

# Appendix 2.1: EIA Scoping Report

# **Anfield Road Stand, Liverpool**

## Environmental Impact Assessment (EIA)

### Scoping Report

January 2020

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**Client**

Liverpool Football Club and Athletic Grounds Limited

**Our reference**

LIVM3025

6 January 2020

# 1. Introduction

## Request for an EIA Scoping Opinion

- 1.1 Liverpool Football Club and Athletic Grounds Limited (hereafter referred to as the 'Applicant') is working with a project team to design the new Anfield Road Stand (hereafter referred to as the 'Proposed Scheme') at Anfield Stadium. The Proposed Scheme includes construction of the new Anfield Road Stand and proposed use of the whole of Anfield Stadium for other events on a permanent basis.
- 1.2 A maximum boundary for the project has been defined for the purpose of the Environmental Impact Assessment (EIA) Scoping Report. This is shown on **Figure 1.1** and is hereafter referred to as the 'Site'. The Site, located within the administrative area of Liverpool City Council (LCC), is approximately 2.6 hectares (ha) and is bound by Stanley Park to the north east and the ground and other stands of Anfield Stadium to the south west.
- 1.3 A full planning application (hereafter referred to as the 'Application') will be submitted by the Applicant in 2020. The Application will be submitted to and determined by the LCC planning authority. At this stage, it is assumed that the planning application would be consented in 2020. This enables construction to commence later in 2020 and be completed by 2022.
- 1.4 The design of the Proposed Scheme is led by KSS architects with planning advice led by Turley. The Applicant has instructed Turley to lead, manage and control the EIA process. The project team have developed a description of the Proposed Scheme, which is outlined in **Chapter 4 – High Level Description of the Proposed Scheme**. Whilst the Proposed Scheme continues to be refined and the development principles agreed, this description aims to provide factual and sufficient information to inform the EIA Scoping process and the preparation of this EIA Scoping Report.
- 1.5 In accordance with Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) EIA Regulations, 2017<sup>1</sup> (as amended in 2018), (hereafter referred to as the 'EIA Regulations'), Turley request a Scoping Opinion from LCC, informed by this EIA Scoping Report.

## Next Steps: Receipt of LCC EIA Scoping Opinion

- 1.6 In accordance with Regulation 15, we are anticipating that statutory timescales will be met and that Turley will be in receipt of a Scoping Opinion no later than five weeks from the date of receipt of this request.

## Structure of the EIA Scoping Report

- 1.7 The EIA Scoping Report is structured as outlined in **Table 1.1** below.

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<sup>1</sup> The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 No. 571. Available at: <http://www.legislation.gov.uk/uksi/2017/571/contents/made> [Accessed 03/12/2019].

**Table 1.1: Structure of EIA Scoping Report**

Chapter No.	Topic	Description
1	Introduction	Outlines the context in which Turley request a Scoping Opinion; provides an overview of the structure of the report; outlines our understanding for the requirements for EIA; and the stakeholder engagement proposed.
2	Approach to EIA	Outlines the objectives and strategy for the EIA to ensure consistency and clarity across the process. Also provides an indication of the methodology and skills adopted within the EIA and the anticipated format of the Environmental Statement (ES). Outlines the interaction with other documentation submitted in support of the planning application.
3	Description of the Site and Surroundings	Provides a description of the Site and surrounding environment, which represents the baseline conditions.
4	High Level Description of the Proposed Scheme	Outlines the Proposed Scheme as currently understood by the project team. It is this description and supporting plans upon which this EIA Scoping Report is based.
5	Topics which are Not Significant	Outlines the environmental topics which are not considered to be significant and will not form part of the EIA.
6-12	Likely Significant Environmental Topics	Presents a number of potential likely significant effects across a range of environmental topics. A separate chapter is provided for each topic. The chapters also provide detail on effects which are not considered to be significant and will not form part of the EIA.
13	Methodology for Assessment of Cumulative Effects	Outlines the proposed methodology for the assessment of cumulative effects, comprising both effect interactions and in-combination effects.
14	Summary	Provides a tabular summary of the insignificant and likely significant effects at this stage of the EIA process.

## Definition of EIA

- 1.8 The term 'EIA' has the meaning given by Regulation 4 of the EIA Regulations, as 'a process consisting of-
- (a) the preparation of an environmental statement;
  - (b) any consultation, public and notification required by, or by virtue of, these Regulations or any other enactment in respect of EIA development; and
  - (c) the steps required under regulation 26' (consideration of whether planning permission or subsequent consent should be granted)'.
- 1.9 This describes a procedure that must be followed for certain types of project before they can be given 'development consent'. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for reducing them are properly understood by the public and the relevant local planning authority before it makes its decision.
- 1.10 The aim of EIA, as defined by national Planning Practice Guidance (PPG), is to:
- 'protect the environment by ensuring that a local planning authority when deciding to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision making process.... The aim... is also to ensure that the public are given early and effective opportunities to participate in the decision making procedures'.<sup>2</sup>*

## Requirement for EIA

- 1.11 The need for an EIA is recognised as the Proposed Scheme meets the thresholds and criteria within Schedule 2 10(b) of the EIA Regulations (see **Table 1.2**). This does not determine the requirement for EIA, but requires a subsequent stage to determine 'likely significant effects on the environment by virtue of factors such as its nature, size or location'.

**Table 1.2: Extract from Schedule 2 of the EIA Regulations**

<i>'Description of development</i>	<i>Applicable thresholds and criteria</i>
<i>10. Infrastructure projects</i>	
<i>(b) Urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas;</i>	<i>(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.'</i>

<sup>2</sup> Ministry of Housing, Communities and Local Government (2019). Planning Practice Guidance Para 002 Ref ID.4-002-20140306. Available at: <https://www.gov.uk/guidance/environmental-impact-assessment#the-purpose-of-environmental-impact-assessment> [Accessed 03/12/2019].

- 1.12 The Site is not located within a 'Sensitive Area' as defined by Regulation 2 of the EIA Regulations. At this stage, due to the size and nature of the Proposed Scheme, a number of likely significant environmental effects have been identified.

### **Stakeholder Engagement**

- 1.13 Consultation is an important part of the EIA process. It is the responsibility of LCC to undertake the appropriate level of consultation, including the identification of relevant and applicable statutory and non-statutory consultees, required to inform their Scoping Opinion. However, as part of the EIA, it is anticipated that consultation between the technical team and the following key consultees will be undertaken:
- LCC (including technical officers);
  - Natural England;
  - Historic England;
  - Environment Agency;
  - Utility Providers; and
  - Merseyside Environmental Advisory Service (MEAS).
- 1.14 A summary of the project consultation undertaken to date to inform the EIA Scoping Report is provided in **Appendix 1**.
- 1.15 Public consultation events for the Proposed Scheme commenced in November 2019 at Anfield Stadium. A second stage of public consultation is due to take place in early 2020.

## 2. Approach to EIA

2.1 This Chapter outlines the following:

- Objectives and regulatory compliance;
- Adoption of best practice;
- Study boundaries for data collection;
- Interaction between the design process and the EIA;
- An iterative approach to scoping;
- The approach to assessment of alternatives;
- The baseline scenario;
- Information to inform the final assessments;
- Requirement for EIA at subsequent stages;
- Significance criteria;
- Format of the ES;
- Competent expertise; and
- Interaction of the ES with other planning application documents.

### EIA Scoping Report Objectives and Regulatory Compliance

2.2 This EIA Scoping Report supports a formal request for a Scoping Opinion from LCC as to the scope and methodology for assessment to be adopted in the ES. It aims to ensure that there is a clear and agreed scope for the EIA including all of the relevant baseline studies that will be required to ensure a robust assessment of likely significant environmental effects.

2.3 Not only is the Scoping Opinion sought on the technical breadth of the topics considered within the EIA, but also the specific effects within each of the topic areas (**Chapters 6 – 12**).

2.4 In accordance with Regulation 15(2) of the EIA Regulations, this report contains the following:

- A plan sufficient to identify the land (**Figure 1.1**);
- A description of the Proposed Scheme, including its nature, purpose, location and technical capacity (**Chapter 4 – High Level Description of the Proposed Scheme**). This includes an overview of the site preparations; development principles; any primary mitigation and timescales;



- An explanation of the likely significant effects of the development on the environment (**Chapters 6 – 12**); and
- Such other information or representations as the person making the request may wish to provide or make.

## Adopting Best Practice

2.5 Schedule 4, Part 7 of the EIA Regulations states that an ES should include:

*‘a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases’.*

2.6 The Institute of Environmental Management and Assessment (IEMA) has issued guidance on the interaction of design and EIA as part of ‘Shaping Quality Development’<sup>3</sup> and ‘Delivering Quality Development’<sup>4</sup> which was published in November, 2015 and July, 2016, respectively. The principles of this document have been adopted for the project.

2.7 As we progress through the EIA process, there will be different types of mitigation developed and these are defined as:

- **Primary mitigation** – modifications to the location or design of the Proposed Scheme made during the pre-application phase that are an inherent part of the project;
- **Secondary mitigation** – actions that will require further activity in order to achieve the anticipated outcome. These would be included within the ES and secured by condition; and
- **Tertiary mitigation** – actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.

2.8 With the application of secondary or tertiary mitigation, they are only considered appropriate if there is a high level of confidence in their mechanism for implementation (by the Applicant or third party).

2.9 The design process will be informed by baseline surveys and desktop reviews so that effects are well understood and primary and tertiary mitigation developed.

2.10 Examples of primary mitigation measures may include boundary features for retention, agreed landscape design/planting or surface water management strategy. Examples of tertiary mitigation measures may include the adoption of best practice measures that can be

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<sup>3</sup> IEMA (2015). Environmental Impact Assessment Guide to: Shaping Quality Development.

<sup>4</sup> IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development.

controlled via a Construction Environmental Management Plan (CEMP) or other established legislative requirements.

- 2.11 In the context of the Proposed Scheme, we have and will continue to identify all primary and tertiary mitigation in advance of the assessments within the ES as this will ensure the ES remains proportionate and solely focused on the 'likely significant effects'. In the case of tertiary mitigation, where this is used as an evidence base to 'scope out' effects or even technical topics, in order to provide confidence to LCC that such measures can be secured, the ES will be supported by a 'Schedule of Mitigation'. The Schedule of Mitigation will detail all primary and tertiary mitigation. The Schedule of Mitigation can be extracted by LCC to support the preparation of appropriate conditions for planning permission, where necessary.
- 2.12 The assessment of effects of the Proposed Scheme will be based on the information contained within a 'Description of the Proposed Scheme' or referred to as a 'Development Specification'.
- 2.13 Following the conclusion of the effects based on the Proposed Scheme, any further mitigation (secondary mitigation) will further reduce an adverse effect or enhance a beneficial one and will also be documented in the Schedule of Mitigation.

#### **Study Boundaries for Data Collection**

- 2.14 The study area upon which data is collected must be consistent. The EIA study area boundary is outlined in **Figure 1.1**. This is not necessarily the boundary upon which the EIA will be based but is considered the maximum extent of the Site, including all permanent and temporary works (including primary mitigation) as outlined in Schedule 4 of the EIA Regulations.
- 2.15 Should the eventual planning application boundary extend beyond this study area boundary there may be insufficient information upon which to base the EIA. Therefore, it is important to set the maximum extent at this stage.
- 2.16 Off-site highways or public footpath improvements/mitigation required are unknown at this stage (as is the party responsible for its implementation). These types of improvements/mitigation will be considered as secondary mitigation and appropriately assessed within the residual effects assessments within the EIA. It is considered appropriate that secondary mitigation does not need to be within the EIA study area boundary because any impact will be assessed and controlled as part of a separate approval process for these works, which will be subject to its own protocols to understand any environmental issues.

#### **Interaction between Design and EIA**

- 2.17 A range of technical surveys and desk studies have been undertaken in 2019 and supplementary/new surveys and desk studies are planned or underway, as outlined in **Chapters 6 – 12**.
- 2.18 The EIA process is iterative and will demonstrate how technical surveys, desk studies and design advice have influenced the spatial location of development and the design parameters and principles upon which the EIA will be based.

- 2.19 By following this process, and where possible, the EIA will demonstrate the resolution and minimisation of environmental effects during design. This should ensure the ES focuses only on likely significant environmental effects and complies with the need to provide '*a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment*'.

### **An Iterative Approach to Scoping**

- 2.20 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, iterative re-scoping will continue as the design and strategy is refined, and the plans, design principles and development specification evolve.
- 2.21 This iterative 're-scoping' process will continue up until the point when the assessments within the ES are in their first draft, although this will be in advance of planning application submission.
- 2.22 Any deviation between the scope of effects considered within the EIA Scoping Report and the ES will be clearly communicated in the ES. This is considered to be in accordance with paragraph 038 of Planning Practice Guidance<sup>5</sup> which states that:

*'...where it becomes evident during the assessment process...that a particular environmental factor is absent or unlikely to be significantly affected by a proposed development, there should be no need for further assessment of that factor even though it was identified in the scoping process...'*

### **Approach to Alternatives**

- 2.23 Paragraph 2, Schedule 4, of the EIA Regulations states that an ES should include:
- 'a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'*.
- 2.24 PPG indicates that the EIA Regulations do not require the consideration of alternatives, rather that where alternatives have been studied the ES should report these alternatives in line with Schedule 4, Paragraph 2.
- 2.25 Neither the EIA Regulations, nor PPG identify a specific methodology for the assessment of alternatives, or the criteria to be used to inform the assessment of reasonable alternatives. The methodology to be adopted for the purpose of the EIA is based on professional experience of similar projects and an understanding of the Proposed Scheme and its characteristics, as well as focus on delivery of a proportionate assessment, in line with PPG.

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<sup>5</sup> Ministry of Housing, Communities and Local Government (2019). Planning Practice Guidance Para 038 Ref ID. 4-038-20170728. Available at: <https://www.gov.uk/guidance/environmental-impact-assessment> [Accessed 03/12/2019].

2.26 For the purpose of the EIA, the consideration of alternatives will follow a two-step approach, set out as follows:

- **Step 1:** Consideration of ‘factors<sup>6</sup>’ that constitute alternatives and justification/discussion for the inclusion/exclusion from further assessment; and
- **Step 2:** Assessment of factors brought forward from Step 1 and, where applicable, comparison of environmental effects.

### **The Baseline Scenario for Use in the EIA**

2.27 Likely significant effects as a result of the Proposed Scheme will be described in the ES in relation to the deviation from the baseline environment within the Site or/and relevant technical study areas. The baseline environment will comprise the existing environmental characteristics and conditions, based upon surveys undertaken and information available at the time of the assessment.

2.28 The baseline conditions for the purpose of the ES will vary dependent upon the timing of the survey or the date when data sources will have been accessed. We anticipate that all baseline surveys will be based upon data accessed or surveys completed between 2018 to 2020, which is the period in which baseline data has been collected.

2.29 Some data obtained from third parties may be older though may still be relevant to the baseline scenario if there have been no significant changes. The origin of all third party data, the dates of surveys and the dates when data sources have been accessed will be clearly outlined within the ES alongside any limitations and assumptions.

### **Information to Inform the Final Assessment within the ES**

2.30 The ES will be based upon a series of detailed plans and design principles.

2.31 The Development Specification will describe the committed design principles and define the sequencing of construction activities. It will also define how the project will be resilient to climate change.

2.32 It is proposed to assess the environmental effects of the Proposed Scheme as a whole during construction (peak construction year) and at operation, when the Proposed Scheme is completed (2022).

### **EIA Requirements at Subsequent Stages**

2.33 The ES will identify and assess likely significant effects based on the detailed plans and Development Specification. This will ensure that all likely significant effects will be assessed and will inform the determination of the Application, in accordance with PPG. Should there be a change to the maximum quantum or specification following the submission of the Application, there may be a requirement to Screen any subsequent application to determine

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<sup>6</sup> These are likely to consider alternative sites, alternative design, alternative technology and a ‘do nothing’ scenario.

any likely significant effects on the environment not previously identified. Any EIA Screening Report and associated assessments will then be undertaken as required, at that stage.

### **Significance Criteria**

- 2.34 The EIA will report on the likely significant effects for the construction (including site preparation and demolition) and operational phases of the Proposed Scheme.
- 2.35 The following criteria will be taken into account when determining significance:
- Relevant legislation;
  - International, national, regional and local standards/guidance;
  - Probability/likelihood of occurrence of likely effect;
  - Geographical extent of likely effect;
  - Magnitude and complexity of likely effect;
  - Sensitivity/value/importance of the receptor/receiving environment;
  - Duration (short – up to 1 year, medium – 1 to 10 years, or long-term – over 10 years) of effect;
  - Frequency and reversibility of effect (temporary/permanent); and
  - Inter-relationship between effects (both cumulatively and in terms of potential effect interactions).
- 2.36 The method for assessing significance of effects varies between environmental topics but in principle will be based on the environmental sensitivity (or value/importance) of a receptor and the magnitude of change from the baseline conditions. The magnitude of change will be assessed on a scale of large, medium, small and negligible and sensitivity (or value/importance) will be assessed on a scale of high, medium, low and negligible.
- 2.37 The assignment of significance will be based on professional judgement and the matrix below is only a tool to assist with the process. Whilst the matrix provides ranges, this is to guide the competent expert and a definitive assessment of significance will be provided for each effect. A conclusion will also be provided as to the threshold of a significant effect, again based on professional judgement.

**Table 2.1: Matrix to Support Determining Significance**

Magnitude of change	Sensitivity (or value/importance)				
		High	Medium	Low	Negligible
	Large	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Small	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

2.38 The following terms will be used to define the significance of the effects identified and these can be '*beneficial*' or '*adverse*':

- **Major effect:** where the Proposed Scheme is likely to cause a considerable change from the baseline conditions and the receptor has limited adaptability, tolerance or recoverability or is of the highest sensitivity. This effect is considered to be 'Significant';
- **Moderate effect:** where the Proposed Scheme is likely to cause either a considerable change from the baseline conditions at a receptor which has a degree of adaptability, tolerance or recoverability or a less than considerable change at a receptor that has limited adaptability, tolerance or recoverability. This effect is considered more likely to be 'Significant' but will be subject to professional judgement;
- **Minor effect:** where the Proposed Scheme is likely to cause a small, but noticeable change from the baseline conditions on a receptor which has limited adaptability, tolerance or recoverability or is of the highest sensitivity or a considerable change from the baseline conditions at a receptor which can adapt, is tolerant of the change or/and can recover from the change. This effect is considered less likely to be 'Significant' but will be subject to professional judgement; and
- **Negligible:** where the Proposed Scheme is unlikely to cause a noticeable change at a receptor, despite its level of sensitivity or there is a considerable change at a receptor which is not considered sensitive to a change. This effect is 'Insignificant'.

2.39 For some specific topic assessments, guidance or the nature of the effect requires that differing criteria or scales for determining significance are to be used, however, wherever possible there will be consistency of terminology and conclusions will tie in with the above matrix. This is to ensure that the conclusions of the different effects can be compared during the decision making process and be robustly considered cumulatively.

2.40 Summary of effect tables that summarise the likely significant effects associated with each of the environmental topics will be provided at the end of each Chapter. These tables will outline sensitive receptors, mitigation measures and residual effects. A distinction will be

made between direct and indirect; short, medium and long-term; permanent and temporary; and beneficial and adverse effects.

- 2.41 Cumulative effects will be considered as a single coordinated assessment as outlined in **Chapter 13 – Methodology for Assessment of Cumulative Effects**.

### **Format of ES**

- 2.42 The ES will comprise of three volumes:

- Volume 1: Main Text and Figures;
- Volume 2: Technical Appendices; and
- Volume 3: Non-Technical Summary.

- 2.43 The proposed format and structures of the ES is provided in **Appendix 2: Structure of Environmental Statement**.

### **Competent Expertise**

- 2.44 Regulation 18, Paragraph 5(a) of the EIA Regulations requires the ES to be prepared by competent experts.

- 2.45 The EIA will be led by Turley. The Institute of Environmental Management and Assessment (IEMA) has awarded Turley the EIA Quality Mark in recognition of our technical quality and commitment to improvement in practice.



- 2.46 All technical assessment will be undertaken by a suitably qualified project team, inclusive of a thorough technical review to assure technical credibility, followed by a subsequent procedural review by the EIA coordination team and EIA Project Director.
- 2.47 In line with the EIA Regulations, all contributors to the EIA are competent experts in EIA and this will be demonstrated in the ES with an overview of each key expert's qualifications, professional accreditations and experience.

### **Interaction of the ES with Other Planning Application Documents**

- 2.48 The Application will be accompanied by a number of documents, some of which will inform the ES and therefore should be read in conjunction with the ES, whilst others will form standalone Application Documents which provide greater detail of how the Proposed Scheme is likely to come forward or how it complies with policy. In addition, the ES will be supported by a range of technical appendices.
- 2.49 Whilst the list of Application Documents is currently evolving, **Table 2.2** provides further details based on the current understanding.

**Table 2.2: List of Anticipated Supporting Application Documents**

Anticipated Document Title	The report is required to support the ES and is appended	Further detail is provided but should be read in conjunction with the ES. However, the report will be provided as a Standalone Application Report <sup>7</sup>	There are no linkages between the ES and these Application Reports
Planning Statement			
Design and Access Statement			
Transport Assessment			
Sustainability Statement			
Flood Risk Assessment and Drainage Strategy			
Economic Impact Assessment			
Heritage Assessment			
Preliminary Ecological Appraisal			
Lighting Impact Assessment			
Wellbeing Assessment			
Statement of Community Involvement			
Summary Guide to the Application			

<sup>7</sup> Aspects of the Application which are committed to which are part of the Proposed Scheme are outlined within the 'Development Specification' as part of the Proposed Scheme.



### 3. Description of the Site and Surroundings

#### Location and Setting

- 3.1 The Site, which extends to approximately 2.6ha covers the Anfield Road Stand (the northernmost stand), Anfield Road and, predominantly, areas of hand standing at Anfield Stadium in Liverpool. The Site is shown in **Figure 1.1**.
- 3.2 The Anfield Stadium was subject to two previous planning permissions to expand capacity and associated improvements in associated uses; those applications were approved by LCC in 2014 and, subsequently, 2016. The Applications<sup>8</sup> granted full planning permission for expansion of the Main Stand, and outline (in principle) consent for the Anfield Road Stand – only the siting of the Anfield Road Stand was agreed, with all other matters reserved for subsequent approval. The Main Stand development has been completed, opening in September 2016. Reserved matters were not submitted for the Anfield Road Stand and that planning permission has since expired.
- 3.3 The wider Anfield Stadium (the other stands and pitch) is located directly south/south west of the Site. Skerries Road and Alroy Road are located the south east and west respectively. Stanley Park bounds the Site to the north; it is part of a wider expanse of open space, including Anfield Cemetery, extending to 101ha.
- 3.4 The wider area surrounding the Site to the south, east and west is predominantly residential in character. The Walton Breck Road high street, which contains a mix of commercial, residential and community uses, lies immediately to the south of the Anfield Stadium.
- 3.5 The city centre of Liverpool is approximately 2.5km to the south west of the Site.

#### Connection and Access

- 3.6 Several of the surrounding residential streets have movement restricted to one direction, with Alroy Road (southbound onto Gilman Street), Skerries Road (southbound), Wylfa Road (northbound) and Arkles Lane (southbound) of note, providing connections between Walton Breck Road and Anfield Road. There is a Temporary Traffic Regulation Order (TTRO) – the LCC controlled Football Match Parking Zone (FMPZ) in operation around the Site, requiring vehicles parking on the street within the zone to display a residents or visitors parking permit. The FMPZ operates annually between 1 August and 31 May; that has recently been extended up to 30 June annually under an Experimental TTRO linked to a temporary permission for concerts and major events at Anfield Stadium in the closed football season.
- 3.7 Scheduled bus services travel along Walton Breck Road, with stops outside of the Kop Stand. The nearest railway station is Sandhills, located approximately 2.2km / 26 minute walk from the Site and is served by trains running to all three Northern Line northbound end destinations (Southport, Ormskirk and Kirkby) and to Hunts Cross in South Liverpool via Liverpool Central in the city centre.
- 3.8 Stanley Park is located to the north of the Site, and within the eastern side of this sits Stanley

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<sup>8</sup> 14F/1262 & 15F/2160

Park car park, which is leased from LCC for use on match and event days; it currently provides 1,073 standard and 46 disabled parking bays. Between Anfield Road and Stanley Park is Anfield Road car park, a private car park owned and operated by Liverpool Football Club (LFC) which currently provides 100 standard and 25 disabled parking bays. The other LFC operated car park in the immediate vicinity of the Site is outside the Sir Kenny Dalglish stand, providing a further 98 standard and 2 disabled parking bays.

- 3.9 Priory Road runs north of Stanley Park, and on the corner of Priory Road and Utting Avenue is a further car park providing 600 standard parking bays. The car park is operated by LFC on match days only. Access to the LFC-controlled car parks on match days is by pre-allocation only, principally linked to hospitality tickets in the Stadium.
- 3.10 Collectively, the existing car parks provide 1,944 parking spaces, including 73 disabled parking spaces.

### **Built Heritage**

- 3.11 The Site is partially located within a designated heritage asset; the grade II\* listed Stanley Park Registered Park and Garden. This asset includes a variety of listed buildings and structures (all of which lie outside the Site) associated with the park, including the grade II listed Isla Conservatory.
- 3.12 There are no other designated heritage assets within the remainder of the Site. Within the surrounding area is the grade II\* listed Anfield Cemetery Registered Park and Garden with its associated grade II listed buildings and structures. There are also a number of grade II listed villas along Anfield Road and the Arkles PH at the junction of Arkles Lane and Anfield Road. Additionally, there are number of designated and non-designated heritage assets within the wider vicinity of the Site.
- 3.13 **Figure 3.1 – Heritage Asset Plan** identifies the Site, Study Area and designated and non-designated heritage assets.

### **Archaeology**

- 3.14 There are no nationally designated archaeological remains within 500m of the Site. North West England would have been uninhabitable during the Lower Palaeolithic era with no human activity in Merseyside recorded until the end of the Ice Age (c. 10,000BC)<sup>9</sup>. Prehistoric remains (c. 10,000BC to AD 43) are recorded in Merseyside, however the earliest dated find recorded by the Merseyside Environmental Advisory Services (MEAS) Historic Environment Record<sup>10</sup> (HER) within 500m of the Site is a Roman coin, dated from 140 AD onwards, found on Sybil Road, approximately 100m to the north-west (HER ME3982). No other Roman remains are recorded within 500m of the Site. The place names 'Everton' and 'Walton' suggest that they are small settlements or farmsteads that originated in the early medieval period, which could have been occupied throughout that time. No early medieval remains are recorded within 500m of the Site. Historic maps from the 18<sup>th</sup> century suggest that the

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<sup>9</sup> Oxford Archaeology North (2003). Stanley Park, Liverpool Archaeological Desk-Based Assessment Issue number 2003-2004/134.

<sup>10</sup> Merseyside Environmental Assessment Service (2019). Merseyside Historic Environment Record Search, centred on Anfield Stadium (500m radius), dated 27<sup>th</sup> November 2019.

area within the Site was rural until the first residential properties are recorded along Anfield Road in the early 19<sup>th</sup> century, opposite the Stadium and partially within the Site.

- 3.15 The vast majority of archaeological remains within 500m surrounding the Site relate to former 19th century buildings, in particular St Ann's Hill House, situated on the northern side of Anfield Road, partially within the Site (HER ME9852). The house was demolished in the early 20<sup>th</sup> century and buried remains such as footings and basements, might still survive, though the land has since been developed with new car parking facilities associated with the Stadium.
- 3.16 Overall the archaeological evidence suggests that the archaeological potential for all periods is considered low. Any archaeological remains are likely to be considered of negligible heritage value due to their limited archaeological interest<sup>11,12</sup>.

### **Townscape and Visual Environment**

- 3.17 The Stadium forms a defining feature in the area due to its scale, massing, contribution to the localised urban grain and land use. The Stadium contrasts sharply with the neighbouring largely residential area typified by a tight urban grain. As stated, there are some grade II listed buildings within the residential context adjacent to the Site, on Anfield Road.
- 3.18 Stanley Park is considered to be one of the finest mid-Victorian parks in the region and is of national significance. The Park includes a number of listed buildings and structures. Stanley Park is visually and physically connected to the Stadium. Although access along Anfield Road between the Stadium and the Park is currently permitted, the relationship between the Stadium and the Park is poor, with surface parking and the rear of the existing Anfield Road Stand forming the interface.
- 3.19 There are a number of trees located to the boundary with the Park. Some are on LFC land but the majority are within Stanley Park. Trees within the Park are protected under its listed status.
- 3.20 The Grade II\* listed Anfield Cemetery is located beyond Stanley Park to the north, and has visual connections to the Stadium. The cemetery is also considered to be of national significance.

### **Biodiversity**

- 3.21 The Site includes the Stadium and its associated infrastructure comprising of hardstanding, small areas of amenity grassland, scattered trees and ornamental planting and Stanley Park car park. Overall, the Site has low biodiversity potential, with the exception of some limited use by bats.

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<sup>11</sup> Historic England (2015). Managing Significance in Decision-Taking in the Historic Environment.

<sup>12</sup> Historic England (2019). Statements of Heritage Significance: Analysing Significance of Heritage Assets.

## Local Air Quality, Noise and Lighting Environment

### Air Quality

- 3.22 The Site is located within the city-wide 'Liverpool City Air Quality Management Area' (AQMA), an area identified by LCC as exceeding the annual mean nitrogen dioxide (NO<sub>2</sub>) air quality objective of 40µg/m<sup>3</sup>. LCC undertakes monitoring and reports NO<sub>2</sub> concentrations across a large network of automatic and passive sites. However, there is no air quality monitoring in the immediate vicinity around the Site, indicating that air quality in this area is not a key concern. The monitoring location that is most representative of the Site is located on the southwest corner of the junction of Priory Road and Townsend Avenue. This monitoring site, known as 'B14', monitored a NO<sub>2</sub> concentration 30µg/m<sup>3</sup> in 2018, which has decreased from 45µg/m<sup>3</sup> in 2014, and is currently well below the air quality objective. Particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)<sup>13</sup> is monitored at a single 'urban background' automatic analyser located in Speke approximately 12km south east of the Site. Monitored PM<sub>10</sub> and PM<sub>2.5</sub> concentrations were 14µg/m<sup>3</sup> and 9µg/m<sup>3</sup> respectively and were well below the relevant long-term and short-term air quality objectives in 2018. The Annual Status Report 2019<sup>14</sup> acknowledges that there is a downward (improving) trend between 2014 and 2018 at most monitoring locations suggesting air quality is improving in Liverpool.

### Noise

- 3.23 There are noise sensitive receptors in the form of residential dwellings immediately to the southeast, northeast and northwest of the Stadium with residences on Skerries Road, parts of Anfield Road, Arkles Lane, Gilman Street and Alroy Road having direct line of sight to the Stadium. To the southwest the Stadium is bounded by the A5099 Walton Breck Road which has a mix of commercial properties, residences, Christ Church and a licenced premises "The Park". There is an area of regeneration beyond Walton Breck Road which includes developments of recently constructed residences. The north side of the Stadium is bounded by Anfield Road with Stanley Park beyond. Match day car parking is contained within the Park with direct access routes to the Stadium.
- 3.24 On non-match days noise levels are typical of urban areas with the noise climate dominated by road traffic noise, particularly from Walton Breck Road, its eastern continuation Oakfield Road with contributions from the local road network including Anfield Road and Arkles Lane.
- 3.25 In addition to traffic noise, residents around the Stadium are accustomed to regular football games occurring on weekends and week-day evenings with associated noise impacts from transportation sources, football crowds both outside the Stadium in the lead-up to and after games and within the Stadium during games, concessions outside the ground, occasional amplified music emanating from within the ground and fan zone areas, and public address within the ground and concourse areas.

### Lighting

- 3.26 The Site is located in close proximity to Stanley Park, with a few adjacent residential and commercial properties within the immediate area.

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<sup>13</sup> PM<sub>10</sub> and PM<sub>2.5</sub> refer to particulate matter with an aerodynamic diameter less than 10 and 2.5 microns respectively.

<sup>14</sup> Liverpool City Council (2019). Local Air Quality Management Annual Status Report.

- 3.27 Due to the modifications made during the recent development of the Main Stand, which was completed in 2016, several residential dwellings were demolished. This has reduced the number of potential residential receptors to those on Alroy Road, Skerries Road, with the majority located in Anfield Road.

### **Flood Risk and Hydrology**

- 3.28 The Site is located in Flood Zone 1 and as such is at low risk of flooding. There are no watercourses in the vicinity of the Site although there is a small pond, Stanley Park Lake, situated to the north of the Site.
- 3.29 The local area is served by a combined water public sewer network. There is a 375mm diameter sewer located in Anfield Road which flows in a south easterly direction and a 375mm diameter combined sewer on the boundary of Stanley Park which flows in a north westerly direction. A 180mm diameter water main which serves the Site is also located in Anfield Road.
- 3.30 Ground investigations undertaken for the Main Stand expansion show that ground water levels are approximately 30m below ground level.

