numbers of pedestrians, particularly on event days, and which are inherently capable of being used in multiple ways during different parts of the day / week to create activity on non-event days. The main pedestrian approach route to City Square is likely to be along Joe Mercer Way from the north (including from the Etihad Metrolink Stop) with pedestrians likely to have opportunities to directly enter the square or take pathways both left and right leading to entrance points around the rest of the stadium.
- 2.31 The Proposed Development will be delivered in one phase; the construction programme has not yet been confirmed. This will follow the implementation of the Site Improvement Works application which includes grouting of the area identified, decommissioning of the existing substation and diversion of existing services and drainage provisions, as well as removal of existing structures including the Club Shop.

3 Approach to EIA and Proposed Methodology

The Project Team

- 3.1 Regulation 18, Paragraph 5 (a) of the EIA Regulations requires the ES to be prepared by competent experts. The Applicant has instructed Deloitte to lead and manage the EIA process. Deloitte has significant experience and expertise in managing the EIA process and holds the IEMA EIA Quality Mark.
- 3.2 As part of the Scoping Exercise, technical input to this EIA Scoping Report has been provided from the following members of the project team:

Table 3.1 Project Team and Technical Discipline

Consultant	Technical Disciplines
Deloitte	Planning, Heritage and Socio-Economics
Populous	Architecture and design
Laing O'Rourke	Construction
Buro Happold	Daylight sunlight, waste, sustainability, wind microclimate, water resources, air quality, noise and vibration, ground conditions, climate change
ME Engineers	Lighting, Energy, BREEAM, TV Reception Survey, Ventilation
Arup	Traffic and Transport
Helen Hamilton Ecology	Ecology
Enfusion	Human Health
Planit-ie	Townscape and Visual Impact
Salford Archaeology	Archaeology
Greater Manchester Police	Crime and security

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

Table 3.2: EIA Team

Topic	EIA Consultant	Qualifications
EIA Coordinator	Deloitte	PIEMA, MRTPI, MPlan, BA (Hons) IEMA Quality Mark Registered

Topic	EIA Consultant	Qualifications
Air Quality and Dust	Buro Happold	Full Member of IAQM, Full Member of IES, Chartered Scientist (CSci), MSc Environmental Management, BSc Biology, BSc Environmental Science,
Climate Change		BSc Geography, MSc Sustainability and Consultancy, MSc Climate Change Member of IEMA
Water Quality, Drainage and Flood Risk		BSc Geography, MSc Sustainability and Consultancy, MA (Hons) Architecture, MSc Environmental Management Member of IEMA
Ground Conditions		BSc (Hons) Geology, MSc Engineering Geology, Chartered Geologist (C.Geol), Specialist in Land Contamination (SiLC), Fellow of the Geological Society (FGS)
Noise and Vibration		BSc Audio Technology, Member of the Institute of Acoustics (MIOA), MSc Environmental and Architectural Acoustics
Wind Microclimate		PhD Mechanical Engineering. Treasurer of the Wind Engineering Society UK (WES)
Human Health	Enfusion	BSc MSc CEnv FIEMA Fellow Membership of IEMA
Townscape and Visual Impact	Planit-ie	BA(Hons), Chartered Member of the Landscape Institute CMLI
Traffic and Transport	Arup	MEng (Hons) Civil Engineering, Chartered Civil Engineer (CEng) MICE. MCIHT, BA (Hons), MSc, MCIHT, MTPS IEMA Quality Mark Registered

Approach to Scoping

- 3.4 This EIA Scoping Report supports a formal request for a Scoping Opinion under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. It aims to ensure that there is a clear and agreed scope for the EIA, to ensure a robust assessment of likely significant environmental effects arising from the Proposed Development.
- 3.5 The Scoping exercise has taken account of the proposed construction activities, operational characteristics of the Proposed Development, relevant planning policy, knowledge of the Site, and the professional opinion of the project team.

- 3.6 Given the proposals are at a feasibility stage of development and the final design, mix of uses and quantum of floorspace has not yet been fixed, whilst this EIA Scoping Report seeks to establish the overall framework for the EIA in relation to the environmental topics and associated likely significant effects that will be subject to detailed assessment, iterative re-scoping will continue as the design and strategy is refined, plans and principles are developed and additional technical survey work informs the final design for the Proposed Development. Any deviation between the scope of effects considered within this EIA Scoping Report and the ES will be clearly communicated in the ES.
- 3.7 The following statutory consultees should be consulted through the EIA Scoping process:
- Manchester City Council (MCC) – Contaminated Land, Environmental Health, Flood Risk, Highways, Tree Officer (Technical Officers);
 - Transport for Greater Manchester (TfGM);
 - Environment Agency (EA);
 - Canal and River Trust;
 - Greater Manchester Police Secure by Design;
 - Historic England;
 - Greater Manchester Archaeological Advisory Service;
 - Natural England;
 - Greater Manchester Ecological Unit;
 - Health and Safety Executive (in relation to the adjacent gasholders); and,
 - United Utilities.
- 3.8 Early consultation with a number of the above statutory consultees has already been undertaken/is being undertaken, to inform specifics of the design of the Proposed Scheme and to ensure early engagement to ascertain their views on likely significant effects, baseline data collection and appropriate assessment methodologies. The outcomes of those early consultations are reflected in this EIA Scoping Report.

Structure of the ES

- 3.9 The ES would comprise two volumes, volume 1 would set out the findings with respect to each of the environmental disciplines that have been examined as part of the EIA. Volume 2 would include all the supporting documents and technical appendices relating to the chapters. A Non-Technical Summary (NTS) of the ES (Volume 3) will also be produced and form a standalone document.
- 3.10 Overall, the information presented in the ES will be provided in accordance with Schedule 4 of the EIA Regulations and will include:
- A description of the Proposed Development;
 - An outline of the main alternatives studied;
 - A description of the aspects of the environment likely to be significantly affected by the Proposed Development;

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

EIA Boundary

- 3.11 The geographical coverage of the EIA will be determined by a number of factors including:
- The physical extent of work;
 - The nature of the baseline environment, including the location of sensitive receptors;
 - The distance over which effects will be significant; and
 - The presence and type of “pathways” along which impacts may be spread.
- 3.12 Appendix 1a illustrates the Red Line Application Boundary. The EIA Site boundary shown on Appendix 1b represents the maximum extent of all temporary and permanent works (including primary mitigation) for the Proposed Scheme identified at this stage, during the project’s life cycle. As such, it is not necessarily the boundary upon which the technical assessments presented in the ES will be based. Where required, technical specific study areas (informed by relevant best practice and guidance) will also be used. The study area for data collection for each environmental topic / effect will be fully defined within the ES.

EIA Methodology

- 3.13 The introductory chapters of the ES will provide the following information:
- An introduction to the ES in a legislative and site specific context;
 - Description of the Site and Proposed Development;
 - Alternatives considered and project design evolution;
 - EIA methodology;
 - Construction methodology and programme;
 - Stakeholder engagement;
 - ES structure; and
 - Details of the EIA project team.
- 3.14 The EIA would assess both the construction and operational phases of the Proposed Development.
- 3.15 Each ES chapter would follow the headings set out below to ensure the final document is transparent, consistent and accessible.

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

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

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

3.18 Across all the technical disciplines it is acknowledged there is a 2014 extant planning permission on the Site which relates to a proposed extension of the North Stand. To ensure the EIA is robust; where appropriate, each technical discipline will provide a qualitative assessment of this extant permission at the end of the technical assessment. Where relevant, the qualitative assessment will highlight the differences (if any) in effect(s) between the 2014 extant scheme and current 2023 Proposed Development, both during construction and operation.

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

Introduction

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

Legislative and Policy Context

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

Assessment Methodology and Significance Criteria

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

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

Baseline Conditions

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

placed in its context and surroundings so that the effects of the proposed changes can be predicted.

Identification and Evaluation of Likely Significant Effects

- 3.25 This section will identify the likely significant effects on the environment resulting from the Proposed Development.
- 3.26 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the effects can be positive or negative. The criteria to be used in carrying out this process are detailed below. It should be noted that these tables provide a standardised set of criteria, which may not be applicable to all technical disciplines considered within the EIA. Where relevant, individual consultants may use a variation of the criteria and this will be clearly explained within the methodology of each chapter.
- 3.27 The assessments are to be based on the following scenarios:
- Scenario 1 – baseline as existing today with committed developments;
 - Scenario 2 – baseline as 2014 extant consent (qualitative assessment);
 - Scenario 3 – baseline plus Proposed North Stand development; and,
 - Scenario 4 – baseline plus Proposed North Stand development and mitigation.

Prediction of Impact Magnitude

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

Table 3.3: Methodology for Assessing Magnitude of Change

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

Prediction of Receptor Sensitivity

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

Table 3.4: Methodology for Determining Sensitivity

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

Assessment of Effect Significance

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

Table 3.5: Effect Significance Matrix

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

Mitigation Measures

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

- 3.32 The approach to mitigation will follow best practice guidance, which suggests a hierarchical approach. The UNEP EIA Training Resource Manual (2002) advises that impacts should ideally be:
- Avoided; if not
 - Minimised; and/or
 - Compensated.
- 3.33 Three ‘types’ of mitigation are characterised in IEMA’s Special Report – The State of Environmental Impact Assessment Practice in the UK (2011):
- EIA influence at design stage;
 - Standard construction practices for minimising effects; and
 - Follow-up actions for implementation post-consent.
- 3.34 Clear details of when and how the mitigation measures were carried out, or will be carried out, are to be given within the Environmental Statement. When certainty of impact magnitude and/or effectiveness of mitigation over time exists, monitoring programmes will be proposed to enable subsequent adjustment of mitigation measures, as necessary.
- 3.35 The opportunity for enhancement measures will also be considered where appropriate.

Cumulative Effects

- 3.36 Two types of cumulative effect will be assessed:
- Type 1 - Cumulative effects are the interactions between effects of the construction and development works on a single receptor.
 - Type 2 - Cumulative effects are those that arise from incremental changes caused by other past, present or reasonably foreseeable actions together with the construction and development works.
- 3.37 An assessment of the cumulative effect of the Proposed Development and other committed developments within a defined radius of the Site, including those with recent Planning Permissions and reasonably foreseeable to come forward in the near future will be undertaken as part of the EIA.
- 3.38 There is no agreed / standard threshold for how far the assessment should go; therefore a professional judgement has been taken regarding which schemes to highlight, taking into consideration the surrounding context of the Site.
- 3.39 Where the construction of schemes is well progressed these will be treated as part of the baseline and not as committed developments.
- 3.40 Full details of the committed developments to be included as part of the cumulative effects assessment are set out at Appendix 2.
- 3.41 The Applicant seeks the agreement from the Local Authority to the scope of committed developments and invites guidance on any additional schemes not listed.

Residual Effects

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

4 Environmental Disciplines to be Scoped Out of the EIA

- 4.1 As part of the EIA process and based on the information available to date, there are a number of topics for which will not give rise to likely significant effects on the environment and therefore will not be considered within the ES.
- 4.2 A summary explanation for each discipline by each relevant technical consultant is given below with further details contained within Appendix 3.

Agricultural Circumstances

- 4.3 The Site is entirely on brownfield land so there would be no likely significant effects with respect to agriculture. This discipline can therefore be scoped out of the EIA.

Archaeology

- 4.4 There has been a long history of archaeological assessment on the Site, dating back to 2000, in support of the ongoing regeneration of the area.
- 4.5 As part of the 2013 application to extend the Etihad Stadium, an Archaeological Desk Top Assessment was prepared by Oxford Archaeology, and subsequently a watching brief was put in place during the remediation of the Etihad Stadium expansion site. During these remediation works it was found that a few sites to the north are considered to be of local, or even borough importance, which may merit preservation by record, should they be damaged or destroyed by future development. In particular, any buried remains of mid-nineteenth-century back-to-back dwellings situated adjacent to the North Stand would potentially be of archaeological interest, as they represent late examples of this type of domestic building in the Manchester area.
- 4.6 A Watching Brief, which included a Written Scheme of Investigation was subsequently submitted to Manchester City Council on the 24 January 2014, in relation to a programme of archaeological works for the expanded stadium. It was later agreed and confirmed with GMAAS and MCC that the works in relation to the South Stand do not need to be watched and this work was therefore never undertaken.
- 4.7 As part of the current Site Improvement Works application (submitted in December 2022), within their statutory consultee response, GMAAS have recommended a WSI which has since been instructed to address their comments with regard to the area around the North Stand.
- 4.8 It is considered that this discipline can therefore be scoped out of the EIA.

Aviation

- 4.9 The existing height of the masts on the South Stand 117.4m AOD. The height of the masts on the North Stand are at 124.59m AOD.

- 4.10 Given the feasibility stage, for the purposes of this Scoping exercise, the potential maximum height parameters for the Proposed Development are within that of the maximum height approved based on the 2014 extant permission. This exceeds the 90m AOD aviation safeguarding threshold, and therefore consultation with NATS and MAG will be undertaken prior to the submission of the planning application.
- 4.11 Given similarities in height to the South Stand, and from our professional experience of similar scale developments, it is not considered that the Proposed Development would give rise to aviation conflicts subject to appropriate mitigation. Therefore, it is considered that the aviation discipline will not give rise to likely significant effects on the environment and would therefore not require inclusion in the ES.
- 4.12 It is considered that this discipline can therefore be scoped out of the EIA.

Built Historic Environment

- 4.13 A Heritage Statement that fully considers the impact of the Proposed Development on the identified heritage assets will be submitted as a standalone technical report with the application for Full Planning Permission. The visual impact of the Proposed Development will also be assessed as part of a Townscape and Visual Impact assessment, which is proposed to form part of the EIA.
- 4.14 It is considered that the proposals are unlikely to result in significant environmental effects in relation to the Built Historic Environment and should be scoped out of the EIA. Further details are provided at Appendix 3.
- 4.15 Based on the information above and that contained within Appendix 3, it is considered that this discipline can therefore be scoped out of the EIA.

Daylight and Sunlight

- 4.16 Buro Happold have considered the potentially significant effects (contained at Appendix 4), all of which are considered not significant and therefore the discipline can be scoped out of the EIA. A separate Sunlight, Daylight Report will be submitted with the forthcoming planning application to confirm this.
- 4.17 Based on the information above and that contained within Appendix 3, it is considered that this discipline can therefore be scoped out of the EIA.

Ecology

- 4.18 A Preliminary Ecological Assessment, has been prepared by Helen Hamilton Ecology to assess the impacts of the Proposed Development upon the Site and surrounding area in respect of ecology.
- 4.19 The Assessment found a single European Protected Site within 10km of the proposals – Rochdale Canal SAC. This site is too distant to be affected by proposals. No SSSI's or National Nature Reserves were located within 1km of the Site. Clayton Vale Local Nature Reserve is located 734 m to the northeast of the Site but separated by Alan Turing Way. This site is too distant to be affected by proposals.

- 4.20 Ashton Canal SBI is located 50 m to the north of the Site. The nature of the Proposed Development is not considered to potentially affect this asset. Two additional SBIs, located further away, are too distant to be affected by proposals.
- 4.21 Two species of bat have been recorded within the 1 km search area, with only common pipistrelle roosts known close to the Site. The nearest are both approximately 250m away and unlikely to be affected by proposals.
- 4.22 Other protected species recorded in the Site's immediate vicinity include peregrine and little ringed plover, but neither were recorded on the Site itself. The peregrine routinely nests elsewhere, and nesting habitats for little ringed plover are not present on Site. Other protected species occurring in the wider 1km search zone include badger, barn owl, black redstart and kingfisher.
- 4.23 Several Priority Species have been recorded locally but not on the Site, including mammals, invertebrates and birds. Only lapwing and linnet have records close to the Site but neither are likely to nest on the Site due to the lack of suitable habitat.
- 4.24 The Site visit found that the Site comprises previously developed land, all of which is in current use. Potential habitats on site comprise buildings, hardstanding, and some localised scrub and ephemeral short perennial vegetation. A total of 35 plant species were recorded: all common and widespread and typical of such post-developed sites. No evidence of protected species was noted, and the Site was considered unsuitable for most protected and priority species. Existing buildings were assessed to have negligible potential for bats and no evidence of bird nesting was noted.
- 4.25 It is therefore concluded that no significant effects will occur with regards to ecology as a result of the site improvement works. The Ecological Assessment accompanies the planning application, and a copy can be found at Appendix 4.

Television, FM Radio and DAB Radio Reception

- 4.26 A Television, FM Radio and DAB Radio Reception Pre-construction Survey has been completed by SCS Technologies on behalf of ME-Engineers during November 2022. A copy of the survey is included at Appendix 5.
- 4.27 The report highlights a potential impact zone for terrestrial television reception. The shadow zone created by the Proposed Development from the Winter Hill transmitter covers an area extending to the Southeast. In this area there will be a reduced television signal, however this mostly covers areas of roadways and parking and the Etihad Campus training facilities and as such no residential properties should be affected by the introduction of the development and as such will be of minor impact.
- 4.28 For Satellite reception there were no satellite dishes observed during the survey that were close enough to be affected. FM & DAB signals were recorded, and SCS Technologies anticipate these not to be significantly impacted. It is advised that the situation regarding television reception is monitored closely during the construction and any reports of interference are investigated promptly. During the developments if scaffolding or tower cranes are used, that would extend to a greater height than the development, temporary minor disruption to the digital terrestrial signal may be affected for the duration it is used.

- 4.29 On the basis of this information, it is considered that TV, FM Radio and DAB Radio Reception can therefore be scoped out of the EIA.

Lighting

- 4.30 A lighting assessment has been undertaken by ME Engineers. The Proposed Development will result in a limited change to the external lighting environment at the Stadium.
- 4.31 For these reasons it is proposed that Lighting is scoped out of the ES.

Socio Economic

- 4.32 A socio-economic assessment and supporting Economic Impact Assessment prepared by Amion will accompany the forthcoming planning application and aims to assess the potential socio-economic impacts from the Proposed Development on the local, regional and national baselines, which will also consider impacts on Manchester City Centre.
- 4.33 A baseline assessment will be undertaken to establish the socio-economic conditions which currently surround the Site at the Manchester and Greater Manchester level. This will detail local socio-economic conditions, including analysis of population and demographic trends; economic growth and productivity; employment; local labour market; unemployment and economic inactivity; and deprivation. It will also include a review of the strategic policy context to provide an outline of social and economic objectives at the national and local levels.
- 4.34 Baseline data will be derived from a range of publicly available secondary datasets, including (but not limited to) Annual Population Survey, Business Register and Employment Survey, and the 2011 and 2021 Census (where appropriate). The most recent available data for the study area will be obtained, wherever possible.
- 4.35 The Etihad Campus, and the Etihad Stadium in particular, is an existing sports and visitor destination which significantly contributes to employment and GVA in East Manchester, Manchester and Greater Manchester more widely. The Proposed Development is expected to further enhance these socio-economic benefits. Details of the scope of the assessment are contained at Appendix 3.
- 4.36 On the basis of the tables contained at Appendix 3 and the standalone Amion report which will assess the socio-economic impacts on detail it is considered socio-economic can be scoped out of the EIA.