### **Ground Conditions**

- 3.31 Made Ground is prevalent on Site associated with the existing Anfield Stadium construction and its associated facilities (e.g. car park, merchandise shop and fan zone), along with road surfaces, sub-base and (now demolished) residential properties to the north of Anfield Road.
- 3.32 The bedrock underlying the Site is characterised by the Chester (previously called Bunter) Formation<sup>15</sup> of the Sherwood Sandstone Group, which comprises coarse-grained sandstones mixed with conglomerates of pebbles and gravels, and sporadic siltstones. British Geological Survey (BGS) mapping identifies superficial deposits as absent at the Site and there are no faults reported on the Site.
- 3.33 The Chester Formation is designated as a Principal Aquifer<sup>16</sup>, which is described by the Environment Agency (EA) as *“layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage.”*<sup>17</sup> The Site is within an area of High Groundwater Vulnerability (for Major Aquifers), although there are no designated groundwater Source Protection Zones (SPZ) located on the immediate Site. There is one licensed groundwater abstraction listed within 1km of the Site, which is associated within Stanley Park Lake. This abstraction is designated for recreational purposes and is operated by LCC.

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<sup>15</sup> British Geological Survey (2019). The Geology of Britain. Available at: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>. [Accessed 11/2019].

<sup>16</sup> MAGIC (2019). MAGIC Maps. Available at: <https://magic.defra.gov.uk/MagicMap.aspx>. [Accessed 11/2019].

<sup>17</sup> Environment Agency (2017). Available at: <http://apps.environment-agency.gov.uk/wiyby/117020.aspx>. [Accessed 11/2019].

## Climate Change

3.34 The latest Met Office climate projections (UKCP18)<sup>18</sup> for the Anfield area (Easting 33601, Northing 393147) for the 2050s include:

- A 1.9°C increase in summer mean temperature;
- A 2.2°C increase in summer maximum temperature;
- A 1.6°C increase in annual mean temperature;
- A 5% increase in winter rainfall;
- A 19% reduction in summer rainfall; and
- A 2% reduction in annual rainfall.

3.35 A climate emergency was declared by LCC in July 2019.

## Community and Socio-Economics

3.36 The Site is located within Anfield ward, in the city of Liverpool, but is adjacent to the boundary with neighbouring Everton ward. These wards collectively accommodated a resident population of around 30,800 people in 2018<sup>19</sup>. This equated to around 6% of the population of Liverpool and 2% of the population of the Liverpool City Region, which covers the city and the adjoining authorities of Halton, Knowsley, Sefton, St Helens and Wirral (for a plan showing each of these areas, see **Figure 3.2**).

3.37 There are approximately 646,000 jobs in the economy of the wider City Region, as of 2018. This is inclusive of circa 254,000 jobs based in the city of Liverpool, and 10,500 jobs across Anfield and Everton wards<sup>20</sup>. The 2011 Census indicated that the vast majority of jobs in the City Region (86%) are taken by people living therein, and the city of Liverpool similarly drew the majority of its workforce (91%) from the City Region<sup>21</sup>. There is a relatively high level of labour force containment at the City Region level.

3.38 Liverpool ranks amongst the most deprived local authorities in England<sup>22</sup>. Around 15,000 of its residents were claiming Jobseeker's Allowance or Universal Credit in October 2019, inclusive of circa 1,600 people living in Anfield and Everton wards<sup>23</sup>.

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<sup>18</sup>Met Office (2018). UK Climate Projections 2018. Available at: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/about> [Accessed 16/12/2019].

<sup>19</sup>Office for National Statistics (2019). Population estimates – small area based by single year of age.

<sup>20</sup>Office for National Statistics (2019) Business Register and Employment Survey.

<sup>21</sup>Office for National Statistics (2011) Census – location of usual residence and place of work.

<sup>22</sup>Ministry of Housing, Communities and Local Government (2019).

<sup>23</sup>Office for National Statistics (2019). Claimant count by sex and age.

## **Waste**

- 3.39 The association of Greater Manchester Authorities, Merseyside and Halton (including Knowsley, Liverpool, Sefton, St Helens and Wirral) and the unitary authority of Warrington have jointly produced the Joint Local Aggregate Assessment that outlined the aggregate sales and reserves in Greater Manchester, Merseyside and Warrington for 2016<sup>24</sup>. Aggregates include crushed rock from Carboniferous and Permo-triassic rock, sand and gravel mostly made up of Glaciofluvia sand and gravel, Carboniferous Millstone Grit and Triassic Sandstone. Across this region there are 11 permitted aggregate quarries. The Port of Liverpool has significant marine infrastructure to handle primary landings of aggregate materials and crushed rock shipped from Glensanda Super quarry, which is then transported by road for use in the region.
- 3.40 In 2018, England produced 212.9 million tonnes of waste that was managed across 6,324 permitted waste facilities. The North West region produced over 31 million tonnes of waste managed in 870 facilities and Merseyside produced over 8 million tonnes. With respect to construction and demolition waste, the Environment Agency recorded that 584,000 tonnes of inert construction and demolition waste was deposited in landfill in the North West region<sup>25</sup>.
- 3.41 Within 5km of the Site, there are 51 waste facilities with 21 able to treat or transfer construction and demolition waste.

## **Daylight, Sunlight and Overshadowing**

- 3.42 The existing daylight and sunlight levels to the neighbouring properties and open areas are currently determined by the scale and massing of the Anfield Stadium, including the existing Anfield Road Stand, and the neighbouring properties. The baseline position is the scale and massing of the Anfield Stadium, in particular the existing Anfield Road Stand and neighbouring properties.

## **Wind Microclimate**

- 3.43 The immediate environment surrounding the Site generally consists of low-rise residential housing to the south, east and west, and open parkland in the north. These surroundings provide little shelter to the Stadium, most notably from the prevailing south-south easterly winds.
- 3.44 However, the Stadium including the recently constructed Main Stand sits immediately to the south and south west of the Site and provides shelter from the prevailing winds.

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<sup>24</sup> Joint Local Aggregate Assessment Greater Manchester, Merseyside and Halton, and Warrington (2018). Available at: [https://www.sthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016\\_final.pdf](https://www.sthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016_final.pdf) [Accessed 11/2019].

<sup>25</sup> UK statistics on waste data (2019). Available at: <https://www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management>. [Accessed 11/2019].

## **Risk of Major Accidents and Disasters**

3.45 The Site is not in an area which experiences particular risk of major accidents or disasters, being outside areas of flood risk and the UK not being susceptible to natural disasters. Current risks are associated with the use of the Site for football games and other events.

3.46 The closest emergency services to the Proposed Scheme are as follows:

- Kirkdale Fire Station is located approximately 2.8km east;
- The Royal Liverpool University Hospital is located approximately 3km south; and,
- Walton Lane Police Station is located approximately 2.4km north.



## 4. High Level Description of the Proposed Scheme

### Development Specification

- 4.1 All temporary and permanent works will take place within the 'EIA Study Area Boundary' as defined on **Figure 1.1** and hereafter referred to as the 'Site'. During construction and as a result of operations requirements for events, there will also be requirements for offsite construction facilities and event promoter compound. These are both discussed further below.

### Site Preparation and Construction Overview

- 4.2 The overall strategy is to construct the new Anfield Road Stand to the rear of the existing stand to allow it to remain fully functional throughout the majority of the works, in particular during the football season. The more disruptive works affecting the operation of the stadium will be carried out during the close season (early-May to early-August).
- 4.3 The construction site itself will primarily occupy the existing match day parking and fan zone area adjacent to the north of Anfield Road within the Site. During the close season the existing Outside Broadcast (OB) area will be utilised as a lay down area. These areas are located to the north of Anfield Road and south of Stanley Park.
- 4.4 During match days an Access Zone sufficient for the safe operation of the Stadium will be provided between the construction site and Anfield Road Stand, in the approximate alignment of Anfield Road to allow match-goers to access the stadium.

### Construction Compound

- 4.5 During construction, a compound will be provided for use by contractors. This will include site offices and welfare facilities and be located within Stanley Park. The preferred location is shown on **Figure 1.1**, pending agreement with LCC. Following completion, this area will be restored to current conditions, or improved. Should vegetation loss occur, this will be replaced.

### Working Hours

- 4.6 The permitted hours of work<sup>26</sup> for activities which would be audible at the Site boundary are:
- Monday-Friday 8.00am-6.00pm;
  - Saturday 8.00am-1.00pm; and
  - No working on Sundays or Bank Holidays (except with the agreement of LCC Environmental Protection Unit).
- 4.7 Any work audible at the Site boundary outside normal hours would be subject to agreement with the LCC Environmental Protection Unit.

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<sup>26</sup> In accordance with Liverpool City Council *Construction hours of work Guidance note for contractors and developers*: <https://liverpool.gov.uk/media/2779/construction-site-noise-guidance.pdf> (accessed in November 2019)

### Construction Programme

- 4.8 It is anticipated that, subject to planning approval, works on Site would commence in autumn 2020 and be completed by summer 2022.
- 4.9 **Table 4.1** summarises an indicative programme for the activities that will be carried out in the close season and mid-season.

**Table 4.1: Indicative Key Construction Activities**

Activity	Programme
Foundations and substructure	Autumn 2020 to Spring 2021
Superstructure	Spring 2021 to Spring 2022
Roof	Summer 2021 to Spring 2022 Primary elements in Close Season 1 (2021)
Works to Anfield Road Stand	Close Season 0 (2020) Close Season 1 (2021) and Close Season 2 (2022)
Existing Upper Tier and Roof Demolition	Close Season 2 (2022)

### Demolition Works

- 4.10 The existing roof of the Anfield Road Stand will be subject to demolition as will the steel and concrete upper tier. A lightweight crane will be required on the pitch side to assist with supporting and lowering dismantled elements. It is likely that components would be lowered by a crane onto a working platform and then cut up into smaller sections before being lowered to the ground. The small sections would then be transported out of the stadium through the existing access routes at the corner of the Anfield Road Stand and Main Stand.
- 4.11 There may also be a requirement for some advance/enabling works prior to Close Season 2 to soft strip, remove cladding and divert services.

### Foundations, Substructure and Superstructure

- 4.12 Foundations will be shallow concrete pads supported on the existing rock formation just below ground level. These pads are likely to be around 1.5m-3m deep. Ground anchors may also be required in some locations.
- 4.13 A steel framed structure will support composite concrete floors in the stand, whilst steel raker beams will support precast concrete terracing.
- 4.14 Stair cores are likely to be formed from reinforced concrete walls and slabs with precast staircases.

### Works to the Anfield Road Stand

- 4.15 The new extension to the Anfield Road Stand will be constructed behind the existing stand to its full height, initially retaining an access strip behind the existing stand and adjacent stands in order to allow access for stadium operations and match day spectators. The steel frame of the new building will be erected between matches using tower cranes (although the selected contractor may wish to engage mobile cranes).

- 4.16 Whilst the access strip behind the existing stand will initially be left uncovered, as early as possible in the programme it will be infilled with new floors above to provide a 'crash deck' which enables further construction activities to continue above whilst maintaining the access strip on match days.
- 4.17 The existing roof structure will be demolished once the new roof is complete and facilities/equipment supported by the roof replicated in the new works, anticipated to be in Close Season 2 (2022)
- 4.18 The existing upper tier will be demolished once the new grandstand extension is complete, anticipated to be in Close Season 2 (2022).
- 4.19 Internal and external works to the existing building would be completed during the construction programme to suit ongoing stadium operation requirements.

### **Roof Construction**

- 4.20 The methodology for the roof construction is yet to be fully identified with a contractor but it is likely that the roof members will be delivered to Site and the OB area utilised for assembly (as per the Main Stand project).
- 4.21 It is envisaged that the primary and secondary trusses will be prefabricated in welded sections which can be assembled using bolted connections on Site. The prefabricated elements of the truss will be brought to Site on standard low loader vehicles. In order to minimise the number of bolted connections on Site, lengths of up to 20m may be required to be delivered to Site, with load widths of up to 2.5m and heights of 4.5m. Layout and assembly areas will be required such that the individual elements can be laid out and assembled on the ground into components that are lifted into position. These layout and assembly areas will primarily be located in the OB area.
- 4.22 New steel tower structures supporting the roof at each end of the building will first be assembled on the ground and lifted into position by cranes. It is envisaged that the primary (portal) truss elements will be assembled in sections using mobile cranes and temporary towers to support it. The permanent crash deck at Level 1 above the access strip behind the existing stand may also be used as an assembly and lifting area.
- 4.23 Once the primary long span portal truss is complete, the secondary trusses will be assembled on the ground in the OB area and then paired up with bracing and ties. Each pair of trusses, complete with safety netting, will be lifted into position in a planned sequence by tower cranes or a crane positioned in front of the new building. Members between each secondary truss pair will be lifted and fitted on an individual basis.

### **Works to Anfield Road**

- 4.24 As part of the Proposed Scheme, Anfield Road (insofar as it is present within the Site) will be realigned around the new Anfield Road Stand. Anfield Road will be closed to all vehicles during the construction period.

### **Indicative Plant Requirements**

- 4.25 At this time, precise construction plant requirements are subject to further consideration and confirmation by the appointed contractor. **Table 4.2** sets out an indicative plant list. To ensure a worst case this details both crawler cranes and tower cranes, the precise solution being subject to confirmation.

**Table 4.2: Indicative Construction Plan**

Construction Activity	Plant
Site Clearance and Preparation	Mobile Crane
	Dozer
	Tracked Excavator
	Dumper Truck
	Wheeled Loader
	Tipper Wagons
Demolition of Anfield Road Stand Roof and Seating Tier	Tower crane
	Mobile crane
	Lightweight Crane
	Spider Crane
	Hand Held Gas Cutter
	Articulated low loader lorry
	Tipper Wagon
Superstructure	MEWP
	Articulated low loader lorry
	Tower crane
	Mobile Crane
	Spider Crane
	MEWP
	Ready mix concrete delivery lorry
	Concrete pump
	Hand held vibrating pokers
Roof	Access scaffold and staircases
	Articulated low loader lorry
	Tower crane
	Mobile Crane
	MEWP
	Access scaffold

Construction Activity	Plant
Foundations	Dumper
	Wheeled Loader
	Tracked excavator
	Hydraulic Breaker Mounted on tracked excavator
	Tipper wagons
	Vibratory Roller
	Dumper Truck
	Mobile crane
	Tower Crane
	Ready mix concrete delivery lorry
	Concrete pump
	Hand held vibrating pokers
	Mobile rock crusher

- 4.26 Due to the existing underlying geology, it is anticipated that piling will not be required for the Proposed Scheme, although a limited number of ground anchors may be adopted.

#### **Point of construction access and details of the likely routes for construction traffic when approaching and leaving the Site**

- 4.27 It is likely that the access and egress configuration for construction traffic would route vehicles to the Site via Priory Road, Arkles Lane and then Anfield Road from the east. The egress route would be the reverse of this. Construction traffic will not travel along Anfield Road from Walton Lane, except on the very few occasions when particularly large deliveries for roof members are brought to site. The actual preferred construction route for HGVs will be agreed within a Construction Environmental Management Plan and a Construction Traffic Management Plan.

#### **Services and Telecommunications Strategy**

- 4.28 Services within the Site will be subject to some diversions, albeit this is not anticipated to effect services beyond the Site (such as those to nearby properties).
- 4.29 Radio-frequency signals used for telecommunications are attenuated, reflected and scattered by buildings and as such, the increased stadium mass has the potential to impact on broadcast and communications signals that pass near the Proposed Scheme.
- 4.30 Terrestrial TV reception is currently provided by a transmitter at Winter Hill, the signal from which could potentially be occluded by the stadium mass, however, there are alternative transmitters whose line of sight is not interrupted by the Proposed Scheme. Furthermore, TV antennas will be realigned by a TV aerial installer, through arrangement with and by LFC, in order to pick up a signal from an alternative transmitter.
- 4.31 There are currently no residential properties located in the satellite signal shadow produced by the Proposed Scheme so satellite TV reception for householders will not be impacted by

the Proposed Scheme. However, the outside broadcast compound does fall within the shadow of the Proposed Scheme and broadcasters in the compound may be affected.

- 4.32 FM and DAB radio reception will not be affected due to the relatively low frequencies used (which propagate more readily around corners in the presence of obstructions) and the very strong coverage in the Liverpool area.
- 4.33 Initial consultation has been carried out with Ofcom (Office of Communications, the independent regulator for the UK communications industries) who provided information on parties who have either point-to-point radio links that pass near the Site or mobile network operators that operate near the Site.
- 4.34 Further consultation will be undertaken to confirm if any radio links or networks will be affected and if appropriate, what design measures/remedial measures will be required to prevent disruption. Initial discussions with LCC have confirmed that any required such measures will be controlled by way of planning condition.
- 4.35 No impingement upon existing microwave links has been identified as the nearest fixed microwave link is approximately 1 km away from the Site.

#### **Details of features for retention**

- 4.36 There are a number of trees located on the boundary with Stanley Park. Some are on LFC land but the majority are within Stanley Park. Trees within the Park are protected under its listed status. Proposals will aim to minimise losses with the remaining trees requiring protection during the construction process. An updated Arboricultural Assessment has been undertaken in accordance with the requirements of BS 5837:2012.
- 4.37 The Park boundary railings were replaced in 2016 and counter terrorism bollards added to the two existing gateways in 2018. These elements will be retained.
- 4.38 Food and retail containers contained within the Family Park will be relocated into the completed scheme. Options are being explored for their relocation both internally and within the public realm.

#### **Presence and quantities of contaminated land and remediation strategy**

- 4.39 The Proposed Scheme is considered to present a low risk to human health and controlled waters. Exploratory holes at the Site, undertaken during the 2015 Jacobs Phase 2 site investigation (Trial pits TP245 – TP257), identified Made Ground deposits to a maximum depth of 1.0m (TP254). Given that the foundations for the Proposed Scheme will be shallow concrete pads approximately 1.5m-2m deep, supported on the existing rock formation, this will necessitate removal of Made Ground across the footprint of the proposed work. Due to Site space constraints, any in-situ material excavated as part of the proposed works will be removed from the Site, thereby removing any potential source of contamination, including ground gas. The underlying sandstone bedrock is of low ground gas generation potential. Furthermore, with the exception of the existing areas of soft landscaping, the proposed works will be hardstanding surface on completion. This would therefore break the source-pathway-receptor linkage across the Site. No further remedial measures are deemed necessary to mitigate risks to human health and controlled waters.
- 4.40 The acute risks to construction and maintenance workers resulting from short-term exposure to soils, will be mitigated by the Contractor, through appropriate design of the works and

compliance with health and safety legislation. The Unexploded Ordnance (UXO) report for the Site confirms the Site is within an area of low risk of encountering UXO.

#### **Groundwork and Construction Waste**

- 4.41 In the order of 1,500 tonnes of demolition material will be removed from the existing grandstand.
- 4.42 The design intent for the new grandstand extension will be to achieve a net cut and fill balance, utilising stand stone arisings from excavation as granular fill. However there will be some existing materials (road surfacing, made ground etc) which will be unsuitable for re-use and will need to be removed from Site. Approximately 1,500m<sup>3</sup> is assumed to be removed at present.

#### **Community Engagement and Prior Notification**

- 4.43 At the start of the construction phase, during mobilisation and Site set up, best practice for the management of construction works will be implemented. This will include:
- Notifying the LCC Environmental Health Officer of the works and providing contact details for a nominated person on Site who will act as point of contact to address any complaints. The Environmental Health Officer will then be kept informed of the works progress and the time and dates of any particularly disruptive activities.
  - Review of project conditions relating to agreed working hours and any restrictions on levels of noise and incorporating any such requirements into the Project Management Plan.
  - As required, make contact with local residents and business owners by letter drop to keep them informed of the construction progress and how to contact the construction team. For residents it may be appropriate to contact local councillors or community representatives.
  - Where it is perceived that there is a risk of construction or demolition works creating a nuisance, the local community will be informed in advance by letter.

#### **Development Principles**

##### **Overview of the Proposed Scheme**

- 4.44 The Proposed Scheme seeks to increase fan capacity at the Anfield Road Stand through the provision of a new stand increasing seating from 8,962 to approximately 16,000, along with the provision of new associated facilities. The Anfield Road Stand will accommodate a mixture of home and away fans; the number of away fan tickets for each match depends upon the type of game (league or cup) and will vary between 3,000 and 9,000. New wheelchair positions for home and away fans will be provided in improved (elevated) locations as part of the Proposed Scheme to ensure they are compliant with guidance from the Sports Grounds Safety Authority.
- 4.45 In addition, the Proposed Scheme also seeks to establish permanent use of the Stadium for other uses. Further information on both the new stand and events are detailed in the following section.

### **Land use classes and maximum quantum proposed**

- 4.46 The Proposed Scheme is for an extension to the existing Anfield Football Stadium. The primary use is as a football stadium for the hosting of Liverpool first team football matches; the current permission for the stadium also allows it to be used for other football matches (including international games) and rugby.
- 4.47 The Anfield Stadium is also used as a venue for conferences and meetings on non-match days. The majority of those activities take place in the recently completed new Main Stand. There are currently no facilities in the Anfield Road stand for non-match day activities. The newly expanded concourse space at the lower level of the extended stand will provide opportunity to host exhibitions on non-match days.
- 4.48 The Proposed Scheme looks to provide some additional office space for LFC at level one and mezzanine level.

### **Height**

- 4.49 The Proposed Scheme will be up to 94mAOD<sup>27</sup> in height to the top of the highest part of the roof.

### **Materials**

- 4.50 The Proposed Scheme will be constructed predominately of red brick with a central glazed section, facing Stanley Park, and red enamelled panel coating used to highlight areas of interest; and a profiled metal cladding roof. Materials will match those of the new Main Stand.

### **Football Matches**

- 4.51 Anfield is home to up to 32 first team football matches (including cup ties) per annum and this is not expected to change. The Proposed Scheme increases capacity at the stadium to allow more fans to attend these matches.

### **Events**

- 4.52 The Applicant currently holds a temporary permission to hold up to 6 events on the pitch in the closed football season (mid-May to end-June); that permission expires in 2021. This is for music concerts and other major events; there are no events permitted during July. As part of the Proposed Scheme, permission is being sought for the permanent and unrestricted permission to hold any number of concerts and major events on the pitch for the same period. Permission is also sought for the stadium to host other sports (such as Gaelic games and American football) during international breaks in the football season.

### **The proposed operational hours**

- 4.53 There are no planning restrictions on the hours of operation of the stadium for football / rugby matches or non-match activities in the stadium (conferences, meetings etc).
- 4.54 The majority of football matches are held in the afternoon / early evening of weekends during the football season. Some matches, in particular cup-ties, are held during the week with kick-off time around 8.00pm; other than in exceptional circumstances (extra-time and penalty shoot-out) games usually finish by 10.00pm. Hospitality lounges stay open for 90

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<sup>27</sup> Grade levels are c.58.00mAOD at the north west end of Anfield Road and c.56.50mAOD at the north east end, and likely to be c.57.00mAOD along the facade line closest to the Stanley Park Boundary.



minutes following the final whistle; those hours will apply to the new hospitality lounge in the Anfield Road Stand.

- 4.55 The temporary permission for concerts / major events requires that all music events finish by 2300hrs; non-music events (such as boxing) may extend up to 2330hrs.

#### **Parking Provision**

- 4.56 Liverpool Football Club currently manages match-day car parks outside the Sir Kenny Dalglish Stand, in Stanley Park, Utting Avenue (the former Anfield Comprehensive School) and on Anfield Road. Collectively, they provide 1,944 spaces, including 73 disabled parking spaces. Access to the car parks is by pre-allocation only, principally linked to hospitality tickets in the stadium.
- 4.57 The Proposed Scheme will result in the loss of the Anfield Road car park (125 spaces). The disabled parking bays will be re-provided in the Stanley Park car park resulting in an overall reduction of 25 standard parking bays from this car park. In total, 125 standard spaces will be lost as a result of the Proposed Scheme.
- 4.58 During concerts and major events part of the Stanley Park car park will be required as a promoters' compound; at those times the majority of that car park will be used for managed drop-off and pick-up pre and post the event.

#### **Transport Strategy and Operational access arrangements**

- 4.59 LFC have a Transport Strategy in place which supports fan travel to and from the stadium on match days, with a focus on supporting sustainable travel choices. This will be updated as part of the Proposed Scheme. Key elements of the current Strategy<sup>28</sup> are:
- Controlled parking provisions (as noted above) coupled with the existence of a Football Match Parking Zone (FMPZ) being in place on surrounding streets preventing on-street parking without a residential permit.
  - Temporary closure of Anfield Road and Walton Breck Road in the run up to matches and post matches to protect pedestrian safety.
  - Match day special bus services (commercially operated by third parties) provide connections pre- and post- match between the City Centre and Walton Breck Road/Anfield Road. These are in addition to existing scheduled bus services which continue to run during matches. Some scheduled services however are diverted for periods of time around matches due to the temporary road closures.
  - A Soccerbus service, which is a bus link between Sandhills Station and Walton Lane, supporting onward rail journeys on the Northern Line.
  - The provision of taxi ranks to enable taxi journeys to and from the stadium.
  - Wayfinding signage to direct fans to the City Centre and Sandhills Station, to promote journeys by foot and rail.

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<sup>28</sup> Detailed information on the strategy is provided on the LFC website:  
<https://www.liverpoolfc.com/fans/fan-experience/getting-to-anfield>

- The provision of cycle parking at the stadium to support trips by bike.

#### **The proposed lighting strategy**

- 4.60 The lighting design for the Proposed Scheme will accord with all applicable lighting standards from relevant British / European / UEFA standards to ensure lighting is appropriate to the work that is being undertaken and the operation of the football stadium. A lighting mitigation strategy **Appendix 6** has been developed to guide the formulation of a detailed lighting strategy, which will accord with best practice and the criteria set out to avoid any nuisance issues.

#### **Overview of any open space proposed**

- 4.61 The Main Stand development established a number of guiding principles in relation to the public realm and the stadium's relationship to the adjacent Stanley Park. These included bringing the park into the stadium environment through significant tree planting and greening, recognising historical links and views and increasing pedestrian permeability between the stadium and the park. These guiding principles remain equally as relevant to the Proposed Scheme and form the basis upon which the design continues to evolve.
- 4.62 As part of the development proposals it is likely that additional routes through the Park boundary will be required, the principle of which was set in the outline permission. The exact location, number and size of any new routes will be determined by ongoing crowd modelling, existing trees, levels and heritage considerations.
- 4.63 The existing uses on Anfield Road (car park, family park, OB area and LFC TV studio and retail unit) will all be impacted on to some extent by the Proposed Scheme. In summary the car park will be lost with accessible parking relocated to Stanley Park, the family park will be re-provided both within the new stand and the new public realm, the OB area may be increased in size and the TV unit and retail unit are likely to remain in situ with the grassed area surrounding it activated on a match day.

#### **Overview of surface water drainage strategy**

- 4.64 The drainage strategy for the Proposed Scheme will be developed in accordance with the guidelines of the National Planning Policy Framework (NPPF)<sup>29</sup>, local planning requirements and the SuDS Manual - CIRIA 753<sup>30</sup>. The drainage design will incorporate a limited discharge rate and Sustainable Drainage Systems (SuDS) to provide attenuation which will help to mitigate the risk of pluvial flooding during the operational phase.

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<sup>29</sup> Ministry of Housing, Communities and Local Government (2019). National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed 28/11/2019].

<sup>30</sup> CIRIA (December 2015). The SuDS Manual (C753).

## 5. Topics which are Not Significant

- 5.1 As part of the EIA process and based on the information available to date, there are a number of topics for which an assessment as part of the EIA is not justified and will not be considered in the ES. The other topic areas outlined within this EIA Scoping Report also identify effects which are not likely to be significant. These are reported in **Chapters 6 – 14**.
- 5.2 The topic areas for which no likely significant environmental effects have been identified are:
- Air Quality;
  - Climate Change and Greenhouse Gases;
  - Water Resources, Flood Risk and Drainage;
  - Ground Contamination;
  - Archaeology;
  - Risks of Major Accidents and Disasters;
  - Waste;
  - Daylight, Sunlight and Overshadowing; and
  - Obtrusive Light.
- 5.3 The justification for no likely significant environmental effects for these topics is outlined below.

### Air Quality

#### **Nuisance and disturbance as a result of dust from construction activities**

- 5.4 It is anticipated that dust and particulate matter emission produced during construction activities will be controlled through the implementation of a CEMP. The mitigation incorporated within the CEMP will be informed by the Institute of Air Quality Management (IAQM) guidance<sup>31</sup> and will include prevention measures, such as screening stockpiles of materials, deployment of windbreak netting and dampening exposed soils as appropriate, and set out requirements for ongoing monitoring and liaison with the local community, and LCC. These tertiary mitigation measures are an integral part of the Proposed Scheme and will be considered as part of the Schedule of Mitigation. Therefore, effects of dust and particulate matter emissions are unlikely to be considered significant and will not be considered within the ES.

#### **Temporary change in air quality as a result of on-site construction plant emissions**

- 5.5 Construction requires the use of different equipment such as excavators, cranes and on-site generators. All construction plant has an energy demand with some as direct emissions to air

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<sup>31</sup> Institute of Air Quality Management (2014). 'Guidance on the assessment of dust from demolition and construction.

from exhausts. Guidance from the IAQM<sup>31</sup> notes that effects from exhausts will likely not be significant. Given the small-scale and temporary nature of the site plant, effects of plant emissions on local air quality are considered to be of negligible significance. As above, the CEMP will be informed by the IAQM guidance<sup>32</sup> and will include prevention measures, such as avoiding the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable and ensuring all vehicles switch off engines when not in use. These tertiary mitigation measures are an integral part of the Proposed Scheme and considered as part of the Schedule of Mitigation. Therefore, effects of on-site construction plant emissions are unlikely to be considered significant and will not be considered within the ES.

#### **Temporary change in air quality as a result of construction road traffic emissions**

- 5.6 At this stage, information related to traffic generated during construction is not available. However, Environment Protection UK (EPUK) and IAQM guidance<sup>33</sup> indicates that an assessment of traffic emissions is only likely to be required for large, long term construction sites that will generate an additional annual average flow of greater than 25 Heavy Duty Vehicles (HDVs) per day or greater than 100 Light Duty Vehicles (LDVs) per day within an AQMA.
- 5.7 Although the construction programme is estimated to last 23 months, there is likely to be fluctuation in construction road traffic movements for different construction activities where movements may be lower than those criteria specified in the EPUK and IAQM guidance.
- 5.8 Based on the nature of the Proposed Scheme, previous application and associated construction activities, it is considered unlikely that construction road traffic emissions would exceed the above criteria on an annual average basis. Therefore, effects of construction road traffic emissions are unlikely to be considered significant and will not be considered within the ES.

#### **Permanent change in air quality as a result of road traffic emissions during the operation phase**

- 5.9 The increase in stadium capacity is not expected to cause an increase in road traffic in the vicinity of the Site as no additional vehicle parking will be made available by the Proposed Scheme.
- 5.10 Additionally, LFC have a Match Day Transport Strategy in place which supports fan travel to and from the Stadium on match days, with a focus on supporting sustainable travel choices. A separate Event Transport Management Strategy is in place for concerts and major events. This Proposed Scheme would not change those Transport Strategies (albeit they would be updated as set out in **Chapter 10 – Transport**, to ensure it delivers the same principles as a result of the Proposed Scheme) although is considered as a tertiary mitigation measure to help manage air quality during match days. This tertiary mitigation measure would be considered an integral part of the Proposed Scheme and considered as part of the Schedule of Mitigation. Therefore, the change in air quality as a result of road traffic emissions during

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<sup>32</sup> Institute of Air Quality Management (2014). 'Guidance on the assessment of dust from demolition and construction.

<sup>33</sup> Environmental Protection UK and Institute of Air Quality Management (January 2017), 'Land-Use Planning and Development Control: Planning for Air Quality' version 1.2

the operation phase are unlikely to be considered significant and will not be considered within the ES.

## **Climate Change and Greenhouse Gases**

- 5.11 LCC declared a climate emergency in July 2019 and plans to establish a Climate Change Select Committee to assess four key themes: transport and air quality; buildings and the built environment; waste, recycling and energy, and; the low carbon economy. In relation to the Proposed Scheme, the built environment and transport are likely to represent the main source of CO<sub>2</sub> emissions which will be appraised within the Sustainability Statement submitted with the Application. Due to the relative scale of development, however, climate change effects are considered unlikely to be significant in EIA terms.
- 5.12 The Proposed Scheme comprises the construction of a new stand at Anfield to increase total seating capacity by approximately 7,000 (approximately 13% of current seating capacity at the stadium). Given the nature and relatively limited scale of development, significant effects relating to climate change and greenhouse gases in EIA terms are not anticipated, as detailed below. The Proposed Scheme will inevitably result in additional carbon emissions during its construction (e.g. from the manufacture of construction materials) and operation (e.g. from additional energy consumption and match day travel) which will be reported within the Sustainability Statement submitted with the Application.
- 5.13 This approach is commensurate with the 'proportionality' requirement for EIA whilst ensuring that information on likely carbon emissions is nevertheless included within the planning submission despite this not representing a significant impact in EIA terms.

## **Climate Change Adaptation and Resilience**

- 5.14 Drawing from the UK's second Climate Change Risk Assessment (2017)<sup>34</sup> key potential risks to businesses, infrastructure and human health from future climate change are increased risk of flooding from changes to rainfall patterns and sea level rise, increased risk of water shortages from reduced summer rainfall, and increased risk of summertime overheating within buildings. These potential risks are discussed in turn below.

## **Flood Risk**

- 5.15 As set out below under 'Water Resources and Flood Risk', significant effects are not anticipated in relation to flood Risk. The Application will be supported by a Flood Risk Assessment and Drainage Strategy. This work will be undertaken in accordance with the latest Environment Agency guidance, and include an allowance for future climate change (a minimum betterment of at least 30% from existing discharge rates will be achieved). Flood risk and drainage issues, including future climate change effects, have therefore been included on the basis of the primary mitigation for the Proposed Scheme. Significant effects in relation to flood risk, in relation to climate change, have therefore been allowed for within the design of the Proposed Scheme, are not considered to be significant and are therefore scoped out of the ES.

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<sup>34</sup>Department for Environment, Food and Rural Affairs (2017). UK Climate Change Risk Assessment. Available at: <https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017> [Accessed 16/12/2019].

### **Overheating**

- 5.16 Higher summer temperatures will increase the risk of overheating within buildings and as a result potentially affect the comfort and health of building occupants. A key contributing factor to building overheating risk is the extent and orientation of external glazing, with large areas of south-facing glazing at particular risk of excess solar gain unless suitable design measures such as external shading are incorporated. The main external glazing for the Proposed Scheme is orientated north-east towards Stanley Park and as a result is not at risk of significant solar gain. Potential internal building overheating risks are therefore mitigated through inherent building design and as a result are considered unlikely to be significant and will not be considered within the EIA or reported in the ES.

### **Drought**

- 5.17 Reduced summer rainfall has the potential to result in periods of mains water shortage. Water efficiency will be promoted within the Proposed Scheme through the specification of efficient fixtures, fittings, controls, and water meters to ensure operational water demands are reduced. Together with the implementation of a CEMP through the construction period which will include measures to minimise the consumption of water and other resources, significant adverse impacts to or from the proposals in relation to drought are not anticipated. As a result such effects are considered unlikely to be significant and will not be considered within the EIA or reported in the ES.

### **Greenhouse Gas Emissions**

- 5.18 A key source of operational carbon emissions from new development is energy demand for lighting, heating / cooling and power. Large areas of the Proposed Scheme (e.g. external seating and circulation areas) will have limited energy demand, with energy demand likely to relate primarily to certain proposed internal areas such as offices, hospitality lounge, kitchens and toilets.
- 5.19 A Sustainability Statement will be submitted with the Application to set out how the proposals respond to national and local planning policy and related guidance regarding sustainable development. This Statement will include an estimate of CO<sub>2</sub> emissions from the Proposed Scheme in relation to construction materials and operational energy consumption. These emission estimates will be reported within the context of baseline CO<sub>2</sub> emissions within the LCC administrative area. Proposed measures to reduce these emissions will also be reported, for example energy efficiency measures.
- 5.20 Match day travel will be a further source of CO<sub>2</sub> emissions from the Proposed Scheme. Drawing on the findings of supporter travel surveys, changes in match day travel CO<sub>2</sub> emissions achieved by modal shift from the promotion of sustainable transport options and reduction of car parking spaces managed by LFC emissions will also be reported. Indeed, as outlined in **Chapter 10 – Transport**, the existing Transport Strategy for current operations will be updated for the Proposed Scheme.
- 5.21 Whilst the Proposed Scheme will inevitably result in CO<sub>2</sub> emissions during construction and operation, these emissions are considered unlikely to be significant in EIA terms within the context of baseline emissions from the Liverpool area, and as such will not be considered within the EIA or reported in the ES.

## Water Resources, Flood Risk and Drainage

### Fluvial or tidal flooding

- 5.22 The Environment Agency Flood Map<sup>35</sup> shows the Site to be located in Flood Zone 1 and thus to be at a low probability of fluvial or tidal flooding. Due to an absence of watercourses in the vicinity of the Site it is not proposed that surface water from either the construction or operational phase will discharge into a watercourse.
- 5.23 Therefore, as no surface water from the Site is to discharge directly or indirectly into a watercourse during operation or construction, the effects on fluvial or tidal flooding risk are unlikely to be considered significant and will not be considered within the ES.

### Pluvial flooding

- 5.24 The Environment Agency Flood Map<sup>36</sup> shows the Site to be located in an area at low risk of pluvial flooding. The majority of the Site is currently impermeable and benefits from a positive drainage system.
- 5.25 During construction activities, surface water run-off would be controlled through the implementation of a CEMP. The CEMP will be compiled by the contractor and outline what mitigation measures will be implemented to control surface water runoff from the Site during construction.
- 5.26 The drainage strategy for the Proposed Scheme will be developed in accordance with the guidelines of the National Planning Policy Framework (NPPF)<sup>37</sup>, local planning requirements and the SuDS Manual - CIRIA 753<sup>38</sup>. The drainage design will incorporate a limited discharge rate and Sustainable Drainage Systems (SuDS) to provide attenuation which will help to mitigate the risk of pluvial flooding during the operational phase.
- 5.27 As the Site has a footprint greater than 1ha, a Flood Risk Assessment (FRA) will be required to ensure no increase in surface water run-off from the Proposed Scheme and to manage and mitigate flood risk due to the Proposed Scheme.
- 5.28 Therefore, the effects on pluvial flooding from the Proposed Scheme are unlikely to be significant and are proposed to be scoped out of the ES.

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<sup>35</sup> Environment Agency (2019). Flood Map. Available at: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=336307&northing=393167> [Accessed 28/11/2019].

<sup>36</sup> Environment Agency (2019). Flood Map. Available at: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=336307&northing=393167> [Accessed 28/11/2019].

<sup>37</sup> Ministry of Housing, Communities and Local Government (2019). National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed 28/11/2019].

<sup>38</sup> CIRIA (December 2015). The SuDS Manual (C753).

### **Reservoir flooding**

- 5.29 The Environment Agency Flood Maps<sup>39</sup> show the Site to be located outside of the flood envelope for reservoir flooding. The Proposed Scheme will not have an impact on any reservoirs during either the construction or operational phase.
- 5.30 Therefore, the effects on reservoir flood risk from the Proposed Scheme are unlikely to be considered significant and will not be considered in the ES.

### **Water bodies**

- 5.31 With respect to water resources, the principal surface water body in the vicinity of the Site is the River Mersey which flows approximately 3km to the east of the Site. There is a small pond, Stanley Park Lake, situated approximately 600m to the north of the Site. The Proposed Scheme will not interact with either water body.
- 5.32 Therefore, any effect on water resources from the Proposed Scheme are unlikely to be considered significant and will not be considered in the ES.

### **Water resources (potable water supply)**

- 5.33 During both the construction and operational phase there will be a small increase in potable water usage from the Proposed Scheme. The water supply to the Site is currently provided by the United Utilities (UU) water main located in Anfield Road and it is proposed that the water supply for the Proposed Scheme is provided from the same water main.
- 5.34 Initial discussions with UU have confirmed that there is sufficient potable water available to supply the Proposed Scheme whilst not impacting on the water supply to the surrounding area.
- 5.35 Therefore, effects on water resources in relation to potable water supply from the Proposed Scheme are unlikely to be considered significant and will not be considered within the ES.

### **Water resources (foul sewerage discharge)**

- 5.36 During both the construction and operational phase there will be an increase in foul effluent discharging from the Proposed Scheme. The foul flows from the Site currently discharge into the UU combined public sewer network.
- 5.37 Initial discussions have taken place with UU and they have confirmed that there is capacity within the sewer network to accept the increase in foul flows from the Proposed Scheme. As a result of the drainage strategy, the Proposed Scheme will result in a reduction in the surface water run-off rate into the combined sewer network so there will actually be a net reduction in flow rates into the public sewer network from the Proposed Scheme.
- 5.38 Therefore, effects on water resources in relation to foul effluent from the Proposed Scheme are unlikely to be considered significant and will not be considered within the ES.

### **Drainage**

- 5.39 The majority of the Site is currently impermeable and benefits from a positive drainage network which discharges into the combined public sewer in Anfield Road. During

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<sup>39</sup> Environment Agency (2019). Flood Map. Available at: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=336307&northing=393167> [Accessed 28/11/2019].



construction activities surface water run-off rates will be controlled by the contractor through the implementation of a CEMP. The CEMP would stipulate the surface water discharge rate and the method for limiting discharge rates to ensure there is no risk of flooding from the Site.

- 5.40 In the operation phase the surface water discharge rates from the Site will be limited to rates set by UU and the Lead Local Flood Authority. UU have stated that they would require the discharge rate to be limited to provide a minimum of a 30% reduction from the existing discharge rates which will have a positive effect on the downstream drainage network.
- 5.41 The surface water drainage for the Proposed Scheme will be designed with attenuation features to mitigate the risk of flooding from the drainage network.
- 5.42 Therefore, by providing a reduction in surface water discharge rates by at least 30% of existing discharge rates and on-site attenuation provided as part of a SuDS based drainage strategy, the impacts of the surface water drainage are unlikely to be considered significant and will not be considered in the ES.

#### **Groundwater quality and recharge**

- 5.43 During construction, activities would be controlled by the contractor through the implementation of a CEMP. The CEMP will outline the measures required to ensure that any potential pollutants are safely stored, and procedures are in place for any accidental spillages. It is not proposed that any surface water from the operational phase will infiltrate into the ground.
- 5.44 Currently the Site is positively drained with only soft landscaped areas draining into the ground. The Proposed Scheme will also be positively drained so there will be no impact on groundwater recharge.
- 5.45 Therefore, as no surface water from the Site is to discharge into the ground the impact on groundwater quality and recharge is unlikely to be considered significant and will not be considered within the ES.

#### **Water quality**

- 5.46 It is anticipated that during the construction phase standard mitigation measures, as outlined in the national Guidance for Pollution Prevention (GPP) documents, would be included within the CEMP to prevent pollution within surface water discharges. The Proposed Scheme will see a reduction in car parking spaces on the Site and the implementation of SuDS with pollution control measures will ensure that residual effects would not be significant during operation.
- 5.47 Therefore, effects on water quality from the Proposed Scheme are unlikely to be considered significant and will not be considered within the ES.

#### **Ground Contamination**

##### **Risk of unexploded ordnance (UXO) on-site**

- 5.48 As part of the previous Anfield stadium expansion, a UXO survey was undertaken in 2014 by Zetica Limited<sup>40</sup> to inform the risk of unexploded bombs on-site. This survey encompassed

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<sup>40</sup> Zetica Limited (2014). Site Safe UXO Desk Study, Anfield Liverpool, report ref. P4463-13-R1-A.

the Site, as part of the wider study area for the Stadium. Historic records have identified that one High Explosive (HE) bomb fell within the Site's vicinity, at Baltic Street during WWII, although no other significant UXOs have been identified on the Site within the proposed area of development. It is considered that the Site has a Low UXO hazard level, therefore on-site UXO surveillance works would be unnecessary. However, the CEMP will ensure training is provided to raise UXO awareness as part of the Site inductions and as a primary mitigation measure to enhance the safety of workers on-site. The risk associated with UXO on Site is not considered to be significant and it is therefore scoped out of the ES.

#### **Dust generation from contaminated soil due to the removal of hardstanding/Made Ground and topsoil**

- 5.49 The excavation and removal of hardstanding, Made Ground and topsoil (albeit minimal) during construction could potentially expose construction workers and members of the public to contaminated material, either through inhalation, ingestion, or dermal contact. A 2015 Phase II geo-environmental investigation of the wider Site<sup>41</sup> as part of the Anfield Main Stand development, indicated that there is a limited number of potential contamination sources on and surrounding the Site, and that the overall contaminative potential is considered low. It is anticipated that dust arising from earthworks during construction would be mitigated through the implementation of a CEMP as a tertiary mitigation measure. The CEMP would be informed by Institute of Air Quality Management (IAQM) guidance as discussed under 'Air Quality' above. The risks of contaminated soil dust exposure will also be reduced to low risk through excavation and off-site removal of soil and through encapsulation beneath hardstanding on completion of the works. Therefore, any effects of contaminated dust are not considered significant and will not be considered within the ES.

#### **The generation and migration of ground gases**

- 5.50 The potential for ground gas sources on-site has previously been assessed in a Jacobs 2015 Phase II investigation and is considered to be low risk<sup>41</sup>. Accordingly, there is a low likelihood for ground gas to be generated off-site and to migrate through permeable strata. The proposed foundations for the Scheme would incorporate concrete pads that are 3m deep, supported on the underlying rock formation. Exploratory holes at the location of the proposed Anfield Road development, undertaken during the 2015 Jacobs Phase 2 site investigation (Trial pits TP245 – TP257), identified Made Ground deposits to a maximum depth of 1.0m (TP254). The proposed foundations will therefore necessitate excavation of Made Ground deposits across the footprint of the proposed work. Due to site space constraints, any in-situ material excavated as part of the Proposed Scheme will be removed from the Site, thereby removing the potential source of ground gas. The underlying sandstone bedrock is of low ground gas generation potential.
- 5.51 A single level of ground gas protection has been recommended in the 2015 Phase II report, presenting a form of primary mitigation through reinforced concrete slabs as foundations. Therefore, it is not foreseen that a source of ground gas will be present on Site, nor will pathway for ground gas migration exist between any off-site source of gas and the building in the post-construction stage. The potential risks from ground gases to the excavations and any permanent underground structures are to be dealt with by the Contractor and

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<sup>41</sup> Jacobs SMK Ltd. (2015). Liverpool FC Expansion: Phase II Geo-Environmental Investigation Interpretive Report.

operations staff, in accordance with the current Confined Spaces Regulations<sup>42</sup>. The risk from ground gases is therefore considered to be low following mitigation measures, as described. Risks associated with ground gas during construction and operation are not considered to be significant and will not be considered within the ES.

#### **Risks of contaminating controlled waters**

- 5.52 A limited number of contaminant concentrations in excess of water quality standards have been recorded within soil leachate across the Site<sup>41</sup>. These concentrations are considered to pose a minor risk to controlled waters, due to the recorded depth of groundwater at the Site, the distance to the nearest viable surface water receptor (>1km) and the proposed excavation and off-site removal Made Ground deposits, thereby removing the potential source of contamination. The development of the Scheme would minimise infiltration across the Site, via construction of impermeable hardcover and foundations (i.e. concrete pads) and the incorporation of a contained surface water drainage system.
- 5.53 The Jacobs 2015 Phase II report identified the absence of shallow groundwater on-site which would reduce the risk of groundwater contamination, estimating the depth of the water table to be approximately 30m below ground level. Construction plans will incorporate measures within a CEMP to prevent leaks and spillages, and emergency procedures must be planned in case of accidental spills. These measures present primary mitigation to the risk of contaminating controlled waters, reducing the risk to a low level. During operation, hardstanding will eliminate the pathway of surface contaminants from infiltrating into groundwater. Risks of contaminating controlled waters are not considered to be significant and will not be considered within the ES.

#### **Mobilisation of contaminants through excavation**

- 5.54 Excavation and removal of the ground across the footprint of the Proposed Scheme will be required to construct the shallow concrete pads, which will form foundation at depths of 3m. According to the trial pit logs (TP245 – TP257) undertaken during the 2015 Phase II investigation, Made Ground deposits to a maximum depth of 1.0m have been recorded. Given that the proposed foundation construction will necessitate removal of Made Ground across the footprint of the proposed work, any potential source of contamination will be removed from Site. As limited potential for soft landscaping has been proposed, effects of soil contamination to Site end users (i.e. human health receptors) will be insignificant. The risks to controlled waters from the mobilisation of contaminants have also been discussed above and are considered low. Furthermore, the Proposed Scheme will be hardstanding on completion. This would break the source-pathway-receptor linkage across the Site, therefore no further remediation is required to mitigate risks.
- 5.55 The acute risks to construction and maintenance workers resulting from short-term exposure to soils will be mitigated by the Contractor, through appropriate design of the works and compliance with health and safety legislation. The risk of mobilising contaminants through excavation are not considered significant and will not be considered within the ES.

#### **Compaction of soil for flora and fauna**

- 5.56 Soil may be consolidated in the construction process, which could hinder vegetation growth through the reduction in pore spaces containing oxygen. However, the amount of existing

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<sup>42</sup> *The Confined Spaces Regulations 1997*. SI: 1997/1713. UK: The Stationery Office Limited. Available at: <http://www.legislation.gov.uk/uksi/1997/1713/contents/made> [Accessed 11/2019].

green space on the Site is minimal, and any existing vegetation comprises landscaped areas, so the sensitivity of the receptor is low. There will potentially be some replacements of affected landscaped vegetation, thus conditions will be kept similar on completion of the proposed works. Therefore, the effects are not considered to be significant and will not be considered within the ES.

### **Risks to buried structures & services**

- 5.57 Buried concrete structures are susceptible to corrosion from excessive levels of sulphate within the ground. The chemical testing conducted on samples obtained across the wider Site area during the Jacobs 2015 Phase II investigation, have been reviewed to ascertain the appropriate concrete classification for buried concrete with reference to BRE Special Digest 1 - Concrete in Aggressive Ground (2005). The Jacobs 2015 Phase II investigation report concluded that a Design Sulphate Class DS-2 and an Aggressive Chemical Environment for Concrete Class (ACEC) of AC-1s will be appropriate for buried concrete at the Site.
- 5.58 Given that Made Ground deposits across the footprint of the proposed stand development are to be excavated and removed from the Site, new potable water supply pipes will therefore be laid within natural ground and surrounded by pipe bedding material. The risk to potable water supply pipes from contamination is therefore considered to be low. Should visual or olfactory contamination be identified during installation of services then work should cease immediately and a United Utilities Pipe Selection Risk Assessment<sup>43</sup> be produced.
- 5.59 It is therefore considered that ground aggressivity and the associated risk to new subsurface structures and services are unlikely to be considered significant and will not be considered within the ES.
- 5.60 On the basis of the above assessment, it is proposed that ground contamination can be scoped out of the EIA, and will not be reported within the ES, for both the construction and operational phases of the proposed Anfield Road development, due to an absence of sensitive receptors and likely significant effects. The results of future ground investigation works can be summarised in a supporting Ground Investigation Report, which can accompany the planning submission, if required

## **Archaeology**

### **Loss, truncation or disturbance to archaeological remains from construction activities**

- 5.61 The groundworks associated with the construction of the Proposed Scheme have the potential to impact buried archaeological remains associated with the buildings formerly situated along Anfield Road. If any buried remains survived the construction of the Stadium and subsequent construction of associated car parking and modern buildings, such remains would likely be of negligible or low heritage value (also referred to as significance). St Ann's Hill House, situated on the northern side of Anfield Road, partially within the Site (HER ME9852) for example would be considered of low value for its archaeological interest as an example of a 19th century house. Moreover the extent of later construction is likely to have truncated earlier archaeological remains and removed deposits. Any archaeological remains

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<sup>43</sup> United Utilities (no date). Supplementary guidance for the selection of water pipes in land potentially Affected by contamination. Available at: <https://www.unitedutilities.com/builders-developers/pre-development/water-pre-dev/> [Accessed 11/2019].

that do survive are likely to be considered of negligible heritage value due to their limited archaeological and historic interest on the basis of the available evidence. Therefore, any impact from ground disturbance would be limited. The effect, considered not to be significant, would be mitigated prior to, or during, construction through excavation and preservation by record. Any necessary mitigation would be secured through a condition of planning in line with paragraph 198 and 199 of the National Planning and Policy Framework<sup>44</sup>.

#### **Loss, truncation or disturbance to below ground heritage assets as a result of operational activities**

5.62 It is anticipated that any effects on potential buried heritage assets, if they survive, will be entirely mitigated in advance of, or during the course of, the construction phase through excavation and preservation by record. As such, there are unlikely to be any effects on archaeological remains during the operational phase and buried heritage assets will not be considered in the ES.

#### **Risk of Major Accidents and Disasters.**

5.63 Schedule 4 of the EIA Regulations requires EIAs to include 'a description of the expected significant adverse effects on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned'.

5.64 IEMA defines major accidents and disasters as the following<sup>45</sup>;

- Major accident: *'an uncontrolled occurrence in the course of the construction or operation of a development, leading to serious danger to the environment, which may be either immediate or delayed'*; and,
- Disaster: *'an external event (i.e. not directly caused by the development) leading to serious danger to the environment, which may be either immediate or delayed. It may result from natural sources, such as coastal flooding, adverse weather, ground movement, or from man-made sources (e.g. escalation of a fire from an adjacent facility, dam collapse etc.)'*.

5.65 The United Nations Office of Disaster Risk Management defines vulnerability as:

*'The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards'*<sup>46</sup>.

5.66 The sensitive receptors considered in this section are; stadium users, pedestrians, road users, primary schools, care homes, residents, and local air quality. Following the above definitions, an appraisal of the Proposed Scheme's vulnerability to major accidents or disasters has been made based on professional judgement and evidence provided where possible. Those

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<sup>44</sup> Ministry of Housing, Communities and Local Government (2019). National Planning Policy Framework. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed 11/2019].

<sup>45</sup> IEMA (2017). EIA Quality Mark Article, 'What is this MADness?'

<sup>46</sup> United Nations Office of Disaster Risk Management (2019). 'Global Assessment Report on Disaster Risk Reduction'.

events/scenarios of relevance are set out in **Table 5.1** and those which are considered to present a potential risk discussed further below.

**Table 5.1: Potential Major Accidents and Disasters which Presents Risks at Construction and/or Operation Phase**

Events/Scenarios	Does the Proposed Scheme Pose a Risk During Construction/Operation Phase? (Y/N)	
	Construction	Operation
Flooding (coastal and tidal) <sup>47</sup>	N	N
Earthquake	N	N
Volcanic Eruption	N	N
Landslide	N	N
Flooding (rainfall)	Y	Y
Severe weather: storms and gales	Y	Y
Severe weather: low temperature and heavy snow	Y	Y
Severe weather: heatwaves	Y	Y
Severe weather: drought	Y	Y
Wildfires	N	N
Human Diseases	Y	Y
Animal Diseases	N	N
Major transport accidents	Y	Y
Urban fires	Y	Y
Widespread public disorder	Y	Y
War and terrorism	Y	Y
Risk of unexploded ordnances on site	Y	Y

5.67 Events which do not pose a risk during construction or operation phase have been removed from the section, evidence for the decisions is provided in **Appendix 3**.

<sup>47</sup> See Water Resources, Flood Risk and Drainage section, significant effects associated with flooding are not anticipated and are therefore not considered to pose a risk in relation to the risk of major accidents or disasters.

- 5.68 It is anticipated that policies, procedures and mitigation measures currently being adhered to at the Stadium will be carried forward and implemented for the Proposed Scheme.
- 5.69 The following identified effects are not considered to be significant, and they will not be considered further with the EIA or reported in the ES.

**Public nuisance and/or structural damage caused by flooding (rainfall)**

- 5.70 According to the Government's surface water flooding map<sup>48</sup>, Anfield Stadium has a low risk (annual chance of flooding of between 0.1% and 1%) of surface water flooding. It is intended that any effects which could result in flooding from surface water will be mitigated for within the CEMP. See Water Resources, Flood Risk and Drainage section for further detail on the potential risk of flooding and possible mitigation measures.
- 5.71 As mentioned in the Water Resources, Flood Risk and Drainage section, the effects associated with flooding are not anticipated to be significant and therefore are not considered to pose a risk during the construction or operational phase and will not be considered within the ES.

**Public harm and/or structural damage caused by severe weather (storms and gales)**

- 5.72 It is anticipated any effects caused by severe storms and gales during construction phase will be mitigated for within the CEMP. These mitigation measures include: ensuring equipment and material are properly secured when not in use, wearing the appropriate safety equipment, and ensuring staff have undertaken suitable awareness sessions on the dangers of working during high winds. As the effects can be mitigated for during construction, the risk of storms and gales on public harm is not considered significant.
- 5.73 The building structure and cladding for the Proposed Scheme will be designed to current Eurocode (and UK National Annex) wind requirements to ensure the safety of the building during severe storms and gales. In addition, a wind tunnel test will be carried out to establish structural and cladding loads for the long span roof structure. As the Proposed Scheme is an expansion of the current stadium features, and building codes will be adhered to, the risks of storms and gales on the public and structural damage is not considered significant. The effect of severe weather (storms and gales) is unlikely to be considered significant and will not be considered within the ES.

**Public harm and/or structural damage caused by severe weather (low temperatures and heavy snow)**

- 5.74 It is anticipated that any effects caused by low temperatures and heavy snow during construction will be mitigated for within the CEMP. These mitigation measures include: providing suitable training to staff, receiving reliable weather warning updates, and maintaining equipment during low temperatures. As the effects can be mitigated for during construction, the risk of low temperatures and heavy snow on public harm are not considered significant.
- 5.75 The structure of the building and roof design will be designed to current Eurocode (and UK National Annex) requirements. The roof has been designed to withstand snow loading pressures and the angle of the roof will be such that rainfall/snowfall will fall to drainage

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<sup>48</sup> UK Government, 'Long Term Flood Risk Information'. Available at: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=336263&northing=393106&address=38007511> [Accessed 11/12].



points which will be maintained. It is unlikely for the risk of low temperatures and heavy snow to increase with the Proposed Scheme compared to the current stadium. As the Proposed Scheme is an expansion of the current stadium features, and building codes will be adhered to, the risks from low temperatures and heavy snow on the public and structural damage is unlikely to be considered significant and will not be considered within the ES.

#### **Public harm caused by severe weather (heatwaves)**

- 5.76 It is not anticipated for the Proposed Scheme to pose a risk during construction phase. There is a potential for personnel to suffer from health issues if exposed to extreme adverse conditions for a long period without adequate provisions. The health and safety of personnel should be informed by standard health and safety regulations, as such, heatwaves are not considered a significant risk during the construction phase.
- 5.77 The main risk of heatwaves is dehydration, heatstroke and heat exhaustion. Heatwaves can be predicted; as such the impacts of heatwaves are reduced by personal preparation. The Proposed Scheme has incorporated mitigation measures for heatwaves into the design which aim to reduce the risk of the building overheating. These measures include: each occupied room will be designed to comply with TM52: Limits of Thermal Comfort (CIBSE, 2013), and high density areas will have comfort cooling provided. The comfort requirements will be designed against a future weather file and will take into account the potential risks posed by climate change. To reduce the risk of users suffering during heatwaves, the stadium should ensure users are aware of drinking facilities and educate the users prior to attending matches or events of the importance of remaining hydrated during heatwaves. Furthermore, the orientation of the stand is such that any large areas of glazing will face north east and thus not present a risk from solar gain. As the risks can be mitigated for in preparation and design, heatwaves are unlikely to be considered significant and will not be considered within the ES.

#### **Public harm or fatalities caused by droughts**

- 5.78 The most recent notable drought in the UK occurred between 2010 and 2012 due to a combination of below average rainfall between 2010 and early 2012, and a dry 2011-2012 winter<sup>49</sup>. It is anticipated that the likelihood of droughts will become more testing, as climate change, environmental management obligations and demand from population growth increases. Drought planning is undertaken by a number of organisations including; the Environment Agency, the water industry and other parts of the water sector.
- 5.79 It is not anticipated for the Proposed Scheme to pose a risk during construction phase. Any mitigation measures to conserve water during a drought can be included in the CEMP. Therefore, droughts are not considered a significant risk during construction phase.
- 5.80 On completion, the Proposed Scheme is not anticipated to increase the risk of droughts. In the event of a drought, the Proposed Scheme may experience and have to mitigate for temporary bans on the water supply as decided by the utilities company. These mitigation measures may include; prioritising the water supply, ensuring the public are aware of the limited water supply, and the potential to have to cancel or postpone matches in the event

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<sup>49</sup> Chartered Institution of Water and Environmental Management, Policy Position Statement, 'Managing drought in the UK'



of severe droughts. As these risks can be mitigated for, droughts are unlikely to be considered significant and will not be considered within the ES.

#### **Outbreaks of human diseases**

- 5.81 It is not anticipated for there to be an increased risk of human diseases during construction phase for this project.
- 5.82 Whilst the Proposed Scheme will encourage large crowds to congregate within close proximity to one another in a relatively close-off environment, there will be a negligible increased risk of human diseases compared to the risk posed at the current stadium capacity. As a precaution, consideration to certain health and safety measures, and quarantine procedures will be defined in the operation of the Proposed Scheme in the event of an outbreak. Outbreaks of human diseases are unlikely to be considered significant and will not be considered within the ES.

#### **Public harm or fatalities caused by major transport accidents**

- 5.83 It is intended that any effects on the potential for major transport accidents during construction phase will be mitigated for within the Construction Traffic Management Plan (CTMP) which will include measures such as; a planned route for construction traffic to reduce the risk to current road users and residents, restricting deliveries to a certain time, and ensuring the vehicles are well-maintained. As the risk can be reduced with the implementation of mitigation measures, it is unlikely for there to be a significant risk during construction.
- 5.84 On completion, Anfield Road will be realigned around the new Anfield Road Stand. There are currently drop bollards in place at Anfield Road to restrict vehicle access during events for the safety of pedestrians which are anticipated to remain in place. The road layout to the east of the Proposed Scheme is a network of one-way residential roads with a 20 mph speed restriction, similarly the road layout to the west consists of one-way residential roads with a 20 mph speed restriction. Liverpool Football Club has a Transport Strategy in place for the current stadium which aims to reduce the number of fans travelling independently and encourages sustainable transport routes, the Proposed Scheme would not change this Transport Strategy. The potential risk of a major transport accident is unlikely to be considered significant and will not be considered within the ES.

#### **Public harm or fatalities and/or structural damage caused by urban fires**

- 5.85 It is intended that any effects for urban fires during construction will be mitigated for within the CEMP during construction. Mitigation measures may include; ensuring flammable waste is disposed of suitably, ensuring any flammable materials or ignition sources are stored under lock-and-key, and ensure staff and visitors are aware of the stadium's fire safety procedure. The construction phase of the Proposed Scheme is not considered to pose a significant risk of urban fires.
- 5.86 On completion, the Proposed Scheme is not considered to present an increase in risk of urban fires. The current stadium fire safety procedure and safety measures will be implemented, as such it is not anticipated for the Proposed Scheme to pose a significant risk of urban fires and are unlikely to be considered significant and will not be considered within the ES.

### **Public harm or fatalities as a result of public disorder, crowd control or anti-social behaviour**

- 5.87 It is anticipated the construction works will be controlled through the implementation of a CEMP, which should include measures to minimise disturbances to the surrounding public such as noise and vibration, air pollution, visual disturbance and impacts of traffic. Therefore, it is considered unlikely for the Proposed Scheme to result in public disorder during construction phase.
- 5.88 On completion, the Proposed Scheme will encourage the congregation of high-density crowds with the potential for conflicting viewpoints particularly on match-days, however the Stadium is already operational and as such has crowd control strategy measures in place to mitigate potential risks. These measures include; turnstiles to slow and control the movement of people, separated fan areas for home and away crowds, and additional security during match-days. The increase in capacity of the Proposed Scheme will increase the potential risk of widespread public disorder; however, providing suitable mitigation measures are implemented, public disorder is unlikely to be considered significant and will not be considered within the ES.

### **Malicious attacks caused by war and terrorism**

- 5.89 It is not anticipated for the construction works to attract warfare or terrorist activities, however, the Proposed Scheme is located in a densely populated area and is associated with an internationally recognised brand/club. The maintenance of the 'ring of steel' protocol will be implemented during construction phase as well as operation phase and safety measures will be considered in the CEMP.
- 5.90 On completion, the Proposed Scheme is unlikely to attract an increased interest of warfare or terrorist activities above baseline conditions. The Stadium has security measures in place to deter these activities such as bollards around key areas to remove accessibility of unauthorised vehicles, private security patrols, bag drop facilities and bag search procedures, and CCTV operations. These measures will be maintained and implemented in the new Anfield Road Stand design. Additional security measures included in the design include; drop bollards along the entry and exit of the road of Anfield Road, and any new pedestrian entrances to the stadium will include fixed bollards whilst any new vehicular access points will include manual telescopic bollards. As the significance of this risk can be mitigated during the construction and operation phases, war and terrorism are unlikely to be considered significant and will not be considered within the ES.

### **Risk of unexploded ordnance (UXOs) on-site**

- 5.91 A UXO survey was undertaken in 2017 by Zetica Limited<sup>50</sup> to inform the risk of unexploded bombs at the Anfield Stadium and the adjacent area, as marked out for the Main Stand expansion in 2016. As stated in relation to Ground Contamination considerations, records have indicated that only 1No. HE bomb fell in the surveyed area during World War Two and no other sources of UXO were identified. The Proposed Scheme is considered to have a low UXO hazard level, as such the risk of UXOs is not considered a significant risk and will not be considered within the EIA or reported in the ES.
- 5.92 The potential effects relating to major accidents and disasters are considered unlikely to be significant, provided suitable mitigation measures are implemented throughout design,

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<sup>50</sup> Zetica Limited (2014) Site Safe UXO Desk Study, Anfield Liverpool, report ref. P4463-13-R1-A

construction and operation. The consideration of major accidents and disasters is scoped out and will not be reported in the ES.

## **Waste**

### **Material resources**

5.93 Types of materials potentially required for the Proposed Scheme may include:

- Steel;
- Aggregate;
- Cement;
- Concrete;
- Bitumen;
- Wood; and
- Plastic.

### ***Use of materials during construction***

5.94 During the construction phase, the Proposed Scheme will require a small quantity of material resources for the construction of the new Anfield Road Stand and associated structures. This could deplete the availability of non-renewable resources and have impact on the national demand for materials.