5 Environmental Statement Chapters

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

- Air Quality
- Ground Conditions
- Noise and Vibration
- Climate Change
- Human Health
- Townscape and Visual Impact
- Traffic and Transport
- Water Quality, Drainage and Flood Risk
- Wind Microclimate

Air Quality

Executive Summary

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

Baseline

5.3 Baseline data will be gathered from the following key sources:

- GMCA statutory air quality annual status reports¹
- DEFRA national air quality background maps²
- Baseline traffic flows supplied by the appointed transport consultant, supplemented by Department for Transport counts where required

5.4 The Site is located 2.4km east of Manchester City Centre, adjacent to Alan Turing Way (A6010). The Site boundary is within the Greater Manchester Air Quality Management Area (AQMA), which has been declared due to historic exceedances of long-term objectives for key ambient pollutant concentrations. The Site is located within the wider Etihad Stadium area.

¹ Greater Manchester Air Quality Annual Status Report (2017-2022) Annual Status Report

² Defra (2022) Background Air Quality Mapping, 2018 Reference Year

- 5.5 There is no air quality monitoring in close proximity to the Site, with the nearest monitor (MA95BNO) being located 1.1km south of the Site on Ashton Road.
- 5.6 The COVID-19 pandemic had a significant impact on national air quality, owing to changes in travel patterns, industrial processes and commercial and domestic activity. Therefore, the monitoring data recorded in years 2020 and 2021 will be atypical compared to previous years. Therefore, it is necessary to use 2019 data as an appropriate baseline year, as 2022 data has not yet been published. In 2019 the two nearest monitoring sites, MA95BNO and MA28NO, recorded annual mean NO₂ concentrations of 43.4 µg/m³ and 36.1 µg/m³ respectively. Given the annual mean objective of 40 µg/m³, these monitored concentrations show roadside conditions will be close to exceedance of the relevant objective.
- 5.7 It is expected that roadside NO₂ concentrations will be comparable to those monitored at nearby sites; however, technical dispersion modelling will be carried out to ascertain concentrations of NO₂ and Particulate Matter (PM₁₀ and PM_{2.5}) across the Site. The only highly sensitive use with respect to air quality impact associated with the Proposed Development is the hotel. The hotel is set back considerably from the road (when compared to the monitoring sites). Therefore, it is likely pollutant concentrations will be far lower at these locations than the roadside.
- 5.8 In terms of future baseline conditions if the Proposed Development did not come forward, baseline air quality conditions are expected to improve year on year owing to improvements to emission abatement technology of vehicles and combustion plant, the electrification of the national vehicle fleet and policy measures seeking to improve air quality on a national scale.
- 5.9 The Proposed Development will potentially worsen existing air quality during the demolition, construction and operation phases. Emissions arising during demolition, earthworks and construction activities and as result of construction traffic may adversely impact local air quality. During operation, emissions from operational traffic, and any proposed combustion plant, may adversely impact local air quality. There is also a risk that the Site introduces new receptors (i.e. visitors and staff at the hotel, and other site users) to an area of poor air quality.
- 5.10 The nearest highly sensitive receptors to the Site are residential dwellings immediately south of Ashton New Road (A662). However, any residential dwellings adjacent to roads impacted by operational traffic are potentially at risk of impact.
- 5.11 An assessment of the construction and operational effects of the 2014 consented north stand will be scoped out of the air quality assessment. Construction effects of the 2014 consented north stand and the north stand which forms part of the Proposed Development are expected to be very similar, with no material differences. With respect to operational impacts, the traffic volumes generated by the north stand which forms part of the Proposed Development will be the same as those generated by the 2014 consented north stand and therefore there is no material difference relating to air quality effects.

Scope of Assessment

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Health impacts associated with a worsening of local air quality.	Nearby residential dwellings and amenity space adjacent to impacted roads, likely to include dwellings in close proximity to Alan Turing Way and Ashton New Road.	C
Dust soiling and loss of amenity due emissions of construction dust and particulates.	Nearby residential dwellings and amenity space adjacent to impacted roads, likely to include dwellings within 350m of the Proposed Development including those adjacent to Alan Turing Way and Ashton New Road.	C
Health impacts associated with introducing new receptors to an area of poor air quality.	Nearby residential dwellings and amenity space adjacent to impacted roads, likely to include dwellings in close proximity to Alan Turing Way and Ashton New Road.	O
Health impacts associated with worsening of local air quality due to operational emissions.	Proposed receptors (e.g. hotel users and staff, and other site users).	O

Assessment Methodology for Likely Significant Effects

- 5.12 It is proposed that air pollutant concentrations in the area will be assessed to identify current baseline levels and to determine any constraints or impacts associated with the Proposed Development during both the demolition and construction and operational phases.
- 5.13 It is proposed to conduct consultation with the Environmental Health officer (EHO) at Manchester City Council (MCC) to confirm detailed assessment methodology, specifically pertaining to model verification and monitoring results processing that will be carried out as part of the air quality assessment. The assessment will also identify air quality sensitive receptors, both human and ecological, on and around the Site with the potential to be affected by the Proposed Development. A review and summary of existing local, regional, national and international policies and guidelines regarding air quality and planning will also be undertaken.

- 5.14 The assessment will consist of a qualitative and quantitative assessment. The qualitative assessment will consider the dust and particulate impacts during the demolition and construction stage of the Proposed Development in accordance with Institute of Air Quality Management (IAQM) construction guidance³ to determine the likely impacts on sensitive receptors. The mitigation measures assessed to be necessary to minimise any predicted effects will then be carried forward into the Construction Management Plan (CEMP) being submitted in support of the planning application and into planning conditions to minimise dust and Particulate Matter (PM₁₀) release.
- 5.15 The quantitative assessment will consider the effects associated with construction and operational traffic predicted changes in concentrations of Nitrogen Dioxide (NO₂), Particulate Matter (PM₁₀) and Particulate Matter (PM_{2.5}) at selected worst case receptor locations during the construction and operational phases, as a result of changes in traffic flows on the surrounding road network. Modelling will be undertaken using dispersion modelling software ADMS-Roads extra.
- 5.16 The need to conduct detailed dispersion modelling of the construction and operational traffic for each scenario to be assessed will be determined using the criteria set out in the IAQM guidance⁴, presented in Table 5.1. The following scenarios will be considered (future baseline and peak construction years to be confirmed):
- Baseline Year (2019) with committed development
 - Peak Construction Year (2023) without development ‘Do Nothing’ scenario
 - Peak Construction Year (2023) with development ‘Do Something’ scenario
 - Future Baseline, inclusive of traffic from nearby cumulative schemes (2026) without development ‘Do Nothing’ scenario
 - Future Baseline, inclusive of traffic from nearby cumulative schemes (2026) with development ‘Do Something’ scenario
 - In the event significant impacts are assessed, we will undertake the following further scenario:
 - Future Baseline, inclusive of traffic from nearby cumulative schemes (2026) with development ‘Do Something’ scenario, including mitigation measures
- 5.17 Where IAQM criteria are not met, a quantitative assessment of traffic emissions will be scoped out of any future assessment. For completeness not meeting the criteria is a positive in this instance.
- 5.18 In scenarios where IAQM criteria are met, a worst-case approach will be taken in predicting pollutant concentrations at receptor locations which assumes no change in background concentrations from existing conditions. If this leads to predicted significant impacts, consideration will be given to Defra’s projected improvements in background air quality conditions. The scope and extent of any dispersion modelling study carried out will be agreed with the Air Quality Officer at MCC.
- 5.19 The IAQM guidance provides criteria to determine the need to proceed to a detailed assessment of combustion plant emissions (see Table 5.1 below). Where these criteria

³ Institute of Air Quality Management (2014), Guidance on the assessment of dust from demolition and construction

⁴ IAQM (2017) Land Use Planning and Development Control: Planning for Air Quality.

are met, a quantitative assessment of combustion plant emissions will be undertaken using ADMS-Roads extra, to predict changes in concentrations of nitrogen dioxide at selected receptors. Where these criteria are not met, an assessment of combustion plant emissions will be scoped out.

- 5.20 As the Site is within an AQMA, the risk of exposure to poor air quality will be considered across the Proposed Development due to the proximity to nearby major roads. The modelling study will be used to ascertain concentrations of key pollutants across the Proposed Development and the concentrations will be compared to both UK Air Quality objectives and World Health Organisation Guidelines⁵.
- 5.21 An assessment of the likely cumulative effects associated with committed developments would also be undertaken for the demolition and construction and operational phases. Where detailed modelling assessment is required, each scenario will consider traffic flows associated with the cumulative schemes.

Table 5.1 IAQM criteria for requiring a detailed air quality assessment

The development will:	Indicative criteria to proceed to detailed assessment:
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans).	A change of LDV flows of: More than 100 annual average daily traffic (AADT) within or adjacent to an AQMA More than 500 AADT elsewhere
Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight)	A change of HDV flows of: More than 25 AADT within or adjacent to an AQMA More than 100 AADT elsewhere
Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. NB. this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping	Typically, any combustion plant where the single or combined NO _x emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates. Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable

⁵ World Health Organization. (2021). WHO global air quality guidelines: particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide.

Effect prediction and assessment of effect significance

- 5.22 The concentrations predicted by the model will be compared against the appropriate air quality objectives and any exceedances will be highlighted. Significance levels will be reported using the criteria set out in the IAQM and Environmental Protection UK (EPUK) air quality planning guidance⁶.

Table 5.2 Long term impact descriptors for individual receptors

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

- 5.23 Mitigation measures for demolition and construction and operational phase effects of the Proposed Development will be dependent on the level of risk and significance of the impacts: demolition/construction mitigation will follow the IAQM, and operational mitigation measures will follow industry best practice and will be informed through professional experience and relevant guidance.

Limitations and Assumptions

- 5.24 There are several limitations and sources of uncertainty associated with dispersion modelling. Firstly, as with any modelling study, the dispersion model itself has inherent uncertainty, due to the fact that it is a simplified mathematical representation of real-world processes and relies on many parameterisations and simplifications for efficiency purposes. In addition, several other processes in model processing and post processing have uncertainty in calculations, including NO_x to NO₂ conversion and emissions factors as well as other variables such as background concentration and roughness length.
- 5.25 Traffic flow data will have inherent uncertainty associated with it. The traffic flows used in the modelling study are representative of 2019 conditions and do not take into account any changes in traffic flow numbers, due to the Proposed Development, cumulative schemes or due to wider measures that may affect traffic flows, in the future

⁶ IAQM (2017) Land Use Planning and Development Control: Planning for Air Quality.

scenario. Applying the model adjustment factor aims to mitigate some of this uncertainty.

5.26 In order to take account of the inherent uncertainty associated with dispersion modelling, a conservative approach will be taken where possible, this will include the following:

- Using the existing baseline scenario to inform design decisions and proposed mitigation;
- Worst case receptor locations used to assess impact;
- Assumption of no change in background pollutant concentrations in future year scenarios; and,
- Considering mitigation/design intervention at locations that have predicted concentrations within 10% of air quality objectives.

Ground Conditions

Executive Summary

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

Baseline

5.28 The ground conditions assessment will address issues relating to existing geoenvironmental conditions at the Site, with the aim of ensuring that suitable and safe conditions are achieved for the proposed end-use. Consideration will be given to the Site's conceptual model including geology, hydrology, hydrogeology and the geoenvironmental conditions (including issues associated with soil gases, chemicals within site soils and groundwater). This assessment will consider the Site and its environs as it is currently (in 2022), how baseline conditions will be expected to change as a result of the Proposed Development (i.e. impacts associated with the design, construction and operation), as well as how baseline conditions would change if the Proposed Development did not come forward.

5.29 An initial understanding of the baseline has been obtained from a review of published mapping, a Site walkover, and existing reports on the Site and of neighbouring land. This current text is presented with the purpose of providing an initial appreciation of the baseline ground conditions but it must be recognised that this is subject to revision as more detail becomes available. It is noted that baseline conditions in terms of ground conditions are not expected to change significantly if the Proposed Development did not come forward.

5.30 The natural geology beneath the Site comprises Carboniferous Pennine Upper Coal Measures, overlain by Glacial Till. There are a number of coal seams that sub-crop at the Site, including the previously worked Openshaw and Charlotte seams. Owing to the significant industrial past of the Site and the nature of redevelopments and various earthworks, the natural geological sequence will be overlain by Made Ground (fill). This Made Ground is likely to comprise a range of material types from manufactured asphalt

and sub-base to re-used natural superficial materials containing anthropogenic fragments of brick, concrete, metal, ash and occasional clinker and slag.

- 5.31 The Site history has been determined with reference to published Ordnance Survey mapping (dating back to the mid-1800s) and to other accessible information and reports (via internet searches). The recent and historic uses of the land at the Site (summarised below) are relevant to the likely location, nature and scale of any ground contamination.
- 5.32 From the 1840s the Site was shown as fields crossed by several tracks all leading to a structure (use unknown) in the northeast. Part of the Site (southwest) was occupied by the Manchester and Salford Water Works Reservoir. By the 1890s, significant industrial development had taken place across the Site, including the Bradford Iron Works and associated rail infrastructure. By 1905 a gas works had been developed to the north. Between the 1930s and 1950s there were no significant changes to the Site but some redevelopment occurred in the 1960s from residential to industrial (works). In the 1980s the northern area was cleared of buildings and the Iron Works closed in 1986. The Site was almost completely cleared by the 1990s and a stadium constructed (for the Commonwealth Games) in the early 2000s with subsequent re-purposing for Manchester City Football Club.

Scope of Assessment

- 5.33 By considering the baseline conditions (outlined above) and proposed future use, a number of potential receptors with respect to land contamination at the Site have been identified. These are listed below:
- Future Site users
 - Off site occupiers/visitors of neighbouring land
 - Construction and site investigation workers
 - Secondary A Aquifer (Coal Measures)
 - River Medlock
 - Ashton Canal
 - Ecological receptors (flora)
 - Potable water supply pipework
 - Building structures (concrete)
- 5.34 A qualitative assessment of the 2014 consented north stand will be included within the ES chapter. This will compare the ground conditions effects between the 2014 consented scheme (that with appropriate mitigation measures resulted in an acceptable design solution) and the new north stand to be provided as part of the Proposed Development.

Identification of Effect/s which are Not Significant

Effect	Health effects	Applicable Development Phase (C / O)	C	Receptor	Off-site occupiers/visitors of neighbouring land
Discussion of Effect					

The Proposed Development is considered to be large scale, with a potential to affect surrounding site users within close proximity to the Site and site occupiers by inhalation of contaminated dust generated during earthworks and construction.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Tertiary mitigation will comprise development of a Construction Management Plan which sets out the appropriate investigation and adoption of good construction practice to prevent dust generation.					
Concluding Statement					
The risks to off-site occupiers/visitors of surrounding land will be mitigated during construction through adoption of good construction practice. Therefore, the risk is not significant during construction.					
Effect	Health effects	Applicable Development Phase (C / O)	O	Receptor	Future site users/visitors
Discussion of Effect					
Negative health effects to future site users due to dermal contact with or the direct/indirect ingestion of any residual contaminated soil, inhalation of contaminated dust and/or hazardous fibrous substances, ingestion of contaminated water supplies. Proposed future use commercial with mostly hard landscaping (and soft landscaping likely to be raised within planters).					
Mitigation Committed to in order to Avoid or Reduce Effect					
Mitigation will be achieved through encapsulation as part of the building construction (i.e. limiting the potential for dust generation). Direct contact and ingestion of contaminated soils mitigated through use of raised planters and suitable soils for areas of soft landscaping. Primary mitigation will be carried out including appropriate site investigation, design and implementation of remediation. Secondary mitigation will include measures that are required by planning conditions.					
Concluding Statement					
The risks to future site users will be mitigated during construction through appropriate investigation, assessment and if required, remediation. Therefore, the risk is not significant during operation.					
Effect	Phytotoxic impacts on plant species	Applicable Development Phase (C / O)	C & O	Receptor	Flora
Discussion of Effect					
Root uptake from contaminated materials within the Made Ground (phytotoxic element).					

Mitigation Committed to in order to Avoid or Reduce Effect					
Secondary mitigation will include all future landscaping to be in above ground planters with imported materials needed to meet horticultural requirements. Raised planters mitigate the risk of contact with underlying contaminated materials.					
Concluding Statement					
Existing landscaping on the Site is limited, proposed landscaping is likely to be isolated from existing Made Ground materials. All future landscaping will need to meet the appropriate horticultural requirements.					
Effect	Degradation of water quality	Applicable Development Phase (C / O)	C	Receptor	Secondary A Aquifer
Discussion of Effect					
During the construction of the Proposed Development, there is a potential for the mobilisation of contamination. This is because, during earthworks the removal of sealed surfaces/hardstanding and the excavation of ground (for services/foundations etc.) there is a potential for increased rainwater infiltration. The construction of deep foundations (e.g. piled foundations) and service trenches also presents the potential for the creation of preferential migration pathways. Therefore, there is a consequent increased potential for the downward migration of contamination into the underlying Secondary A Aquifer.					
Mitigation Committed to in order to Avoid or Reduce Effect					
The Secondary A Aquifer, present within the Coal Measures, is beneath a substantial thickness (>10m) of low permeability Glacial Till. Deep piling could create preferential pathways; however, service trenches/shallow foundations are unlikely penetrate beyond the Glacial Till material. Primary mitigation of the potential risks can be achieved through appropriate investigation, risk assessment and design.					
Concluding Statement					
The Secondary A Aquifer is covered by some 10m thickness of low permeability Glacial Till; therefore, infiltration is unlikely. Potential for increased migration of contamination along preferential pathways (such as piles) would be negligible.					
Effect	Degradation of water quality	Applicable Development Phase (C / O)	C	Receptor	River Medlock
Discussion of Effect					
During the enabling works (grouting) and construction of the Proposed Development, there is a potential for the mobilisation of contamination, increased rainwater infiltration, and the creation					

of preferential pathways (e.g. drainage runs/below ground service trenches) and a consequent potential for the migration of contamination into the nearby River Medlock.					
Mitigation Committed to in order to Avoid or Reduce Effect					
There is a potential for increased infiltration and promotion of leaching during earthworks and construction. However, River Medlock is located >170m northwest of the Site, within a culvert. The nearest entrance to the Medlock is >300m west. Owing to the geological conditions (low permeability Glacial Till) and distance to the river, migration of mobilised contamination is considered unlikely. Primary mitigation of potential risks can be achieved through appropriate investigation, risk assessment and design.					
Concluding Statement					
The River Medlock is located over 170m northwest of the Site, within a culvert. The nearest entrance point is >300m west. Owing to the geological conditions (substantial thickness of low permeability Glacial Till), migration of mobilised contamination is considered unlikely.					
Effect	Degradation of water quality	Applicable Development Phase (C / O)	C	Receptor	Ashton Canal
Discussion of Effect					
During the enabling works and construction of the Proposed Development, there is a potential for the mobilisation of contamination, increased rainwater infiltration, and the creation of preferential pathways (e.g. drainage runs/below ground service trenches) and a consequent potential for the migration of contamination into the nearby Ashton Canal.					
Mitigation Committed to in order to Avoid or Reduce Effect					
There is a potential for increased infiltration and promotion of leaching during earthworks. Ashton Canal is located about 30m north. However, the Metrolink cutting (which is deeper than the canal) is located between the Site and the Canal. The canal channel is likely cut into the Glacial Till stratum (clay) limiting any lateral ingress of contamination from off site. The canal is not considered to be in continuity with the underlying groundwater. Nonetheless, groundwater flow direction is anticipated to be in a south westerly direction, away from the canal. Primary mitigation of potential risks can be achieved through appropriate investigation, risk assessment and design.					
Concluding Statement					
Migration of mobilised contamination during earthworks and construction considered with the potential to adversely impact Ashton Canal considered unlikely owing to the geological conditions, (substantial thickness of Glacial Till), groundwater flow direction (anticipated to be in a south westerly direction away from the canal) and presence of the deeper Metrolink cutting.					