5.95 A baseline study (**Appendix 4**) was conducted to assess available resources and key construction activities, the results of which indicate it is likely that any significant adverse effects due to the quantity of materials resources required could be appropriately mitigated. Measures to reduce the effects of material resource use throughout the design process, may be achieved through reducing the material requirements in the design itself, the use of site-won or recycled materials and the use of materials with a high proportion of recycled content.

5.96 When considering the requirement for the supply of materials for use on Site, the proximity principle should be considered such as identifying local suppliers, where possible, to reduce fuel requirements, carbon footprint and cost of delivery, resulting from transportation. The potential environmental impacts of transportation are discussed in **Chapter 10 – Transport** and have, therefore, not been considered in this section.

5.97 The appointed contractor will produce a CEMP that will detail mitigation measures, such as those outlined above, to be adhered to on-site to reduce potential impacts from material resource use during the construction of the Proposed Scheme.

5.98 With the implementation of such mitigation measures, the use of materials during construction are not unlikely to be considered significant and will not be considered within the ES.

### ***Use of materials during operation***

- 5.99 For the operation phase, the baseline study (**Appendix 4**) has identified that maintenance work (i.e. building maintenance) would be infrequent and associated material volumes required will be in small volumes.
- 5.100 Therefore, the use of material during operation are unlikely to be considered significant and will not be considered within the ES.

### **Waste Generation**

5.101 Waste for the Proposed Scheme may result from the following:

- Waste from the demolition of existing structures (roof and seating tiers);
- Surplus excavated materials (soils or substrata);
- Green waste (from vegetation removal or management);
- Waste packaging and out-of-spec, damaged or defective materials and components;
- Contaminated soils from excavations (which may be classified as hazardous waste);
- Surplus construction materials (e.g. concrete, aggregates, asphalt);
- General solid and liquid waste from the site workforce;
- Municipal type waste from the use of the Stadium during games and events;
- Other commercial waste from the day-to-day activities at the Stadium;
- Maintenance activities; and
- Litter and other debris.

### ***Waste generated during construction***

- 5.102 The generation and management of waste as a result of the construction of the Proposed Scheme may result in adverse environmental effects, including the temporary occupation of waste management facility space (from treatment of waste) and the permanent reduction to landfill capacity (from disposal of waste). However, the Proposed Scheme would implement mitigation measures to minimise waste generated during construction such as implementing the waste hierarchy to minimise disposal and maximise reuse and recycling.
- 5.103 The baseline study (**Appendix 4**) has not found any contaminated land (i.e. landfills), within 500m of the Site. The baseline study has indicated adequate availability of suitable waste management facilities within Merseyside and the North West to accommodate any construction, demolition and excavation (C, D & E) waste generated during construction of the Proposed Scheme.
- 5.104 Measures to reduce the effects of waste generation may be achieved through designing out waste during the design phase.
- 5.105 Where waste cannot be avoided the development of a Site Waste Management Plan (SWMP) will outline the use of waste hierarchy to manage waste, minimise disposal and maximise re-

use and recycling. By reusing and recycling as much waste as possible, this would reduce the amount of waste going to landfill. Where waste must be taken to recycling/disposal facilities, these facilities must have the appropriate permits to ensure environmental risks are reduced. Again, the Proximity Principle should be considered to identify recycling/disposal facilities as close to the works as possible to minimise transport, thereby reducing carbon emissions resulting from transportation. The closest and relevant treatment and disposal sites will be identified by the appointed Contractor. As noted above, the potential environmental impacts of transportation are discussed in **Chapter 10 – Transport** and have, therefore, not been considered further here. .

- 5.106 The appointed Contractor would produce a CEMP. This would detail mitigation measures to be adhered to on-site to reduce potential impacts from waste generation including dust, particulate emissions and noise, during the construction of the Proposed Scheme (see **Chapter 11 – Noise and Vibration** and the Air Quality section above).
- 5.107 A SWMP, will be produced by the appointed Contractor. This would consider the sourcing, transport and use, and disposal of waste and material resources, in a sustainable manner. It would also take account of, and capture, design changes as the Proposed Scheme design evolves and would ensure that unavoidable construction waste is identified, and able to be managed in accordance with the waste hierarchy and other relevant legislative requirements. The SWMP would be used to derive the management options that would achieve the highest practicable performance levels within the hierarchy.
- 5.108 Due to the proposed waste management controls and the implementation of appropriate mitigation measures, waste generated during the construction phase is unlikely to be considered significant and will not be considered within the ES.

#### ***Waste generated during operation***

- 5.109 The baseline study (**Appendix 4**) indicated that during the operation of the Proposed Scheme, the waste generated through maintenance activities would be unlikely to generate large volumes of waste requiring treatment or disposal. Additional volumes of waste generated during the day-to-day activities of the stadium are unlikely to be significantly more than is currently generated.
- 5.110 A review of the existing operational waste management arrangements and the development of an Operational Waste Management Strategy (OWMS), will mitigate against any potential significant adverse environmental effects that may be anticipated during operation. This will outline how waste will be managed during the operation of the Proposed Scheme, ensuring there is sufficient storage provision provided and it is collected in accordance with legislation and policy.
- 5.111 Due to the proposed waste management controls and the implementation of appropriate mitigation measures, waste generated during the operational phase is unlikely to be considered significant and will not be considered within the ES.

#### **Daylight, Sunlight and Overshadowing**

##### **Construction Phase Effects**

- 5.112 No significant adverse daylight, sunlight or overshadowing effects will arise during the construction phase. Any daylight, sunlight and overshadowing effects will be driven by the

scale of the completed development (considered below) and any effects during demolition works and associated with temporary plant, such as tower cranes, will be minimal/negligible and of a temporary nature.

#### **Daylight and sunlight effects to neighbouring residential properties**

5.113 The scale of the Proposed Scheme works are such that there is the potential for daylight and sunlight effects to some of the neighbouring residential properties. It is anticipated that any such effects will be either minimal and /or negligible and will not need to be considered within the ES. The methodology and approach adopted in appraising the daylight and sunlight issues is described in **Appendix 5**. This appraisal was undertaken as part of scheme design considerations (i.e. primary mitigation, inherent to the Proposed Scheme), to ascertain if any modifications were required to mitigate effects. As set out above no significant issues were identified and thus it can be concluded that no likely significant effects would occur.

#### **Daylight and sunlight effects to neighbouring non-residential properties**

5.114 No neighbouring non-residential properties have been identified where potential daylight and sunlight effects might arise.

#### **Overshadowing**

5.115 Given the orientation of the Proposed Scheme any overshadowing will be limited, in the main, to the adjacent car parking area to the north of the Site which is included in the EIA Scoping Area and a small area of Stanley Park. Any overshadowing impacts to the neighbouring areas will be negligible/minimal and is not considered to present a likely significant effect.

#### **Obtrusive Light**

5.116 The following identified effects are not considered to be significant. They will not be considered further with the EIA or reported in the ES. A factual evidence base has been provided below to support this.

5.117 The obtrusive light limitations highlighted within **Table 5.1** below have been agreed with LCC and will be adhered to during the construction and operational phases thus ensuring that potential effects outlined in the bullet points below are mitigated to a negligible magnitude:

- Spill light;
- Luminaire intensity;
- Building luminance; and
- Sky glow.

5.118 Relevant information to support this conclusion is provided in the Design and Construction Phase Mitigation Strategy in **Appendix 6**.

**Table 5.2: Obtrusive Light Limitations**

Environmental Zone	Sky Glow ULR (Max %)	Light Intrusion (Into Windows) Ev (Lux)		Luminaire Intensity I (Candelas)		Building Luminance Pre-curfew*
		Pre-curfew	Post-curfew*	Pre-curfew	Post-curfew*	
E0	0	0	0	0	0	0
E1	0	2	0 (1**)	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	6	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	25

Source: ILP GN01:2011 as amended via consultation with Liverpool City Council

\*Curfew - 23:00 hours as agreed via consultation with Liverpool City Council.

\*\* Permitted only from public road lighting installations.

## 6. Socio-Economics and Human Health

### Identification of Effects which are Not Significant

- 6.1 The assessment of socio-economic and human health effects considers the impacts of the Proposed Scheme on the labour market, local economy and the health of future employees and existing residents and employees. There is no overarching formal guidance to inform such an assessment of economic impacts, although the assessment of human health is informed by the NHS Health Urban Development Unit (HUDU) Rapid Health Impact Assessment Toolkit<sup>51</sup>.
- 6.2 The commercial nature of the Proposed Scheme means that certain socio-economic and human health effects often resulting from new development are not relevant. The Proposed Scheme will not affect the number of homes in the area or generate demand for school places, for example, and it will not materially affect how people access food or leisure facilities.
- 6.3 Beyond this initial exercise, the following effects have been identified as potentially relevant to the Proposed Scheme but will not be considered further with the EIA or reported in the ES because they are deemed to be not significant. A factual evidence base has been provided below to support this.

### Changes in crime levels and community safety

- 6.4 Site security arrangements for the Proposed Scheme during the construction phase will be in line with the requirements set out in the Construction (Design and Management) Regulations 2015 and appropriate levels of security (personnel/CCTV) will be provided. Appropriate measures are and will remain in place to minimise the extent to which operations affect crime levels and community safety, and it is anticipated that these measures will be adapted and improved as necessary to reflect the increased stadium capacity following completion of the Proposed Scheme. As a result, there are unlikely to be significant effects in relation to crime and this will not be considered further in the ES.

### Change in social cohesion and lifetime neighbourhoods

- 6.5 The urban form of the nearby residential areas will not be affected by the Proposed Scheme. Communities will not be displaced or moved as a result of construction or operational activities. Therefore, the impact of the Proposed Scheme on social cohesion is not significant and will not be considered further in the ES.

### Active travel and public transport connections

- 6.6 A Transport Strategy is in place and will be updated as part of the Proposed Scheme. It includes the provision of bus services on match days to maximise use of public transport. It further incorporates wayfinding signage to promote journeys by foot and rail, and provides cycle parking at the stadium to support trips by bike. Within this context, the impact of the Proposed Scheme on active travel and public transport connections is not significant and will not be considered further in the ES.

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<sup>51</sup> NHS Health Urban Development Unit (2017) Rapid Health Impact Assessment Tool, 3<sup>rd</sup> edition



## Identification of Sensitive Receptors and Likely Significant Effects

- 6.7 The following effects shown in **Table 6.1** have been identified and will be assessed within the EIA and reported in the ES.

**Table 6.1: Likely Significant Effects and Sensitive Receptors**

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Creation of direct, indirect and induced employment	Labour force residing in the local and wider impact areas	C / O
Economic productivity generated (measured in gross value added)	Businesses that form the economy of the local and wider impact areas	C / O
Expenditure of visitors in the local and wider economy	Workforce and businesses situated in the local and wider impact area	O

*C – Construction / O – Operation*

## Background Studies to Inform Assessment

- 6.8 The following studies have been prepared or are proposed and will be used to inform the EIA (**Table 6.2**).

**Table 6.2: Baseline Studies / Surveys**

Study / Survey	Overview	Date
<b>Current or Pending</b>		
Economic Impact Assessment	Economic impact modelling will be undertaken to estimate the scale of economic effects. This assessment will be undertaken taking account of best practice guidance <sup>52</sup> and will draw upon information shared by the Club as well as secondary datasets. It will present the quantifiable economic impacts likely to be generated during construction and operation, accounting for leakage, displacement and multiplier effects.	February 2020

## Assessment Methodology of Likely Significant Effects

- 6.9 The following methodology for the assessment is proposed:
- Appropriate study areas will be defined, which – in the absence of formal guidance – will be based on an understanding of relevant local and wider economic geographies

<sup>52</sup> Homes and Communities Agency (2014) Additionality Guide, fourth edition

and a consideration of the extent to which socio-economic and human health effects are likely to be captured therein. It is currently envisaged that a neighbourhood impact area will be defined to cover the wards of Anfield and Everton, with the administrative area of Liverpool City Council then forming a local impact area and the entire Liverpool City Region forming a wider impact area. This reflects existing patterns in the directly employed workforce of the Club<sup>53</sup> and evidence of labour force containment from the 2011 Census<sup>54</sup>.

- Best practice and methodological guidance will be drawn upon as appropriate to inform key elements of the assessment, including the Additionality Guide produced by the former Homes and Communities Agency<sup>55</sup> (HCA). Net additional economic impacts will be presented, accounting for leakage, displacement and multiplier effects.
- The sensitivity of receptors will be determined through comparison with regional and national trends. Through observation of a receptor's capacity for change relative to wider comparator areas and/or national standards, the sensitivity of receptors locally can be observed. Consideration is also given to the priority attributed to specific receptors in strategy and policy terms, particularly in the case of qualitative receptors and those where there may be a shortage of quantitative evidence. The assessment is based on professional judgment.
- Once the sensitivity of the receptor has been identified, the absolute impact attributable to the Proposed Scheme will be benchmarked against the current rate of change in the corresponding social, economic or health baseline. This allows a relative assessment of the magnitude of impact that is attributable to the Proposed Scheme.
- The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine significance, on a scale of high or large, medium, low or small and negligible. Significant effects will be determined through professional judgment.

## Limitations and Assumptions

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

- The assessment is desk-based and therefore reliant on data and information obtained from a variety of official published sources. No further verification of these sources will be undertaken.
- Where necessary, professional and realistic assumptions will be made and applied.

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<sup>53</sup> Around 11% of the directly employed workforce on matchdays is drawn from three postcode areas (L4/L5/L6) that broadly align with the ward boundaries of Anfield and Everton. The Club equally draws 85% of its workforce from the city of Liverpool

<sup>54</sup> The 2011 Census found that 86% of jobs in the Liverpool City Region are filled by its residents, indicating that the majority of significant socio-economic effects generated by the Proposed Scheme would be contained within this geography

<sup>55</sup> Homes and Communities Agency (2014) Additionality Guide, fourth edition

## 7. Townscape and Visual

### Identification of Effects which are Not Significant

- 7.1 The following identified effects are not considered to be significant. They will not be considered further with the EIA or reported in the ES. A factual evidence base has been provided below to support this.

#### Townscape effects on topography during construction and operational phases

- 7.2 It is intended that the Proposed Scheme will work with existing ground levels to accommodate the new stand.
- 7.3 Therefore, effects on topography are not considered significant and will not be considered within the EIA or reported in the ES.

#### Townscape effects on land use during construction and operational phases

- 7.4 It is anticipated that the predominant land use within the Site will be unchanged as a result of the Proposed Scheme.
- 7.5 Therefore, effects on land use are not considered significant and will not be considered within the EIA or reported in the ES.

#### Townscape effects on environmental designations during construction and operational phases

- 7.6 There are no townscape environmental designations covering the Site or immediate context, therefore effects on environmental designations are unlikely to be considered significant and will not be considered within the EIA or reported in the ES.

#### Visual effects on World Heritage Site key views during construction and operational phases

- 7.7 A number of key World Heritage Site (WHS) views and vistas were identified within Liverpool's World Heritage Site SPD<sup>56</sup>. As part of the previous application for expansion of the Main Stand and Anfield Road Stand, the WHS views were discounted due to the distance between the viewpoint location and the Site. This was agreed with both LCC and Historic England as part of the consultation process.
- 7.8 Therefore, effects on receptors at WHS viewpoints are unlikely to be considered significant and will not be considered within the EIA or reported in the ES.

#### Visual effects from local viewpoints during construction and operational phases

- 7.9 A total of 24 key viewpoints were identified for the previous consented 2014 application. A number of these key viewpoint locations have been discounted for the purposes of this assessment, and the rationale for their exclusion are listed below:
- View from Walton Breck Road looking north west towards the Site (View 1). The view is focussed on the previous 2014 Phase 1 (Main Stand extension), and is not predicted to allow views of the Proposed Scheme.

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<sup>56</sup> Liverpool City Council (2009). Liverpool Maritime Mercantile City World Heritage Site: Supplementary Planning Document. Available at: <https://liverpool.gov.uk/media/9644/world-heritage-site-spd.pdf> [Accessed 17/12/2019].

- View from the south side of Walton Breck Road looking east towards the Site (View 2). The view is focussed on the previous 2014 Phase 1 (Main Stand extension), and is not predicted to allow views of the Proposed Scheme.
- View from Stanley Park footpath off entrance at Walton Lane and Priory Road junction looking south east (View 10). Given the dense block of evergreen planting, there is no view afforded of any elements of the stadium.
- View from lakeside path in far western end of Stanley Park looking south east towards the Site (View 12). Given the predominantly evergreen nature of the tree cover, the current stadium is barely visible within the centre of the view.
- View from junction of Venice Street and Vanguard Street looking north east towards the Site (View 13). The view is focussed on the previous 2014 Phase 1 (Main Stand extension), and is not predicted to allow views of the Proposed Scheme.
- View from road junction between Walton Lane and Walton Breck Road looking east to the Site (View 14). The view is focussed on the previous 2014 Phase 1 (Main Stand extension) and is not predicted to allow views of the Proposed Scheme.
- View from Oakfield Road at Junction with Ludwig Road looking north west to the Site (View 17). The viewpoint allows a narrow and framed view towards the Main Stand.
- View from central reservation of the A580 at junction with Cherry Lane looking west towards the Site (View 18). No view afforded of any part of the stadium.
- View from Walton Hall Park, North of Walton Hall Avenue, looking south towards the Site (View 20). No view afforded of any part of the stadium.
- View from Anfield Road looking south east along Back Rockfield Road towards the Site (View 22). The side of the Kop terminates the view.

## Identification of Sensitive Receptors and Likely Significant Effects

- 7.10 The following effects shown in **Table 7.1** have been identified and will be assessed within the EIA and reported in the ES.
- 7.11 Refer to **Figure 7.1 – TVIA Scoping Report Key Viewpoints** that accompanies this report for the locations of the identified viewpoints.

**Table 7.1: Likely Significant Effects and Sensitive Receptors**

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Changes to townscape and landscape character within the site context	Surrounding residential areas and Stanley Park/Anfield Cemetery.	C / O

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Changes to built/landscape heritage assets as townscape receptors	Grade II* listed Stanley Park, Grade II* listed Anfield Cemetery including internal listed buildings and structures. Listed buildings within the context around the site, including those along Anfield Road.	C / O
Changes to tree cover	Trees within the Site and immediate site context. There are a number of trees located to the boundary with the park. Some are on LFC land but the majority are within Stanley Park. Trees within the park are protected under its listed status.	C / O
Changes to scale, massing and height	The existing stadium, and its relationship to the surrounding built context.	C / O
Changes to movement and linkages	Movement and circulation within the stadium. Movement and linkages along Anfield Road. Connection to/from Stanley Park.	C / O
Changes to public open space	Visual and physical changes to the interface between the Site and immediately adjacent Stanley Park.	C / O
Changes to site character	Visual and physical changes at site level, including; public realm, movement and linkages, trees and landscape, legibility and connectivity.	C / O
Changes to the character and amenity of views	<p>The following viewpoint locations are being considered:</p> <p>View 1: View north west from Anfield Road from adjacent to the Grade II listed The Arkles public house.</p> <p>View 2: View west from Utting Avenue/Priory Road junction across Grade II* registered Stanley Park. Primary vehicular route and approach to the stadium with high numbers of viewers.</p>	C / O

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
	View 3: View south west from Priory Road across Grade II* registered Stanley Park.	
	View 4: View south from Grade II* registered Stanley Park (south).	
	View 5: View south from Grade II* registered Anfield Cemetery (north).	
	View 6: View south from Grade II* registered Anfield Cemetery (south).	
	View 7: View south from Grade II* registered Stanley Park (north).	
	View 8: View south east from Anfield Road. The view incorporated the Grade II listed dwellings fronting onto Anfield Road.	
	View 9: View south west from Grade II* registered Stanley Park.	
	View 10: View north east from St Domingo Road. Key local route within the residential areal to the south west. Relatively open view across open space.	
	View 11: View north west from Anfield Sports and Community Centre/Edinburgh Park. Long-range, open view across open space.	
	View 12: View south west from Utting Avenue (south). Primary vehicular route and approach to the stadium with high numbers of viewers.	
	View 13: View south west from Abingdon Road playing fields. Long-range, open view across open space.	
	View 14: View south west from Utting Avenue (north). Primary	

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
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vehicular route and approach to the stadium with high numbers of viewers.

*C – Construction / O – Operation*

## Background Studies to Inform Assessment

7.12 The following studies have been prepared or are proposed and will be used to inform the EIA (Table 7.2).

**Table 7.2: Baseline Studies / Surveys**

Study / Survey	Overview	Date
<b>Completed</b>		
Desktop survey	Review of 2014 assessment to identify and changes which may impact on to 2014 baseline. Production of ZVI using detailed sketchUp model of the Proposed Scheme accurately located in Google Earth.	December 2019
<b>Current or Pending</b>		
On-site walkover survey	On-site walkover to assess any changes in context which may impact on townscape and/or visual effects from the Proposed Scheme.	January/February 2020

## Assessment Methodology of Likely Significant Effects

7.13 The following methodology for the assessment is proposed:

- The methodology is drawn from the GLVIA, 3rd Edition<sup>57</sup>. The detail of the methodology is to be agreed with the landscape officer on behalf of the LPA; and
- The photography and preparation of any Visually Verified Montages (VVMs) will be prepared in accordance with the Landscape Institutes Advice Note 01/11<sup>58</sup>. The location and number of these has been agreed with the Landscape Officer on behalf of the LPA.

7.14 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine significance, on a scale of

<sup>57</sup> Landscape Institute and the Institute of Environmental Management and Assessment's Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3rd Edition.

<sup>58</sup> Landscape Institutes Advice Note 01/11 on Photography and photomontage in landscape and visual impact assessment.

negligible, minor, moderate and major. Significant effects will be determined through professional judgment.

### **Limitations and Assumptions**

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

- The assessment relies on available data, and best endeavours have been 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.



## 8. Built Heritage

### Effects which are Not Significant

- 8.1 The following not significant effects have been identified and will not be considered further with the EIA or reported in the ES. A factual evidence base has been provided below to support this.

#### Physical change or alteration of above ground heritage assets within the Site

- 8.2 The Site (small parcel of land for construction works) is partially located within the grade II\* listed Stanley Park Registered Park and Garden and the proposals have the potential to affect the significance of the designated heritage asset through physical change or alteration.
- 8.3 There are no above ground heritage assets located within the remainder of the Site that would be susceptible to physical change or alterations as a result of the Proposed Scheme during the construction or operational phase.

#### Change to the setting of above ground heritage assets outside the Site

- 8.4 A Study Area of 1km from the Site boundary has been defined following a site visit, inspection of relevant heritage assets and taking into consideration the following factors:
- The nature and scope of the Proposed Scheme;
  - The proximity of heritage assets to the Proposed Scheme;
  - The degree of inter-visibility between the heritage assets and the Site taking into consideration, for instance, changes in topography as well as interposing townscape and landscape features; and
  - The significance of the relevant heritage assets and their setting.
- 8.5 Heritage assets located further than 1km from the Site boundary (outside the Study Area) are unlikely to experience significant effects on their setting due to the Proposed Scheme as a result of the intervening distance, built form, vegetation and topography. Therefore change in the setting of assets beyond the Study Area is unlikely to be considered significant and will not be considered within the ES.
- 8.6 A number of heritage assets are located within the Study Area but unlikely to experience significant effects on their setting due to the Proposed Scheme as there is no visibility of the Proposed Scheme due to intervening built form, distance, vegetation and topography. There are also no known functional or historic connections between these assets and the Site. Therefore, change in the setting of assets in this area are unlikely to be considered significant and will not be considered within the ES. They will however be proportionately assessed within the accompanying Heritage Statement.

### Identification of Sensitive Receptors and Likely Significant Effects

- 8.7 The following sensitive receptors (**Table 8.1**) have been identified and will be considered within the EIA:

**Table 8.1: Heritage Assets within 1km where significant effects are likely**

Asset Type	Name	Grade
Registered Park and Garden	Stanley Park	II*
Registered Park and Garden	Anfield Cemetery	II*
Listed Building	No's 43 & 45 Anfield Road	II
Listed Building	No's 35 & 37 Anfield Road	II
Listed Building	No's 39 & 41 Anfield Road	II
Listed Building	The Arkles Public House	II
Non-Designated Heritage Asset	Stanley House	n/a

- 8.8 The following effects shown in **Table 8.2** have been identified and will be assessed within the EIA and reported in the ES.

**Table 8.2: Likely Significant Effects**

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Physical change / direct works to Stanley Park	Stanley Park Registered Park and Garden (Grade II*)	C
Change in the setting of designated heritage assets	Designated Heritage assets	C / O

*C – Construction / O – Operational*

### Background Studies to Inform Assessment

- 8.9 The following studies have been prepared or are proposed and will be used to inform the EIA (**Table 8.3**).

**Table 8.3: Baseline Studies / Surveys**

Study / Survey	Overview	Date
<b>Current or Pending</b>		
Heritage Assessment	Heritage Assessment - A detailed Heritage Statement will be prepared in support of the Application. It will contain a Heritage Assessment that will be carried out in light of the statutory duties <sup>59</sup> , national planning policy <sup>60</sup> and guidance <sup>61</sup> , local planning policy and best practice guidance <sup>62,63</sup> . The Heritage Assessment will identify the significance of the relevant heritage assets within the Site and assess the impact of the Proposed Scheme upon that significance. It will be appended to and inform the EIA.	Forthcoming

## Assessment Methodology of Likely Significant Effects

8.10 The following methodology for assessment is proposed:

- In the absence of specific prescribed criteria for the assessment of impacts on built heritage the methodology for establishing the relative value or importance of heritage assets; the magnitude of impact; and the significance of effect is drawn from best practice guidance. The detail of the methodology is to be agreed with Historic England and the Liverpool City Council Conservation Officer.
- The Built Heritage ES Chapter will be prepared in collaboration with the Townscape and Visual Chapter to ensure integration of approach and assessment.
- The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine significance, on a scale of large or high, medium or small, low and negligible. Significant effects will be determined through professional judgment.

<sup>59</sup> The Planning (Listed Buildings and Conservation Areas) Act 1990.

<sup>60</sup> Ministry of Housing, Communities and Local Government (2019). National Planning Policy Framework. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/810197/NPPF\\_Feb\\_2019\\_revised.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf) [Accessed 16/12/2019].

<sup>61</sup> Ministry of Housing, Communities and Local Government (2019). Historic Environment National Planning Practice Guidance. Available at: <https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment> [Accessed 18/12/19].

<sup>62</sup> Historic England (2015). Good Practice Advice Note 2, Managing Significance in Decision Taking in the Historic Environment.

<sup>63</sup> Historic England (2017) Good Practice Advice Note 3, The Settings of Heritage Assets (2nd Edition).

## **Limitations and Assumptions**

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

- The assessment relies on available data, and best endeavours have been made to ensure that the data are accurate and up to date. It is assumed that information on the National Heritage List for England (NHLE), Liverpool City Council (LCC) and the Merseyside Historic Environment Record (HER) database is accurate.

## 9. Biodiversity

### Identification of Effects which are Not Significant

- 9.1 The following identified effects are not considered to be significant. They will not be considered further with the EIA or reported in the ES. A factual evidence base has been provided below to support this.

#### **Disturbance to Badger, Great Crested Newt and Reptiles as a result of the Proposed Scheme**

- 9.2 A Preliminary Ecological Appraisal (PEA) (317415/WTD/MID/002/A) was undertaken in 2014 by Mott MacDonald Limited, as part of the previous planning application on the Site. The PEA Report (PEAR) concluded that there was no habitat to support, and no evidence of, great crested newt (GCN) *Triturus cristatus*, badger *Meles meles* or reptiles being active on Site. In addition, no data records were returned for these species within 2km of the Site.
- 9.3 No suitable terrestrial habitat is located within or adjacent to the Site for GCN, as it is predominately made up of hardstanding with amenity grassland and ornamental planting. No suitable aquatic habitat for GCN is located within 250m from the Site boundary.
- 9.4 No suitable habitat for badger or reptiles is located within the Site as it is predominately made up of hardstanding with amenity grassland and ornamental planting. Stanley Park is unsuitable to support badger and reptiles due to high levels of disturbance through a continuous grass cutting regime and as well as recreational use by the general public. It also isolated within the urban landscape of Liverpool and has limited connectivity to the surrounding landscape.
- 9.5 Since the PEAR in 2014, all habitats on Site have remained of the same ecological value and their condition is unchanged.
- 9.6 Therefore, disturbance to badgers, GCN and or reptiles is unlikely to be considered significant and will not be considered within the ES.

#### **Habitat loss within and adjacent to the Stadium as a result of the Proposed Scheme**

- 9.7 The habitats on Site have not changed since the PEAR was undertaken in 2014 by Mott MacDonald Limited (317415/WTD/MID/002/A). Habitats on Site include amenity grassland, bare ground, buildings, hardstanding, introduced shrub and scattered trees. The habitats present are very common, homogenous in nature and isolated from larger areas of natural habitat. Therefore these habitats are not considered to be of ecological importance in their own right.
- 9.8 No habitat removal is planned within or adjacent to a National or European designated site.
- 9.9 Therefore, habitat loss, within and adjacent to the Stadium as a result of the Proposed Scheme is very unlikely to be considered significant and will not be considered within the ES.

#### **Disturbance to features of European Statutory Designated Sites**

- 9.10 European Statutory Designated Sites; Liverpool Bay Special Protection Area (SPA), Mersey Narrows & North Wirral Foreshore Special Area of Conservation (SAC), SPA & Ramsar are all located within 5km of the Scheme. These areas are designated for their important numbers

of various species of water birds including populations of over-wintering birds including red-throated diver *Gavia stellata* and common scoter *Melanitta nigra*.

- 9.11 It is noted that common scoter is an extremely shy species (Garthe & Huppopp (2004)<sup>64</sup>, sensitive to disturbance and noise. However, given the distance between these receptors and the Proposed Scheme, the presence of other industry and potential prior sources of disturbance, it is considered unlikely that a significant effect associated with noise and disturbance would occur as a result of the proposed development. As such, potential effects to European statutory designated sites are not considered significant and will not be considered within the ES.

## Identification of Sensitive Receptors and Likely Significant Effects

- 9.12 The following effects shown in **Table 9.1** have been identified and will be assessed within the EIA and reported in the ES.
- 9.13 Applying the proportionality principle, the Likely Significant Effects below consider those areas closest, or most likely to be affected by the Proposed Scheme.

**Table 9.1: Likely Significant Effects and Sensitive Receptors**

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Disturbance to roosting bats	Historic small (count.1) transitional common pipistrelle <i>Pipistrellus pipistrellus</i> bat roost within the Kop stand structure.	C and O
Damage to green space within Stanley Park including the loss of trees and grassland	Removal of or damage to protected trees. Removal of or damage to grassland and trees, which have the potential to support breeding birds. The works associated with the removal also have the potential to disturb neighbouring breeding birds. Removal of or damage to trees and hedges, which have potential to support foraging and commuting bats.	C and O

*C – Construction / O – Operation*

<sup>64</sup> Garthe, S. & Huppopp, O. (2004). Scaling possible adverse effects of marine windfarms on seabirds: developing and applying a vulnerability index. Journal of Applied Ecology 41 724734.

## Background Studies to Inform Assessment

9.14 The following studies have been prepared or are proposed and will be used to inform the EIA (Table 9.2).

**Table 9.2: Baseline Studies / Surveys**

Study / Survey	Overview	Date
<b>Completed</b>		
Preliminary Ecological Appraisal Report (317415/WTD/MID/002/A)	A Preliminary Ecological Appraisal Report (PEAR) of the Site was completed during 2014 by Mott MacDonald Limited to support a planning application to extend the existing main stand at Anfield stadium.	January 2014
Initial bat assessment	An initial bat assessment was undertaken by Mott MacDonald Limited in 2014 (317415/WTD/MID/001/A).	January 2014
Updated Bat Assessment Technical Note: Bat survey results – Anfield Stadium(SH-MMD-XX-RP-J-001)	In May 2018 a repeat bat roost assessment was undertaken by Mott MacDonald Limited to support a planning application for Anfield stadium to be used for hosting concerts and events during mid-May to end-June annually.	May and June 2018
<b>Current or Pending</b>		
Updated Phase 1 Habitat Survey and PEAR	This survey will be undertaken to confirm habitats on site remain as described in the 2014 PEAR.	January 2020
Bat assessment	An endoscope survey in the Kop stand will be undertaken to confirm if a single recorded bat is still present at this location.	January 2020

## Assessment Methodology of Likely Significant Effects

9.15 The following methodology for the assessment is proposed:

- The Preliminary Ecological Appraisal Report (317415/WTD/MID/002/A), conducted by Mott MacDonald Limited in 2014 will be updated, to include the southern part of Stanley Park, where the proposed Site compound is planned. This will include an Extended Phase 1 Habitat Survey, to determine the presence and or potential for protected species and habitats. It will also make recommendations on any further

mitigation which may be required such as further surveys. The PEAR will be undertaken following guidelines provided by CIEEM4.

- An updated bat roost assessment will be undertaken of the Site, including an endoscope survey of the Kop stand, to determine if the roost status of the Site has changed. This should be undertaken by a bat licensed ecologist either before the summer maternity period or after the winter hibernation period. This survey should follow the Bat Conservation Trust good practice guidelines<sup>65</sup>.
- If the Site is identified to still be used by roosting bats, further assessment into the potential of the Proposed Scheme to cause disturbance to roosting bats through increased noise levels (temporary construction noise, operational noise associated with new building services plant and noise break out associated with the other events) should be undertaken. This will involve comparing the baseline noise levels of the stadium to the Scheme's predicted noise levels during construction and operation. If it is concluded that the Scheme has the potential to disturb bats, a Bat Mitigation License will be required from Natural England.