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Health impacts: direct/dermal contact, ingestion/inhalation of contaminated soils and dusts. Asphyxiation from hazardous ground gases.	Construction and investigation workers	C
Asphyxiation from hazardous ground gases.	Future site users	O
Damage or pollution to new below ground infrastructure around the Proposed Development where it is in direct contact with existing contaminated materials.	Below ground concrete, water supply pipework	O

Assessment Methodology for Likely Significant Effects**Technical Scope**

- 5.35 Land contamination is regulated under several regimes, including environmental protection, pollution prevention and control, waste management, planning and development control, and health and safety legislation. The primary regulatory regimes under which contaminated land are managed in the UK are under the planning process described in the National Planning Policy Framework and under Part 2A of the Environmental Protection Act.
- 5.36 The framework for the assessment of potential land contamination adopted in this assessment will be based on current guidance documents regarding the implementation of these regimes and the assessment of potentially contaminated land, with particular reference to:
- The Environment Agency Land Contamination: Risk Management and their Guiding Principles on Land Contamination
 - The relevant British Standard (BS10175:2011+A2:2017)
 - Reference will also be made to regional planning policy, namely Manchester's Local Development Framework - Core Strategy Development Plan Document
- 5.37 A conceptual model of the Site will be developed that describes its features together with the expected interaction of potential contamination sources. This will be presented within a Desk Study Report and form a technical appendix to this ES Chapter Assessment of the potential interactions will then be undertaken by means of a Source – Pathway – Receptor analysis of the Site in accordance with the guidance documents referred to above.
- 5.38 Where a source, relevant pathway and receptor are present, or could be created as a result of the Proposed Development, a "contaminant linkage" is present. The presence (or potential presence) of such a linkage gives rise to a circumstance through which

some level of environmental harm could occur which requires assessed and the identification of mitigation, as appropriate.

Baseline assessment

- 5.39 Baseline conditions will be assessed for the Site and for a distance of up to 250m beyond. This “halo” around the Site boundary is considered in order to take into account the potential for off-site contamination sources and receptors. The baseline data will be sourced from a desk-based study including a Site walkover survey, available data on the geological and geoenvironmental conditions from any existing investigation reports, together with published information and existing borehole logs published by the British Geological Survey.
- 5.40 Consideration of the future baseline will take into account currently planned development (and any associated remediation works) which may affect the contamination status of land and/or may affect the Proposed Development itself.
- 5.41 Consideration of the future baseline will take into account the activity required to facilitate the Proposed Development including earthworks, foundations, construction and any associated remediation works which may affect the contamination status of land and/ or may affect the Proposed Development itself.

Effect prediction and assessment of effect significance

- 5.42 The methodology for impact prediction is based on assessing both the magnitude of the changes expected and the sensitivity of the receptors. Criteria for assessing the significance of potential human and environmental impacts will be based on a qualitative assessment of the magnitude of the impact, or how far the impact deviates from the baseline condition, and the receptor sensitivity.
- 5.43 The following resources/receptors will be considered in the assessment: construction workers, future site users, surrounding land users, controlled waters (groundwater and surface water bodies), flora, and the built environment. It is not anticipated that these resources/receptors will all be significantly affected, but it is necessary to demonstrate that these important receptors have been considered. Incorporation of mitigation such as personal protective equipment (PPE) and the health & safety regime for construction workers will address the majority of any potential health risks associated with the Proposed Development.
- 5.44 Receptors are considered to have varying degrees of sensitivity to contamination potentially present beneath the Site, based on the potential scale of exposure and the integrity of any site specific exposure pathways. The scale of receptor sensitivity will be defined on a scale from very low to high.
- 5.45 The criteria used to assess the magnitude of effects will be based on a qualitative assessment of the level of contamination and potential seriousness of the effect or how far the effect deviates from the baseline condition and the period of time that the effect could last. The combination of the sensitivity of the receptor and the magnitude of the impact will provide an indication of the nature and severity of possible effects (rankings may vary in accordance with the different scenarios being considered baseline, construction or operation). Positive or negative effects during construction and when the Proposed Development is operational will be identified. The positive effects are

associated with the mitigation of risks associated with contamination. The negative effects are temporary during the construction phase and relate to the increased potential for contaminant exposure (e.g. from the generation of contaminated dusts) and long term from the use of the Site during the operational phase (and any residual contamination if remediation was inadequate or not carried out).

- 5.46 Consideration of the 2014 consented north stand proposals will take into account implementation of the mitigation measures and associated remedial works required as part of the extant consent.

Limitations and Assumptions

- 5.47 To ensure transparency within the EIA process, the following limitations and assumptions have been identified. When considered in totality, the reports referenced above and those included as technical appendices are comprehensive and provide a reasonable level of certainty about ground conditions. Further ground investigations will be carried out, including gas monitoring.
- 5.48 It is important to recognise that there are inherent uncertainties associated with ground conditions and the data that informs its understanding, both geotechnical and geoenvironmental. For example, geological strata can be very consistent or highly variable, both laterally and vertically. Similarly, contamination can be both widespread and relatively localised, depending upon its source, location, nature and mobility. No investigation, however comprehensive can be expected to determine absolutely the geological conditions, the geotechnical parameters or the nature and extent of contamination which could be present on any site. There will always be an element of uncertainty about the ground conditions, including contamination.
- 5.49 This potential for uncertainty associated with each of the identified potential sources of contamination and with the migration pathways that could link such sources to any of the identified receptors has been taken into consideration in the various risk assessments and in the assessment of effects presented above. It will also be considered in the assessment of the need for, scope and design of the detailed remediation strategy; in geotechnical design; in health and safety planning; in financial risk management; and in the implementation of any remediation works.

Noise and Vibration

Baseline

- 5.50 On days when no football matches or other events such as concerts are taking place at the Etihad Stadium, the current baseline noise environment in the areas around the Site is expected to be dominated by road traffic noise, primarily from the A6010 Alan Turing Way to the east, and the A662 Ashton New Road to the south.
- 5.51 On match and other event days, noise from the crowd and Public Address (PA) announcements within the stadium are likely to contribute to the existing noise climate. Ongoing construction of the Co-op Live arena to the north of the Site is expected to generate noise from the associated construction works, although this is a temporary source.
- 5.52 A baseline noise survey has been undertaken to characterise and quantify the existing noise levels at the nearest noise sensitive receptors to the Site which define the study

area, namely the residential properties off Gibbon Street and Stuart Street to the north-east, and on the north side of Ashton New Road to the south of the Site. Unattended noise monitoring was undertaken at two locations from Tuesday 1st November to Thursday 10th November 2022, as follows:

- On the west side of Alan Turing Way, opposite and representative of 'The Cube' and 'The Drum' residential buildings off Gibbon Street and Stuart Street respectively; and,
- On the north side of Ashton New Road, next to the city@home building to the south-west of the stadium, opposite and representative of the residences on the south side of Ashton New Road.

5.53 The unattended noise monitoring was supplemented by attended noise monitoring and observations during the Manchester City home games on Wednesday 2nd November (Sevilla, Champions League, evening kick-off) and Saturday 5th November 2022 (Fulham, Premier League, afternoon kick-off), as well as on Thursday 10th November, a non-match day. Attended measurements were taken adjacent to 'The Cube' residential block off Gibbon Street and residences on the south side of Ashton New Road to provide additional insight and for correlation with the unattended measurements to confirm they are representative

5.54 The Proposed Development has the potential to change the level of noise being emitted from within the stadium during events primarily due to the increase in crowd capacity, as well as through the replacement of the existing City Square fan zone at the north of the stadium with a new covered fan zone in the same area. The new office and hotel, and potentially the club shop and museum, are expected to generate additional road traffic which may change noise levels from that source, and new building services plant at the Proposed Development could also contribute to a change in the existing noise levels.

5.55 In terms of the future baseline scenario if the Proposed Development did not come forward, it is unlikely that the existing noise climate will change significantly based on current information; it is understood that operation of the Co-op Live arena is expected to have negligible impacts on noise in the area.

5.56 Regarding vibration, there are no significant permanent sources in the areas around the Site. The Manchester Metrolink runs to the east and north of the stadium, but typically tram/light railway systems do not generate significant levels of vibration. There is a railway line to the west, but it is around 240m from the stadium and is unlikely to result in material levels of vibration in the area around the Site. Temporary vibration from certain activities associated with the construction of the Co-op Live arena to the north of the Site may be present. When in operation, the Proposed Development is not expected to result in the generation of vibration; however, vibration associated with its construction may be produced, depending on the techniques used.

5.57 The proposed stadium design is different when comparing the 2014 consented north stand with the north stand included in the Proposed Development. Therefore, the assessment will consider the 2014 consented north stand in terms of event noise, with a primarily qualitative comparison between the 2014 consented north stand and new north stand to be included within the ES chapter.

- 5.58 The 2014 consented north stand will not be considered in terms of noise effects associated with trip generation as no further trips will be generated by the new north stand and the highway network remains at capacity (i.e. no change). Construction effects of the 2014 consented north stand and the north stand which forms part of the Proposed Development are expected to be very similar and therefore this will also be scoped out of the assessment.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	Operational vibration	Applicable Development Phase (C / O)	O	Receptor	Nearby residential properties off Gibbon Street, Stuart Street, and to south of Ashton Park Road
Discussion of Effect					
Operation of the Proposed Development will not generate any significant vibration.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Due to the negligible impact of the Proposed Development on operational vibration, no mitigation is required.					
Concluding Statement					
As the Proposed Development will not generate significant levels of vibration during its operation, there is no need to consider operational vibration as part of the assessment.					

Effect	Event day road traffic noise	Applicable Development Phase (C / O)	O	Receptor	Nearby residential properties off Gibbon Street, Stuart Street, and to south of Ashton Park Road
Discussion of Effect					
It is understood that the Proposed Development will not include any additional car parking. On this basis, there will be no material increases in local road traffic or the corresponding noise on event days (i.e., football matches and concerts).					
Mitigation Committed to in order to Avoid or Reduce Effect					
Due to the negligible impact of the Proposed Development on event day road traffic noise, no mitigation is required.					

Concluding Statement
As the Proposed Development will not result in significant increases in local road traffic, there is no need to consider event day road traffic noise as part of the assessment.

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Temporary construction noise, including related traffic	Nearby residential properties off Gibbon Street, Stuart Street, and to south of Ashton Park Road	C
Temporary construction vibration	Nearby residential properties off Gibbon Street, Stuart Street, and to south of Ashton Park Road	C
Changes in noise associated with football matches and concerts	Nearby residential properties off Gibbon Street, Stuart Street, and to south of Ashton Park Road	O
Changes in road traffic noise due to new non-event uses (office and hotel)	Nearby residential properties off Gibbon Street, Stuart Street, and to south of Ashton Park Road	O
Changes in noise from use of new external fixed building services plant	Nearby residential properties off Gibbon Street, Stuart Street, and to south of Ashton Park Road	O

Assessment Methodology for Likely Significant Effects

Overview

- 5.59 The potential effects of noise and vibration are assessed using different methods based on the type of source being considered. In some cases, such as construction noise and vibration, this involves the definition of a Lowest Observed Adverse Effect Level (LOAEL), below which no adverse effects are expected, but above which adverse effects are detectable, and a Significant Observed Adverse Effect Level (SOAEL), above which significant adverse effects are expected to occur. In addition to exceeding the SOAEL, potential significance may also require consideration of other factors such as duration of the effect. However, where a type of noise is already part of an existing environment but is altered by a development, it can be more appropriate to use the magnitude of change in noise levels to indicate significance.

Temporary construction noise, including related construction traffic, and vibration

- 5.60 Construction noise from the main construction activities at the relevant receptors will be predicted based on the methods described in BS 5228-1:2009+A1:2014⁷ for noise and BS

⁷ BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open Sites – Part 1: Noise'

5228-2:2009+A1:2014⁸ for vibration, using preliminary information provided by the project team on construction activities and plant.

- 5.61 Construction noise and vibration effect level thresholds will be based on those detailed in same standards for the on site construction activities, with the duration of any threshold exceedances also considered when determining significance. These criteria are detailed in the following tables:

Table 5.3: Effect level thresholds for construction noise

Effect Level ^a	Time Period	Threshold Value (dB L _{Aeq,T}) ^b
LOAEL	Day (07:00 – 19:00)	65
	Evening (19.00 – 23.00)	55
	Night (23.00 – 07.00)	45
SOAEL	Day (07:00 – 19:00)	75
	Evening (19.00 – 23.00)	65
	Night (23.00 – 07.00)	55
Notes: ^a These effects (adverse and significant adverse) are expected to occur if the programme of works indicates that the relevant threshold values are likely to be exceeded over a period of at least one month. ^b Values apply to a location one metre from a residential building façade containing a window, ignoring the effect of the acoustic reflection from that façade.		

Table 5.4: Effect level thresholds for construction vibration

Effect Level	Threshold Value (PPV, mm/s) ^a
LOAEL	0.3
SOAEL	1.0 ^b
Notes: ^a This is the level at a residential receptor. ^b Guidance in BS 5228-2:2009+A1:2014 states that this level of exposure can be tolerated by those affected if prior warning and explanation has been given. It goes on to state that a level of 10 mm/s is likely to be intolerable in most building environments for any more than a very brief exposure.	

- 5.62 Predicted changes in road traffic noise due to construction traffic on the roads around the Site will be calculated by comparing scenarios both with and without the traffic associated with the construction of the Proposed Development, with the basic noise

⁸ BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open Sites – Part 2: Vibration'

level (BNL) for each relevant link calculated using the method described in the technical memorandum Calculation of Road Traffic Noise⁹ (CRTN).

- 5.63 The changes will be assessed based on the methodologies described in the Design Manual for Roads and Bridges¹⁰ (DMRB). For construction traffic noise, the assessment of significance is based on the magnitude of the change in noise levels resulting from the construction vehicle movements, and the duration of the impact, as set out in Table 5.5.

Table 5.5 Impact magnitudes and assessment of significance of construction traffic noise at sensitive receptors

Magnitude of Impact	Increase in noise level due to construction road traffic (dB)
Negligible	Less than 1.0
Minor	Greater than or equal to 1.0 and less than 3.0
Moderate	Greater than or equal to 3.0 and less than 5.0
Major	Greater than or equal to 5.0
<i>Identification of effect significance:</i> <i>Construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:</i> <i>a) 10 or more days or nights in any 15 consecutive days or nights; or</i> <i>b) A total number of days exceeding 40 in any 6 consecutive months.</i>	

Changes in noise associated with football matches and concerts

- 5.64 The Etihad stadium is currently used for both large scale football matches and concerts, and the resulting noise is part of the existing noise climate at the receptors around the Site.
- 5.65 Event noise from within the stadium for scenarios both with and without the Proposed Development will be predicted at the relevant receptors using typical assumptions for football match and concert noise levels, validated against the results of the baseline noise survey where possible. The Proposed Development scenario will take account of the changes in crowd capacity and structural form of the stadium. Noise levels will be predicted using the method described in ISO 9613-2:1996¹¹. The results for each scenario will then be compared and the change in event noise levels used to identify any significant effects arising as a result of the Proposed Development, as follows:

⁹ Calculation of Road Traffic Noise, Department for Transport: Welsh Office, 1988

¹⁰ Design Manual for Roads and Bridges, LA 111 – Noise and vibration, version 2, Highways Agency, May 2020

¹¹ ISO 9613-2:1996 'Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation'

Table 1.6 Impact magnitudes and assessment of significance of changes in event noise from football matches and concerts

Magnitude of Impact	Change in noise level (dB)	Significance of effect
No Change	0	Insignificant
Negligible	Up to 0.9	
Minor	1.0 – 2.9	
Moderate	3.0 – 4.9	Significant
Major	5.0 and above	

- 5.66 As identified above, for additional context, a primarily qualitative comparison between event noise from the north stand associated with the Proposed Development and event noise from the 2014 consented scheme will be undertaken. This comparison includes a proposed expansion to the north stand with a similar increase in crowd capacity to the Proposed Development.

Changes in road traffic noise due to new non-event uses (office, hotel and club shop)

- 5.67 Predicted changes in road traffic noise due to operational non-event traffic on the roads around the Proposed Development will be calculated by comparing scenarios both with and without the traffic associated with the Proposed Development for a given year. This calculation will be using data provided by the project transport consultant in the annual average weekday traffic (AAWT) format for the 18 hour period of 06:00 to 00:00, with the basic noise level (BNL) for each relevant link calculated using the method described in the technical memorandum Calculation of Road Traffic Noise¹² (CRTN).
- 5.68 The changes will be assessed based on the methodologies described in the Design Manual for Roads and Bridges¹³ (DMRB). For operational non-event traffic noise, the assessment of significance is based on the magnitude of the change in noise levels, as follows:

Table 2.7 Impact magnitudes and assessment of significance of changes in noise from operational road traffic

Magnitude of Impact	Change in noise level (dB)	Significance of effect
No Change	0	Insignificant
Negligible	Up to 0.9	
Minor	1.0 – 2.9	
Moderate	3.0 – 4.9	Significant
Major	5.0 and above	

¹² Calculation of Road Traffic Noise, Department for Transport: Welsh Office, 1988

¹³ Design Manual for Roads and Bridges, LA 111 – Noise and vibration, version 2, Highways Agency, May 2020

Changes in noise from use of new external fixed building services plant

- 5.69 As discussed under the ‘Limitations and Assumptions’ below, target noise levels for noise emissions from proposed external fixed building services plant to avoid significant effects at noise sensitive receptors will be provided based on the results of the baseline noise survey. The selection of appropriate target levels will be based on BS 4142:2014+A1:2019¹⁴ and the Manchester City Council Planning & Noise Technical Guidance¹⁵. Plant installations will be designed to meet the target levels.

Limitations and Assumptions

- 5.70 The prediction and assessment of construction noise and vibration requires detailed information which is typically unavailable at the time of a planning application submission. It is likely, therefore, that assumptions will need to be made regarding the type of construction plant to be used and the works methodologies. However, this is considered a reasonable approach in identifying any likely significant effects.
- 5.71 It is assumed that at the time of undertaking the assessment, full details of any proposed external fixed building services plant will not be available. Consequently, it is unlikely that any relevant predictions of noise from such plant will be possible. Therefore, in lieu of an assessment, target noise levels for plant noise emissions at noise sensitive receptors based on the results of the baseline noise survey will be defined in accordance with the relevant standards and guidance.

Climate Change

Executive Summary

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

Baseline

- 5.73 The existing north stand of the Etihad Stadium currently occupies the Site, as well as existing retail space.
- 5.74 The baseline of the assessment of GHG emissions in the ES will be based on the existing conditions on the Site.
- 5.75 The sources of GHG emissions associated with the existing baseline scenario are those resulting from operational energy use and operational water consumption associated with the existing stadium uses. The GHG emissions of the current development will be estimated in the baseline section of the Climate Change ES Chapter. Where data on current GHG emissions is available, this shall be used to inform the baseline. Where current energy use is not available, estimates of GHG emissions shall be made based on floor areas by use and type with appropriate benchmarks.