9.16 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine significance, on a scale of high/large, medium, low/small and negligible. Significant effects will be determined by using the robust assessment methods as outlined above.

### **Limitations and Assumptions**

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

- It is assumed that bat surveys undertaken in 2014 and repeated in 2018, which illustrate the presence of, but no recorded activity of a common pipistrelle bat in the Kop Stand can be considered robust and will be accepted by LCC, based on the principles of proportionality.
- Site visits and surveys provide a snapshot of a moment in time, and species or habitat absence during a survey is not an indication of absence in perpetuity. It is therefore recommended that surveys are updated as a minimum every 2 years, in line with CIEEM best practice guidelines<sup>66</sup>.
- Biological records do not present a complete species list of the area; individuals provide records on an impromptu basis and as such can be inaccurate or skewed.

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<sup>65</sup> Bat Conservation Trust (BCT) (2016). Bat Surveys for Professional Ecologists – Good Practice Guidelines. Third Edition. Bat Conservation Trust; London.

<sup>66</sup>CIEEM (2019). Advice Note on the Lifespan of Ecological Reports and Surveys. Available at: <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf> [Accessed 20/12/2019].



# 10. Transport

## Identification of Effects which are Not Significant

- 10.1 From a transport perspective, the main impacts anticipated as a result of the Proposed Scheme are associated with increased demand (trips) on the transport network, as a result of:
1. The increase in capacity at the Site (only applicable during the operation phase) meaning additional supporters requiring to travel to and from the Site on match and event days;
  2. The introduction of construction traffic (only applicable during the construction phase) placing additional demand on the highway network on non-match and non-event days; and
  3. The removal of all 125 parking spaces from Anfield Road car park, with alternative disabled parking provided in Stanley Park car park. The new location will require trips to divert on the network creating additional trips on Priory Road, albeit provision will result in a reduction of 25 standard spaces.
- 10.2 In line with guidance produced by the Institute of Environmental Management and Assessment<sup>67</sup>, for transport assessments within the EIA, the following effects are considered:
- Driver severance and delay - This effect is associated with increased journey times for highway network users (drivers and passengers) which may lead to journey delay, or a perceived severance of journeys;
  - Accidents and safety on the highway network – This effect is associated with increased traffic flows affecting highway safety;
  - Public transport severance and delay - There are no rail stations or services in the immediate vicinity of the Site. Public transport in this instance therefore refers to bus services (only)<sup>68</sup>;
  - Pedestrian severance and delay;
  - Pedestrian amenity; and
  - Hazardous and dangerous loads.
- 10.3 The significance of these effects for each impact across two proposed scenarios has been examined, with each scenario being considered for both the construction and the operation (post construction) phases:
- Match and event days; and

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<sup>67</sup> The Institute for Environmental Assessment (IEMA) (1993). IEMA guidance note 'Guidelines for the Environmental Assessment of Road Traffic'.

<sup>68</sup> This effect is not listed in the IEA guidelines but has been added to ensure a robust assessment

- Non-match, non-event days (i.e. operation as usual (OAU)).

10.4 The following identified effects are not considered to be significant. They will not be considered further within the EIA or reported in the ES. A factual evidence base has been provided below to support this.

#### **Driver severance and journey delay associated with increased demand on the highway network on account of the Proposed Scheme**

##### ***Match and event days, construction phase***

10.5 During the construction phase, the additional capacity at the Stadium will not yet be available and therefore there would be no additional traffic movements associated with the Proposed Scheme for match and event days during this phase.

##### ***Match and event days, operation phase***

10.6 A Transport Strategy exists to support fan travel, manage demand on the highway and public transport network, and to mitigate effects associated with an increased demand for travel due to the increased capacity.

10.7 The separate Transport Assessment will consider the impact of the transport strategy in mitigating the impact of additional capacity at the stadium on all modes, and refine the strategy.

10.8 The existing Transport Strategy will be updated through the above referenced Transport Assessment process and implemented as a tertiary mitigation measure to address the increase in capacity and minimise the effect of driver delay and severance (during the operational phase) by promoting and supporting the use of sustainable transport options over increased use of private car. No additional parking is proposed at the Site and the presence of the Football Match Parking Zone (FMPZ) limits parking in the immediate area. This means that there are limited opportunities for vehicle flows to increase in the area or surrounding vicinity as a result of the Proposed Development.

##### ***OAU construction and operation phase***

10.9 The Anfield Road car park would be closed and staff who currently park there advised instead to park in Stanley Park car park. There are 125 spaces in Anfield Road car park, and on average, observations by LFC indicate that the car park is typically 75% full on OAU days (i.e. c.94 spaces are utilised). Vehicles must access Stanley Park car park from Priory Road. The addition of these vehicles onto Priory Road is not considered significant as:

- They would not all be arriving together, dissipating the impact. Priory Road is not a residential road and has signal controls at either end to manage traffic joining onto other routes;
- The number of vehicles is also relatively low (with there being approximately 1-2 vehicles per minute within an hour); and
- The route usually accommodates significant use of the car park on match and event days which can coincide with traditional PM peak periods (for example for weekday evening matches, albeit this is unusual due to weekend matches being more common).

- 10.10 The LFC Staff Travel Plan is being updated to manage staff movements to and from the Site, which will assist with further minimising private car movements by staff on OAU days.
- 10.11 It is not expected that for OAU once the Proposed Scheme is operational, there will be an increase in demand which leads to significant increased traffic flows, as OAU uses of the Proposed Scheme are minimal. Existing other OAU activities at the Site will continue but are not expected to change as a result of the Proposed Scheme.

***OAU construction phase only***

- 10.12 Anfield Road would be temporarily closed to vehicles during construction, with vehicles required to divert onto surrounding routes. This does not affect match and event days during the construction phase as the road is temporarily close on these days already. The use of diversion routes has the potential to lead to driver severance and journey delay. The significance of this effect will therefore be considered further within the ES for OAU for the construction phase.
- 10.13 Additional demand on the highway network would be generated as a result of the construction activities.
- 10.14 It is anticipated that during the construction phase, construction traffic movements would be controlled through the implementation of a Construction Traffic Management Plan (CTMP) (as a tertiary mitigation measure), which would be conditioned as part of the planning application.
- 10.15 This CTMP would set out the following which would help to minimising the impact of construction traffic on the highway network by managing the routes, times and use of the highway network by construction traffic:
- Construction traffic routing and access – an identified route for all construction plant vehicles travelling to and from Site, which would focus movements onto the strategic road network, minimising the effect upon local residential streets. The proposed route would require vehicles to approach the Site from Anfield Road (east), and make use of Priory Road and Utting Avenue.
  - Construction worker travel and access – all construction worker travel would be to/from Stanley Park car park, directly from Priory Road. Construction workers would be encouraged to travel by public transport, walk, cycle or car share to reduce the level of private car use and associated effect upon the highway network and parking facilities.
  - Times of movement – construction traffic movements should be timed to occur outside of peaks to minimise effect upon existing traffic flows.
- 10.16 The modest levels of construction traffic, coupled with the management of construction movements through the CTMP will mean the effect on driver severance and journey delay effect is not significant. Construction would cease on match and event days, and therefore have no impact upon traffic flows on these days.

***Summary***

- 10.17 Considering the points above, driver severance and journey delay associated with increased traffic flows is unlikely to be considered significant due to the implementation of the

proposed tertiary mitigation measures and will not be considered within the EIA or reported in the ES.

**Increased traffic flows effecting highway safety associated with increased traffic on the highway network due to increased capacity at the stadium**

- 10.18 This impact is associated with increases in traffic on the highway network impacting upon road safety and contributing to an increase in accidents. It should be noted that the Proposed Scheme is not expected to generate a significant change in the composition of traffic in the surrounding area.

***Construction scenario***

- 10.19 Implementation of the CTMP would manage the movements of construction traffic on the highway network, minimising their impact in relation to accidents and safety during the construction phase. As a result of this management and the relatively low number of expected movements, the impact in relation to accidents and safety is not considered to be significant.
- 10.20 During the construction phase, the additional capacity at the stadium will not yet be available and therefore no additional traffic movements associated with the Proposed Scheme for match and event days during this phase.
- 10.21 As noted above, increased use of Stanley Park car park by staff would be managed through the staff travel plan and is a relatively small number of movements, in comparison to full occupation of the car park.

***Operation scenario***

- 10.22 For match and event days during the operation phase, the Transport Strategy will continue to promote public transport and sustainable travel options. With no additional provision of car parking at the Site, and the presence of the FMPZ, it is not expected that the Proposed Scheme will contribute to additional traffic movements on match and event days which are considered significant. In addition to this, more efficient use of the existing car parking provisions will help to mitigate any impact associated with accident and safety from increased vehicle movements.
- 10.23 For OAU, the number of new trips associated directly with the Proposed Scheme will be negligible. The corresponding impact in relation to accidents and safety is therefore not considered significant.

***Summary***

- 10.24 Therefore, accidents and safety associated with increases in traffic from increased demand at the Site is unlikely to be considered significant and will not be considered within the EIA or reported in the ES for any scenario.

**Public transport severance and delay associated with increased traffic flows**

***All scenarios, construction phase***

- 10.25 Any increase in flows associated with construction traffic would be managed through the CTMP as discussed in the previous section, therefore minimising any effect upon public transport services. Construction traffic movements are not expected to effect access to public transport facilities or cause delay to services.

***Match and event days, operation phase***

- 10.26 On match and event days, as part of the Transport Strategy, to mitigate against increased demand on the highway network due to travelling supporters, as well as the road closures, scheduled bus services are diverted from the local area to minimise effect on journey times. This would continue to apply during the construction and operation phase for match and event days, with no additional delay or severance anticipated.
- 10.27 Therefore, public transport severance and journey delay associated with increased flows on match and event days (both construction and operation) is unlikely to be considered significant and will not be considered within the EIA or reported in the ES.

***OAU, operation phase***

- 10.28 There is not intended to be a significant increase in demand associated with the OAU scenario, with the increased capacity at the stadium not in use. This will mean no impact upon existing public transport services.

***Summary***

- 10.29 Therefore, public transport severance and journey delay associated with OAU (operation phase) is unlikely to be considered significant and will not be considered within the EIA or reported in the ES.

***Pedestrian severance and delay associated with increased demand on the traffic network increasing vehicles flows******All scenarios, construction phase***

- 10.30 During the construction phase, pedestrian and cyclist connectivity on OAU days will not be possible along Anfield Road. An alternative, direct route would be via Dahlia Walk within Stanley Park which runs parallel to the section of Anfield Road to be temporarily closed to enable construction of the Proposed Scheme. Dahlia walk would provide a safe, surfaced and lit alternative route whilst construction is in progress. The increase in distance and journey time associated with using this route vs Anfield Road is minimal (approximately 20m increase in distance) and therefore, with this alternative route in place (primary mitigation), impact associated with pedestrian (and cyclist) severance during construction is not considered significant.
- 10.31 On match and event days during construction, connectivity would be restored, with movement possible along Anfield Road, in front of the Anfield Road Stand, and therefore there would be no impact.
- 10.32 During the construction phase, the additional capacity at the stadium will not yet be available and therefore there would be no additional traffic movements causing delay or severance associated with the Proposed Scheme for any of the scenarios during this phase.

***Match and event days, operation phase***

- 10.33 On match and event days during operation, the area around the stadium gets busy with pedestrians in the lead up to the start of matches or events, as well as after they conclude. Walton Breck Road and Anfield Road are closed to vehicles to provide additional pedestrian space. There are multiple routes away from the stadium, enabling efficient dissipation of crowds. For matches and events in the operation phase, the proposed increase in capacity is unlikely to lead to pedestrian severance and delay being considered significant.

- 10.34 As discussed above, the Transport Strategy will be implemented as a tertiary mitigation measure to minimise increases in traffic flows which could lead to pedestrian severance, with any increases in flows not considered significant enough to impact upon pedestrians.

***OAU, operation phase***

- 10.35 There is not intended to be a significant increase in demand associated with the OAU scenario, with the increased capacity at the stadium not in use on these days, and therefore no associated pedestrian severance or delay.

***Summary***

- 10.36 Therefore, for the reasons outlined above, pedestrian severance and journey delay associated with increased demand is unlikely to be considered significant and will not be considered within the EIA or reported in the ES for any scenario.

**Pedestrian amenity associated with the design of the Proposed Scheme**

- 10.37 Pedestrian amenity is associated with the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and the positioning of pedestrian footways in relation any separation from traffic on the highway. The guidance suggests a tentative threshold for judging the significance of changes in pedestrian amenity of where traffic flow (or its lorry/HGV component) is halved or doubled.

***Construction phase***

- 10.38 As noted above for pedestrian delay and severance, an alternative route via Dahlia walk would be required to be used on OAU days during construction. This temporary, alternative route is through Stanley Park and is surfaced and lit. It provides a tranquil and direct route, and is not adjacent to a live carriageway, however this is a temporary diversion and is also currently already available as a route for pedestrians and cyclists to use. The effect of the diversion on pedestrian amenity is therefore not considered significant.
- 10.39 For match and event days during construction, the route would be re-instated along Anfield Road around the curtilage of the new Anfield Road Stand, and it is expected that the amenity of this route would be comparable to that which exists in the baseline scenario for match and event and therefore any impact is considered not significant.

***Operation phase***

- 10.40 During the operation phase, there will be improved public realm outside of the Anfield Road Stand, however the principles of the route would remain the same (i.e. pedestrian route adjacent to a highway) meaning changes are not significant. Significant changes in traffic flow along Anfield Road (i.e. halved or doubled) are not expected given the nature of the Proposed Scheme, with use of Anfield Road expected to remain as per existing, with the exception of traffic accessing Anfield Road car park.

***Summary***

- 10.41 Therefore, for the reasons outlined above, pedestrian amenity associated with changes to public realm on Anfield Road is unlikely to be considered significant and will not be considered within the EIA or reported in the ES for any scenario.

### **Hazardous and dangerous loads required for the construction or operation of the Proposed Scheme effecting other highway users**

- 10.42 This impact is associated with the movement of hazardous or dangerous loads on the highway network directly associated with the proposed scheme and the effect this could have upon other highway users.
- 10.43 As part of the construction phase, no hazardous or dangerous loads are expected to be required. Any Abnormal Indivisible Loads (AILs) would follow guidance set out in the CTMP, and likely to be limited to travel on the highway network outside of peak times, using prescribed routes, and being accompanied by an escort. The number of these trips is expected to be low. The low number of potential movements of AILs coupled with the proposed mitigation via the CTMP means this impact is not considered significant. Therefore, the effect of hazardous and dangerous loads on other road users are unlikely to be considered significant and will not be considered within the EIA or reported in the ES for the construction phase.
- 10.44 During the operation phase, there is no requirement for hazardous or dangerous loads. Therefore, the effect of hazardous and dangerous loads on other road users are unlikely to be considered significant and will not be considered within the EIA or reported in the ES for the operation phase.

### **Identification of Sensitive Receptors and Likely Significant Effects**

- 10.45 The following effects shown in **Table 10.1** have been identified and will be assessed within the EIA and reported in the ES.

**Table 10.1: Likely Significant Effects and Sensitive Receptors**

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Driver severance and journey delay associated with the temporary closure of part of Anfield Road	Drivers and car passengers	Construction OAU
Temporary closure of part of Anfield Road leading to increased flows on diversion routes affecting highway safety and accidents	Other road users (drivers and passengers in all vehicle types), pedestrians and cyclists	Construction OAU

### **Background Studies to Inform Assessment**

- 10.46 The following studies have been prepared or are proposed and will be used to inform the EIA (**Table 10.2**).

**Table 10.2: Baseline Studies / Surveys**

Study / Survey	Overview	Date
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<b>Completed</b>		
Traffic surveys	Two traffic surveys of Anfield Road have been completed in November and December 2019 following agreement with LCC highways.	November 2019 December 2019
Site observations	Observations of fan movement and general travel operation on match days.	Saturday 30 <sup>th</sup> November 2019 (vs Brighton)  Wednesday 4 <sup>th</sup> December 2019 (vs Everton)
<b>Current or Pending</b>		
Site observations	Observations of local movement and general travel operation on non-match days.	January 2020
Baseline traffic flow analysis	Review of existing traffic flows in the surrounding area and on diversion routes. Where existing data is not available, new survey data may be required to be collected.	January 2020
Transport Assessment (TA)	The TA will provide an assessment of the effectiveness of the Transport Strategy to ensure the final strategy addresses anticipated impacts associated with the Proposed Scheme	This will be completed for the planning submission.

## Assessment Methodology of Likely Significant Effects

10.47 The following methodology for the assessment is proposed with the sensitivity of each receptor assigned based on professional judgement.

**Table 10.3: Receptor Sensitivity**

Receptor	Sensitivity	Justification
Drivers and passengers (all motorised vehicles)	Low	Motorised vehicles have a greater ability to adapt their behaviour (route choice) to respond to changes in baseline
Pedestrians and cyclists	Medium	Pedestrians are limited in their ability to adapt their behaviour (e.g. take an alternative route) without this causing notable delay or severance.

10.48 Driver severance and journey delay associated with the temporary closure of part of Anfield Road during construction – Guidance from IEA suggests that the significance of changes in traffic flows should be based on percentage change, with a 30% change being considered light, 60% change being considered moderate and a 90% change being considered substantial (major) – in the context of our assessment these would be translated as Minor,



Moderate and Major respectively. Diversion routes for traffic would be identified and as a sensitivity test, 100% of traffic from Anfield Road diverted along each of the diversion routes (a. via Priory Road, b. via Walton Breck Road and Wylfa/Arkles Lane). The change in flow from baseline this creates will be quantified to determine the level of effect based on this guidance.

- 10.49 Closure of part of Anfield Road leading to increased flows on diversion routes affecting highway safety and accidents – A review of existing accidents on the highway surrounding the Site and potential diversion routes (for traffic diverted from Anfield Road) will be analysed to understand current levels of accidents on the network. Professional judgement will be used to determine if the increases in flows would likely exacerbate any accident cluster points (to be defined as locations with more than 5 incidents recorded within the last 5 years). Factors contributing to the accidents (such as weather, driver error, etc) will be taken into consideration, to determine the magnitude of change. A matrix would then be applied to determine the level of effect. The result would be based on professional judgement.
- 10.50 The assessment of likely significant effects to sensitive receptors will consider the sensitivity of the receptor and the magnitude of change to determine significance, on a scale of high or large, medium, low or small and negligible. Significant effects will be determined through professional judgment.

### **Limitations and Assumptions**

- 10.51 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 have been made to ensure that the data are accurate and up to date. It is assumed that information supplied by third parties is accurate.
  - No highway modelling will be undertaken to inform route diversions and flow changes, and instead static re-routing would be undertaken, applying 100% of diversion flows along two alternative routes.

## 11. Noise and Vibration

### Identification of Effects which are Not Significant

- 11.1 The following identified effects are not considered to be significant. They will not be considered further with the EIA or reported in the ES. A factual evidence base has been provided below to support this.

#### Disturbance as a result of operational vibration

- 11.2 It is intended that all potential for operational vibration will be entirely mitigated through the design process and maintenance work, by for example appropriate design of stand structure, installing building services plant on anti-vibration mountings or inertia bases and by ensuring that plant is maintained in good order. There are unlikely to be any adverse effects on nearby receptors during the operational phase and operational vibration will not be considered within the EIA or reported in the ES.

#### Change in noise from crowds and Public Address and Voice Alarm (PAVA) within the Stadium on match days

- 11.3 The nature of crowd noise is continuously variable and is dependent on a number of factors, including match attendance, level of away team rivalry, number of goals scored, etc. It is anticipated that noise from crowds on match day will remain a variable component of the acoustic environment, but the development of the Anfield Road Stand will not cause a significant increase in the range of crowd noise before, during or after the match. Therefore, any change in crowd noise is unlikely to be considered significant and will not be considered within the ES.
- 11.4 Noise from PAVA systems within the stadium will be entirely mitigated through the design process to ensure that additional PAVA systems required as a result of the Proposed Scheme do not increase noise levels above those associated with the use of existing PAVA systems. Therefore, any change in PAVA noise effects for nearby receptors are unlikely to be considered significant and will not be considered within the ES.

### Identification of Significant Effects and Sensitive Receptors

- 11.5 The following effects shown in **Table 11.1** have been identified and will be assessed within the EIA and reported in the ES.

**Table 11.1: Likely Significant Effects and Sensitive Receptors**

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Temporary construction noise	Adjacent residential receptors	C
Temporary construction vibration	Adjacent residential receptors	C
Operational noise from new building services plant	Adjacent residential receptors	O

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Changes in road traffic	Residential receptors on the surrounding local roads	C / O
Noise break-out from concerts and sporting events other than the existing football matches	Adjacent residential receptors	O

*C – Construction / O – Operation*

## Background Studies to Inform Assessment

- 11.6 The following studies have been prepared or are proposed and will be used to inform the EIA (Table 11.2).

**Table 11.2: Baseline Studies / Surveys**

Study / Survey	Overview	Date
<b>Completed</b>		
Match day noise survey	Attended noise measurements have been completed in residential areas in the lead up to, during, and immediately after the match.	April 2018
Non-match day noise survey	Both attended and unattended noise measurements have been completed in residential areas.	May 2018
Match day noise survey	Completed by third party acoustic consultants Sandy Brown.	November 2019
Post-concert reporting, including monitoring	Monitoring of noise management during Take That, Bon Jovi and P!nk concerts. Completed by third party acoustic consultants Vanguardia.	June and July 2019
<b>Current or Pending</b>		
Traffic data for Anfield Road	Traffic data for roads around the stadium, in particular Anfield Road will provide a baseline for traffic noise changes at receptors associated with the proposed realignment of Anfield Road, and to give context for consideration of the additional motor-vehicle trips associated with operation of the redeveloped Anfield Road Stand.	January 2020

## Assessment Methodology of Likely Significant Effects

11.7 The assessment will take account of the following national policy relevant to noise and vibration:

- The National Planning Policy Framework 2019<sup>69</sup> (NPPF);
- The Noise Policy Statement for England 2010 (NPSE)<sup>70</sup>; and
- Planning Practice Guidance – Noise<sup>71</sup> (PPG-N) (Revised July 2019).

11.8 The following methodology for the assessment is proposed:

- Construction noise will be predicted and assessed using methodology from BS5228-1<sup>72</sup>. This will be based upon knowledge of construction activities, plant inventories and programme available at the time of assessment;
- Construction vibration will be predicted and assessed using methodology from BS5228-2<sup>73</sup> informed by data from TRL Report 53<sup>74</sup>. This will be based upon knowledge of construction activities, plant inventories and programme available at the time of assessment;
- Noise emissions from new operational plant associated with the Proposed Scheme will be assessed using the approach set out in BS4142<sup>75</sup>;
- Changes in vehicular traffic noise associated with implementation of the Proposed Scheme, principally the realignment of Anfield Road, will be determined by calculation at the receptor using methodology from Calculation of Road Traffic Noise<sup>76</sup> (CRTN).

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<sup>69</sup> Ministry of Housing, Communities and Local Government (2019). National Planning Policy Framework. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/810197/NPPF\\_Feb\\_2019\\_revised.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf) [Accessed 16/12/2019].

<sup>70</sup> DEFRA (2010). The Noise Policy Statement for England. Available at: <https://www.gov.uk/government/publications/noise-policy-statement-for-england> [Accessed 16/12/2019].

<sup>71</sup> Ministry of Housing, Communities and Local Government. Noise Planning Practice Guidance. Available at: <https://www.gov.uk/guidance/noise--2> [Accessed 16/12/2019].

<sup>72</sup> BSI, 2009, amended 2014. British Standard BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

<sup>73</sup> BSI, 2009, amended 2014. British Standard BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

<sup>74</sup> TRANSPORT RESEARCH LABORATORY, 1986. Report 53. Ground Vibration Caused by Civil Engineering Works.

<sup>75</sup> BSI, 2014 Amended 2019. British Standard BS 4142 Methods for rating and assessing industrial and commercial sound.

<sup>76</sup> DoT, 1988. Calculation of Road Traffic Noise.

Impacts will be assessed in terms of magnitude of noise change using the principals of the approach set out in the Design Manual for Roads and Bridges<sup>77</sup> (DMRB); and

- Operational noise assessment for events will follow the approach set out in the Noise Council Code of Practice on Environmental Noise Control at Concerts<sup>78</sup>.

11.9 The above list above is not exhaustive and further guidance will be referenced as necessary.

11.10 In order to satisfy the aims of the NPPF with respect to noise, significance of noise vibration impacts will be determined using the concepts of lowest observed adverse effect level (LOAEL) and significant observed adverse effect level (SOAEL) introduced in the NPSE and elucidated further in PPG\_N and the Institute of Environmental Management & Assessment (IEMA) Guidelines for Noise Impact Assessment. LOAEL and SOAEL for each parameter has been agreed for the assessment in consultation with Liverpool City Council (LCC) and is set out in **Table 11.3**.

**Table 11.3: LOAEL and SOAEL**

Parameter Assessed	LOAEL and SOAEL	Source Guidance
Construction Noise	LOAEL $L_{Aeq,T}$ 50dB (free field)	World Health Organisation guideline value for moderate annoyance in outdoor living areas <sup>79</sup> .
	SOAEL $L_{Aeq,T}$ 65 dB (free field)	BS 5228-1 threshold for potential significance of day-time construction noise
Construction Vibration	LOAEL peak particle velocity (PPV) 0.3mm/s	BS 5228-2 threshold at which vibration “might be just perceptible in residential environments”
	SOAEL PPV 1.0 mm/s	BS 5228 threshold at which vibration is likely to cause complaint within residential environments “but can be tolerated if prior warning and explanation has been given to residents”
Music Noise	LOAEL $L_{Aeq,T}$ 50dB (free field)	World Health Organisation guideline value for moderate annoyance in outdoor living areas
	SOAEL Music Noise Level (MNL) of $L_{Aeq,15min}$ 76dB (façade).	Noise Council Code of Practice on Environmental Noise Control at Concerts, lowest noise level rounded to the nearest dB which

<sup>77</sup> HIGHWAYS ENGLAND, 2019. Design Manual for Roads and Bridges, Sustainability and Environmental Appraisal, LA111 Noise and Vibration.

<sup>78</sup> THE NOISE COUNCIL, 1995. Code of Practice on Environmental Noise Control at Concerts.

<sup>79</sup> WORLD HEALTH ORGANISATION, 1999. Guidelines for Community Noise.

Parameter Assessed	LOAEL and SOAEL	Source Guidance
		exceeds the upper limit for MNL for urban stadia
Building Service Plant	LOAEL and SOAEL not set	Limit set for noise emission based upon rating level as defined in BS4142 does not exceeding existing background noise level (defined in terms of $L_{A90}$ )
Traffic Noise Impacts	LOAEL $L_{A10,18\text{hour}}$ (façade) 55dB	DMRB LA111Table 3.49.1
	SOAEL $L_{A10,18\text{hour}}$ (façade) 68 dB	DMRB LA111Table 3.49.1

- 11.11 Exceedance of SOAEL will not in itself constitute a significant adverse effect. The assessment of likely significant effects at sensitive receptors will consider the sensitivity of the receptor and the magnitude, duration and frequency of change. Significant effects will be determined through professional judgment.

### Limitations and Assumptions

- 11.12 To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- It is not practical to measure baseline noise levels at all possible locations in the vicinity of the Proposed Scheme. Representative noise measurement data for both match day and non-match day collected by Mott MacDonald in 2018 supplemented by measurements undertaken in 2019 by third party acoustic consultants Sandy Brown is assumed to provide sufficient baseline for the EIA and no new surveys will need to be undertaken;
  - At this stage in the programme, details of construction activities, plant and programme are provisional. Where there is uncertainty, professional judgement will be used drawing upon experience of other schemes, in particular the construction of the Main Stand; and
  - Assessment of traffic noise changes will be based upon available traffic data specific to Anfield Road. The assessment will be undertaken for the Proposed Scheme opening year only.

## 12. Climatic Effects (Wind Microclimate)

### Identification of Effects which are Not Significant

- 12.1 The following identified effects are not considered to be significant. They will not be considered further with the EIA or reported in the ES. A factual evidence base has been provided below to support this.

#### Wind effects as a result of construction activities

- 12.2 Any wind impacts associated with the construction phase will be temporary in nature and can be managed through appropriate mitigation, for example through the implementation of a CEMP, including measures such as securing lightweight materials during temporary stockpiling. There are unlikely to be any adverse effects on nearby residential receptors during the construction phase and as such construction activities will not be considered within the EIA or reported in the ES.

### Identification of Sensitive Receptors and Likely Significant Effects

- 12.3 The following effects shown in **Table 12.1** have been identified and will be assessed within the EIA and reported in the ES.

**Table 12.1: Likely Significant Effects and Sensitive Receptors**

Effect	Receptor	Applicable Development Phase (Construction and/or Operation)
Wind movement within the stadium	Spectators inside the stadium	O
Wind movement within the stadium	Players using the pitch	O
Wind environment outside the stadium	Pedestrians in the vicinity of the stadium	O

*C – Construction / O – Operation*

### Background Studies to Inform Assessment

- 12.4 The following studies have been prepared or are proposed and will be used to inform the EIA (**Table 12.2**).

Study / Survey	Overview	Date
<b>Completed</b>		
n/a	n/a	n/a
<b>Current or Pending</b>		

Physical Wind Tunnel Testing	Physical wind tunnel testing will be used to quantify the wind conditions around the existing stadium and with the proposed stand constructed. The assessment will be undertaken against the industry standard Lawson Criteria and based on expert engineering judgement.	February 2020
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### Assessment Methodology of Likely Significant Effects

12.5 The wind environment around the Proposed Scheme will be assessed by means of wind tunnel testing. The wind microclimate assessment will be undertaken using physical wind tunnel modelling using RWDI's specialist boundary layer wind tunnel test facility.

12.6 The following methodology for the assessment is proposed:

- A model of the Proposed Scheme will be constructed and will be mounted on a model of the surroundings which will capture a minimum of 360m from the centre of the Site.
- The mean and turbulent wind speeds will be measured for 36 wind directions at a number of discrete measurement points at ground and accessible elevated levels including the stands and pitch.
- The following 3 test scenarios will be assessed.
  - (i) Baseline (Existing Site with Existing Surrounding Buildings);
  - (ii) The Proposed Scheme with Existing Surrounding Buildings; and
  - (iii) The Proposed Scheme with Future Surround Buildings (Cumulative Assessment)<sup>80</sup>.
- The wind tunnel data will be combined with statistical meteorological data for the Liverpool Area, adjusted to the Site, to establish the likely magnitude and frequency of winds at each measured location
- The industry standard Lawson criteria for pedestrian comfort and safety will be used to assess the wind environment for annual uses such as thoroughfares and entrances.

<sup>80</sup> It should be noted that no cumulative schemes have been identified within the immediate vicinity of the Site which would warrant consideration as part of the assessment at this time.



- The assessment will consider the windiest season (typically winter) and an assessment will also be made of the wind conditions in the public realm and amenity spaces for the summer season (as this is when these areas are most likely to be used).
  - Where necessary, further testing may be conducted to develop mitigation measures.
- 12.7 The assessment of likely significant effects to sensitive receptors will consider by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, using the following criteria:
- Adverse Impact - If the measured conditions are windier than the baseline or exceeding the criterion for the intended pedestrian use;
  - Negligible impact - if the measured conditions are same as in the baseline for the intended pedestrian use; and
  - Beneficial impact - If the measured conditions are less windy (calmer) than the baseline for the intended pedestrian use.

### **Limitations and Assumptions**

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

- Wind tunnel testing is modelling and a finite number of measurement points will be tested within the model. Engineering judgement and experience will be used to select points which are representative of the stand or pedestrian area in question, but nevertheless conditions may sometimes differ significantly in the vicinity of the measurement location;
- The thermal effects of wind cannot be explicitly modelled;
- Long-term historical wind data will be used in the analysis. Future wind conditions are obviously not known and could be more severe than the historical conditions;
- The Lawson criteria for pedestrian comfort focus on the effect of wind force on people's activities but do not factor in other environmental variables such as air temperature, solar radiation and relative humidity; and
- The assessment will focus on pedestrian level wind effects and excludes other wind effects, such as wind pressure loading on building facades and natural ventilation.

## 13. Methodology for Assessment of Cumulative Effects

### Introduction

- 13.1 Cumulative effects comprise the combined effects of reasonably foreseeable human induced changes within a specific geographical area and over a certain period of time, and can be both direct and indirect. An assessment of the significance of cumulative effects needs to be undertaken in the context of the characteristics of the existing environment.
- 13.2 To accord with the EIA Regulations and best practice guidance, the following types of cumulative effects will be considered within the EIA:
- Effect interactions: the interaction and combination of environmental effects of the Proposed Scheme affecting the same receptor either within the Site or in the local area; and
  - In-combination interactions: the interaction and combination of environmental effects of the Proposed Scheme with a committed project (or projects) affecting the same receptor.
- 13.3 It is anticipated that a qualitative cumulative effects assessment will be undertaken for the majority of environmental topics considered.