¹⁴ BS 4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’

¹⁵ Planning & Noise: Technical Guidance, Manchester City Council, June 2022

- 5.76 A future baseline scenario will be assessed which shall consider how the GHG emissions associated with the current development on the Site are likely to change in the future if the Proposed Development did not come forward. For comparison, this shall consider the same 60-year period that will be used to assess the Proposed Development.
- 5.77 An assessment of the 2014 consented north stand will be scoped out of the GHG emissions assessment. An assessment of this scenario is not relevant as all climate change effects are likely to be the same for both the 2014 consented north stand and the Proposed Development, during both construction and operation.

Scope of Assessment

Identification of Effect/s which are Not Significant

Effect	GHG emissions associated with operational transport	Applicable Development Phase (C / O)	O	Receptor	The global atmosphere
Discussion of Effect					
GHG emissions that arise as a result of operational transport associated with the Proposed Development.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Tertiary Mitigation: A Framework Travel Plan will be submitted alongside the planning application. This will set out how physical and operational interventions will be adopted to encourage sustainable and low carbon modes of travel.					
Concluding Statement					
GHG emissions associated with operational transport will not be assessed as a Framework Travel Plan will be implemented (the Site is easily accessible via public transport).					

Effect	Operational waste generated by the Proposed Development	Applicable Development Phase (C / O)	O	Receptor	The global atmosphere
Discussion of Effect					
GHG emissions arising from operational waste production. GHG emissions associated with waste management are likely to make up a small proportion of the overall GHG emissions associated with the Proposed Development.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Tertiary mitigation: An Operational Waste Management Strategy will be submitted alongside the planning application. This will set out how physical and operational interventions will be adopted that follow the waste hierarchy.					

Concluding Statement
GHG emissions associated with operational waste will not be assessed as they are highly dependent on occupant behaviour and an Operational Waste Management Strategy shall be produced for the Proposed Development.

Effect	Carbon sequestration of green infrastructure	Applicable Development Phase (C / O)	C & O	Receptor	The global atmosphere
Discussion of Effect					
GHG emissions associated with green infrastructure. The Site is currently occupied, and the Proposed Development will result in the removal of no vegetation. There is also minimal green infrastructure associated with the Proposed Development. Therefore, GHG emissions associated with carbon sequestration of green infrastructure will be low relative to total GHG emissions over the whole life of the Proposed Development.					
Mitigation Committed to in order to Avoid or Reduce Effect					
No mitigation is required.					
Concluding Statement					
Effects associated with carbon sequestration of green infrastructure are not likely to be significant.					

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Embodied carbon associated with the product stage (lifecycle stages A1-A3 – see Figure 5.1)	The global atmosphere	C
Embodied carbon associated with the construction process stage (lifecycle stages A4-A5 – see Figure 5.1)	The global atmosphere	C
Embodied carbon associated with the in-use stage from the Proposed Development (lifecycle stage B1-B5– see Figure 5.1)	The global atmosphere	O
GHG emissions associated with operational energy for the	The global atmosphere	O

Effect	Receptor	Applicable Development Phase (C / O)
Proposed Development (lifecycle stage B6 – see Figure 5.1)		
GHG emissions associated with operational water (lifecycle stage B7 – see Figure 5.1)	The global atmosphere	O
GHG emissions associated with the end-of-life stage (lifecycle stage C1-C4 – see Figure 5.1)	The global atmosphere	O

Assessment Methodology for Likely Significant Effects

Existing site (baseline) with committed developments

- 5.78 For the GHG emissions ES Chapter, the baseline for the Proposed Development is defined as the current GHG emissions arising from activities and infrastructure within the Site boundary, in line with the IEMA (2022) guidance. As the Site is currently occupied by the existing north stand and club shop, the GHG emissions associated with the operation of these buildings will be estimated as a point of comparison for the baseline section of the Climate Change ES Chapter. This will also be estimated over a 60-year period for the future baseline scenario.

Baseline Plus the Proposed Development

- 5.79 There is currently no standard methodology for quantifying GHG emissions within EIA. However, best practice will be drawn from the following:
- Institute of Environmental Management and Assessment (IEMA) Guide to Assessing GHG Emissions and Evaluating their Significance (IEMA, 2022)¹⁶;
 - Royal Institute of Chartered Surveyors (RICS) Whole Life Carbon Assessment for the Built Environment (2017)¹⁷; and
 - British Standard EN 15978:2011 Sustainability of construction works. Assessment of environmental performance buildings. Calculation method¹⁸.
- 5.80 An assessment period of 60 years is proposed, as per the principles outlined in BS EN 15978. This is based on the typical expected service life of the Proposed Development. The total GHG emissions will be estimated to 60 years after completion of the Proposed Development.
- 5.81 The GHG emissions scope will align with the lifecycle stages defined as modules within BS EN 15978, with building elements included as per guidance within the RICS guidance

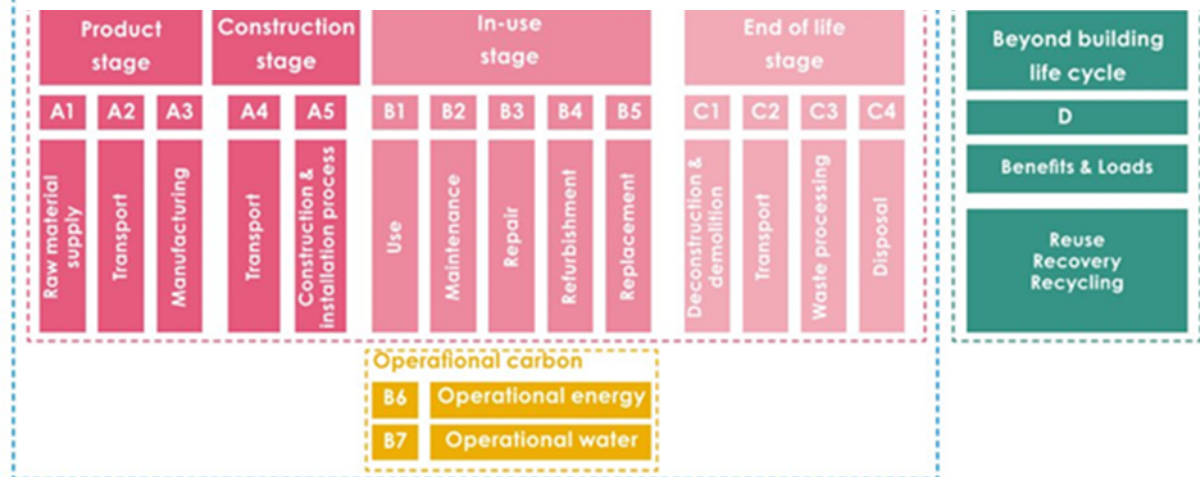
¹⁶ Institute of Environmental Management and Assessment (IEMA) (2022) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2nd Edition.

¹⁷ Royal Institution of Chartered Surveyors (RICS). (2017). Whole Life Carbon Assessment for the Built Environment

¹⁸ BSI (2011) BS EN 15978 Sustainability of Construction Works – Assessment of Environmental Performance and Buildings – Calculation Method

on Whole Life Carbon Assessment for the Built Environment (2017), as shown in Figure 5.1.

Figure 5.1 Diagram showing the stages of a lifecycle GHG emissions assessment. Diagram based on lifecycle stages set out in BS EN 15978



- 5.82 GHG emissions associated with the demolition and construction phase will be based on those set out in the Whole Life Carbon Assessment, which shall be submitted alongside the planning application.
- 5.83 GHG emissions associated with operational embodied carbon and end-of-life demolition will be based on those set out in the Whole Life Carbon Assessment. Where information is available from the sustainability and energy consultants on likely operational energy, and the utilities engineers on likely operational water, carbon factors shall be applied to determine GHG emissions associated with these sources. Where this information is not available, appropriate published benchmarks shall be used.
- 5.84 The effect significance for construction and operational GHG emissions will be assessed against the magnitude of change and significance criteria set out in Appendix A using professional judgement and previous project experience.
- 5.85 Appropriate mitigation measures will be recommended for both the demolition and construction and operational phases of the Proposed Development. With these mitigation measures in place, the significance of effects will be assessed again against the magnitude of change and significance criteria set out in Appendix A using professional judgement and previous project experience.

Limitations and Assumptions

- 5.86 When calculating GHG emissions associated with the demolition and construction and operation of the Proposed Development, appropriate energy and carbon benchmarks will be used based on floor area and building use. Whilst these benchmarks will give an estimate of the scale of GHG emissions associated with the Proposed Development, they will not be completely accurate due to variations in geography, construction processes and construction materials used for the Proposed Development compared to the buildings that the benchmarks are based upon. However, these are considered the best available methods of estimating GHG emissions given the information available.

Methodology for Determining Impact Magnitude

- 5.87 The criteria used to assess how far an effect deviates from the baseline condition, i.e. the magnitude of change, are described in the table below. This is based on the IEMA (2022) guidance document.

Magnitude	Criteria
Major	The Proposed Development's GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
Moderate	The Proposed Development's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Minor	The Proposed Development's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with neutral effects is fully in line with or exceeds measures necessary to achieve the UK's trajectory towards net zero.
Negligible	The Proposed Development's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Beneficial	The Proposed Development's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-project baseline. A project with major beneficial effects substantially exceeds net zero requirements with a positive climate impact.

Methodology for Determining Sensitivity

- 5.88 GHG emissions arising from the construction and operation of the Proposed Development are considered the key impacts, with the principal receptor being atmospheric GHG concentrations. The consequence of GHG emissions associated with the Proposed Development is that atmospheric GHG emissions are pushed closer towards their environmental limit, triggering subsequent effects on the global climate system.

5.89 In line with the IEMA (2022) guidance, the sensitivity of the receptor (i.e., the global atmosphere) in relation to GHG emissions is always considered to be ‘high’, based on the following conclusions:

- Value of the resource: the atmosphere and its role in regulating the global climate is of high ecological, social and economic value and underpins life on the planet, therefore is of global critical value;
- Vulnerability: it is recognised by the Paris Agreement (2015) that the GHG concentrations in the atmosphere are already approaching their environmental limit and the effects of climate change are already evident; and
- Reversibility of the effect: climate change is considered irreversible, with a delayed effect in any actions or technologies employed to reduce concentrations of GHG emissions already in the atmosphere.

5.90 The sensitivity of a receptor is therefore based on the following table:

Sensitivity	Examples of receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.

Impact Significance

5.91 The significance of an environmental impact is determined by the interaction of magnitude and sensitivity, whereby the impacts can be positive or negative. As the sensitivity of the receptor is always deemed to be high, the impact Significance is as per the matrix below:

Magnitude	High
Major	Major Adverse/Beneficial
Moderate	Major Adverse/Beneficial
Minor	Minor Adverse/Beneficial
Negligible	Negligible

Human Health

Executive Summary

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

Baseline

- 5.93 There is no prescribed EIA definition for human health but the identification, description, and assessment of effects on human health is well established in the UK for Strategic Environmental Assessment (SEA). Consideration of human health and well-being within EIA is separate from Health Impact Assessment (HIA), although each process can inform the other. It is considered that most of the factors addressed in development proposals can have impacts on health and quality of life/wellbeing – both positive and negative, and both physical and mental - through townscape, air quality, climate change resilience, flood risk, noise, provision of/accessibility to good quality housing/buildings and employment, health and community services, transport, and green infrastructure.
- 5.94 The overall approach to human health will be to consider the summary findings of each relevant technical topic and align these with their interconnectedness into the four themes for healthy urban planning. The key baseline from the other technical topics will be studied where relevant. It is not considered to be necessary to undertake primary research or surveys specific to the Human Health chapter. This is because the extent and nature of available information and the conclusions of other technical reports are sufficient to enable undertaking an appropriate and proportionate assessment of impacts on Human Health.
- 5.95 The Site is located within the Etihad Campus area bounded by the A6010 Alan Turing Way to the east, the A662 Ashton New Road to the south, and New Viaduct Street to the west. The Etihad Stadium is home to Manchester City Football Club and in line with the extant consent, the stadium can accommodate a total of up to 62,170 spectators. Access to the Stadium is by safe and well-lit route from Piccadilly railway station, via Metrolink with the Etihad Campus stop, a wide variety of direct bus lines, and with carparking access on Alan Turing Way. There are residential areas located to the north-east of the stadium with the nearest approximately 0.5 km distance, and to the south with the nearest located approximately 0.5 km distance. There is one care home located to the south, about 0.5 km distance; other care homes are at least 1.5 km distance. There are four schools located to the south about 0.8km distance but unlikely to be affected by match days or events. There are no hospitals nearby – all are at least 3 km distance to the south west.
- 5.96 The Site is located within the Clayton & Openshaw Ward where the percentage of good general health (Census 2011) as reported by the usual residents is 30.33% which compares to 32.79 for Greater Manchester and 34.22% for England. Poor health (2015/6-2019/20 emergency hospital admissions for all causes) is reported at 163.3 which is at the higher numbers of the range for all wards – 36.2-186.7. Life expectancy for the Ward is 77.7 (females) and 73.7 (males) at the lower end of the range for all wards with 76.5-84.1 (females) and 71.9-81.8 (males).
- 5.97 The Index of Multiple deprivation (IMD) is an overall relative measure of deprivation constructed by combining seven domains of deprivation – Income; Employment; Education; Skills & Training; Health & Disability; Crime; Barriers to Housing Services and Living Environment. The Clayton & Openshaw Ward has a IMD score (2019) of 57.01, (the least deprived is in the range 15.5-31.1 with 48.4-62.7 indicating the most deprived) indicating that the Ward is one of the most deprived Wards in the City. This level of deprivation is comparable with Wards adjacent to the south and north, whilst deprivation is lower to the west, and comparison with Manchester data at 40.00. Unemployment (residents aged 16+ claiming unemployment benefit) within Clayton &

Openshaw Ward is 1,125 (September 2022) which is at the higher end of the range for all wards from 155 – 1,365. Reported street crime (2018) is 3,620 totalled for all 14 categories and compares to the range for all wards at 1,343.0 to 16,552.

Scope of Assessment

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Health & wellbeing – air, noise, traffic, safety	On-site workers Nearby residents, including any particularly sensitive receptors such as care homes, schools Visitors	C
Health & wellbeing – air, noise, traffic, accessibility	Nearby residents, including any particularly sensitive receptors such as care homes, schools Workers at new office building Visitors, including guests at new hotel	O
Health & wellbeing – flood risk, ground conditions, climate change, wind microclimate	Nearby residents Workers at new office building Visitors, including guests at new hotel	O
Health & wellbeing – socioeconomics including employment/economy	Local & wider communities, including new office building & new hotel	C & O
Health & wellbeing – crime, safety	Nearby residents Workers at new office building Visitors, including guests at new hotel	O
Health & wellbeing – townscape & Visual Impact	Nearby residents Visitors, including guests at new hotel	C & O

Effect	Receptor	Applicable Development Phase (C / O)
	Workers at new office building	

Assessment Methodology for Likely Significant Effects

- 5.98 There is no standard methodology for assessing health in EIA. The complexities of investigating health impacts are recognised, for example, by Public Health England (PHE, 2017) with their Wider Determinants of Health tool that details the multiple determinants for health and the need for cross-sectoral understanding. This guidance is primarily focused on spatial plan makers and public health practitioners, but the principles and checklist can be applied to major development proposals. The recent Health Impact Assessment in Spatial Planning (PHE, 2020) similarly focuses on spatial planning and Strategic Environmental Assessment (SEA) but does include an annex on integrating HIA in EIA and asserts the importance of a “proportionate and justified approach”. The EIA professional body Institute of Environmental Assessment & Management (IEMA) has prepared outline guidance for practitioners – Health in EIA, a Primer for a Proportionate Approach (2017) - it is important that health in EIA is proportionate, balanced, and relevant.
- 5.99 It is proposed that the assessment will consider the four themes for health and wellbeing, as identified by the Healthy Urban Development Unit HIA Tool (2017), as follows – Healthy Housing/Buildings; Active Travel; Healthy Environment; and Vibrant Neighbourhoods. This HUDU checklist aims to promote healthy urban planning by ensuring that the health and wellbeing implications of major planning applications are consistently considered, through providing a set of themes and planning issues that can be used to assess development proposals. The HUDU tool has been further developed (4th edition 2019) to recognise eleven topics or broad determinants of health and wellbeing focused on the built environment and issues influenced by planning decisions.
- 5.100 Housing/Building Design is fundamental for health and wellbeing. No housing development is included in the Proposed Development and therefore, the elements of building design that are relevant are the office building, the hotel, enhanced shop & new museum, and the fan zone amenity. Accessibility to health and social care infrastructure is not relevant to the Proposed Development as workers and visitors are most likely to be using facilities and services near to their residences.
- 5.101 Access to open space/nature; air quality, noise and neighbourhood amenity; accessibility and active travel; and crime reduction and community safety are relevant to health and wellbeing associated with the Proposed Development and will be considered within the Health & Wellbeing impact assessment. Access to healthy food is beyond the scope of the Proposed Development. Access to work and training is known to affect health and wellbeing; employment and the local economy will be considered. Limited elements of social cohesion and inclusive design are relevant to the Proposed Development. Minimising the use of resources and climate change are key factors in considering environmental sustainability, a healthy environment, and reducing risks to health and wellbeing from the predicted effects of climate change.

- 5.102 The overall approach to human health will be to consider the summary findings of each relevant technical topic – air quality; climate change; flood risk; noise and vibration; socioeconomic; townscape and visual impacts; traffic; wind microclimate - and align these with their interconnectedness into the four themes for healthy urban planning and taking into account the relevant broad determinants of health. Different study areas will be used for the assessment of individual human health impacts, according to each relevant technical topic. Overall, the study area will be the Site with local surrounds, and the wider study area of Manchester City for the themes for healthy urban living and based upon professional judgement. The Human Health chapter will consider Scenario 3 = existing baseline + committed developments + proposed development + mitigation.
- 5.103 Sensitive receptors will include:
- onsite workers during construction
 - existing residents, businesses, educational facilities, healthcare facilities, and communities around the Site, as well as any other sensitive receptors identified by the technical assessments
 - future users and visitors of the Site
- 5.104 Effects that are described as ‘minor’ or ‘negligible’ are determined to be ‘Not Significant’ and effects that are described as ‘moderate’ or ‘major’ are determined to be ‘Significant’. This takes into account the sensitivities of receptors as high, moderate, low. The criteria and categories of significance applied in the health impact assessment are, as follows:
- Major Adverse/Beneficial – important considerations at local or district scale; if adverse, are potential concerns to the project and may become key factors in the decision-making process
 - Moderate Adverse/Beneficial – modest important local effects that, if adverse, are not likely to be key issues for decision-making
 - Minor Adverse/Beneficial – Slight, short, or highly localised effects that, if adverse, are unlikely to be important in the decision-making process
 - Negligible – no appreciable effects on health factors
- 5.105 Each technical impact assessment is subject to its own standards, regulations, and methods of assessment. Standardised sectoral thresholds and significance criteria will be used for each of the relevant technical factors that contribute to health and wellbeing. The overall likely significant effects on health will then be determined in a qualitative way using professional judgment. The key impacts for health will be considered and inter-relationships will be integrated within the four themes identified for healthy urban living, such that any significant impacts for human health are clearly presented in a separate chapter.