### Assessment Methodology

- 13.4 At present, there is no widely accepted methodology or best practice for the assessment of cumulative effects although there are a number of guidance documents available. The following approach that will be adopted is based on previous experience at Turley, the types of receptors being assessed and the nature of the Proposed Scheme being considered.
- 13.5 The assessment will be a qualitative assessment based on the available information. Where information is not available, assumptions will be made based on professional judgement and clearly stated alongside any uncertainty as part of the assessment.

### Effect Interactions

- 13.6 The approach to the assessment of effect interactions considers the changes in baseline conditions at common sensitive receptors due to the Proposed Scheme. The assessment is based upon the residual effects only. The common sensitive receptors considered within this assessment are those which are assessed within two or more of the technical assessments within the ES.
- 13.7 A matrix of residual effect interactions will be formulated in the ES corresponding to the construction and operational phase of the Proposed Scheme.
- 13.8 An overall qualitative assessment of the cumulative effect on the common sensitive receptors identified will be made using professional judgement and informed by the technical information provided in the ES and supporting appendices.

### **In-combination effects**

- 13.9 Assessment of potential in-combination effects will be undertaken using the methodology outlined below.

#### ***Step 1: Identification of Projects for Consideration***

- 13.10 In order to inform potential committed developments, a high level review of planning applications submitted to LCC (and other sources as required) in the last 3 years will be undertaken in order to identify potential projects that could give rise to in-combination interactions with the Proposed Scheme.
- 13.11 Applicable projects for consideration of in-combination effects will be determined using the following criterion:
- Permitted application(s) either under construction or not yet implemented;
  - Submitted applications(s) not yet determined but which have the potential to be determined prior to the determination of the application for the Proposed Scheme in 2020; and
  - The project being of a relevant scale: the threshold for consideration has been the Schedule 2 criteria in the *EIA Regulations*, at which there is a potential for '*likely significant effects*', however, it is recognised that this needs to be applied with caution.
- 13.12 This will produce a shortlist of projects for further evaluation.

#### ***Step 2: Assessment of In-combination Effects***

- 13.13 The shortlist will be further evaluated based on available documentation which supported the planning applications. Where available, consideration will also be given to whether there is a concurrent construction or operational phase with the Proposed Scheme (2020 – 2022).
- 13.14 The sensitive receptors identified for the Proposed Scheme will then be cross checked against the receptors identified within the potential approved projects. In order for there to be a potential in-combination effect, there needs to be a potential effect on the same receptor for a similar duration within the overall programme. There may be effects at the project level which require due consideration and management but these effects will not be reconsidered as part of the cumulative assessment.
- 13.15 The qualitative evaluation at the receptor level will consider the following:
- Combined magnitude of change;
  - Sensitivity/value/importance of the receptor/receiving environment to change; or/and
  - Duration and reversibility of effect.
- 13.16 Through a combination of the qualitative evaluation and mitigation presented in the EIA, conclusions will be drawn as to the likelihood for significant in-combination environmental effects.

## 14. Summary

- 14.1 **Table 14.1** provides a summary of all the effects which are not considered to be significant and are therefore to be scoped out of the ES and also the likely significant environmental effects identified that will be assessed within the ES.

**Table 14.1: Summary of Effects which are Significant and Not Significant**

Technical Topic Area	Effects which are Not Significant	Likely Significant Environmental Effects
<b>Air Quality</b>	Nuisance and disturbance as a result of dust from construction activities	N/A
	Temporary change in air quality as a result of on-site construction plant emissions	
	Temporary change in air quality as a result of construction road traffic emissions	
	Permanent change in air quality as a result of road traffic emissions during the operation phase	
<b>Climate Change and Greenhouse Gases</b>	Climate change adaptation and resilience (flood risk, overheating, drought)	N/A
	Greenhouse gas emissions	
<b>Water Resources, Flood Risk and Drainage</b>	Fluvial or tidal flooding	N/A
	Pluvial flooding	
	Reservoir flooding	
	Water bodies	
	Water resources (potable water supply)	
	Water resources (foul sewerage discharge)	
	Drainage	
	Groundwater quality and recharge	
	Water quality	

Technical Topic Area	Effects which are Not Significant	Likely Significant Environmental Effects
<b>Ground Contamination</b>	Risk of unexploded ordnance on Site	N/A
	Dust generation from contaminated soil due to the removal of hardstanding/Made Ground and topsoil	
	The generation and migration of ground gases	
	Risks of contaminating controlled waters	
	Mobilisation of contaminants through excavation	
	Compaction of soil for flora and fauna	
	Risks to buried structures & services	
<b>Archaeology</b>	Loss, truncation or disturbance to archaeological remains from construction activities	N/A
	Loss, truncation or disturbance to below ground heritage assets as a result of operational activities	
<b>Risk of Major Accidents and Disasters</b>	Public nuisance and/or structural damage caused by flooding (rainfall)	N/A
	Public harm and/or structural damage caused by severe weather (storms and gales)	
	Public harm and/or structural damage caused by severe weather (low temperatures and heavy snow)	
	Public harm caused by severe weather (heatwaves)	
	Public harm or fatalities caused by droughts	
	Outbreaks of human diseases	
	Public harm or fatalities caused by major transport accidents	

Technical Topic Area	Effects which are Not Significant	Likely Significant Environmental Effects
	Public harm or fatalities and/or structural damage caused by urban fires	
	Public harm or fatalities as a result of public disorder, crowd control or anti-social behaviour	
	Malicious attacks caused by war and terrorism	
	Risk of unexploded ordnance (UXOs) on-site	
<b>Waste</b>	Use of materials during construction	N/A
	Use of materials during operation	
	Waste generated during construction	
	Waste generated during operation	
<b>Daylight, Sunlight and Overshadowing</b>	Construction Phase Effects	N/A
	Daylight and sunlight effects to neighbouring residential properties	
	Daylight and sunlight effects to neighbouring non-residential properties	
	Overshadowing	
<b>Obtrusive Light</b>	Spill light	N/A
	Luminaire intensity	
	Building luminance	
	Sky glow	
<b>Socio-Economics and Human Health</b>	Changes in crime levels and community safety	Creation of direct, indirect and induced employment

Technical Topic Area	Effects which are Not Significant	Likely Significant Environmental Effects
	Change in social cohesion and lifetime neighbourhoods	Economic productivity generated (measured in gross value added)
	Active travel and public transport connections	Expenditure of visitors in the local and wider economy
<b>Townscape and Visual</b>	Townscape effects on topography during construction and operational phases	Changes to townscape and landscape character within the site context
	Townscape effects on land use during construction and operational phases	Changes to built/landscape heritage assets as townscape receptors
	Townscape effects on environmental designations during construction and operational phases	Changes to tree cover
	Visual effects on World Heritage Site key views during construction and operational phases	Changes to scale, massing and height
	Visual effects from local viewpoints during construction and operational phases	Changes to movement and linkages
		Changes to public open space
		Changes to site character
		Changes to the character and amenity of views
<b>Built Heritage</b>	Physical change or alteration of above ground heritage assets within the Site	Physical change / direct works to Stanley Park
	Change to the setting of above ground heritage assets outside the Site	Change in the setting of designated heritage assets
<b>Biodiversity</b>	Disturbance to Badger, Great Crested Newt and Reptiles as a result of the Proposed Scheme	Disturbance to roosting bats

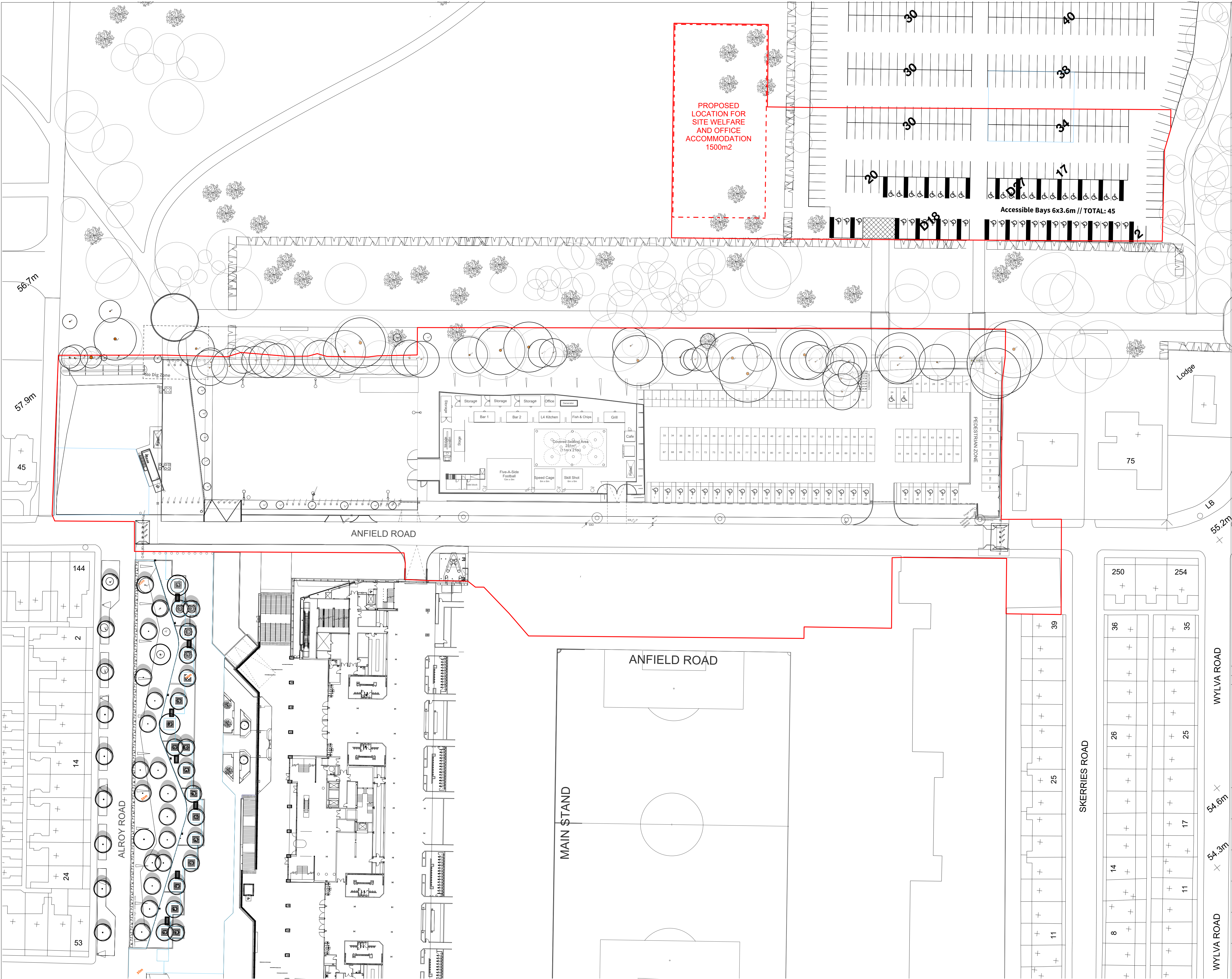


Technical Topic Area	Effects which are Not Significant	Likely Significant Environmental Effects
<b>Transport</b>	Habitat loss within and adjacent to Anfield Stadium as a result of the Proposed Scheme	Damage to green space within Stanley Park including the loss of trees and grassland
	Disturbance to features of European Statutory Designated Sites	
	Driver severance and journey delay associated with increased demand on the highway network on account of the Proposed Scheme	Driver severance and journey delay associated with the temporary closure of part of Anfield Road
	Increased traffic flows effecting highway safety associated with increased traffic on the highway network due to increased capacity at the stadium	Temporary closure of part of Anfield Road leading to increased flows on diversion routes affecting highway safety and accidents
	Public transport severance and delay associated with increased traffic flows	
	Pedestrian severance and delay associated with increased demand on the traffic network increasing vehicles flows	
	Pedestrian amenity associated with the design of the Proposed Scheme	
<b>Noise and Vibration</b>	Hazardous and dangerous loads required for the construction or operation of the Proposed Scheme effecting other highway users	
	Disturbance as a result of operational vibration	Temporary construction noise
	Change in noise from crowds and Public Address and Voice Alarm (PAVA) within the stadium on match days	Temporary construction vibration
		Operational noise from new building services plant

Technical Topic Area	Effects which are Not Significant	Likely Significant Environmental Effects
<b>Climatic Effects (Wind Microclimate)</b>	Wind effects as a result of construction activities	Changes in road traffic
		Noise break-out from concerts and sporting events other than the existing football matches
		Wind movement within the stadium
		Wind movement within the stadium
		Wind environment outside the stadium

## Figure 1.1: EIA Study Area Boundary





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2. Always work to noted dimensions.
3. All dimensions are in millimetres unless otherwise stated.
4. All setting out, levels and dimensions must be agreed on site.
5. The dimensions of all materials must be checked on site before being laid out.
6. This drawing must be read with the relevant specification clauses and detail drawings.
7. Order of construction and setting out to be agreed on site.

S1-P03	10.12.19	COMMENT	AT	GB
S1-P02	10.12.19	COMMENT	AT	GB
S1-P01	10.12.19	COMMENT	AT	GB

Revision	Date	Description	Drawn	Apprv.
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Tempest 5.3, 12 Tithebarn Street, Liverpool, L2 2DT  
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Client Liverpool FC

Project Anfield Road Stand Expansion

Drg Title EIA Scoping Plan

Created on	Created by	Approved by
21.10.19	JV	GB

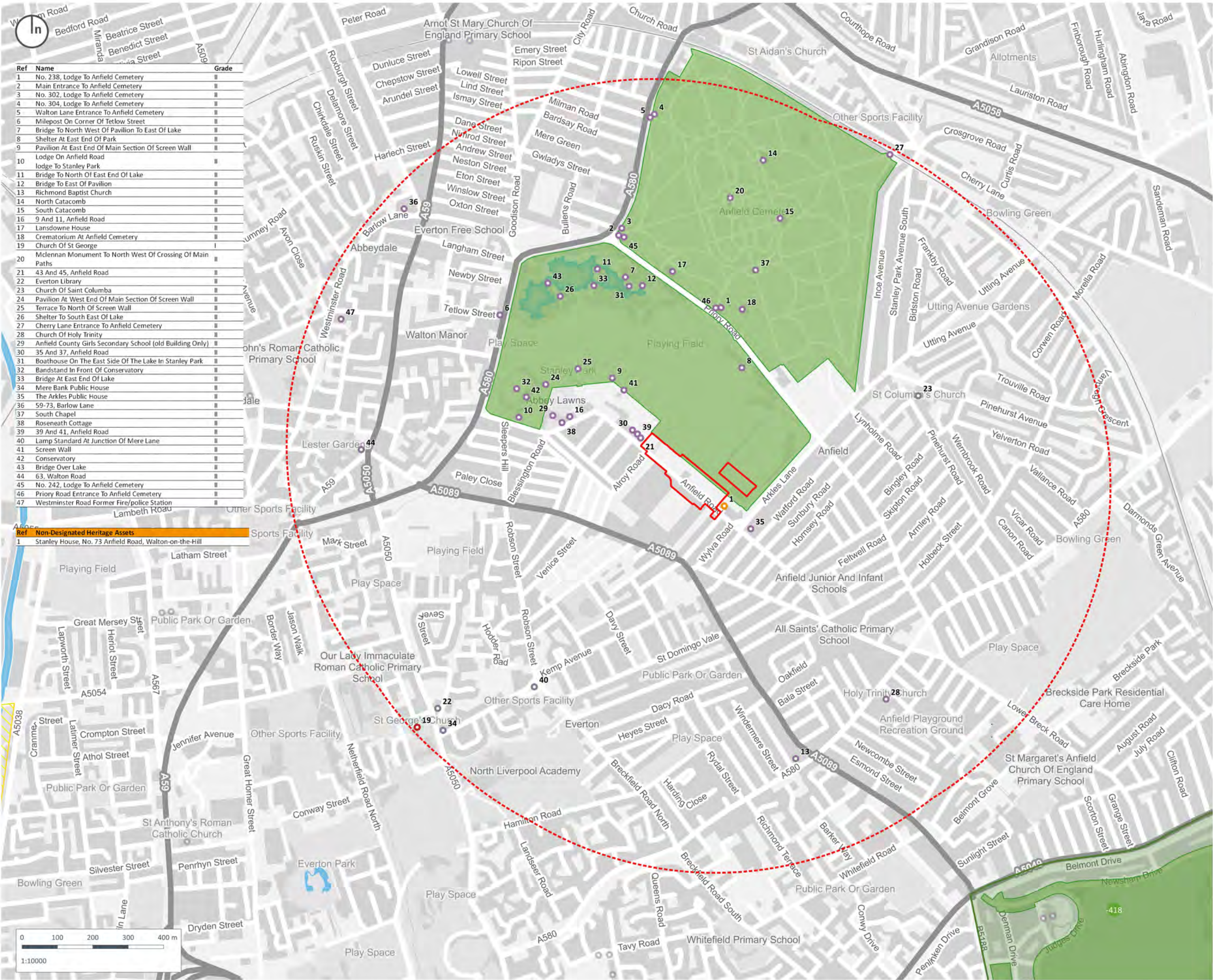
Scale	Size	Workstage
1:500	A1	RIBA 2

Drg No.	Suitability	Revision
ARS-PLA-XX-DR-L-0006	S1	P03



**Figure 3.1: Heritage Asset Plan**





Ref	Name	Grade
1	No. 238, Lodge To Anfield Cemetery	II
2	Main Entrance To Anfield Cemetery	II
3	No. 302, Lodge To Anfield Cemetery	II
4	No. 304, Lodge To Anfield Cemetery	II
5	Walton Lane Entrance To Anfield Cemetery	II
6	Milepost On Corner Of Tetlow Street	II
7	Bridge To North West Of Pavilion To East Of Lake	II
8	Shelter At East End Of Park	II
9	Pavilion At East End Of Main Section Of Screen Wall	II
10	Lodge On Anfield Road	II
11	Lodge To Stanley Park	II
12	Bridge To North Of East End Of Lake	II
13	Bridge To East Of Pavilion	II
14	Richmond Baptist Church	II
15	North Catacomb	II
16	South Catacomb	II
17	9 And 11, Anfield Road	II
18	Lansdowne House	II
19	Crematorium At Anfield Cemetery	II
20	Church Of St George	I
21	McLennan Monument To North West Of Crossing Of Main Paths	II
22	43 And 45, Anfield Road	II
23	Everton Library	II
24	Church Of Saint Columba	II
25	Pavilion At West End Of Main Section Of Screen Wall	II
26	Terrace To North Of Screen Wall	II
27	Shelter To South East Of Lake	II
28	Cherry Lane Entrance To Anfield Cemetery	II
29	Church Of Holy Trinity	II
30	Anfield County Girls Secondary School (old Building Only)	II
31	35 And 37, Anfield Road	II
32	Boathouse On The East Side Of The Lake In Stanley Park	II
33	Bandstand In Front Of Conservatory	II
34	Bridge At East End Of Lake	II
35	Mere Bank Public House	II
36	The Arkles Public House	II
37	59-73, Barlow Lane	II
38	South Chapel	II
39	Roseneath Cottage	II
40	39 And 41, Anfield Road	II
41	Lamp Standard At Junction Of Mere Lane	II
42	Screen Wall	II
43	Conservatory	II
44	Bridge Over Lake	II
45	63, Walton Road	II
46	No. 242, Lodge To Anfield Cemetery	II
47	Priory Road Entrance To Anfield Cemetery	II
48	Westminster Road Former Fire/police Station	II

Ref	Non-Designated Heritage Assets
1	Stanley House, No. 73 Anfield Road, Walton-on-the-Hill

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- Application site
- Study area 1km
- Conservation Area  
1. NEWSHAM PARK
- Listed Buildings

I

II\*

II
- Locally Listed Buildings
- Registered Parks and Gardens
- Non-Designated Heritage Assets

CLIENT:  
Liverpool Football Club & Athletic Grounds Limited

PROJECT:  
Anfield Road Stand

DRAWING:  
Heritage Asset Plan

PROJECT NUMBER:  
LIVM3025

DRAWING NUMBER:  
GIS\_100

REVISION:  
1.2

DATE:  
December 2019

CHECKED BY:  
KL

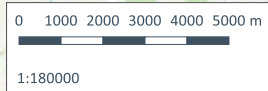
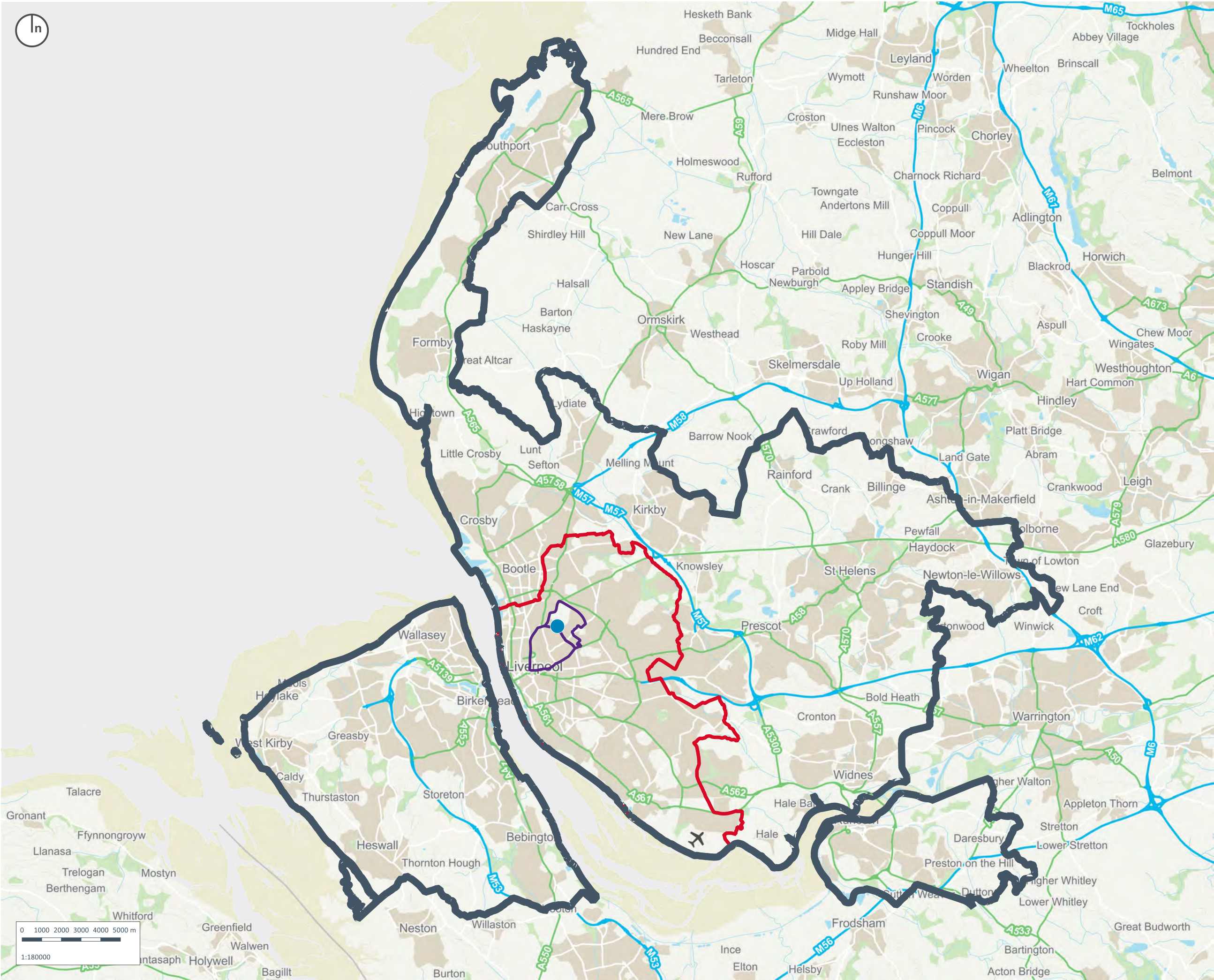
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**Figure 3.2: Economic Study Areas**









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-  Liverpool City Region
-  Liverpool
-  Anfield & Everton
-  Site

CLIENT: \_\_\_\_\_

PROJECT: \_\_\_\_\_

DRAWING: \_\_\_\_\_  
#####

PROJECT NUMBER: \_\_\_\_\_

DRAWING NUMBER: \_\_\_\_\_  
GIS\_000

CHECKED BY: \_\_\_\_\_

REVISION: \_\_\_\_\_  
1.0

STATUS: \_\_\_\_\_  
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DATE: \_\_\_\_\_

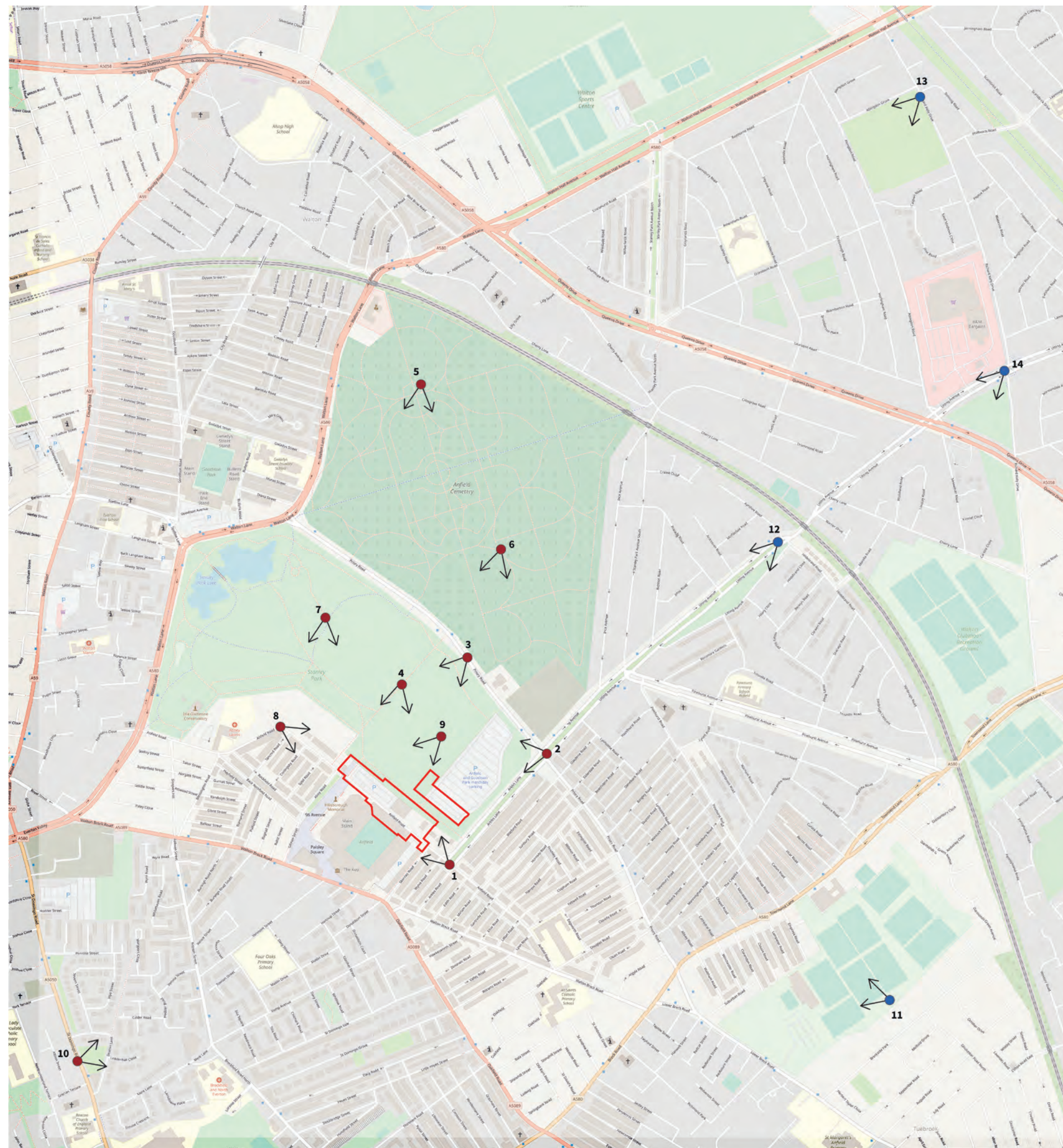
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**Figure 7.1: TVIA Key Viewpoints**





## KEY

 The Site

 Wireline photomontage

 Fully rendered photomontage

### Photomontage viewpoints:

Viewpoint 1: View north west from Anfield Road.

Viewpoint 2: View west from Utting Avenue/Priory Road junction.

Viewpoint 3: View south west from Priory Road.

Viewpoint 4: View south from Stanley Park (south).

Viewpoint 5: View south from Anfield Cemetery (north).

Viewpoint 6: View south from Anfield Cemetery (south).

Viewpoint 7: View south from Stanley Park (north).

Viewpoint 8: View south east from Anfield Road.

Viewpoint 9: View south west from Stanley Park.

Viewpoint 10: View north east from St Domingo Road.

### 'Wireline' photomontage viewpoints:

Viewpoint 11: View north west from Anfield Sports and Community Centre/Edinburgh Park.

Viewpoint 12: View south west from Utting Avenue (south).

Viewpoint 13: View south west from Abingdon Road playing fields.

Viewpoint 14: View south west from Utting Avenue (north).

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3. All dimensions are in millimetres unless otherwise stated.  
4. All wiring, ducts, and other services to be agreed upon site.  
5. The dimensions of all materials must be checked on site before being laid out.  
6. This drawing must be read with the relevant specification notes and detail drawings.  
7. Owner of construction and settings must be agreed on site.

1

PL 14.12.19 Date: 14.12.19 Status: Approved Drawn/Approved: GW/JW

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Client: Liverpool Football Club

Project: Anfield Road Stand

Doc Title: TVIA Scoping Report Key Viewpoints

Created on: 04.12.19 Created by: GW Approved by: JW

Scale: Not to scale Status: For information

Doc No.: 2378-ID-001-01 Title: 01



## Appendix 1: Record of Consultation

Body / Organisation	Role	Date and Form of Consultation	Summary
<b>Water Resources, Flood Risk and Drainage</b>			
United Utilities (UU)	Developer Engineer for Liverpool and Wirral	Meeting on 06/11/2019	A discussion was had to determine the extents of the public sewer network within the Site and also any discharge rate limits UU would impose on the Proposed Scheme.
<b>Transport</b>			
Liverpool City Council	Highways	Meeting on 02/12/2019	Discussion on the proposed scope of the Transport Assessment, Staff Travel Plan and Transport Strategy. Also briefly discussed proposed scope of the Transport EIA chapter.
Liverpool City Council	Highways	Transport Working Group on 11/12/2019	Discussion on the emerging expansion plans and the proposed approach for updating the match and event transport strategies to accommodate the additional supporters travelling to and from the Site.
Merseytravel	Liverpool City Region Passenger Transport Executive.		
Merseyside Police	Responsible for fan safety on match days outside of the Site.		Further discussions would be held with this group as the assessment progresses.
Stagecoach	Provider of scheduled and match day special bus services to the area surrounding the Site.		
Liverpool City Council Licensing and Unite the Union	Taxi representatives		

<b>Air Quality</b>			
Liverpool City Council	Air Quality Support Officer	Telephone and email on 27/12/2019 Follow up email on 10/12/2019	Discussion and agreement on the approach to scoping out air quality from the EIA.
<b>Noise and Vibration</b>			
Liverpool City Council	Officers from the Environmental Protection Unit	Presentation of the Proposed Scheme for Liverpool City Council officers on 26/11/2019	The Environmental Health Officer's expressed general satisfaction with approach to control of construction impacts from previous projects and did not raise concerns with respect to concerts held in the Summer of 2019.
Liverpool City Council	Noise specialist from Environmental Protection Unit	E-mail correspondence on 04/12/2019 and 10/12/2019	Consultation was undertaken on proposals for assessment of significance for the noise and vibration assessment. LCC agreed the approach set out in this Scoping Report.
<b>Townscape and Visual</b>			
Historic England and LCC.	Advisor/Planning Officer	In advance of the previous 2014 consented application	Previously agreed viewpoints reused for the purposes of this application where appropriate. The previous viewpoints have been through a thorough testing process to remove previously identified viewpoints which afford either 'no view' or are not focussed on the Site.
<b>Archaeology</b>			
MEAS	Archaeologist	Phone call on 04/12/2019 to ascertain the most appropriate recipient for email correspondence	A plan showing the Site boundary including the proposed site welfare and office accommodation was submitted along with the following text: 'we are producing the archaeology section of the scoping report for the construction of a new Anfield Road stand to the rear of the existing stand, largely within the boundary of the works permitted in 2014. The proposed

			compound location is situated in Stanley Park. Given the low archaeological potential of the area, and given that archaeology was scoped out of the 2014 ES, please could you confirm that you are happy that archaeology can be scoped out of the EIA and if any archaeological investigation/recording is needed it can be dealt with as a condition of planning where necessary?’
Merseyside Environmental Advisory Service (MEAS)	Archaeologist	Email on 11/12/2019	Response received from MEAS as follows: ‘Yes I am happy for archaeology to be scoped out of the EIA. There will be some archaeological mitigation required but this can be dealt with by a pre-determination evaluation or by condition’.
<b>Built Heritage</b>			
Historic England	Marie Smallwood (Development Advice Team Leader)	Telephone and email in November 2019	Discussion on study area, methodology and potential effects.
Liverpool City Council	Peter Hoey (Conservation Officer)	Pre-application Meeting on 26/11/19	Discussion on study area, methodology and potential effects.
<b>Lighting</b>			
Liverpool City Council	Lighting Engineer – Dr Ian Rushforth	Email on 02/05/14 (as part of the consultation carried out for the Main Stand and Anfield Road Stand EIA)  E-mail correspondence received from Dr Ian Rushforth of	Agreement from Dr Ian Rushforth was obtained which confirmed that the Institute of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light GN01:2011 <sup>81</sup> details concerning Environmental Zone and Obtrusive Light Limits. It was agreed that the Environmental Zone was to be E3, the levels of light intrusion into windows was to be in accordance with an E3

<sup>81</sup> Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01:2011

	LCC on 11/12/2019.	zone although the pre-curfew limit was requested to be reduced from 10 lux to 6 lux which is a more stringent level. The time when the post-curfew levels are applicable was advised to be 23.00 hrs.
--	-----------------------	---

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#### **Biodiversity**

---

MEAS	Rachel Rhodes (RR) – Ecological Advisor	Email return and phone conversation on 19/12/2019	Discussed the Proposed Scheme and the potential to cause significant disturbance to qualifying features of known designated sites. On review of the distance from the Site and the level of disturbance anticipated, RR confirmed no requirement to include HRA Screening within the scope of the ES. Otherwise happy with the proposed scope.
------	---	--	--

---

# **Appendix 2:     Structure of Environmental Statement**

## **Volume 1: Main Text and Figures**

Chapter 1: Introduction

Chapter 2: Approach to EIA

Chapter 3: Description of the Site and Surroundings

Chapter 4: The Proposed Scheme

Chapter 5: Consideration of Alternatives

Chapter 6: Socio-Economics and Human Health

Chapter 7: Townscape and Visual

Chapter 8: Built Heritage

Chapter 9: Biodiversity

Chapter 10: Transport

Chapter 11: Noise and Vibration

Chapter 12: Climatic Effects (Wind Microclimate)

Chapter 13: Cumulative Effects Assessment

Chapter 14: Summary of the ES and Schedule of Mitigation

## **Volume 2: Technical Appendices**

## **Volume 3: Non-Technical Summary**

## **Appendix 3: Major Accident and Disaster Effects which do not pose a Risk**

The following identified effects are not considered to pose a risk during construction or operation phase of the Proposed Scheme.

### **Public harm or fatalities and/or structural damage caused by flooding (coastal and tidal sources)**

The Proposed Scheme is within Flood Zone 1 and is not located close to a channel or the coast, as such, coastal and tidal flooding are not considered to be a risk during construction or operational phase, are unlikely to be considered significant and will not be considered within the ES.

### **Public harm or fatalities and/or structural damage caused by earthquakes**

Earthquakes are extremely rare, and occurrences recorded have been of low magnitude. Therefore, earthquakes are not considered to be a risk during construction or operational phase and are unlikely to be considered significant and will not be considered within the ES.

### **Public harm or fatalities and/or structural damage caused by volcanic activity**

There are no active volcanoes in the UK. Therefore, it is not considered to be a risk during construction or operational phase and volcanic activity are not considered to be significant and are unlikely to be considered significant and will not be considered within the ES.

### **Public harm or fatalities and/or structural damage caused by landslides**

The Proposed Scheme is urbanised and surrounded by level, superficially solid ground. Therefore, landslides are not considered to be a risk during construction or operational phase, are unlikely to be considered significant and will not be considered within the ES.

### **Public harm or fatalities and/or structural damage caused by wildfires**

The Proposed Scheme is in an urban surrounding with no woodland or bush habitat in the vicinity. Therefore, wildfires are not considered to be a risk during construction or operational phase, are unlikely to be considered significant and will not be considered within the ES.

### **Outbreak and spread of animal diseases**

The Proposed Scheme is unlikely to interact with animals or come into contact with animal diseases during construction or operation. Therefore, animal diseases are not considered to be a risk during construction or operational phase, are unlikely to be considered significant and will not be considered within the ES



## **Appendix 4:   Material Resource and Waste – Baseline Study**



# **Anfield Road Stand, Liverpool**

## **Material Resources and Waste - Baseline Study**

18 December 2019

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# **Anfield Road Stand, Liverpool**

## **Material Resources and Waste - Baseline Study**

18 December 2019

# Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	22/11/19	Mohar Das	Anita Manns	Lorna Meek	For Turley review
B	17/11/19	Mohar Das	Anita Manns	Lorna Meek	Update to Turley review
C	18/12/19	Mohar Das	Anita Manns	Lorna Meek	Final for issue

Document reference: 405016 | 1 | C

Information class: Standard

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Generation and Management of Waste	3
Policy Context	7
Assessment Methodology	8
Legislation and Guidance	8
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# Materials Resources and Waste Baseline

## Introduction

This appendix provides supplementary baseline information and details the methodology that has been used to justify the “scoping out” of the Material Resources and Waste from the subsequent EIA. This appendix should be read in conjunction within the main body of the EIA Scoping Report, more specifically the text within Section 5 regarding ‘Material Resources and Waste’.

## Baseline

### Use of Material Resources

Information on the demand for key construction materials within the UK and Merseyside has been used to provide an initial baseline for material resources. In addition, information for the UK<sup>1</sup> has also been provided as a national comparison. This information has been determined through a desk-study using a number of readily available resources, in particular from the Minerals Products Association<sup>2</sup>, International Steel Statistics Bureau<sup>3</sup>, and Liverpool City Council<sup>4</sup> and has been produced using the most recent updated data available.

Table 0.1 outlines the UK demand, in terms of sales, of minerals and mineral products in 2018. Figures have been provided for 2017 or 2016 if they are unavailable for 2018.

**Table 0.1: Mineral and mineral product sales in GB, 2018**

Mineral	UK Demand, Mt (year)
Aggregates	
Of which:	
• Crushed rock	114.5 (2017)
• Sand and gravel	61.8 (2017)
Total primary sources	176.3 (2017)
Construction Demolition Excavation Waste (CD&E Waste) (incl.railway ballasts)	58.5 (2017)
Asphalt planings	6.1 (2017)
Total recycled sources	64.6 (2017)
Cementitious (including imports)	
Of which:	
• Cement (including imports)	11.7 (2018)
	3.4 (2018)

<sup>1</sup> Where information is not available for the UK due to the differing governing authorities for England, Wales and Scotland, England has been used to provide the national comparison.

<sup>2</sup> Minerals Products Association (2018) The Contribution of Recycled and Secondary Materials to Total Aggregates Supply in Great Britain [online] available at: [https://mineralproducts.org/documents/Contribution\\_of\\_Recycled\\_and\\_Secondary\\_Materials\\_to\\_Total\\_Aggs\\_Supply\\_in\\_GB.pdf](https://mineralproducts.org/documents/Contribution_of_Recycled_and_Secondary_Materials_to_Total_Aggs_Supply_in_GB.pdf) (accessed 22 November 2019)

<sup>3</sup> International Steel Statistics Bureau (2017) Steel Demand [online] available at: <http://issb.co.uk/news/news/uk.html> (accessed 22 November 2019)

<sup>4</sup> Liverpool City Council online at: <https://liverpool.gov.uk/council/strategies-plans-and-policies/environment-and-planning/plan-making-in-liverpool/current-local-plan-documents/> (accessed 22 November 2019)

Mineral	UK Demand, Mt (year)
<ul style="list-style-type: none"> <li>Other cementitious materials (fly ash, ground granulated blast-furnance slag)</li> </ul>	15.1 (2018)
Total cementitious material	
Ready-mixed concrete	56.1 (2016)
Concrete products	25.8 (2016)
Asphalt	25.2 (2016)
Dimension stone	1.0 (2016)
Steel	10.7 (2018)

Source: Minerals Products Association<sup>5</sup> Annual Cementitious Statistics<sup>6</sup> and International Steel Statistics Bureau<sup>7</sup>

At a regional level, the association of Greater Manchester Authorities, Merseyside and Halton (including Knowsley, Liverpool, Sefton, St Helens and Wirral) and the unitary authority of Warrington have jointly produced the Joint Local Aggregate Assessment. Table 0.2 outlines the aggregate sales and reserves in Greater Manchester, Merseyside and Warrington for 2016.

Aggregates produced across Greater Manchester, Merseyside and Halton, and Warrington include crushed rock from Carboniferous and Permo-triassic rocks, sand and gravel mostly made up of Glaciofluvial sand and gravel, Carboniferous Millstone Grit and Triassic Sandstone. There are 11 permitted aggregate quarries in the region. The sub-region also has reserves of recycled aggregates from construction, demolition and excavation wastes comprising of concrete, stone, brick and other similar materials, see Table 0.3. Waste produced and handled in Warrington and the rest of the sub-region. Table 0.3 only shows the amount of CD&E waste that was moved through licences sites and does not include waste that was reused on site or disposed of at exempt sites.

**Table 0.2: Aggregate sales and reserves in Greater Manchester, Merseyside and Halton, and Warrington for 2016**

Aggregate	Sales	Average 10-year sales	Average 3-year sales	LAA rate (per year)	Reserves	Landbank (remaining years)
All land worn sand and gravel	0.25Mt	0.29Mtpa	0.27Mtpa	0.30Mt	c.	5 y
Crushed rock	0.87Mt	0.63Mtpa	0.78Mtpa	0.85Mt	19.5 Mt	23.1 y

Source: Joint Local Aggregate Assessment Greater Manchester, Merseyside and Halton, and Warrington January 2018<sup>8</sup>

<sup>5</sup> Minerals Products Association (2018) The Contribution of Recycled and Secondary Materials to Total Aggregates Supply in Great Britain [online] available at: [https://mineralproducts.org/documents/Contribution\\_of\\_Recycled\\_and\\_Secondary\\_Materials\\_to\\_Total\\_Aggs\\_Supply\\_in\\_GB.pdf](https://mineralproducts.org/documents/Contribution_of_Recycled_and_Secondary_Materials_to_Total_Aggs_Supply_in_GB.pdf) (accessed 22 November 2019)

<sup>6</sup> Annual Cementitious Statistics [online] available at: [https://cement.mineralproducts.org/downloads/industry\\_statistics.php](https://cement.mineralproducts.org/downloads/industry_statistics.php) (accessed 22 November 2019)

<sup>7</sup> International Steel Statistics Bureau (2017) Steel Demand [online] available at: <http://issb.co.uk/news/news/uk.html> (accessed 22 November 2019)

<sup>8</sup> Joint Local Aggregate Assessment Greater Manchester, Merseyside and Halton, and Warrington January 2018 [online] available at: [https://www.sthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016\\_final.pdf](https://www.sthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016_final.pdf) (accessed November 2019)

**Table 0.3: Construction, demolition and excavation waste produced and handled in Greater Manchester, Merseyside and Halton, and Warrington for 2016**

Area	Produced (tonnes)	Handled (tonnes)
Greater Manchester	2,605,920	2,863,791
Merseyside and Halton	1,163,644	1,330,523
Warrington	100,292	328,981
<b>Total</b>	<b>3,869,856</b>	<b>4,523,295</b>

Source: Joint Local Aggregate Assessment Greater Manchester, Merseyside and Halton, and Warrington January 2018<sup>9</sup>

Note: 'Produced'- the quantity of useable material produced from the recycling process. 'Handled'- the quantity of material processed within the area, not all of which is reusable.

The Port of Liverpool has significant marine infrastructure and has handled significant primary landings of aggregate materials and crushed rock aggregate shipped from Glensanda Super quarry and used in ready mix concrete. This material is transported by road to Merseyside and Lancashire and is used within the region. Details of imports to the Port of Liverpool is given in Table 0.4.

**Table 0.4: Marine won aggregates at Port of Liverpool in 2016**

	Marine sand and gravel	Marine aggregate
Port of Liverpool (tonnes)	97% of 215,000	260,398

Source: Joint Local Aggregate Assessment Greater Manchester, Merseyside and Halton and Warrington January 2018<sup>10</sup>

## Generation and Management of Waste

The most recent information available relating to current waste generation and operational waste facilities in Merseyside and the North West region has been gathered through a desk-top study, using a number of readily available resources, in particular data from the Environment Agency, Defra, and Liverpool City Council.

### Waste generation in Merseyside, the North West and England

The latest data from the Environment Agency indicates that England produced 212.9 million tonnes of waste in 2018, which was managed in 6,324 permitted waste facilities. The North West region produced over 31 million tonnes of waste in 2018, which was managed in 870 sites, and Merseyside produced over 8 million tonnes (Table 0.5).

**Table 0.5: Waste breakdown by site types in 2018.**

Site type	England (tonnes)	North West (tonnes)	Merseyside (tonnes)
Landfill	44,000,000	3,966,000	247,000
Transfer	45,800,000	6,389,000	1,642,000
Treatment (excluding metal recycling sector)	81,600,000	17,020,000	3,989,000
Metal recovery	15,700,000	3,252,000	2,150,000

<sup>9</sup> Joint Local Aggregate Assessment Greater Manchester, Merseyside and Halton, and Warrington January 2018 [online] available at: [https://www.sthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016\\_final.pdf](https://www.sthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016_final.pdf) (accessed November 2019)

<sup>10</sup> Joint Local Aggregate Assessment Greater Manchester, Merseyside and Halton, and Warrington January 2018 [online] available at: [https://www.sthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016\\_final.pdf](https://www.sthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016_final.pdf) (accessed November 2019)



Site type	England (tonnes)	North West (tonnes)	Merseyside (tonnes)
Incinerated	14,300,000	1,250,000	100,000
Use of waste	200,000	-	-
Land disposal	11,300,000	43,000	-
<b>Total</b>	<b>212,900,000</b>	<b>31,920,000</b>	<b>8,128,000</b>

Source: Environment Agency Waste Data Interrogator 2018.<sup>11</sup>

With respect to construction and demolition waste, the Environment Agency recorded that 584,000 tonnes of inert construction and demolition waste was deposited in landfill in the North West region, with zero tonnes landfilled in Merseyside<sup>12</sup>. There are no figures available showing how much construction and demolition waste was recovered or recycled. However, the ENV23 – Statistics on Waste<sup>13</sup> outlines that of the 57.6 million tonnes of non-hazardous construction and demolition waste was generated in England in 2016 and 55.2 million tonnes were recovered (which is 92.1% of the total generated).

It was also recorded by the Environment Agency that 19,000 tonnes of waste was used in construction (under permits) in England in 2018<sup>14</sup>. Of this, zero tonnes was reused in the North West of England.

The Environment Agency recorded that 57,000 tonnes of waste was used in reclamation in England in 2018. Of this, zero tonnes was reused in the North West of England.

In regard to hazardous waste, Table 0.6 below outlines the quantities managed and deposited in 2018 in England, the North West and Merseyside. Of the 346,417 tonnes managed in Merseyside, 9,878.5 tonnes were specified as construction and demolition waste and asbestos, and of the 251,093 tonnes deposited in the Merseyside, 849.7 tonnes were specified as construction and demolition waste and asbestos.

**Table 0.6: Hazardous waste managed and deposited in 2018.**

Hazardous waste	England (tonnes)	North West (tonnes)	Merseyside (tonnes)
Managed	5,132,482	792,055	346,417
Deposited	5,516,142	914,964	251,093

Source: Environment Agency Waste Data Interrogator 2018<sup>15</sup>

### Potential hazardous waste arisings

To identify potential sources of contamination an initial review of the landfill sites, both authorised and historic, in close proximity of the Site was undertaken. There are no authorised or historic landfills within 500m of the Site<sup>16</sup>. Potential sources of contamination that are greater

<sup>11</sup> Environment Agency (2019) Waste Data Interrogator 2018 [online] available at: <https://data.gov.uk/dataset/312ace0a-ff0a-4f6f-a7ea-f757164cc488/waste-data-interrogator-2018> Accessed 25 November 2019

<sup>12</sup> Environment Agency (2019) Waste Data Interrogator 2018 [online] available at: <https://data.gov.uk/dataset/312ace0a-ff0a-4f6f-a7ea-f757164cc488/waste-data-interrogator-2018> Accessed September 2019

<sup>13</sup> UK statistics on waste data – February 2019 update [online] available at: <https://www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management>. Accessed 25 November 2019.

<sup>14</sup> Environment Agency (2019) Waste Data Interrogator 2018 [online] available at: <https://data.gov.uk/dataset/312ace0a-ff0a-4f6f-a7ea-f757164cc488/waste-data-interrogator-2018> Accessed 25 November 2019

<sup>15</sup> Environment Agency (2019) Waste Data Interrogator 2018 [online] available at: <https://data.gov.uk/dataset/312ace0a-ff0a-4f6f-a7ea-f757164cc488/waste-data-interrogator-2018> Accessed 25 November 2019

<sup>16</sup> Environment Agency (2019) Permitted Waste Sites - Authorised Landfill Site Boundaries [online] available at: <https://data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permitted-waste-sites-authorised-landfill-site-boundaries> Accessed 25 November 2019

than 500m away from the Site have not been considered, as these are considered unlikely to affect the Proposed Scheme.

### Waste management facilities

The Environment Agency reported that in 2018, 870 sites accepted waste in the North West, and at the end of 2018, 1,316 sites in the North West had environmental permits to accept waste (Table 0.7).

**Table 0.7: Permitted waste facilities 2018**

Site Type	England		North West	
	No. of sites with an environmental permit at the end of 2018	No. of sites that accepted waste in 2018	No. of sites with an environmental permit at the end of 2018	No. of sites that accepted waste in 2018
Landfill	526	307	48	32
Land disposal	427	226	48	28
Incineration	154	96	15	9
Transfer	2,848	2,274	408	311
Treatment	2,896	2,168	426	308
Metal recovery	2,308	1,242	370	182
Use of waste	27	11	1	0
<b>Total</b>	<b>9,186</b>	<b>6,324</b>	<b>1,316</b>	<b>870</b>

Source: Environment Agency (2019) Waste Data Interrogator 2018<sup>17</sup>

Table 0.8 outlines the capacity of landfill within Merseyside, the North West and England at the end of 2018. There are currently four operational landfills in Merseyside with two landfills having remaining capacity at the end of 2017; one of them being inert landfill and the other being hazardous merchant landfill. There is no capacity remaining for non-hazardous landfill. The remaining capacity, recorded in 2017, for inert landfill was 625,148m<sup>3</sup> and hazardous waste was 3,062,243m<sup>3</sup><sup>18</sup>. The one inert landfill, identified with remaining capacity, is outlined below in Table 0.9.

**Table 0.8: Landfill capacity at the end of 2018.**

Landfill type	England (m <sup>3</sup> )	North West (m <sup>3</sup> )	Merseyside (m <sup>3</sup> )
Hazardous merchant	19,122,000	6,311,000	3,062,000
Hazardous restricted	698,000	150,000	-
Non-hazardous with SNRHW* cell	75,059,000	10,372,000	-
Non-hazardous	159,564,000	20,924,000	-
Non-hazardous restricted	25,595,000	-	-
Inert	124,531,000	4,690,000	618,000
<b>Total</b>	<b>404,569,000</b>	<b>42,447,000</b>	<b>3,680,000</b>

<sup>17</sup> Environment Agency (2019) Waste Data Interrogator 2018 [online] available at: <https://data.gov.uk/dataset/312ace0a-ff0a-4f6f-a7ea-f757164cc488/waste-data-interrogator-2018> Accessed 25 November 2019

<sup>18</sup> Environment Agency (2019) Remaining Landfill Capacity [online] available at: <https://data.gov.uk/dataset/237825cb-dc10-4c53-8446-1bcd35614c12/remaining-landfill-capacity> Accessed 25 November 2019

Source: Waste Data Interrogator 2018<sup>19</sup>

Note: \*Some non-hazardous sites can accept some Stable Non Reactive Hazardous Wastes (SNRHW) into a dedicated cell, but this is usually a small part of the overall capacity of the site.

**Table 0.9: Merseyside permitted site for inert landfill, 2017**

Facility name	Local authority	Remaining capacity at end 2016 (m <sup>3</sup> )
Cronton Quarry	Knowsley	625,148

Source: Environment Agency Remaining Landfill Capacity<sup>20</sup>

A search on the public registers for permitted waste facilities showed that there are 51 waste facilities, 21 able to treat or transfer construction and demolition waste, within a 5km distance of the Site. Table 0.10 outlines the available facilities for recycling and recovery which manage construction and demolition waste, either through transfer, treatment, crushing and screening, and storage within 5km of the Site. Not all treatment facilities may be suitable for waste generated from the Proposed Scheme, but it demonstrates that, in general, sufficient treatment facilities are available.

**Table 0.10: Licensed sites within 5km of the Site for construction and demolition waste recycling and recovery**

Site name	Treatment facility type	Approx. distance from the Site (km)
Veolia E S (UK) Ltd	A17: Physico-Chemical Treatment Facility	1.8
Greenway Environmental Ltd	A16: Physical Treatment Facility	1.8
Greenway Environmental Ltd	A17: Physico-Chemical Treatment Facility	1.8
Barry Flanagan & Gerard Flanagan	A11: Household, Commercial & Industrial Waste Transfer Stn	1.9
Olleco	A17: Physico-Chemical Treatment Facility	1.9
European Metal Recycling Limited	S0821 No 21: 75kte Metal Recycling Site	2.2
Centriforce Products Limited	A16: Physical Treatment Facility	2.2
Circle Liverpool Ltd	A11: Household, Commercial & Industrial Waste Transfer Stn	2.5
Top Skip Liverpool Ltd	A11: Household, Commercial & Industrial Waste Transfer Stn	2.6
Wastecare Limited	A17: Physico-Chemical Treatment Facility	2.6
Veolia E S (U K) Ltd	A17: Physico-Chemical Treatment Facility	2.6
P P O' Connor Ltd	SR2010 No12: Treatment of waste to produce soil <75,000 tpy	2.7
Liverpool Streetscene Services Limited	A11: Household, Commercial & Industrial Waste Transfer Stn	2.7

<sup>19</sup> Environment Agency (2019) Waste Data Interrogator 2018 [online] available at: <https://data.gov.uk/dataset/312ace0a-ff0a-4f6f-a7ea-f757164cc488/waste-data-interrogator-2018> Accessed 25 November 2019

<sup>20</sup> Environment Agency (2019) Remaining Landfill Capacity [online] available at: <https://data.gov.uk/dataset/237825cb-dc10-4c53-8446-1bcd35614c12/remaining-landfill-capacity> Accessed November 2019

Site name	Treatment facility type	Approx. distance from the Site (km)
Tarmac Trading Limited	A16: Physical Treatment Facility	2.7
Veolia Environmental Services Merseyside & Halton Ltd	A11: Household, Commercial & Industrial Waste Transfer Stn	3.3
Dowhigh Ltd	SR2010 No12: Treatment of waste to produce soil <75,000 tpy	3.4
Caddick F J	A16: Physical Treatment Facility	3.4
Munro D	A11: Household, Commercial & Industrial Waste Transfer Stn	3.5
Oil Salvage Ltd	A9: Special Waste Transfer Station	3.6
U M Storage Ltd	A17: Physico-Chemical Treatment Facility	4.4
Veolia E S Merseyside & Halton Ltd	A11: Household, Commercial & Industrial Waste Transfer Stn	5

Source: Environment Agency Public Register 2019<sup>21</sup>

In addition to permitted construction and demolition waste management sites, inert material is also managed on sites that have an Environment Agency waste management license exemption. These exempt sites generally comprise land restoration activities such as restoring mineral voids, engineering/landscaping schemes and for agricultural improvements on farmland; therefore, they should not technically be seen as disposal 'landfilling' activity as they are a re-use of the material. These sites are an important part of the provision of the capacity for managing inert materials. Although small tonnages of waste from other waste streams (e.g. biodegradable waste) may be managed at locations with an exemption, the largest tonnage of exempt activities is likely to involve construction and demolition material.

There are 471 waste exemption sites listed by the Environmental Agency within 10km of the Site of which 115<sup>22</sup> are U1 exemption sites. These U1 exemption sites were used to manage waste produced onsite only as a one-off event. These sites are often short-lived, and therefore, should be identified upon commencement of construction.

## Policy Context

The Proposed Scheme has been reviewed with consideration to national and local policy that address the use of material resources and waste generation and its management. The following national policies of relevance to the Proposed Scheme include:

- The Waste Management Plan for England (2013);
- The Waste Prevention Programme for England (2013); and
- National Planning Policy for Waste (2014).

<sup>21</sup> Environment Agency (2019) Environmental Permitting Regulations – Waste Operations [online] available at: <https://environment.data.gov.uk/public-register/view/search-waste-operations> Accessed 26 November 2019

<sup>22</sup> Environment Agency (2019) Environmental Permitting Regulations – Waste Operations [online] available at: <https://environment.data.gov.uk/public-register/view/search-waste-operations> Accessed 26 November 2019

In regard to relevant local policies, the Unitary Development Plan adopted in 2002 is a statutory document and is regarded as a Local Plan Document for the City of Liverpool. The latest Liverpool Local Plan 2018 has been submitted to the Planning Inspectorate for the purposes of independent examination. As part of the Local Policy, the Joint Waste Local Plan (2013) has been adopted by the City of Liverpool. The Joint Waste Plan has identified eight strategic objectives and Policies WM0 to WM15 to ensure sustainable waste management practices in accordance with the waste hierarchy. Liverpool has adopted the Joint Local Aggregate Assessment<sup>23</sup> for the efficient and sustainable use of mineral resources and to allow the Council to plan for adequate aggregate supply. Review of the Proposed Scheme has taken into consideration the findings and priorities of the council's Annual Monitoring Reports<sup>24</sup> (latest is 2016/2017 edition) for dealing with waste and minerals.

## Assessment Methodology

### Legislation and Guidance

The following legislation underpins the review of the Proposed Scheme:

- Waste Framework Directive (2008/98/EC);
- The Environmental Protection Act (1990);
- The Hazardous Waste (England and Wales) Regulations (2005) as amended;
- The Waste (England and Wales) Regulations (2011) as amended; and
- The Environmental Permitting (England and Wales) Regulations (2016).

The following guidance underpins the review of the Proposed Scheme:

- Site Waste Management Plans – Guidance for Construction Contractors and Clients Voluntary Code of Practice (2004);
- Construction Code of Practice for Sustainable Use of Soils on Construction Sites (2009);
- CL:AIRE Definition of Waste: Development Industry Code of Practice (2011);
- Design Manual for Roads and Bridges (DMRB) Volume 11, Section, Part 5 Assessment and Management of Environmental Effects (HE 205/08); and
- Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 13 LA 110 Sustainability and environment. Appraisal. Material assets and waste.

### Significance Criteria

DMRB Volume 11, Section 3, Part 13 LA110 'Sustainability and Environment Appraisal - Material Assets and Waste'<sup>25</sup> provides more focused guidance for assessing the significance of potential effects resulting from material resource use and waste generation (Table 0.11). Although the LA110 guidelines is designed for highways, the guidance is applicable for assessing and reporting the effects on material assets and waste for any demolition and construction project. The significance criteria is described as either significant or not significant (Table 0.12). It is important to note that the criteria mainly reflect the impacts caused by

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<sup>23</sup> Joint Local Aggregate Assessment Greater Manchester, Merseyside and Halton, and Warrington January 2018 [online] available at: [https://www.ssthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016\\_final.pdf](https://www.ssthelens.gov.uk/media/5411/greater-manchester-merseyside-and-warrington-laa-2016_final.pdf) (accessed 22 November 2019).

<sup>24</sup> Implementation and Monitoring Report 2016-17, Joint Merseyside and Halton Waste Local Plan, February 2018. [online] available at: [http://www.meas.org.uk/media/7702/wlp\\_mr\\_201617\\_final\\_v3.pdf](http://www.meas.org.uk/media/7702/wlp_mr_201617_final_v3.pdf) (accessed 26 November 2019).

<sup>25</sup> Highways England (2019) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 13 LA 110 Sustainability and environment. Appraisal. Material assets and waste [online] available at: <http://www.standardsforhighways.co.uk/ha/standards/dmr/vol11/section3/LA%20110%20Material%20assets%20and%20waste-web.pdf> (accessed 26 November 2019)

transportation of materials and waste, and so are based on proportions transported as opposed to the scale of the work involved. Therefore, professional judgement is also used to provide an assessment of effects based on several factors, including:

- The availability of the material resources;
- The type of materials required, e.g. primary/virgin materials, manufactured materials, recycled materials;
- The type of waste generated, e.g. inert, hazardous;
- The availability of suitable facilities within close proximity to the Scheme options to treat the waste generated; and
- Compatibility of the Best Practicable Environmental Option (BPEO) for the waste within the context of the waste hierarchy, i.e. whether generation of the waste can be minimised, the waste can be recycled, landfilled etc.

The assessment of effects on material assets and waste generation encompasses effects arising during: the construction of the Proposed Scheme up until the point when the Proposed Scheme opens; and the operation of the Proposed Scheme in relation to maintenance for the lifetime of the Proposed Scheme. Significant environmental effects are likely to arise from those materials or waste which:

- Arise in the largest quantities;
- Are primary/virgin materials;
- Have hazardous properties; and
- Comprise a large proportion of the value of the Proposed Scheme.

**Table 0.11: Effect categories and typical descriptors for material resources and waste generation**

Significance category	Description
Neutral	<p><b>Material assets:</b></p> <p>Project achieves &gt;99% overall material recovery / recycling (by weight) of non-hazardous Construction Demolition Waste (CDW) to substitute use of primary materials.</p> <p>Aggregates required to be imported to site comprise &gt;99% re-used / recycled content</p> <p><b>Waste generation:</b></p> <p>No reduction or alteration in the capacity of waste infrastructure at a regional scale.</p>
Slight	<p><b>Material assets:</b></p> <p>Project achieves 70-99% overall material recovery / recycling (by weight) of non-hazardous CDW to substitute use of primary materials.</p> <p>Aggregates required to be imported to site comprise re-used/recycled content in line with the relevant regional percentage target</p> <p><b>Waste generation:</b></p> <p>≤1% reduction or alteration in the regional capacity of landfill</p> <p>Waste infrastructure has sufficient capacity to accommodate waste from a project, without compromising integrity of the receiving infrastructure (design life or capacity) within the region</p>
Moderate	<p><b>Material assets:</b></p> <p>Project achieves less than 70% overall material recovery / recycling (by weight) of non-hazardous CDW to substitute use of primary materials</p> <p>Aggregates required to be imported to site comprise re-used/recycled content below the relevant regional percentage target.</p>

Significance category	Description
	<b>Waste generation:</b> >1% reduction or alteration in the regional capacity of waste infrastructure as a result of accommodating waste from a project. 1-50% of project waste requires disposal outside of the region.
Large	<b>Material assets:</b> Project achieves <70% overall material recovery / recycling (by weight) of non-hazardous Construction and Demolition Waste (CDW) to substitute use of primary materials Aggregates required to be imported to site comprise <1% re-used / recycled content Project sterilises ≥ 1 mineral safeguarding site and/or peat resource <b>Waste generation:</b> >1% reduction or alteration in the regional capacity of waste infrastructure as a result of accommodating waste from a project. >50% of project waste requires disposal outside of the region.
Very Large	<b>Material assets:</b> No criteria: as criteria for 'Large' category above. <b>Waste generation:</b> >1% reduction or alteration in national capacity of landfill, as a result of accommodating waste from a project Construction of new (permanent) waste infrastructure is required to accommodate waste from a project.

Source: Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 13 LA 110 Sustainability and environment. Appraisal. Material assets and waste (2019)<sup>26</sup>

**Table 0.12: Significance criteria for material assets and waste generation**

Significance	Description
Not Significant	Material assets: Category description met for Neutral, Slight effect Waste generation: Category met for Neutral or Slight effect
Significant (one or more criteria met)	<b>Material assets:</b> Category description met for moderate or large effect <b>Waste generation:</b> Category met for Moderate, Large or Very Large effect

Source: Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 13 LA 110 Sustainability and environment. Appraisal. Material assets and waste (2019)<sup>27</sup>

## Conclusion

On review of the potential use of materials during construction and operation, there is no potential for significant direct effects from material resource use due to the small volume of materials required for the construction of the Proposed Scheme options, so further assessment on materials during construction is not required to be carried out. A SWMP, and CEMP will be prepared for the Proposed Scheme, to consider the sourcing, transport and use and disposal of

<sup>26</sup> Highways England (2019) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 13 LA 110 Sustainability and environment. Appraisal. Material assets and waste (formerly IAN 153/11) [online] available at: <http://www.standardsforhighways.co.uk/ha/standards/dmr/vol11/section3/LA%20110%20Material%20assets%20and%20waste-web.pdf> Accessed September 2019

<sup>27</sup> Highways England (2019) Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 13 LA 110 Sustainability and environment. Appraisal. Material assets and waste (formerly IAN 153/11) [online] available at: <http://www.standardsforhighways.co.uk/ha/standards/dmr/vol11/section3/LA%20110%20Material%20assets%20and%20waste-web.pdf> Accessed September 2019

materials in a sustainable manner during its construction and operation phase. Following the implementation of a SWMP and appropriate mitigation measures, the disposal of waste materials is not anticipated to result in significant direct or indirect effects, and so further assessment will not be carried out.