Limitations and Assumptions

- 5.106 The Health Chapter will consider the findings relevant to human health of each technical impact assessment scoped into the Environmental Statement and, as such, any key assumptions or limitations associated with each technical impact assessment are addressed within the individual chapters. The overall approach for collating, assessing, and reporting impacts on human health and well-being is considered to be appropriate

and proportionate such that there are no limitations. The assessment will be desk-based and with professional judgment using published information.

Townscape & Visual Impact

Baseline

- 5.107 The Site is located to the northeast of Manchester City Centre, approximately 2.1km north east of Manchester Piccadilly Railway Station. It is located within the Etihad Campus, which includes the Etihad Stadium, the Academy Stadium, City Football Academy (CFA) training facility and the Club's headquarters. The Campus and landmark Stadium building define the local townscape character and urban grain, with large modern structures set within extensive areas of open concourse and landscape. Whilst the Campus is focused on sport, recreation and commercial activities, immediately around it are a number of large residential estates.
- 5.108 The Site itself is currently used as a main northern concourse entrance to the Stadium and includes the existing northern stand. It is located immediately west of the A6010 Alan Turing Way, and approximately 100m northeast of the Etihad Campus Metrolink stop.
- 5.109 The Site is located to the immediate south of the Ashton Canal, which forms the route of a number of key recreational walking and cycling routes, including:
- The Medlock Valley Way;
 - The Cheshire Ring Canal Walk;
 - Regional Cycle Network Route 86, and;
 - National Cycle Network Route 60, which also run north along the Site's eastern edge.
- 5.110 The Grade II registered Phillips Park is located to the northeast of the Site, and will potentially have a visual connection to the Proposed Development. Users of the Park are likely to be focussed on the landscape and sensitive to change.
- 5.111 At the wider level, the Site is located within the Eastlands Regeneration Framework (ERF) area. An update to the ERF was endorsed by Manchester City Council's Executive Committee in July 2019. The ERF supports the on-going regeneration of the Eastlands area. The broad vision for Eastlands is for it to become a place which is attractive for people to live, work and to visit; an area which builds upon its assets to provide a distinctive contribution to the overall success of the city region; and to be a place where all residents are able to share in the long-term success of the area. Central to the long-term vision for the Etihad Campus and the wider area has been the ambition to establish it as a place with a globally competitive sport, leisure and recreation offer.
- 5.112 It is acknowledged that there is an extant 2014 consent on the Site.

Scope of Assessment

Identification of Effect/s which are Not Significant

- 5.113 The tables below summarise the townscape receptors that been scoped out of the Townscape and Visual Impact Assessment.

Effect	Change to site levels	Applicable Development Phase (C / O)	C/O	Receptor	Topography/Site Levels
Discussion of Effect					
Likely minor modification of existing site levels anticipated immediately around the Proposed Development – no major remodelling of ground levels and profile anticipated.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Primary Mitigation - Scheme designed to minimise level changes and facilitate access into the Stadium.					
Concluding Statement					
Due to the likely low sensitivity of the receptor (ground levels already subject to considerable change within the area) and the likely negligible/ minor magnitude of change envisaged, this receptor is scoped out of the assessment.					

Effect	Potential changes to public space provision or designations on site	Applicable Development Phase (C / O)	C/O	Receptor	Environmental Designations and Public Open Space
Discussion of Effect					
No Public Open Space within, or environmental designations covering the Site.					
Mitigation Committed to in order to Avoid or Reduce Effect					
n/a					
Concluding Statement					
There is no direct impact to this receptor type within the Site, therefore it is scoped out of the assessment.					

Identification of Effect/s which are Likely to be Significant

5.114 The following sensitive receptors have been identified and will be considered within the assessment:

- The local townscape character and its key components, including changes to townscape character areas, urban grain, land use, building heights and movement and linkages.

- Site character – the Site as a townscape receptor (as defined by the red line boundary).
- Visual receptors, including local residents, users of public open space, visitors to heritage assets, communities where views contribute to the townscape setting enjoyed by residents, users of public footpaths, users of the strategic movement network, and employees at their place of work.

Effect	Receptor	Applicable Development Phase (C / O)
Changes to townscape character areas within the site context. Consolidation of existing Campus character.	The Site and wider townscape character areas.	[C / O]
Changes to urban grain Consolidation of wider urban form created as part of Campus complex	The Site (direct effect) and local site context (potential indirect effect).	[C / O]
Changes to land use Creation of land use which fits within the wider masterplan setting.	The Site (direct effect) and local site context (potential indirect effect).	[C / O]
Changes to building heights Proposed height in keeping with existing Stadium context.	The Site (direct effect) and local site context (potential indirect effect).	[C / O]
Changes to movement and linkages as a townscape effect. The Proposed Development fits with the existing Campus pedestrian and vehicular route network.	The Site (direct effect) and routes within local site context (potential indirect effect).	[C / O]
Changes to site character Supports existing site character, as part of the wider Stadium Campus.	The Site.	[C / O]
Changes to the character and amenity of views	Representative views shown in Appendix 6: Viewpoints and described in the table below.	[C / O]

5.115 A representative selection of views suitable to illustrate the existing character of the study area and the potential visual effects on receptors as a result of the Proposed Development have been proposed for inclusion within the TVIA.

Viewpoints	Rationale for selection
Viewpoint 1: View north west from pedestrian footbridge leading to Commonwealth Way, Etihad Stadium.	Elevated view over Campus – key pedestrian link with high number of viewers on match days. Proposed Development will be viewed as part of the landmark Stadium building.
Viewpoint 2: View south west from footpath entrance to canal and Alan Turing Way - adjacent to Listed Lock Keepers Cottage	Key pedestrian and cycle entrance from Ashton Canal. Within the context of the Grade II listed Lock Keepers Cottage, Ashton Canal Lock Number 7 and Philips Park.
Viewpoint 3: View from Joe Mercer Way looking south to stadium North Stand.	Close range view from elevated concourse – looking directly at the Proposed Development and public realm. Potential very high number of viewers on match days.
Viewpoint 4: View looking southeast towards stadium on CityLink pedestrian and cycle link from Piccadilly Station.	Close range view from green canal corridor and key pedestrian cycle route back into the City. Proposed Development will be viewed in front of the existing Stadium – and as part of the wider Campus.
Viewpoint 5: View from footway of A662 Ashton New Road looking northeast to Site.	Travelling views with partial views of the Proposed Development viewed as a backdrop to the existing Stadium. Potential high number of viewers on match days.
Viewpoint 6: View from footway of Grey Mare Lane and residential area to the south.	Framed midrange view from adjacent residential areas with the Proposed Development viewed in conjunction with the overall massing of the existing Stadium.
Viewpoint 7: View from Velopark foot/ cycle bridge looking east towards site.	Framed midrange view from key pedestrian and cycle link adjacent to Velodrome. Potential high number of viewers on event days.
Viewpoint 8: View from pathway with Philips Park looking east towards site.	Open midrange view within setting of Grade II Listed Philips Park. Proposed Development will form backdrop to the view, in conjunction with the existing Stadium building. Viewers likely to be focussed on the landscape setting and have some sensitivity to changes to the view.
Viewpoint 9: View south towards site from pedestrian crossing on Alan Turing Way A6010, at junction with Brisco Lane.	Key pedestrian and vehicular route from the north. Within the context of the Grade II Listed Entrance Lodge to Philips Park.
Viewpoint 10: View from pathway in Saxon Saint Park looking southeast towards site.	Midrange open view. Viewers likely to have some appreciation of the wider setting and be sensitive to changes to views to the existing Stadium landmark building.

Assessment Methodology for Likely Significant Effects

- 5.116 The Townscape and Visual Impact Assessment will be carried out with reference to the Guidelines for Landscape & Visual Impact Assessment, 3rd Edition, 2013 (referred to hereafter as “the Guidelines”)¹⁹ by Planit-IE Ltd, a registered practice of the Landscape Institute with considerable experience in landscape and visual assessment.

Assessment Criteria

- 5.117 Based on the likely effects identified, the following scenarios are proposed for assessment:
- Construction and Demolition stage activities;
 - Scenario 1: Existing site (baseline) with committed developments;
 - Scenario 2: Scenario 1 plus Proposed Development;
 - Scenario 3: Scenario 2 plus mitigation (if applicable).

Assessment Approach

- 5.118 The methodology will be collated into a tabulated format where possible to provide structure for a consistent and methodical approach. Desk-based studies will be carried out to collate and map baseline townscape information, and a review of relevant policy and guidance will be used to inform the assessment.
- 5.119 In order to provide the most comprehensive, rounded and objective view of the Townscape and Visual Impacts of the Proposed Development, assessed effects will be agreed following round-table review by a team of individual assessors.
- 5.120 A three-stage assessment process will be adopted. The matrix provided in **below** will be used to guide the assessment of the significance of both townscape and visual effects. The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will be determined following this through professional judgment.

¹⁹ Landscape Institute and IEMA, (2013). Guidelines for Landscape & Visual Impact Assessment, 3rd Edition. Routledge.

Magnitude of Impact	Criteria for assessing impact
Major	Total loss or major/substantial alteration to key element/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstance/situation.

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

Methodology for Determining Sensitivity

Sensitivity	Examples of receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high importance.
Low	The receptor/resource is tolerant of change without detriment to its character, is of low or no local importance.

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

Impact Significance Matrix

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

Magnitude	Sensitivity		
	High	Medium	Low
Minor	Minor Adverse/Beneficial	Minor Adverse/Beneficial	Negligible
Negligible	Negligible	Negligible	Negligible

5.123 The nature of effects 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. 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).

5.124 For the purposes of this Townscape and Visual Impact Assessment, all effects greater than negligible are considered to be Significant in the meaning of EIA Regulations (2017).

Cumulative

5.125 **Scenarios 1-3** will include a cumulative assessment of committed developments in order to understand if any further potential significant environmental effects are likely to arise. Cumulative effects are defined as impacts that result from additional changes to the townscape or visual amenity caused by other developments (scenario 1) and then the Proposed Development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.

Photography and Photomontage

5.126 A Principal Viewpoints plan has been produced as part of this scoping report. The viewpoints were selected through a process of desktop survey and site knowledge. A basic 3D block model reflecting the proposed height of the development was put into Google Earth and a basic Zone of Visual Influence was created using Google viewshed. The viewshed highlights areas in green that have the potential for a visual relationship with the Site, taking into consideration factors such as surrounding building heights and topography. The viewshed has been used to inform viewpoint selection, in addition to detailed study of urban form, topography, site knowledge and professional experience. A total of 10 viewpoints have been selected and are considered representative viewpoints from key visual receptors. Viewpoints were excluded where there is likely to be no visual impact. Refer to the Appendix 6 for an illustration of the Google viewshed and the proposed key views.

5.127 Visually verified photomontages will be produced by Virtual Planit, a professional visualization studio with extensive experience in the production of photomontages, in accordance with the Landscape Institute's Technical Guidance Note 06/09 (2019) *Visual Representation of Development Proposals*²⁰. The Photomontages will be fully rendered to accurately reflect building height and massing and architectural detail as well as public

²⁰ Landscape Institute Technical Guidance Note 06/09 (2019). Visual Representation of Development Proposals. [Online] accessed via: <https://www.landscapeinstitute.org/visualisation/>.

realm where relevant. This will represent ‘worst case scenario’, in accordance with the Guidelines.

Limitations and Assumptions

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

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

Traffic and Transport

Baseline

5.129 This section provides an overview of the baseline conditions relevant to Traffic and Transport. These conditions, within an identified ‘Zone of Influence’, will be described in more detail in the TA and summarised in the ES Traffic and Transportation chapter. For both the construction and operational phase we will define this ‘Zone of Influence’ based on the magnitude of forecast increases in road traffic on road links from the Site.

5.130 The Site forms part of the Etihad Campus; comprising a range of facilities including the Etihad Stadium, Manchester City Football Academy, National Squash Centre, Tennis Centre, and Regional Arena, amongst others. Owing to the variety and nature of these uses, the area is subject to daily operational traffic (including staff, visitor and servicing traffic) but also peaks in traffic associated with matchdays and other events. Activity relating to traffic and transport is therefore influenced by the timing and frequency of events within the overall schedule for the Site and is subject to careful co-ordination and management by City Football Group, its partners, and key stakeholders including MCC, TfGM and Metrolink.

5.131 The area is surrounded by a number of heavily trafficked routes including the A62 Oldham Road, A6010 Alan Turing Way, A662 Ashton New Road, A635 Ashton Old Road. These routes link the Site to the Strategic Road Network (M60) and Manchester City Centre and the Inner Ring Road, and radial connections from the city centre towards other regional destinations. The local area also comprises of a number of residential areas served by more lightly trafficked local distributor and access roads. Furthermore, there are commercial properties in the surrounding communities including warehousing, industrial sites, and local shops and services. The sensitivity of these receptors to increases in road traffic flows is dependent on the type and number of receptors located along each road link. The approach to determine this is discussed in further detail within this Scoping Report.

5.132 The Site also benefits from strong connections to a range of public transport modes including Metrolink, multiple bus routes, matchday/ event day shuttle buses, and local

rail at Ashburys Station. In addition, to the west, Manchester Piccadilly station (and the wider city centre) is within walking and cycling distance of the Site for onwards national and regional rail connections. There are many walking and cycling routes available locally including via the Ashton Canal (National Cycle Route 86) linking to the city centre and Alan Turing Way (National Cycle Route 60).

- 5.133 In 2014 planning permission was granted to expand the Etihad Stadium to provide an additional 12,500 seats (Ref. No: 104315/FO/2013/N2). This consent has subsequently been partially implemented through the expansion of the South Stand by 6,250 seats. The permission for an additional 6,250 seats in the North Stand is consented but is yet to be implemented. Once built, this would increase the Stadium capacity to 61,250 people (based upon the capacity in 2014). This is therefore the 'fall back position' against which future scenarios will be assessed, and is the approach undertaken for the Co-op Live application. The aforementioned Co-op Live arena is currently under construction and will therefore form part of the future baseline traffic flows for the purposes of assessment.
- 5.134 Critically, the overall parking strategy for the future development of the Etihad Campus is not to increase the supply of parking on the Site from current levels and to mitigate any risk of undesirable off-site parking on-street through amendments to the residents parking scheme such that it operates every day and not just on Stadium event days (as at present). This amendment to the resident parking scheme is currently being delivered as a condition of the Co-op Live consent. The TA will set out the relevance of this, and the wider movement strategy for the Etihad Campus in the context of the baseline conditions for the Proposed Development.
- 5.135 Environmental effects associated with Traffic and Transport relate to the impact of increases in road traffic arising from the Proposed Development and the exposure of other roads users and receptors to these increases.
- 5.136 The Proposed Development will lead to a permanent increase in multi-modal transport demand during the operational phase, including to Annual Average Daily Traffic (AADT) flows in the surrounding roads. It is anticipated that this would primarily be cars and servicing vehicles (i.e., Light Goods Vehicles (LGVs) and other modes such as increases in use of the metrolink. Temporary increases in both Heavy Goods Vehicles (HGVs) and LGVs are anticipated during the construction phase of the Proposed Development.
- 5.137 In the event that the Proposed Development did not come forward, traffic flows on the surrounding roads are anticipated to increase due to the impact of background growth and the trips generated by nearby committed development associated with the growth aspirations for the Etihad Campus (as set out in the Strategic Vision and associated TA) including the operational phase of the Co-op Live arena and the consented Etihad Stadium expansion.
- 5.138 A range of measures to promote sustainable modes of transport were agreed for the two aforementioned applications and have subsequently been implemented (or are in the process of being implemented in the case of Co-op Live). The TA will set out the measures that have been (or are in the process of being implemented) to support sustainable transport modes. This will include both the measures required as part of the extant planning consents but also additional measures that are part of the wider activities being undertaken to promote sustainable transport to/from and within the

Etihad Campus. These measures, along with programmed for delivery, will also therefore be considered in the assessment of the future baseline for the assessment, with and without development, where relevant.

Scope of Assessment

5.139 This section sets out the proposed Scope of Assessment for the Traffic and Transport ES Chapter. The proposed scope has been developed using the guidance set out in the following documents:

- Design Manual for Roads and Bridges (DMRB) LA 112, National Highways
- Guidelines for Environmental Impact Assessment Institute for Environmental Management and Assessment (IEMA), 2004
- Guidelines for the Environmental Assessment of Road Traffic (IEMA) (1993).
- Transport Evidence Bases in Plan Making and Decision Making, Ministry of Housing, Communities, and Local Government (MHCLG) (2015).
- Guidance on Travel Plans, Transport Assessments, and Statements, MHCLG, (2014)
- DfT Transport Appraisal Guidance (TAG) UNIT A4.1 Social Impact Appraisal
- DMRB Volume 11, Section 2, Part 5 , National Highways (Withdrawn)
- DMRB LA104: Environmental assessment and Monitoring Rev 1, National Highways

5.140 The scope has also been informed by scoping discussions held with MCC and TfGM with regard to the TA, and the scope of assessment and outcomes of the ES prepared for the Co-op Live Arena planning application (Ref. 126431/FO/2020).

5.141 A TA will be prepared by Arup in relation to the Proposed Development. This will assess the impact and acceptability of the development in relation to traffic and car parking, sustainable modes of transport, servicing and demonstrate appropriate accessibility for all modes. The TA will form a technical appendix to the Environmental Statement (ES) and its outcomes will inform the calculated and reported residual environmental effects relating to Traffic and Transport.

5.142 A Framework Travel Plan will also be developed alongside the TA for the commercial (office and hotel uses). This will outline measures and initiatives that could be promoted to both reduce the dependency on car travel and to promote the use of alternative modes of transport. These measures will look to either adopt, build on or complement measures within existing overarching Campus plans and initiatives.

5.143 The Traffic and Transport ES Chapter will also be prepared by Arup. The chapter will provide sufficient information to enable the reader to understand the likely significant effects in environmental terms of the Proposed Development in relation to Traffic and Transport. The methodology to be applied for the TA is in line with relevant guidance²¹ and is subject to a separate scoping exercise but shares co-dependencies with the ES

²¹ Guidance on Travel Plans, Transport Assessments, and Statements, MHCLG, (2014)

chapter; for example, the agreement of traffic generation, distribution and assignment, committed developments, and scope of traffic modelling.

- 5.144 The assessment will consider baseline conditions and the extent of the proposed Zone of Influence will be agreed with MCC/ TfGM based on the magnitude of increases in road traffic on the surrounding highway network.
- 5.145 The proposed stadium expansion would result in an overall capacity that is within the parameters already approved by the 2014 North and South Stand consent (104315/FO/2013/N2). This expanded capacity was also the basis for subsequent assessments that supported the consented Coop Live scheme in 2020.
- 5.146 The assessment for the TA will focus on the impact of the commercial uses (office and hotel). As it is not proposed to increase the existing capacity of the car park at the Campus, the volume of traffic accessing the Site to use the stadium itself would not increase from that already assessed and approved under previous applications. Indeed, the likely result of the additional commercial uses at the Campus would be to spread the arrival and departure of this existing volume of traffic, thus potentially reducing the peak traffic impacts at the junction before and after a stadium event.
- 5.147 A range of measures to promote these sustainable modes of transport were agreed for the two applications (i.e. North/South Stand Expansions and Co-op Live arena) and have subsequently been implemented (or are in the process of being in the case of Co-op Live). The TA will set out the measures that have been (or are in the process of being implemented) to support sustainable transport modes. This will include both the measures required as part of the extant planning consents but also additional measures that are part of the wider activities being undertaken to promote sustainable transport to/from and within the Etihad Campus. These measures will therefore form part of the Tertiary Mitigation for the Proposed Development.

Identification of Effect/s which are Not Significant

- 5.148 The effects of construction traffic resulting from the construction of the Proposed Development including workforce traffic will be assessed in consideration of the predicted net change in traffic flows. Cumulative effects of construction will also be considered where appropriate in terms of other construction activity occurring concurrently with the Proposed Development. The potential effects of construction traffic will be assessed by comparing the likely trip generation of construction traffic against future baseline traffic conditions.
- 5.149 The scope of this assessment has been determined based on the IEMA Guidelines²² which indicate that roads should be included on the basis of two 'rules of thumb', described as follows:
 - Rule 1: Include highway links where total traffic flows are predicted to increase by more than 30% (or where the number of Heavy Goods Vehicles (HGVs) is predicted to increase by more than 30%); and
 - Rule 2: Include any specifically sensitive areas where traffic flows are predicted to increase as a consequence of a development by 10% or more. Sensitive areas may be defined as locations near to more vulnerable user groups, such as school children,

²² IEMA (1993) 'Guidelines for the Environmental Assessment of Road Traffic'

people with disabilities or the elderly, or accident black spot areas, roads at or near capacity, or links with high pedestrian flow.

- 5.150 Any road links that meet these criteria indicate the potential for significant effects and will be scoped into the assessment.
- 5.151 At the time of writing this Scoping Report the volume and distribution of development traffic for the construction and operational phases and list of committed developments to be considered within the assessment are not yet confirmed and are subject to the outcomes of the TA scoping. It is therefore considered that at this time there may be the potential for significant effects on any road link subject to increases in traffic from the Proposed Development.
- 5.152 The TA scope of works will be agreed in parallel with the consideration of the EIA Scoping Report by the Local Planning Authority. A TA Scoping Note has been submitted to MCC and TfGM. The outcome of the TA scoping discussions is expected to influence where significant effects (i.e. traffic flows in excess of the IEMA thresholds for significance) could occur. It is therefore not possible to determine with certainty which links could experience traffic volumes in excess of the IEMA thresholds. It is therefore proposed to scope in all of the potential environmental effects relating to Traffic and Transport into the ES at this stage and assess the magnitude of traffic increases against the IEMA thresholds at the outset of the ES Chapter. These effects are discussed further below.
- 5.153 The IEMA Guidelines identify that the following environmental effects may be considered important when considering traffic from an individual development:
- Noise
 - Vibration
 - Visual impact
 - Severance
 - Driver delay
 - Pedestrian delay
 - Pedestrian amenity
 - Hazardous loads
 - Air pollution
 - Dust and dirt
 - Ecological impact
 - Heritage and conservation
- 5.154 Of these effects, many will be considered within other technical assessments of the ES. These effects will not therefore be reported in the Traffic and Transport chapter. This includes noise, vibration, visual impacts, air pollution, dust and dirt, ecological impact and heritage and conservation. Whilst not on the recommended list within the IEMA Guidelines, reference is made to effects of Fear and Intimidation and Accidents and Safety, which are proposed to be assessed in the ES.

Identification of Effect/s which are Likely to be Significant

- 5.155 The following receptors have therefore been identified as having the potential to be subject to likely significant effects: severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation and accidents and safety. The potential effects relevant to each receptor will be considered in turn, during both construction and operation phases.

- 5.156 The assessment of severance, pedestrian amenity, fear and intimidation and accidents and safety will be based on the change in total traffic flow (or HGVs) while driver delay and pedestrian delay will be assessed considering the change in total traffic flow on the roads concerned in the area of study.

- 5.157 The assessment will identify the requirements for any mitigation measures during construction that may require incorporation into the design of the development. The construction methodology will be reviewed and considered in relation to potential impacts on the identified receptors. At the time of writing, the volumes of material to be removed or brought to the Site are not yet known.

- 5.158 During the construction phase, mitigation is likely to comprise appropriate construction management measures and controls. Potential residual effects and the likelihood of occurrence of these effects, and residual uncertainties will be considered following mitigation. These will be presented in terms of significance and magnitude.

- 5.159 The effects of traffic resulting from the operation of the Proposed Development will be assessed in consideration of the predicted net change in traffic flows. As noted earlier, it is assumed that the stadium expansion would not result in any change to traffic flows within the zone of influence as no additional parking is proposed and the revised resident parking scheme will limit opportunities to park near to the Stadium. The forecast changes in traffic flows to inform the ES will be provided as an output from the TA, which will be included as an appendix.

- 5.160 The scope of this assessment will be determined based on the IEMA Guidelines (Section 3: Traffic Impact Analysis), which indicate that roads should be included where traffic flows are predicted to increase by more than 30%, unless the road in question is located within a specifically sensitive area in which case the road should be included if traffic flows increase by 10% or more.

- 5.161 As stated in the previous section it cannot be determined with certainty at this stage which road links would meet these criteria. The ES chapter will therefore establish, at outset, the sensitivity of road links subject to increases in traffic flows. An exercise will be undertaken to identify any sensitive receptors in the study area. We propose that the sensitive receptors identified for the Co-op Live Arena application form the basis of link sensitivities, although we would review for any changes in local receptors that may have caused a road link's sensitivity to change. This will be agreed with MCC Highways and TfGM.

- 5.162 The same potential environmental effects identified and defined above are relevant to both the construction and operational phases. They are based on the predicted net change inflows against the future baseline traffic conditions (assessment year to be determined through scoping discussions with MCC Highways and TfGM).

- 5.163 In terms of public transport, the IEMA guidelines do not identify a specific need to assess the impact of public transport changes. These impacts would be considered as part of the TA, and within the consideration of Driver Delay, which has the potential to affect users of bus and Metrolink (where on-street running) services, for example.
- 5.164 For robustness, we propose to assess the impacts of ‘peak month’ and ‘average peak year’ construction traffic flows to consider fluctuations in the intensity of construction activity, and associated volumes of traffic generated.
- 5.165 We have summarised the potential significant effects relevant to Traffic and Transport in the table below.

Effect	Receptor	Applicable Development Phase (C / O)
Severance	Pedestrians, Cyclists, People at Home, People at Work	C
Severance		O
Driver Delay	Car Drivers/ Passengers, Bus Services	C
Driver Delay		O
Pedestrian/ Cyclist Delay	Pedestrians, Cyclists	C
Pedestrian/ Cyclist Delay		O
Pedestrian and Cyclist Amenity	Pedestrians, Cyclists	C
Pedestrian and Cyclist Amenity		O
Fear and Intimidation	Pedestrians, Cyclists, People at Home, People at Work	C
Fear and Intimidation		O
Accidents and Safety	Car Drivers/Passengers, Bus Services, Pedestrians, Cyclists, Metrolink Users, Equestrians	C
Accidents and Safety		O

Assessment Methodology for Likely Significant Effects

- 5.166 In accordance with the IEMA guidelines, the study area will be defined by identifying any road link where it is felt that potentially significant environmental effects may occur as a result of the Proposed Development.
- 5.167 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor (on a scale of high, medium, low and negligible) and the magnitude of change (on a scale of large, medium, small and negligible) to determine the level of effect on a scale of major, moderate, minor and negligible. Significant effects will

be determined using professional judgment, informed by any relevant outcomes from the TA.

5.168 In order to complete the assessment, we will establish the following:

- Baseline traffic flows/ transport conditions.
- Construction and operational traffic generated by the Proposed Development (i.e. Magnitude of Change); and
- Highway link sensitivities (based on type, volume, and sensitivity, of individual receptors adjacent to links)

5.169 For the operational phase, and in accordance with IEMA Guidelines the study area will be defined by identifying any road link where it is felt that potentially significant effects may occur as a result of the Proposed Development.

5.170 For the construction phase, we anticipate that all HGV and LGV traffic would be required to adhere to prescribed 'Construction Traffic Routes'; defined between the Site and the strategic road network (SRN) i.e. M60. We therefore propose that our assessment would consider increases in traffic associated with the construction phase along all road links comprising construction traffic routes.

5.171 The proposed baseline year of assessment will be 2022 to reflect the planned submission of the planning application. Exact sources of data to be used have a co-dependency with the outcomes of the TA scoping however it is anticipated that it would include the following:

- 2019 Traffic Survey Data (manual classified counts) used to inform the Coop Live planning application
- We will liaise with MCC and TfGM to agree appropriate growth factors to be applied to these surveyed traffic flows in order to reflect any changes to traffic patterns that may have occurred since this time. These factors will be based upon locally based evidence using TfGM-held survey data for the local network;
- If required, DfT Countpoint Data Sites;
- TfGM road traffic accident statistics for the latest available five-year period and - if required CrashMap Database Personal Injury Accident (PIA) Data;
- Local, regional, and national planning policy documents; and
- Discussions with MCC/ TfGM

5.172 The magnitude of these effects will be assessed on the basis of the thresholds set out in the table below.

Magnitude of Impact				
	Major	Moderate	Minor	Negligible
Severance - results from the creation of new barriers such as roads	People are likely to be deterred from making pedestrian journeys to an extent sufficient to induce a reorganisation	Some people, particularly elderly people and children may be dissuaded from making a	All people wishing to make pedestrian movements will be able to do so, but there will probably be some	Little or no hindrance to

Magnitude of Impact				
	Major	Moderate	Minor	Negligible
combined with increased traffic flow along existing routes.	of their activities. Those who do make the journey on foot will experience considerable hindrance. Change in total traffic flows (or HGVs) of >90%.	journey on foot. For others, pedestrian journey will be longer or less attractive. Change in total traffic flows (or HGVs) of 60-90%.	hindrance to movement. Change in total traffic flows (or HGVs) of 30-60%.	pedestrian movement. Change in total traffic flows (or HGVs) of <30%.
Driver Delay - often caused by the impact of the works on the local road network, along with increases in overall traffic flow along existing routes.	Delay may have a major effect on journey times. The magnitude of delay is such that drivers may choose alternative route or time for their journey or may decide not to make journey at all. Change in total traffic flows of >30%.	Delay may have a noticeable effect on journey times but is unlikely to cause drivers to choose alternative route or time for their journey. Change in total traffic flows of 20-30%.	A measurable and perceptible change in driver delay. Unlikely to affect overall journey times. Change in total traffic flows of 10-20%.	Little or no change in delays to drivers. Change in total traffic flows of <10%.
Pedestrian Delay – results from increases in traffic flow, speed or composition along existing routes.	Delay may have a major effect on journey times. The magnitude of delay is such that pedestrians may choose alternative route or time for their journey or may decide not to make journey at all. Change in total traffic flows of >90%.	Delay may have a noticeable effect on journey times but is unlikely to cause pedestrians to choose alternative route or time for their journey. Change in total traffic flows of 60-90%.	A measurable and perceptible change in pedestrian delay. Change in total traffic flows of 30-60%.	Little or no change in delays to pedestrians. Change in total traffic flows of <30%.
Pedestrian Amenity – relates to the relative pleasantness of a journey and can be affected by increases in traffic.	The magnitude of change in the pleasantness of journeys made by foot or cycle is such that pedestrians and cyclists may choose alternative route or may decide not to make journey at all.	Change in the pleasantness of journeys made by foot or cycle may have a noticeable effect but is unlikely to cause pedestrians or cyclists to choose alternative route for their journey.	A measurable and perceptible change in the pleasantness of journeys made by foot or cycle. Change in total traffic flows (or HGVs) of 30-60%.	Little or no change in the pleasantness of journeys made by foot or cycle. Change in total traffic flows (or HGVs) of <30%.

Magnitude of Impact				
	Major	Moderate	Minor	Negligible
	Change in total traffic flows (or HGVs) of >90%.	Change in total traffic flows (or HGVs) of 60-90%.		
Fear and Intimidation - a pedestrian's level of fear and intimidation is linked to the volume of traffic on the local road network.	Change in the level of intimidation experienced by pedestrians due to road traffic, particularly HGVs may be such that pedestrians choose alternative route or may decide not to make journey at all. Change in total traffic flows (or HGVs) of >90%.	Change in the level of intimidation experienced by pedestrians due to road traffic, particularly HGVs may have a noticeable effect but is unlikely to cause pedestrians to choose alternative route for their journey. Change in total traffic flows (or HGVs) of 60-90%.	A measurable and perceptible change in level of intimidation experienced by pedestrians due to road traffic, particularly HGVs. Change in total traffic flows (or HGVs) of 30-60%.	Little or no change in the level of intimidation experienced by pedestrians due to road traffic, particularly HGVs. Change in total traffic flows (or HGVs) of <30%.
Accidents and Safety	Change in total traffic flows (or HGVs) of >90%.	Change in total traffic flows (or HGVs) of 60-90%.	Change in total traffic flows (or HGVs) of 30-60%.	Change in total traffic flows (or HGVs) of <30%.
	A qualitative assessment based on historical accident trends over the last five years.			

5.173 The sensitivity of a receptor can be defined by the degree to which it responds to a change in its environment. Within the IEMA guidance, the following groups of people or places are identified as being susceptible to changes in traffic conditions:

- People at home;
- People at work;
- Children, elderly, and disabled persons;
- Sensitive locations such as hospitals, churches, schools, historical buildings;
- Pedestrians;
- Cyclists;
- Open recreational spaces;
- Site of ecological/ nature conservation value; and

- Sites of tourist/ visitor attraction.

5.174 In the ES, a receptor will be defined not by individual affected party, but by location. This approach is consistent with the methodology applied for the Coop Live planning application. This is discussed further within the proposed methodology in the following section of this Scoping Report. The table below summarises a range of receptors and their sensitivity to increases in road traffic.

Example Receptors	Sensitivity
Schools, colleges, playgrounds, accident black spots, retirement homes, urban/residential roads without footways that are used by pedestrians.	High
Congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, un-segregated cycleways, community centres, parks and recreation facilities	Moderate
Sites of tourist/visitor attraction, places of worship, residential areas set back from the highway with screening	Low
Public open spaces, nature conservation areas and residential areas with adequate footway provision.	Negligible

5.175 An assessment will be undertaken looking at the quantity and classification of the sensitivity of receptors along each of the highway links which will be used during the construction of the Project or subject to operational traffic. Based on this assessment each link will be given an overall sensitivity classification, i.e., high, moderate, low, or negligible. These will be included in a set of baseline descriptions for affected highway links.

5.176 These sensitivities will then determine initially whether each link should be subject to assessment based on the IEMA thresholds. Should traffic exceed these thresholds the link sensitivity will be considered against the magnitude of impacts to determine a residual effect for each potential environmental effect relating to traffic and transport.

5.177 The assessment scenarios used to consider the effects of the Proposed Development will be agreed with MCC/TfGM during the scoping process. At this stage, it is envisaged this may include the following:

Ref.	Scenario	Year	Description
1	Baseline	2022	Year of Assessment. 2019 Flows with growth factors applied (TEMPRO v7.2 or as agreed with MCC/ TfGM).
2	Future Baseline as per 2014 Consent (Baseline +	TBC	2019 flows with growth Factors applied (TEMPRO v7.2 or as agreed with MCC/ TfGM) plus committed development + 2014 consent.

Ref.	Scenario	Year	Description
	Committed Development		
3	Construction (Future Baseline + Proposed Development Traffic (Construction))	TBC	As per 'Future Baseline + Committed Development' with Proposed Development construction traffic. 'Peak Month' and 'Average Month' to be assessed.
	Operation (Future Baseline + Proposed Development Traffic (Operational))	TBC	As per 'Future Baseline + Committed Development' with Proposed Development traffic (i.e. + proposed north stand expansion + hotel and office uses).

- 5.178 For the 2014 North and South Stand Expansion Transport Assessment it was agreed with TfGM/MCC that the increase in stadium capacity would result in no additional vehicular traffic on the highway network. As such, the first two scenarios are effectively the same in terms of vehicular traffic flows. The Traffic and Transport chapter will include a justification for this approach, explaining all scenarios, and providing a qualitative description as to why these two scenarios are identical in terms of quantitative traffic flows and that modelling will not be undertaken.
- 5.179 The potential effects of the Proposed Development on the transport networks in these scenarios will be considered against the IEMA assessment guidelines. During the course of the assessment, it will be determined whether the significance of an effect warrants detailed assessment in environmental terms using the thresholds and guidance set out by IEMA. If certain impacts are found to be negligible, then they will be scoped out for further assessment and the reasoning given in the ES Traffic and Transportation chapter.
- 5.180 The TA scope of works will be agreed in parallel with the consideration of the EIA Scoping Report by the Local Planning Authority and confirmed in the EIA Scoping Opinion.
- 5.181 When determining final residual environmental effects it is important to note that the IEMA guidelines do not distinguish between temporary and permanent changes in traffic flows. DMRB guidance does however indicate that this should be considered. In reality, short duration increases are likely to be less disruptive and less impactful than permanent increases, and therefore less significant. This will be discussed in the consideration of final residual effects relating to the construction phase of the Proposed Development. As such, professional judgement will be applied which when considering the influence shorter durations are likely to have on the overall significance of effects.

Limitations and Assumptions

- 5.182 The following limitation and assumptions are relevant to the Traffic and Transport Assessment:
- Construction traffic will be assigned to prescribed 'Construction Traffic Routes' located between the Site and the Strategic Road Network

- For the purposes of assessment, HGVs are defined as any vehicle with a gross vehicle weight in excess of 3.5t
- The location of prescribed Construction Traffic Routes has not been finalised at this stage and is subject to agreement with MCC/TfGM
- The duration, composition, and location of working activities during the construction programme have not been finalised

Water Quality, Drainage and Flood Risk

Executive Summary

- 5.183 Based on completed background studies or available baseline information, the consultant suggests that there are potentially significant effects in relation to this discipline. The methodology of gathering baseline data, undertaking the assessment and recommending mitigation measure is set out below, which will be adhered to in the preparation of the ES chapter relating to Water Quality, Drainage and Flood Risk.

Baseline

- 5.184 The current drainage arrangements for the Site will be reviewed as part of the drainage strategy to be developed for the Proposed Development, which will form an appendix to the Water Resources and Flood Risk ES Chapter. Additionally, a Flood Risk Assessment (FRA) will be prepared and will also form a supporting appendix to the ES Chapter. Appropriate consultation will be held with UU to agree connections and flow rates.

Existing Waterbodies

- 5.185 The nearest watercourse to the Site is the Ashton Canal, approximately 35m to the north of the Site and the River Medlock is approximately 170m to the northwest which is designated as a Main River. The River Medlock is culverted below the car parks on the opposite side of the canal to the north of the Site.
- 5.186 The Site falls within the North West River Basin District and the Irwell Management Catchment. The associated River Basin Management Plan sets a number of actions to meet the requirements (i.e., good status) of the Water Framework Directive (WFD). Surface water from the Site flows into the River Medlock. With regard to the WFD classification system, the River Medlock is currently designated as achieving ‘moderate’ potential for ecological quality and a ‘fail’ for chemical quality.

Existing Drainage

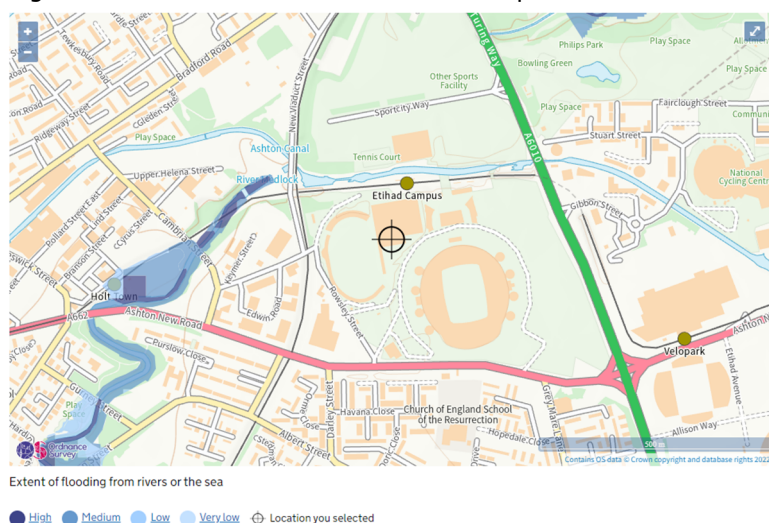
- 5.187 Information obtained from UU indicates the following drainage systems are presented in the vicinity of the Site:
- 850mm diameter surface water sewer running east to west through the north of the Site
 - 900mm diameter combined sewer running from south to north on the east of the Site
 - 375mm diameter concrete sewer running from south to north on the west side of the Site

- 375mm diameter VC sewer and 550mm x 950mm running along the northern boundary of the Site

Flood Risk

- 5.188 The Site is entirely within Flood Zone 1, an area at low risk of flooding from rivers or the sea (this equates to land having a less than 1 in 1,000 annual probability of river or sea flooding), see Figure 5.2. According to the National Planning Policy Framework (NPPF), any type of development is compatible within Flood Zone 1.

Figure 5.2 EA rivers and sea flood risk map.



- 5.189 Multiple areas of the Site are at risk from surface water flooding as per EA Flood Risk from Surface Water Mapping (see Figure 5.3). These areas include the radial road and footway around the Etihad Stadium and the Proposed Development access at Gibbon Street/Alan Turing Way junction. However, most of the flood extents are considered low risk with an annual chance of occurring between 1 in 100 and 1 in 1000 years. The surface water flooding shown can be managed by the provision of Sustainable Urban Drainage Systems (SuDS) as part of the Proposed Development.

Figure 5.3 EA surface water flood risk map



Scope of Assessment

Identification of Effect/s which are Significant

Effect	Receptor	Applicable Development Phase (C / O)
Deterioration of the quality of surface water run-off from the Site which may deteriorate the quality of downstream water bodies and groundwater through infiltration.	Ashton Canal and River Medlock	C
Accidental leaks and spillages of hazardous material which could adversely affect the quality of downstream water bodies and groundwater through infiltration.	Ashton Canal and River Medlock	C
Flood risk to construction workers and plant.	Site users	C
Increased water demand and foul water demand from the Site placing pressure on infrastructure.	Water services infrastructure: Foul drainage and water supply	O
Potential change of surface water flow regime across the Site changing capacity requirements for surface water network.	Water services infrastructure: Surface water drainage	O
Deterioration of the quality of surface water run-off, which may deteriorate the quality of nearby water bodies, via the surface water network.	Ashton Canal and River Medlock	O
An increase in surface water discharge rates which may increase flood risk to the Site, adjacent sites, and areas downstream.	Site users	O

Assessment Methodology for Likely Significant Effects

- 5.190 The Water Resources and Flood Risk Chapter of the ES will assess the potential effects of the Proposed Development on the surrounding water environment and the potential effects of the water environment on the Proposed Development. This will include an

assessment of the potential changes in water supply, foul drainage, surface water drainage, pollution prevention and flood risk.

Existing site (baseline) with committed developments

- 5.191 The baseline assessment will consider the existing scenario both on and around the Proposed Development. Data will be gathered from the following sources:
- Envirocheck reports
 - Consultation with the relevant authorities (i.e. through pre-development enquiries)
 - EA data on current quality of existing surface water features in line with the requirements of the WFD
 - Review of existing surface water runoff regime and flood risk issues. Note an FRA and drainage strategy will inform the baseline study and will form Appendices to the ES
 - A review and summary of relevant international, national, and local legislation relating to the water environment

Baseline plus Proposed Development

- 5.192 Potential effects on the water environment, and in particular the features of the water environment, arising from the Proposed Development will be assessed against the baseline condition. Effects will be assessed for both the demolition and construction, and operational phases of the Proposed Development.
- 5.193 Potential changes to pollution to the surface water environment will be assessed through a qualitative based approach.
- 5.194 An FRA and drainage strategy will be prepared, including consultation with UU, the EA and the LLFA, and will assess the risk of flooding from all sources (fluvial, groundwater, surface water, sewer, and tidal) and the change in risk due to climate change.
- 5.195 The FRA and drainage strategy will provide a level of quantification/appraisal regarding drainage impacts for both foul water and surface water flows and will propose appropriate forms of SuDS to reduce pressures on water infrastructure capacity. This will be summarised in EIA terms within the Water Resource and Flood Risk ES Chapter.
- 5.196 The utilities appraisal for the Site will determine the existing utility baseline conditions on the Site regarding potable water and will provide a level of prediction for constraints and capacities. The findings will be summarised in the Water Resources and Flood Risk ES Chapter.
- 5.197 The effect significance will be based on assessing the effect magnitude (i.e. the deviation from the baseline condition) and the sensitivity of the affected receptor, as set out in Appendix C. Professional judgement and the use of a matrix approach will determine if potential effects are significant.
- 5.198 Where necessary, supplementary mitigation measures shall be implemented. The significance of effects shall then be re-assessed with the supplementary mitigation measures in place, based on the criteria set out in Appendix C.

- 5.199 A qualitative assessment of the 2014 consented north stand will be included within the ES chapter. This will compare the water resources, drainage and flood risk effects between the 2014 consented scheme and the new north stand to be provided as part of the Proposed Development. A drainage strategy and flood risk assessment was prepared for the 2014 extant consent, and the mitigation considered as part of those documents shall inform this assessment.

Limitations and Assumptions

- 5.200 The water environment is well understood for the purpose of this assessment and the preparation of an ES Chapter.
- 5.201 The understanding with regard to flood risk, foul water drainage and surface water drainage will be informed through a number of best practice modelling techniques, to produce accurate information for the baseline and future baseline scenarios. The assessment will be reinforced by sound judgement and professional experience gained from working on similar projects.

Wind Microclimate

Executive Summary

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

Baseline

- 5.203 A safe and comfortable wind climate is integral to the success of any development. New buildings can generate wind acceleration at ground level which could result in discomfort to pedestrians. An assessment of the wind microclimate created by the Proposed Development is necessary to identify any potential impacts that the Proposed Development may have on sensitive receptors adjacent to and users of the Site during both the construction and operational phases.
- 5.204 The existing wind microclimate at the Site will be quantified as part of the proposed modelling using a model of the existing buildings on site and in the surrounding area within a 450m radius, as described below.
- 5.205 The baseline assessment will include the following:
- The closest and most suitable wind data provided by the Met Office will be obtained and a Wind Frequency Analysis will be completed. This will be applied as boundary conditions for a Boundary Virtual wind model that will be used to quantify the wind microclimate of the existing site and its surroundings. The model will include:
 - Wind translation from the wind data location to the Site
 - Topographical and building data available for the Site and existing surroundings

- Quantitative assessment of the agreed baseline conditions of the Site, using available topographical data from local sources. The baseline will be assessed and modelled using computational fluid dynamics (CFD)
- 5.206 The Site is largely open to the south and east, resulting in possible exposure to winds from these directions. To the east of the Site are buildings which are 9 and 10 storeys in height. The Site is fairly exposed to the south east. The large mass of the Etihad Stadium offers some protection from wind from the south; however, some wind moves around it and reaches the Site. The following buildings surround the Site that may affect the wind movement:
- To the southwest of the Site are lower rise buildings. The west of the Site is also fairly open, except for the low rise training grounds;
 - The new Co-op arena building is located to the northeast of the Site;
 - There is a low building within the Site, located to the north (the existing club shop), with surrounding canopies; and
 - There are no tall buildings in the vicinity of the Site, i.e. buildings that are significantly taller than their neighbours
- 5.207 Because of this, wind is likely to move around the stadium.
- 5.208 Pedestrian activities (sensitive receptors) are present along the perimeter of the stadium. Conditions are likely to be suitable for this activity; however, it is likely to feel exposed in high winds.
- 5.209 An assessment of the 2014 consented north stand will be scoped out of the wind microclimate assessment. An assessment of this scenario is not relevant as the change to the stadium design with the new north stand proposals means wind effects and associated mitigation cannot directly be compared.

Scope of Assessment

Identification of Effect/s which are Likely to be Significant

Effect	Receptor	Applicable Development Phase (C / O)
Temporal effects will change depending on the phase of construction. Due consideration will be given to the temporary hoarding, during the construction phase to reduce wind acceleration on site.	Users of the Site	C
New buildings associated with the Proposed Development could generate wind acceleration at ground level, which could cause discomfort to pedestrians (e.g. along public routes and within areas of public realm). The	Users of the Site and pedestrians	O

exposed nature of parts of the Proposed Development will have the potential to generate wind acceleration which could have adverse impacts on sensitive receptors.		
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Assessment Methodology for Likely Significant Effects

Technical Scope

- 5.210 There are no national codes of practice or legislative policies relating to the assessment of environmental wind flows in the built environment. The impact of environmental wind on pedestrian spaces and the subsequent suitability of these spaces for planned usage are described by the Lawson Comfort Criteria (LCC), which are recognised by local planning authorities as a suitable benchmark for wind assessments. The LCC will be applied in the wind assessment for the Proposed Development.
- 5.211 The wind assessment will be informed by a CFD wind assessment, which will comprise the following steps for CFD study and effect prediction.

CFD Assessment

- 5.212 The closest and most suitable wind data provided by the Met Office will be obtained and a Wind Frequency Analysis will be completed. This will be applied to the quantitative assessment of the wind effects likely to occur due to the inclusion of the proposed buildings. The CFD assessment will be used to assess the wind microclimate of the Site and its surroundings and will include topographical and geometrical data will be used.

Effect prediction and assessment of effect significance

- 5.213 The evaluation criteria that will be used will be based on the LCC to assess the level of comfort for both existing sensitive receptors and new residential uses and public routes and spaces proposed as part of the Proposed Development from which the following will be undertaken:
- Assessment of the significance of effects through comparison of the Proposed Development against the LCC (including yearly, seasonal and worst season effects), and safety where necessary
 - Cumulative impacts before and after construction of the Proposed Development and any residual effects
- 5.214 Assessment of the following scenarios will be undertaken:
- Scenario 1: Existing site in the context of existing surroundings (baseline)
 - Scenario 2: Proposed Development in the context of existing surroundings (Proposed Development)
 - Scenario 3: Proposed Development in the context of future existing surroundings (cumulative).

- 5.215 The quantitative assessment will compare the existing and proposed receptors and the Proposed Development as a whole without mitigation, and subsequently the likely effects the proposed landscape strategy may have on the comfort and safety of pedestrians using the Proposed Development.

Limitations and Assumptions

- 5.216 A CFD assessment will be carried out based on a RANS simulation. The RANS simulations do not model the effects of gusts, however, a mathematical approximation will be used to account for it. The use of CFD is accurate for the assessment of pedestrian comfort and safety.

Appendices

Appendix 1a Site Location Plan

Appendix 1b EIA Boundary

Appendix 2 Committed Developments

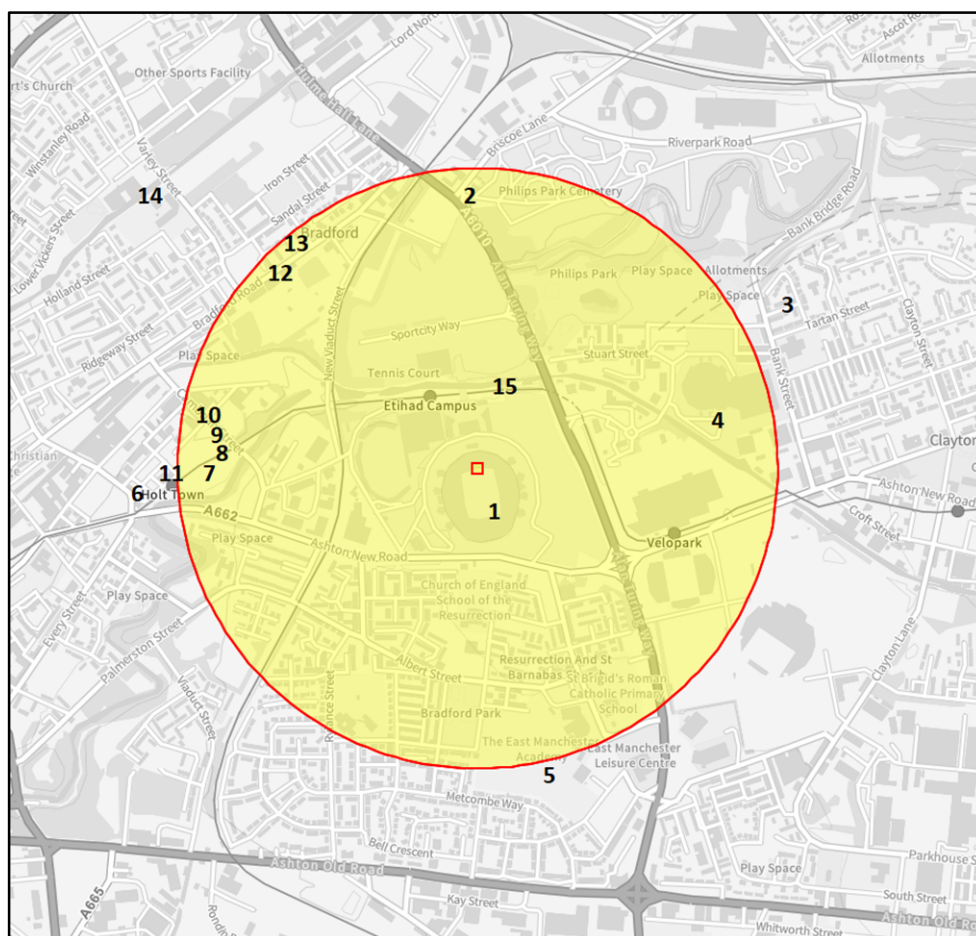
A number of Sites within a 1km radius of the Site benefit from extant Planning Permission, or are currently under consideration by the Local Planning Authority. These are set out in Table A.

Table A: Committed Developments within a 1km radius of the Site as in January 2023

Number	LPA Planning Ref	Description of Development	Status	Distance from the Site
1.	104315/FO/2013/N2	Alterations to the Etihad Stadium, including increasing the overall height of the South and North stands and associated elevational alterations, to allow an increase each stand capacity by up to 6,250 seats respectively and up to 2,000 additional pitch side seats creating a total match day capacity of up to 62,170 seats (from 47,670), expansions of concourse facilities, alteration to public realm including changes to car parking layout, landscaping and boundary treatments and associated infrastructure works.	Application Granted 14 th February 2014	Same site. Permission partially implemented (South Stand) with North Stand permission remains extant. NOTE: To be tested qualitatively and not within cumulative
2.	123295/FO/2019	Erection of a light industrial and storage/distribution building (Sui Generis) (3251 sqm) with associated car parking and boundary treatment.	Permission Granted 20 th May 2020	Approx. 770 metres
3.	122897/FO/2019	Proposed redevelopment of vacant land to create 66 no. 2, 3 and 4 bedroom dwellings incorporating new access roads off Bank Street and Tartan Street, pavements and associated landscaping and boundary treatments.	Permission Granted 28 th June 2019	Approx. 700 metres
4.	128597/VO/2020	CITY COUNCIL DEVELOPMENT - External alterations to building including erection of a two storey plant enclosure extension, on the north elevation, external curtain walling to replace existing and new cladding over exiting finishes on Velodrome building	Permission Granted 11 th January 2021	Approx. 670 metres
5.	132588/FO/2021	Erection of a learning and training facility building (Use Class F1(a)) including classrooms, seminar rooms, offices, flexible conferencing space and workspace, kitchen facilities, changing facilities, a 900 seat spectator stand and ancillary community space, use of existing rugby pitch as a training facility, occasional match and events venue, together with the	Permission Granted 26 th May 2022	Approx. 860 metres

Number	LPA Planning Ref	Description of Development	Status	Distance from the Site
		erection of floodlighting, boundary treatment, access and highways works and other associated works following demolition of existing structures		
6.	125790/FO/2019	Change of use from a vacant car park to a dog day care facility (sui generis) with associated structures and boundary treatment for a temporary 4 year period.	Permission Refused 25 th September 2020	Approx. 720 metres
7.	132458/FO/2021	Creation of 112 space surface car park, modification to existing boundary treatment, installation of lighting columns and associated landscaping following demolition of foundations of previous buildings for a temporary period of three years.	Permission Temporarily Approved 11 th May 2022	Approx. 670 metres
8.	126630/FO/2020	Erection of two storey side extension to existing office, together with the inclusion of a mezzanine floor and associated car and cycle parking.	Permission Granted 2 nd December 2020	Approx. 700 metres
9.	122546/FO/2019	Application for temporary siting and use of site for 50 recycled shipping containers to provide co-working space (sui generis) for a temporary period of up to 5 years, with associated car parking, portable toilets and servicing from Pollard Street East	Permission Temporarily Approved 24 th April 2019	Approx. 690 metres
10.	124267/FO/2019	Application for temporary siting and use of site for 64 additional recycled shipping containers (114 no. in total) to provide co-working space (sui generis) for a temporary period of up to 5 years, with associated car parking, portable toilets and servicing from Pollard Street East	Permission Temporarily Approved 12 th September 2019	Approx. 690 metres
11.	127505/FO/2020	Erection of a first floor extension to existing building to provide 880 sqm of additional office accommodation (Use Class B1) together with elevational alterations and other associated works	Permission Granted 14 th October 2020	Approx. 850 metres
12.	134052/FO/2022	Erection of 28 x two and three storey dwellinghouses (Class C3) with associated parking, landscaping and boundary treatment.	Permission Granted 18 November 2022	Approx. 550 metres
13.	125596/FO/2019	Planning Application for housing-led mixed use redevelopment comprising: a maximum of 410 new dwellings (Class C3); and comprising Class E (maximum floorspace 744 sq.m GIA in total); recreation open space and landscaping; and associated access off Hulme Hall Lane, Varley Street and Iron Street, infrastructure provision and car parking.	Permission Granted 10 th November 2020	Approx. 830 metres
14.	117055/FO/2017	Proposed residential development of 129 properties with a mix of two and three storey semi-detached / terraced properties and eight apartments in one block with associated road access, parking and landscaping.	Permission Granted 13 th February 2018	Approx. 1,000 metres

Number	LPA Planning Ref	Description of Development	Status	Distance from the Site
15.	126431/FO/2020	Erection of a multi-use arena (Use Class D2) with a partially illuminated external facade together with ancillary retail/commercial uses (Classes A1, A3 and A4), with highways, access, servicing, landscaping, public realm and other associated works	Permission Granted 23 rd October 2020	Same site. NOTE: To be tested within the baseline and not within cumulative



Committed Developments within 750 metres buffer (Accessed January 2023)

Appendix 3 Environmental Disciplines to be Scoped Out of the EIA

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

Built Historic Environment

Completed Background Studies / Available Baseline Information

The table below illustrates the completed Background Studies / Available Baseline Information in respect to the built historic environment.

Table 4.1: Completed Background Studies / Available Baseline Information

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
Desktop Assessment of Potentially Impacted Heritage Assets	Designated and non-designated heritage assets were identified within a 1km radius of the EIA Study Area, catalogued (Appendix 6) This was undertaken utilising: • The Historic England online 'Search the List' function for listed buildings. List descriptions were downloaded and reviewed to aid initial understanding of significance of the assets; • Manchester City Council and Salford City Council websites were reviewed to identify Conservation Areas and any associated Council descriptive materials or appraisals were reviewed; and An initial assessment demonstrated that the Proposed Development was most visible from within 500m of the Site. However, a boundary of 1km was also applied to ensure results were robust. This data was then considered with a Zone of Visual Influence (ZVI) (Appendix 7) provided by the townscape and visual lead, Planit.ie From this analysis it was considered that a notional 1km area of analysis was appropriate for consideration. Beyond 1km the approximate Zone of Visual Influence indicated that it is highly unlikely that the Proposed Development would be visible in conjunction with any heritage asset due to the topography and existing development. From this assessment 4 no. listed buildings were discounted from further assessment.	September – November 2022
Site Visits to verify desktop assessment work	Site visits were undertaken in November 2022 to review the identified heritage assets, particularly their primary facades, features of significance and visible relationship with the Site. Photographs were taken as a record and to aid later analysis.	November 2022

Study / Survey / Analysis / Evaluation	Overview	Date of Completion
	Through this analysis 11 no. listed buildings and 2no. registered parks and gardens were identified to be part of the assessment.	

Baseline

The Etihad Stadium is not a considered a heritage asset and is not located within a conservation area.

Within the ZVI (1km), the following designated heritage assets are demonstrated to fall within the zone of influence (i.e. potentially being subject to some level of impact)

- 12 Listed Buildings Comprising
 - 11 Grade II assets
 - 1 Grade II* asset
- 2 Registered Parks and Gardens

Scope of Assessment

Identification of Effect/s which are Not Significant

Table 4.2: Identification of Effect/s which are Not Significant - Construction

Effect	Change in setting and therefore significance of heritage assets	Applicable Development Phase (C / O)	C	Receptor	All identified heritage assets within the ZVI
Discussion of Effect					
During the construction stage there will be a visible change to the setting of the identified heritage assets due to temporary structures and facilities to deliver the scheme and will visibly change from week to week. While the construction stage will not directly impact the identified heritage assets, it will result in a change to their setting and potentially their significance as a result. Where a change to setting is perceived, it will be temporary and will result in 'no' to 'negligible' impact on the significance of the identified assets overall. Furthermore, the construction will take place within a dense city context where construction activities are part of the existing baseline environment. Given the existing mass on site and surrounding form, the construction of the Proposed Scheme will not change the overall setting of the heritage assets.					
Mitigation Committed to in order to Avoid or Reduce Effect					
It is anticipated that the construction site will be kept tidy and presentable at street level with suitable hoardings in place (secured through the Construction Environmental Management Plan). In addition, there will be controls on working hours and management of traffic. The changing weekly visual progress of development will only temporarily indirectly impact the					

Effect	Change in setting and therefore significance of heritage assets	Applicable Development Phase (C / O)	C	Receptor	All identified heritage assets within the ZVI
setting and there will be no permanent impact on setting and therefore significance derived from the construction stage					
Concluding Statement					
Therefore, the change in setting and impact on significance during construction is not considered to be significant and will not be considered further in the EIA or reported in the ES.					

Table 4.3: Identification of Effect/s which are Not Significant - Operational

Effect	Change in setting and therefore significance of heritage assets	Applicable Development Phase (C / O)	O	Receptor	All identified heritage assets within the ZTI
Discussion of Effect					
During the operational stage there will be a change to the setting of the identified heritage assets. The existing structure on site will be extended to form a structure of taller mass. The operational stage will not directly impact the identified heritage assets but will result in a change to their setting (indirect impact) and potentially their significance as a result.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Utilising the ZTI and mapping of heritage assets, numerous viewpoint locations have been identified to fully assess the visual impact on the identified heritage assets. The exact locations will be refined to ensure the full impact can be assessed. It should be noted that not all of these viewpoints are for the purposes of assessing heritage impact. Initial white block massing will be used initially to sense check the ZTI, to consider whether the proposals are visible in each view, before initial rendering of the Proposed Scheme on Site is provided. This will allow the potential indirect impact on the identified heritage assets to be understood and reported (within a Heritage Impact Statement). Deloitte, as the heritage consultant, will then work with the architect to mitigate the impact to avoid or reduce the effect to non-significant as necessary. In addition, the potential magnitude of change and therefore potential level of effect is reduced due to the baseline and the Etihad Stadium in situ. In its current form, it is assessed to make a neutral contribution to the setting of surrounding heritage assets. From an initial view, a number of the Ashton Canal features are enjoyed principally at a lower topography than that of the Site and there is significant boundary planting around the perimeter of Philips Park and Cemetery. These factors, along with the urban location of the Site, renders any potential impact as unlikely to be significant.					

Concluding Statement
Therefore, the change in setting and impact on significance during operation is not considered to be significant and will not be considered further in the EIA or reported in the ES.

Daylight and Sunlight

Baseline

The Site is located east of Manchester City Centre, adjacent to Alan Turing Way (A6010). The Site currently includes a public realm area (City Square) to the north of the existing stadium and south of the Co-Op Arena.

The closest adjacent residential receptors are in the Waterfront development off Gibbon Street, 220m to the northeast of the existing Etihad Stadium. Existing adjacent amenity receptors are the Manchester Regional Arena, the Manchester Tennis and Football Centre and Philips Park located 90m northwest, 220m northwest and 280m northeast of the existing Stadium, respectively. The distances of the above receptors and their location relative to the Site are such that they will all experience a negligible effect on levels of daylight, sunlight and overshadowing in the baseline condition.

Baseline data will be gathered from the following key sources;

- Architect's 3D model of the Proposed Development and existing surroundings; and
- Aerial and street-level photography of the baseline environment.

Scope of Assessment

The Proposed Development will potentially affect the daylight and sunlight access of adjacent existing sensitive receptors. Daylight, sunlight and overshadowing assessments are generally carried out in the context of guidance contained in the BRE report BR209, Site Layout Planning for Daylight and Sunlight 2022 (BR209), which provides guidance on achieving good daylight and sunlight levels within a development and safeguarding daylight and sunlight at existing dwellings and open amenity spaces.

Given the scale of the Proposed Development, a daylight, sunlight, and overshadowing assessment could potentially be considered necessary. The guidance of BR209 is not applicable to daylight and sunlight for buildings within the Proposed Development, as no permanent dwellings are included as part of the Proposed Development.

Identification of Effect/s which are Not Significant

Buro Happold have considered the potentially significant effects in the tables below, all of which are considered not significant and therefore the discipline can be scoped out of the EIA. A separate Sunlight, Daylight Report will be submitted with the forthcoming planning application to confirm this.

Table 4.4: Identification of Effect/s which are Not Significant - Construction

Effect	Loss of daylight and sunlight	Applicable Development Phase (C / O)	C	Receptor	All sensitive receptors
Discussion of Effect					
During construction, the Proposed Development will transition from the baseline to the fully operational state. The fully-built scenario represents the worst-case level of obstruction to natural light experienced at the surrounding sensitive receptors, so construction effects are considered to be not significant.					
Mitigation Committed to in order to Avoid or Reduce Effect					

As construction effects are considered to be not significant, no mitigation is required
Concluding Statement
No significant effects on levels of daylight, sunlight and overshadowing experienced at surrounding sensitive receptors will be experienced during construction of the Proposed Development.

Table 4.5: Identification of Effect/s which are Not Significant - Operational

Effect	Loss of daylight and sunlight	Applicable Development Phase (C / O)	O	Receptor	The nearest residential properties off Gibbon Street
Discussion of Effect					
There is a negligible effect of the Proposed Development on daylight and sunlight access on residential dwellings. The nearest residential properties off Gibbon Street, to the east of the Site, meets BR209 guidance as it has no view of the Proposed Development above a 25° angle struck from the centre of ground floor windows. It is proposed that a daylight, sunlight and overshadowing assessment is scoped out of the ES and is instead provided as a standalone report for the planning application, assessing only sunlight access on amenity spaces provided by the landscaping design within the Proposed Development.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Due to the negligible impact of the Proposed Development on daylight and sunlight access on residential dwellings, no mitigation is required.					
Concluding Statement					
The relationship between the proposed building massing and its separation distance from the nearest residential properties is such that BR209 guidance for acceptable loss of daylight and sunlight at existing properties will be fully met.					

Effect	Loss of sunlight	Applicable Development Phase (C / O)	O	Receptor	Philips Park
Discussion of Effect					
There is a negligible effect of the Proposed Development on daylight and sunlight access at open amenity spaces. Philips Park, to the northeast of the Site, meets BR209 guidance as it is entirely to the north of the Proposed Development, leaving more than 50% of the Park continuing to receive at least two hours of direct sunlight on the March Equinox. It is proposed that a daylight, sunlight and overshadowing assessment is scoped out of the ES and is instead provided as a standalone report for the planning application, assessing only sunlight access on amenity spaces provided by the landscaping design within the Proposed Development.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Due to the negligible impact of the Proposed Development on daylight and sunlight access on open amenity spaces, no mitigation is required.					
Concluding Statement					
The relationship between the proposed building massing and its separation distance from the closest open amenity spaces is such that BR209 guidance for acceptable loss of daylight and sunlight at existing properties will be fully met.					

Effect	Loss of sunlight	Applicable Development Phase (C / O)	O	Receptor	Manchester Regional Arena
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Discussion of Effect
The Manchester Regional Arena, to the west of the Site, will receive shadows from the Proposed Development on outdoor sports and athletics surfaces but will only be overshadowed by the Proposed Development until mid-mornings so will continue to receive over two hours of direct sunlight on at least 50% of their area on the March Equinox. There will be a negligible impact of the Proposed Development on sunlight access associated with this sensitive receptor. It is proposed that a daylight, sunlight and overshadowing assessment is scoped out of the ES and is instead provided as a standalone report for the planning application, assessing only sunlight access on amenity spaces provided by the landscaping design within the Proposed Development.
Mitigation Committed to in order to Avoid or Reduce Effect
Due to the negligible impact of the Proposed Development on sunlight access on this sensitive receptor, no mitigation is required.
Concluding Statement
The relationship between the proposed building massing and its separation distance from this adjoining property is such that BR209 guidance for acceptable loss of sunlight at existing amenity areas will be fully met.

Effect	Loss of sunlight	Applicable Development Phase (C / O)	O	Receptor	The Manchester Tennis and Football Centre
Discussion of Effect					
The Manchester Tennis and Football Centre, to the northwest of the Site will receive shadows from the Proposed Development on outdoor playing surfaces in early mornings and will continue to receive over two hours of direct sunlight on at least 50% of their area on the March Equinox. There will be a negligible impact of the Proposed Development on sunlight access associated with this sensitive receptor. It is proposed that a daylight, sunlight and overshadowing assessment is scoped out of the ES and is instead provided as a standalone report for the planning application, assessing only sunlight access on amenity spaces provided by the landscaping design within the Proposed Development.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Due to the negligible impact of the Proposed Development on sunlight access on this sensitive receptor, no mitigation is required.					
Concluding Statement					
The relationship between the proposed building massing and its separation distance from this adjoining property is such that BR209 guidance for acceptable loss of daylight and sunlight at existing properties will be fully met.					

Effect	Pressure on local CD&E waste infrastructure to manage CD&E waste arisings from the Proposed Development	Applicable Development Phase (C / O)	C	Receptor	Local CD&E waste treatment/disposal infrastructure
Discussion of Effect					
During demolition and construction, the key sensitive waste receptor is the capacity of CD&E waste infrastructure facilities. Effects on this receptor will be dependent on the amount of CD&E waste generated and the capacity available for treating this waste. There is potential for waste generated during the Proposed Development's demolition and construction phase to have an adverse environmental effect if appropriate mitigation measures are not implemented. Large pulses of waste can be generated at key construction stages, with waste from off-cuts and packaging also produced during the fit-out period. Peaks in waste generation can put pressure on local infrastructure capacity, limiting the ability of this infrastructure to treat and manage CD&E waste in an effective and efficient way.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Tertiary mitigation: To encourage the beneficial re-use of waste material and to reduce the risk of any adverse environmental effects occurring, a Site Waste Management Plan (SWMP) will be prepared by the Principal Contractor prior to demolition and construction works commencing. The SWMP will be included within the Construction Management Plan to be submitted with the planning application.					
Concluding Statement					
The Greater Manchester Joint Waste Development Plan Document states that there will be sufficient recycling capacity for CD&E waste in the region, at least until 2028. While the Waste Plan indicates that there will be limited treatment capacity for residual CD&E waste by 2023, a large proportion of this material can be beneficially re-used in various land reclamation and restoration projects across Greater Manchester. The SWMP will demonstrate how both demolition and construction waste will be minimised, as well as how the sustainable waste management needs of the end user will be met. The SWMP will also include a scheme for re-using/recycling/disposing of waste resulting from the demolition and construction works. It is proposed that the measures outlined in the SWMP will help ensure that CD&E waste can be appropriately managed in such a way that significant environmental effects do not arise.					

Effect	Pressure on local commercial and industrial (C&I) infrastructure to manage operational waste arisings from the Proposed Development	Applicable Development Phase (C / O)	O	Receptor	Local C&I treatment/disposal infrastructure
Discussion of Effect					
During operation, the key sensitive waste receptor is the capacity of waste infrastructure facilities. Effects on this receptor are dependent on the amount of operational waste generated and the capacity available for treating/disposing this waste. There is potential for waste generated during the Proposed Development's operational phase to have an adverse environmental effect if appropriate mitigation measures are not implemented. The highest quantities of operational waste will be produced on match days and event days. At these times in particular, there is potential for operational effects to arise, namely pressure being put on existing local infrastructure to treat and manage operational waste in an effective and efficient way.					

Mitigation Committed to in order to Avoid or Reduce Effect
Tertiary mitigation: An Operational Waste Management Strategy (OWMS) will be prepared and submitted with the planning application. The OWMS will estimate expected levels of operational waste generation and outline mitigation measures to reduce, reuse and recycle the waste that is generated.
Concluding Statement
The Greater Manchester Joint Waste Development Plan Document states that there will be sufficient recycling capacity and sufficient organic waste treatment capacity for managing waste generated by the region's C&I sectors, at least until 2028. While additional residual waste capacity will be required within the Greater Manchester area, the Plan has already allocated several sites for this purpose. Moreover, the additional waste arisings from the Proposed Development are likely represent a relatively small proportion of the total waste generation for Greater Manchester. These additional waste arisings are therefore unlikely to alter the results of the needs assessment or site allocation exercise in the Waste Plan. As such, it is expected that the Proposed Development will not have a significant effect on local C&I treatment/disposal infrastructure. To help further reduce the risk of any adverse environmental effects occurring, a robust and well-planned design will be developed that will maximise the efficiency of the Proposed Development's waste management operations. It is proposed that the mitigation measures outlined in the OWMS will help ensure that operational waste can be appropriately managed in such a way that significant environmental effects do not arise.

Socio Economic

Scope of Assessment

Identification of Effect/s which are Not Significant

Consideration of socio-economic effects for both the construction (C) and operation (O) period are highlighted within the tables below.

Table 4.6: Identification of Effect/s which are Not Significant - Construction

Effect	Temporary employment uplift during the construction stage which will support uplift in GVA	Applicable Development Phase (C / O)	C	Receptor	Individuals seeking construction employment and the local economy (through GVA)
Discussion of Effect					
The proposals will see a temporary increase in employment during the construction period.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Considered to be a temporary beneficial effect which will be managed by a Local Labour Agreement.					
Concluding Statement					
Whilst beneficial, these are unlikely to be significant in EIA terms, therefore recommended to be scoped out. In addition the supporting Amion report will consider the impacts.					

Table 4.7: Identification of Effect/s which are Not Significant - Operational

Effect	Crime	Applicable Development Phase (C / O)	O	Receptor	Reduction in crime and fear of crime
Discussion of Effect					
The proposed uses have the potential to lead to reduction in crime and fear of crime					
Mitigation Committed to in order to Avoid or Reduce Effect					
Through 'Secured by Design' compliance which promotes and incorporates good design quality, layout and lighting in addition to Operational Management and security.					
Concluding Statement					
Whilst beneficial, these are unlikely to be significant in EIA terms, therefore recommended to be scoped out.					

Effect	Net change in direct operational employment (and change in GVA)	Applicable Development Phase (C / O)	O	Receptor	Individuals seeking employment and the local economy (through GVA)
Discussion of Effect					
The proposals will see an increase in employment once optional due to the new uses and facilities to the area.					
Mitigation Committed to in order to Avoid or Reduce Effect					
Considered to be a beneficial effect which will be managed by a Local Labour Agreement.					
Concluding Statement					
Whilst beneficial, these are unlikely to be significant in EIA terms, therefore recommended to be scoped out. In addition the supporting Amion report will consider the impacts.					

Effect	Additional demand for the use of the social infrastructure and open/amenity space within close proximity to the Site.	Applicable Development Phase (C / O)	O	Receptor	Open space and social Infrastructure and their users
Discussion of Effect					
The proposals will see an increase in use of local services and facilities once optional.					
Mitigation Committed to in order to Avoid or Reduce Effect					
A travel plan will be submitted for the forthcoming planning application which will cover some of the points, as well as the Amion report which will address the matters.					
Concluding Statement					
The effects are unlikely to be significant in EIA terms, therefore recommended to be scoped out.					
Effect	Uplift in spend, increasing local expenditure, including on retail, food and drink, local transport, recreation and leisure and other expenditure likely to be spent locally.	Applicable Development Phase (C / O)	O	Receptor	Local economy (through GVA)
Discussion of Effect					

The proposals will see an increase in local spending once optional due to the new uses and facilities to the area.
Mitigation Committed to in order to Avoid or Reduce Effect
Considered to be a beneficial effect which will be addressed within the supporting Amion report.
Concluding Statement
Whilst beneficial, these are unlikely to be significant in EIA terms, therefore recommended to be scoped out.

On the basis of the tables and above and the standalone Amion report which will assess the socio-economic impacts on detail it is considered socio-economic can be scoped out of the EIA.

Appendix 4 Ecology Survey

Appendix 5 TV, FM Radio and DAB Radio Reception Survey

Appendix 6 Townscape and Visual Impact Viewpoints



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