No further assessment is required for the effects of the Proposed Scheme on material resources and generation of waste during operation as no significant effects are anticipated. A review of the existing operational waste management arrangements and the development of an Operational Waste Management Strategy (OWMS), will mitigate against any potential significant adverse environmental effects that may be anticipated during operation. Maintenance activities would be infrequent with associated materials volumes expected to be in small quantities and waste generated through maintenance and operational activities would unlikely generate large volumes of waste requiring treatment or disposal.





## **Appendix 5: Daylight, Sunlight and Overshadowing Appraisal**

## Technical Appendix

### Daylight & Sunlight Principles

The BRE Guidelines – *Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Second Edition)* are well established and are adopted by most Local Authorities as the appropriate scientific and empirical methodology of measuring daylight and sunlight amenity in order to provide objective data to assist in the determination of relevant planning applications. The Guidelines are not fixed standards but should be applied flexibly to take account of the specific circumstances of each case.

The Introduction of the Guidelines states:

*"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the developer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design."*

The 'flexibility' recommended in the Guidelines should reflect the specific characteristics of each case being considered. For example, as the numerical targets within the Guidelines have been derived on the basis of a low density suburban housing model, it is entirely appropriate to apply a more flexible approach when dealing with higher rise developments in a denser urban/city centre environment where the general scale of development is greater. In addition, where existing and proposed buildings have specific design features such as projecting balconies, deep recesses, bay windows etc., it is also equally valid to apply a degree of flexibility to take account of the effect of these particular design features. This does not mean that the recommendations and targets within the Guidelines can be disregarded but, instead, the 'flexibility' that should be applied should be founded on sound scientific principles that can be supported and justified. This requires a certain level of professional value judgement and experience.

### Daylighting

In respect of daylighting, the BRE Guidelines adopt different methods of measurement depending on whether the assessment is for the impact on existing neighbouring premises or for measuring the adequacy of daylight to proposed new dwellings. For measuring the adequacy of daylight in the relevant areas of existing neighbouring buildings, as in this instance, the relevant recommendations are set out in Section 2.2 of the Guidelines.

The adequacy of daylight received by existing structures is measured and/or assessed using two preliminary and two detailed methods of assessment/measurement. Both preliminary assessments are based on the relative distance between the neighbouring property and the proposed development and the respective heights of both. The detailed assessments determine the Vertical Sky Component (VSC) – which is a measure of the direct sky illuminance to a specific reference point (typically the centre of a window) and Daylight Distribution (DD) which plots the position of the 'proposed' no sky line contour and shows the distribution of direct daylight to a specific area. (Further information with respect to VSC and DD can be seen in the Technical Footnote at the end of this Appendix)

Paragraphs 2.2.4 and 2.2.5 of the BRE Guidelines describe two preliminary assessments to establish whether or not any loss of daylight to the relevant neighbouring property is likely to be of any significance. The preliminary assessment described at paragraph 2.2.4. provides that if the distance of each part of the new development from the existing window in a neighbouring property is three or more times its height above the centre of the existing window then the loss of daylight will be small and need not be analysed.

The second preliminary assessment is described at paragraph 2.2.5 which provides that if the angle to the horizontal subtended by the new development at the level of the centre of the lowest window in the neighbouring building is *"less than 25 degrees for the whole of the new development then the it is unlikely to have a substantial effect on the diffuse skylight enjoyed by the existing building. If, for any*

*part of the proposed new development, this angle is more than 25 degrees a more detailed check is needed to find the loss of skylight to the existing building."*

VSC is typically measured at the mid-point on the external face of the window serving a habitable room. For the purpose of the Guidelines a "habitable" room is defined as a Kitchen, Living Room or Bedroom. Bathrooms, hallways and circulation space are excluded from this definition. In addition, many Local Authorities make a further distinction in respect of small kitchens. Where the internal area of a small kitchen limits the use to food preparation and is not of sufficient size to accommodate some other form of "habitable" use such as dining, the kitchen need not be classed as a "habitable" room in its own right.

VSC is a 'spot' measurement taken on the face of the window and is a measure of the availability of light from the sky from over the "existing" and "proposed" obstructions caused by buildings or structures in front of the window. As it is measured on the outside face of the window, one of the inevitable shortcomings is that it does not take account of the size of the window or the size or use of the room served by the window. For this reason, the BRE Guidelines require DD to be measured (where room layouts are known or can be assumed with a reasonable degree of accuracy) in addition to VSC. The BRE Guidelines recognise that both *"the total amount of skylight and its distribution within the building are important."*

The 'No Sky Line' contour plotted for the purpose of measuring internal DD identifies those areas within the room usually measured on a horizontal working plane set at table top level, where there is direct sky visibility. This therefore represents those parts within the room where the sky can be seen through the window. This second measure therefore takes account of the size of the window and the size of the room but is only more reliable than VSC when the actual room uses, layouts and dimensions are known. When interpreted in conjunction with the VSC value, the likely internal lighting conditions, and hence the quality of lighting within the room, can be assessed.

For VSC, the Guidelines provide that a VSC of at least 27% will usually result in reasonable daylight with a "conventional" window design. For existing buildings any VSC reduction below this level should be kept to a minimum. *"If the VSC with the new development in place, is both less than 27 % and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of daylight"*.

When considering daylight levels to proposed structures larger windows and revised room layouts are usually needed to provide adequate daylight with VSC's between 15% and 27%. Very large windows are required to provide adequate daylight with VSC's between 5 % and 15%.

The adequacy of daylight for proposed 'New-Build' dwellings is measured using the standards in the British Standard Code of Practice for Daylighting, BS8206 Part 2.

The British Standard relies upon the use of Average Daylight Factors (ADF) rather than VSC and Daylight Distribution. The use of ADF is referred to in the BRE Guidelines (Appendix C) but its use is usually limited as a supplementary 'check' of internal lighting conditions once the VSC and Daylight Distribution tests have been completed.

ADF is often seen as a more accurate and representative measure of internal lighting conditions as it comprises a greater number of design factors and input variables/coefficients. That is, the value of ADF is derived from:

- The actual amount of daylight received by the window(s) serving the room expressed as the "angle of visible sky" which is derived from the VSC value and therefore represents the amount of light striking the face of the window.
- The loss of transmittance through the glazing.
- The size of the window (net area of glazing).
- The size of the room served by the window(s) (net internal surface area of the room).

- The internal reflectance values of the internal finishes within the room.
- The specific use of the room.

One of the main reasons why ADF is more appropriate for New-Build dwellings/accommodation is that any of the above input variables can be changed during the course of the design process in order to achieve the required or enhanced internal lighting values.

Unlike the application of VSC and DD, the British Standard differentiates between different room uses. It places the highest ADF standard on Family Kitchens where the minimum target value is 2% *df*. Living Rooms should achieve 1.5% *df*, and Bedrooms 1.0% *df*.

Although not recommended in the BRE Guidelines for the assessment of daylight impacts on neighbouring properties ADF assessments in respect of neighbouring properties can often prove to be a useful confirmatory analysis/assessment with respect to the potential impact on daylight levels to neighbouring properties.

### **Sunlighting**

Requirements for sunlighting to proposed residential structures are set out in Part 3.1 of the BRE Guide. It is only necessary to assess windows that face within 90 degrees of due south. The calculations are taken at the window reference point at the centre of each window on the plane of the inside surface of the wall.

The guidelines further state that kitchens and bedrooms are less important in the context of considering sunlight, although care should be taken with the design not to restrict too much sun. The guidelines sets the following standard:-

*"the centre of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months of 21st September and 21st March. "*

To summarize the above, a good level of sunlight to a window is 25% annual probable sunlight hours, of which 5% should be in winter months. The BRE Guide recognises that it will not always be possible to meet the above target figures especially for larger intensive city centre developments such as that considered in this report.

### **Adverse Daylight and Sunlight Effects**

A Daylight and Sunlight Amenity Appraisal has been prepared by Avison Young which follows the approach and protocols set down in the BRE Guidelines. This assessment evaluates the likely effects that the proposed development will have in terms of daylight, sunlight and overshadowing in comparison to the existing baseline situation.

#### ***Identification of Sensitive Receptors***

The windows serving habitable rooms facing the application site in the neighbouring residential properties have been selected as the sensitive receptors. The neighbouring properties where sensitive receptors have been identified and in respect of which daylight and/or sunlight assessment have been prepared are detailed below:-

- 2-24 Alroy Road
- 73 ,75, 250 and 252 Anfield Road
- 26-36 and 25-39 Skerries Road

#### ***Appraisal Approach***

For daylight and sunlight, the Building Research Establishment BRE Guidelines (specifically Appendix I) outline the approach in terms of assigning criteria to appraise the effects:

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

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

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

- Only a small number of windows are affected;
- The loss of light is only marginally outside the guidelines;
- An affected room has other sources of skylight or sunlight; and
- The affected building only has a low level of requirement for skylight or sunlight.”

The classification of major adverse is documented within Paragraph I7 of the BRE Guidelines:

“Factors tending towards a major adverse impact include:

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

Daylight and sunlight Appraisals have been prepared by Avison Young in order to confirm the anticipated daylight and sunlight impacts to the neighbouring residential properties and to confirm the validity of not including daylight and sunlight effects in the ES. Schedules giving details of the daylight and sunlight appraisal results are included at the end of this Technical Appendix . The daylight and sunlight assessment results are summarised below:-

**Table 1.1: Daylight Assessment Results**

Effect	Receptor	Impact Assessment based on BRE Guideline Criteria
<b>Reduction in Daylight Levels</b>		
2-24 Alroy Road	Site facing windows and rooms	The daylight assessments show only <b>isolated negligible impacts</b> to these properties with several showing no reduction in daylight levels.
73 – 75 Anfield Road	Site facing windows and rooms	The daylight assessments show only <b>isolated negligible/minor adverse impacts</b> to these properties with several windows/rooms showing no reduction in daylight levels.
250-252 Anfield Road	Site facing windows and rooms	The daylight assessments show only <b>isolated negligible impacts</b> to these properties with several windows/rooms showing no reduction in daylight levels.
26-36 Skerries Road 25-39 Skerries Road	Site facing windows and rooms	The daylight assessments show only <b>negligible impacts</b> to these properties

Table 1.2: Sunlight Assessment Results

Effect	Receptor	Impact Assessment based on BRE Guideline Criteria
<b>Reduction in Sunlight Levels</b>		
2 Alroy Road	Site facing windows	The sunlight assessment shows only a <b>negligible/minor adverse impact</b> to this property with several windows showing no reduction in daylight levels.
73 – 75 Anfield Road	Site facing windows	The sunlight assessment shows only a <b>negligible/minor adverse impact</b> to these properties with several windows showing no reduction in daylight levels.
250-252 Anfield Road 26-36 Skerries Road 25-39 Skerries Road	Site facing windows	The sunlight assessment shows <b>no impact</b> to these properties.

### Conclusion

Given the separation between the Proposed Scheme and any relevant receptors, the scale of the Proposed Scheme and the BRE Guidelines, it is not considered that the proposals will lead to significant effects on the daylight and sunlight amenity of these receptors.

### Technical Footnote

**Vertical Sky Component (VSC)** is a measure of the amount of sky visible from a given point. It is the ratio of the illuminance at a given point due to the light received directly from an overcast sky to the illuminance on an unobstructed outside plane under the same sky (CIE standard overcast sky). VSC measurements are typically taken at the centre of the outside face a window and the VSC is essentially a measure of the potential for a room/area to receive acceptable levels of direct skylight.

**Daylight Distribution (DD)** is a measure of the distribution of diffuse daylight within a room and is show by the no sky line (NSL) which follows the division between those parts of a room that can receive some direct skylight from those that cannot. If from a point in a room on the working plane (a plane 850mm above the floor) it is possible to see some sky then that point will lie inside the NSL contour. Conversely, if no sky is visible from that point then it would lie outside the contour.

**Average Daylight Factor (ADF/df)** is a measure of the average illuminance on the working plane in a room divided by the illuminance on an unobstructed horizontal surface outdoors. It is a measure internal of internal natural light levels and is calculated by reference to several variables including the decorative and floor finishes of the relevant area and the properties of the glazing to any relevant windows. Its value as an assessment for existing properties is limited and it is predominately used to determine light levels to proposed buildings.

**Liverpool Football Club**  
**Daylight results for proposal job 14 11 December 2019**

Room/Floor	Room Use	Window	%VSC			% Daylight Factor			Proposed No Sky	
			Exist	Prop	% Loss	Exist	Prop	% Loss	% of Room Area	% Loss of Existing
24 ALROY ROAD										
R1/100	LIVINGROOM	W1/100	25.30	25.30	0.00%	3.21	3.21	0.00%	85.58%	0.00%
		W2/100	25.81	25.81	0.00%					
		W3/100	23.18	23.18	0.00%					
R1/101	BEDROOM	W1/101	27.18	27.18	>27	2.06	2.06	0.00%	77.09%	0.00%
		W2/101	27.10	27.10	>27					
R2/101	BEDROOM	W3/101	27.05	27.05	>27	2.35	2.35	0.00%	97.61%	0.00%
R1/102	BEDROOM	W1/102	57.94	57.94	>27	2.10	2.10	0.00%	83.60%	0.00%
		W2/102	57.88	57.88	>27					
R2/102	BEDROOM	W3/102	57.79	57.79	>27	1.96	1.96	0.00%	90.46%	0.00%
22 ALROY ROAD										
R4/100	LIVINGROOM	W4/100	24.89	24.89	0.00%	3.11	3.11	0.00%	81.50%	0.00%
		W5/100	25.49	25.49	0.00%					
		W6/100	22.44	22.44	0.00%					
R3/101	BEDROOM	W4/101	26.99	26.99	0.00%	2.33	2.33	0.00%	97.61%	0.00%
R4/101	BEDROOM	W5/101	26.87	26.87	0.00%	2.02	2.02	0.00%	69.02%	0.00%
		W6/101	26.82	26.82	0.00%					
R3/102	BEDROOM	W4/102	57.68	57.68	>27	1.96	1.96	0.00%	89.66%	0.00%
R4/102	BEDROOM	W5/102	57.60	57.60	>27	2.13	2.13	0.00%	81.48%	0.00%
		W6/102	57.50	57.50	>27					
20 ALROY ROAD										
R1/110	LIVINGROOM	W1/110	24.17	24.17	0.00%	3.21	3.21	0.00%	88.74%	0.00%
		W2/110	25.62	25.62	0.00%					
		W3/110	23.77	23.77	0.00%					
R1/111	BEDROOM	W1/111	26.94	26.94	0.00%	2.05	2.05	0.00%	73.17%	0.00%
		W2/111	26.92	26.92	0.00%					
R2/111	BEDROOM	W3/111	26.91	26.91	0.00%	2.36	2.36	0.00%	98.00%	0.00%
18 ALROY ROAD										
R4/110	LIVINGROOM	W6/110	24.16	24.16	0.00%	3.12	3.12	0.00%	86.83%	0.07%
		W7/110	25.54	25.54	0.00%					
		W8/110	23.39	23.38	0.04%					
R3/111	BEDROOM	W4/111	26.91	26.91	0.00%	2.35	2.35	0.00%	98.01%	0.00%
R4/111	BEDROOM	W5/111	26.91	26.90	0.04%	2.05	2.05	0.00%	71.59%	0.00%
		W6/111	26.86	26.85	0.04%					
R2/112	BEDROOM	W2/112	27.93	27.92	>27	0.80	0.80	0.00%	67.22%	0.00%



Room/Floor	Room Use	Window	%VSC			% Daylight Factor			Proposed No Sky	
			Exist	Prop	% Loss	Exist	Prop	% Loss	% of Room Area	% Loss of Existing
16 ALROY ROAD										
R1/120	LIVINGROOM	W1/120	23.09	23.09	0.00%	3.22	3.21	0.06%	85.19%	0.00%
		W2/120	25.68	25.65	0.12%					
		W3/120	24.64	24.61	0.12%					
R1/121	BEDROOM	W1/121	26.91	26.89	0.07%	2.05	2.05	0.05%	71.61%	0.26%
		W2/121	26.97	26.94	0.11%					
R2/121	BEDROOM	W3/121	27.04	27.00	0.15%	2.37	2.36	0.17%	97.81%	0.00%
R1/122	BEDROOM	W1/122	28.04	28.01	>27	0.80	0.80	0.12%	69.27%	0.00%
14 ALROY ROAD										
R4/120	LIVINGROOM	W6/120	23.56	23.55	0.04%	3.12	3.11	0.26%	84.45%	0.00%
		W7/120	25.87	25.78	0.35%					
		W8/120	23.71	23.58	0.55%					
R3/121	BEDROOM	W4/121	27.13	27.06	>27	1.91	1.91	0.21%	96.83%	0.00%
R4/121	BEDROOM	W5/121	27.20	27.09	>27	2.08	2.07	0.29%	76.05%	0.00%
		W6/121	27.22	27.12	>27					
R2/122	BEDROOM	W2/122	28.23	28.14	>27	0.95	0.95	0.32%	73.40%	0.00%
R3/122		W3/122	62.58	62.53	>27	1.19	1.19	0.08%	84.69%	0.00%
12 ALROY ROAD										
R1/130	LIVINGROOM	W1/130	23.02	23.01	0.04%	2.58	2.57	0.35%	85.63%	0.00%
		W2/130	26.31	26.18	0.49%					
		W3/130	25.88	25.71	0.66%					
R1/131	BEDROOM	W1/131	27.52	27.38	>27	2.31	2.30	0.43%	72.88%	0.00%
R2/131	BEDROOM	W2/131	27.68	27.48	>27	1.94	1.92	0.67%	98.24%	0.00%
R1/132	BEDROOM	W1/132	64.81	64.69	>27	1.75	1.75	0.17%	77.63%	0.00%
R2/132	BEDROOM	W2/132	65.19	65.04	>27	3.02	3.01	0.23%	90.95%	0.00%
10 ALROY ROAD										
R4/130	LIVINGROOM	W6/130	23.64	23.59	0.21%	2.55	2.53	0.63%	88.32%	0.00%
		W7/130	26.83	26.57	0.97%					
		W8/130	24.33	24.01	1.32%					
R3/131	BEDROOM	W3/131	27.76	27.55	>27	1.90	1.89	0.68%	97.83%	0.00%
R4/131	BEDROOM	W4/131	27.94	27.67	>27	2.36	2.35	0.76%	77.48%	0.00%
R3/132	BEDROOM	W3/132	63.69	63.52	>27	1.19	1.19	0.25%	76.87%	0.00%
R4/132	BEDROOM	W4/132	28.90	28.66	>27	1.56	1.55	0.71%	69.28%	0.00%
8 ALROY ROAD										
R1/140	LIVINGROOM	W1/140	22.32	22.25	0.31%	3.48	3.46	0.80%	90.78%	0.00%
		W2/140	27.12	26.79	1.22%					
		W3/140	27.02	26.60	1.55%					
R1/141	BEDROOM	W1/141	28.29	27.92	>27	2.49	2.46	1.01%	76.33%	0.00%
R2/141	BEDROOM	W2/141	28.54	28.11	>27	1.98	1.95	1.32%	97.41%	0.00%
6 ALROY ROAD										
R4/140	LIVINGROOM	W6/140	23.83	23.67	0.67%	3.37	3.33	1.31%	91.96%	0.00%
		W7/140	27.93	27.40	>27					
		W8/140	25.64	24.99	2.54%					

Room/Floor	Room Use	Window	%VSC			% Daylight Factor			Proposed No Sky	
			Exist	Prop	% Loss	Exist	Prop	% Loss	% of Room Area	% Loss of Existing
R3/141	BEDROOM	W3/141	28.69	28.25	>27	1.97	1.95	1.37%	97.42%	0.00%
R4/141	BEDROOM	W4/141	29.04	28.49	>27	2.49	2.46	1.48%	83.59%	0.00%
4 ALROY ROAD										
R1/150	LIVINGROOM	W1/150	23.90	23.67	0.96%	2.39	2.35	1.72%	86.85%	0.00%
		W2/150	28.53	27.84	>27					
		W3/150	28.55	27.82	>27					
R1/151	BEDROOM	W1/151	29.36	28.72	>27	1.54	1.52	1.75%	80.28%	0.31%
R2/151	BEDROOM	W2/151	29.73	28.99	>27	3.60	3.53	2.00%	99.20%	0.00%
R1/152	BEDROOM	W1/152	30.49	29.90	>27	1.34	1.32	1.64%	76.60%	0.00%
2 ALROY ROAD										
R4/150	LIVINGROOM	W6/150	24.19	23.82	1.53%	3.02	2.96	2.08%	90.98%	0.00%
		W7/150	29.51	28.60	>27					
		W8/150	31.12	30.22	>27					
R3/151	BEDROOM	W3/151	29.94	29.17	>27	3.67	3.60	2.07%	98.80%	0.00%
R4/151	BEDROOM	W4/151	30.36	29.54	>27	1.64	1.60	2.20%	85.68%	0.00%
R2/152	BEDROOM	W2/152	31.21	30.49	>27	1.25	1.22	2.01%	80.27%	0.00%
73 ANFIELD ROAD										
Gnd Floor										
R1/160	UNKNOWN	W2/160	27.05	19.23	28.91%	2.54	2.34	7.68%	95.85%	2.25%
		W3/160	30.53	20.15	34.00%					
		W4/160	31.80	31.80	>27					
		W5/160	30.62	30.62	>27					
R2/160	UNKNOWN	W1/160	27.97	19.82	29.14%	2.63	2.31	12.19%	97.34%	2.56%
		W6/160	28.39	28.39	>27					
1st Floor										
R1/161	UNKNOWN	W1/161	32.82	31.66	>27	1.19	1.19	0.59%	95.49%	0.69%
		W2/161	32.89	32.89	>27					
		W3/161	31.83	31.83	>27					
R2/161	UNKNOWN	W4/161	29.74	29.74	>27	0.61	0.61	0.00%	91.60%	0.00%
		W5/161	31.72	31.72	>27					
Gnd Floor										
R2/170	UNKNOWN	W2/170	28.81	20.10	30.23%	4.53	4.11	9.16%	97.30%	2.16%
		W16/170	39.35	39.31	>27					
R3/170	UNKNOWN	W3/170	17.19	17.02	0.99%	2.11	1.75	17.23%	76.86%	20.20%
		W4/170	33.32	24.31	27.04%					
		W5/170	14.90	12.67	14.97%					
		W6/170	13.89	11.94	14.04%					
		W7/170	30.65	21.55	29.69%					
R4/170	UNKNOWN	W8/170	27.38	23.15	15.45%	3.41	3.31	3.05%	98.84%	0.56%
		W9/170	32.74	31.69	>27					
		W10/170	30.02	30.01	>27					
R6/170	UNKNOWN	W13/170	27.54	24.60	10.68%	3.33	3.25	2.31%	98.82%	0.10%
		W14/170	33.15	32.17	>27					
		W15/170	31.25	31.25	>27					

Room/Floor	Room Use	Window	%VSC			% Daylight Factor			Proposed No Sky	
			Exist	Prop	% Loss	Exist	Prop	% Loss	% of Room Area	% Loss of Existing
1st Floor										
R1/171	UNKNOWN	W1/171	35.72	27.55	>27	3.30	3.02	8.45%	94.94%	4.45%
		W8/171	38.87	38.83	>27					
R2/171	UNKNOWN	W2/171	35.53	26.98	24.06%	1.46	1.16	20.73%	68.15%	30.57%
R3/171	UNKNOWN	W3/171	35.41	26.40	25.44%	3.31	2.97	10.22%	99.17%	0.00%
		W4/171	34.30	32.67	>27					
R4/171	UNKNOWN	W5/171	35.08	33.76	>27	1.77	1.75	1.19%	97.41%	0.00%
R5/171	UNKNOWN	W6/171	35.28	34.18	>27	1.66	1.64	1.03%	97.28%	0.00%
R6/171	UNKNOWN	W7/171	35.21	34.25	>27	1.66	1.65	0.84%	96.48%	0.00%
2nd Floor										
R1/172	UNKNOWN	W4/172	83.96	81.66	>27	1.22	1.21	1.47%	95.71%	0.00%
R2/172	UNKNOWN	W5/172	85.15	83.30	>27	1.03	1.02	0.97%	94.43%	0.35%
R3/172	UNKNOWN	W6/172	85.00	83.51	>27	1.41	1.40	0.50%	99.37%	0.16%
		W7/172	37.65	37.65	>27					
R4/172	UNKNOWN	W1/172	32.19	25.57	20.57%	1.85	1.51	18.25%	93.59%	3.19%
		W2/172	34.56	28.08	>27					
		W3/172	33.27	26.40	20.65%					
75 ANFIELD ROAD										
Gnd Floor										
R1/180	UNKNOWN	W1/180	18.36	17.49	4.74%	1.97	1.94	1.62%	92.94%	0.00%
		W2/180	30.30	29.68	>27					
R2/180	UNKNOWN	W3/180	28.33	27.76	>27	1.00	1.00	0.20%	91.09%	0.00%
R3/180	UNKNOWN	W4/180	25.26	24.73	2.10%	1.82	1.80	0.88%	98.45%	0.00%
R5/180	UNKNOWN	W9/180	18.32	15.79	13.81%	0.34	0.29	15.20%	72.36%	20.16%
R6/180	UNKNOWN	W10/180	21.65	18.81	13.12%	1.44	1.40	2.23%	95.01%	0.51%
		W11/180	30.11	29.77	>27					
		W12/180	29.66	29.36	>27					
1st Floor										
R1/181	UNKNOWN	W1/181	20.49	19.38	5.42%	2.07	2.03	1.64%	96.09%	0.00%
		W2/181	32.53	31.90	>27					
R2/181	UNKNOWN	W3/181	31.25	30.70	>27	1.07	1.07	0.19%	95.61%	0.00%
R3/181	UNKNOWN	W4/181	28.67	28.17	>27	1.99	1.97	0.71%	98.56%	0.00%
R4/181	UNKNOWN	W5/181	18.70	18.47	1.23%	0.85	0.85	0.23%	86.81%	0.00%
R5/181	UNKNOWN	W6/181	20.48	17.88	12.70%	0.38	0.33	14.21%	74.16%	18.62%
R6/181	UNKNOWN	W7/181	25.46	22.47	11.74%	1.52	1.48	2.18%	95.53%	0.00%
		W8/181	32.44	32.13	>27					
		W9/181	32.10	31.82	>27					
2nd Floor										
R1/182	UNKNOWN	W1/182	19.89	18.88	5.08%	1.91	1.88	1.73%	96.34%	0.00%
		W2/182	33.92	33.39	>27					
R2/182	UNKNOWN	W3/182	29.51	29.06	>27	0.81	0.81	0.12%	95.84%	0.00%
R3/182	UNKNOWN	W4/182	28.53	28.14	>27	1.54	1.53	0.72%	98.56%	0.00%
R4/182	UNKNOWN	W5/182	15.43	15.24	1.23%	0.64	0.64	0.31%	95.12%	0.00%
R5/182	UNKNOWN	W6/182	18.92	16.20	14.38%	0.25	0.19	25.60%	73.91%	14.31%

Room/Floor	Room Use	Window	%VSC			% Daylight Factor			Proposed No Sky	
			Exist	Prop	% Loss	Exist	Prop	% Loss	% of Room Area	% Loss of Existing
R6/182	UNKNOWN	W7/182	25.15	22.21	11.69%	1.44	1.41	2.29%	95.29%	0.25%
		W8/182	29.36	29.12	>27					
		W9/182	33.94	33.71	>27					
250 ANFIELD ROAD										
Gnd Floor										
R1/190	UNKNOWN	W1/190	16.96	16.88	0.47%	1.14	1.14	0.18%	84.42%	0.00%
R2/190	UNKNOWN	W2/190	15.44	15.44	0.00%	0.51	0.51	0.00%	76.26%	0.00%
1st Floor										
R1/191	UNKNOWN	W1/191	28.56	28.48	>27	1.59	1.59	0.06%	100.00%	0.00%
		W5/191	82.99	82.78	>27					
R2/191	UNKNOWN	W2/191	27.39	27.39	>27	1.41	1.41	0.00%	96.13%	0.00%
252 ANFIELD ROAD										
Gnd Floor										
R3/190	UNKNOWN	W3/190	22.07	22.07	0.00%	0.68	0.68	0.00%	77.53%	0.00%
R4/190	UNKNOWN	W5/190	23.85	23.84	0.04%	1.10	1.10	0.09%	95.56%	0.00%
1st Floor										
R3/191	UNKNOWN	W3/191	30.89	30.86	>27	1.18	1.18	0.00%	97.08%	0.00%
R4/191	UNKNOWN	W4/191	31.97	31.95	>27	1.42	1.42	0.00%	96.89%	0.00%
Gnd Floor										
R2/200	UNKNOWN	W2/200	24.16	24.15	0.04%	0.53	0.53	0.00%	91.90%	0.00%
1st Floor										
R2/201	UNKNOWN	W2/201	30.01	29.98	>27	0.69	0.69	0.00%	96.02%	0.00%
2nd Floor										
R2/202	UNKNOWN	W1/202	34.48	34.46	>27	0.70	0.70	0.00%	96.61%	0.00%
36 SKERRIES ROAD										
Gnd Floor										
R1/210	LIVINGROOM	W1/210	28.56	25.08	12.18%	2.45	2.28	7.17%	92.36%	3.54%
		W2/210	30.28	27.03	>27					
		W3/210	25.21	24.30	3.61%					
1st Floor										
R1/211	BEDROOM	W1/211	32.53	29.28	>27	1.68	1.54	8.41%	97.44%	0.00%
R2/211	BEDROOM	W2/211	32.29	29.28	>27	1.81	1.66	7.92%	98.06%	0.00%
34 SKERRIES ROAD										
Gnd Floor										
R4/210	LIVINGROOM	W8/210	26.24	25.05	4.54%	2.25	2.20	2.26%	85.52%	4.39%
		W9/210	27.61	26.88	2.64%					
		W10/210	22.27	22.10	0.76%					
1st Floor										
R3/211	BEDROOM	W3/211	31.57	29.22	>27	1.78	1.66	6.25%	98.06%	0.00%
R4/211	BEDROOM	W4/211	31.04	29.16	>27	1.61	1.52	5.22%	97.44%	0.00%

Room/Floor	Room Use	Window	%VSC			% Daylight Factor			Proposed No Sky	
			Exist	Prop	% Loss	Exist	Prop	% Loss	% of Room Area	% Loss of Existing
32 SKERRIES ROAD										
Gnd Floor										
R1/220	LIVINGROOM	W1/220	23.43	22.86	2.43%	2.26	2.23	1.24%	88.26%	4.68%
		W2/220	27.05	26.61	1.63%					
		W3/220	24.33	24.16	0.70%					
1st Floor										
R1/221	BEDROOM	W1/221	30.53	29.08	>27	1.57	1.50	4.08%	97.44%	-0.08%
R2/221	BEDROOM	W2/221	30.20	28.90	>27	1.65	1.59	3.58%	98.06%	-0.09%
30 SKERRIES ROAD										
Gnd Floor										
R4/220	LIVINGROOM	W9/220	24.60	24.17	1.75%	2.18	2.16	1.01%	83.09%	1.76%
		W10/220	26.48	26.13	1.32%					
		W11/220	22.13	22.02	0.50%					
1st Floor										
R3/221	BEDROOM	W3/221	29.94	28.78	>27	1.64	1.59	3.23%	97.81%	-0.61%
R4/221	BEDROOM	W4/221	29.76	28.71	>27	1.48	1.44	2.91%	95.17%	-0.24%
28 SKERRIES ROAD										
Gnd Floor										
R1/230	LIVINGROOM	W1/230	22.32	21.96	1.61%	2.30	2.28	0.78%	93.27%	0.23%
		W2/230	26.38	26.08	1.14%					
		W3/230	24.22	24.10	0.50%					
1st Floor										
R1/231	BEDROOM	W1/231	29.55	28.63	>27	1.45	1.41	2.75%	92.23%	-2.26%
R2/231	BEDROOM	W2/231	29.48	28.59	>27	1.56	1.52	2.57%	92.16%	-2.15%
26 SKERRIES ROAD										
Gnd Floor										
R4/230	LIVINGROOM	W10/230	24.21	23.90	1.28%	2.23	2.21	0.76%	85.79%	0.86%
		W11/230	26.19	25.90	1.11%					
		W12/230	21.90	21.80	0.46%					
1st Floor										
R3/231	BEDROOM	W3/231	29.36	28.55	>27	1.51	1.48	2.31%	90.45%	-2.14%
R4/231	BEDROOM	W4/231	29.26	28.47	>27	1.43	1.40	2.24%	86.21%	-2.30%
39 SKERRIES ROAD										
Gnd Floor										
R1/240	UNKNOWN	W1/240	21.18	17.91	15.44%	19.55	18.61	4.81%	100.00%	0.00%
		W2/240	21.23	17.78	16.25%					
		W3/240	68.52	64.74	>27					
		W4/240	21.64	18.06	16.54%					
		W5/240	22.33	18.54	16.97%					
		W6/240	16.47	16.45	0.12%					
R2/240	KITCHEN	W7/240	22.62	19.15	15.34%	0.88	0.76	13.44%	55.48%	13.33%
1st Floor										
R1/241	BEDROOM	W1/241	27.78	22.70	18.29%	1.23	1.05	14.78%	68.68%	19.31%

Room/Floor	Room Use	Window	%VSC			% Daylight Factor			Proposed No Sky	
			Exist	Prop	% Loss	Exist	Prop	% Loss	% of Room Area	% Loss of Existing
37 SKERRIES ROAD										
Gnd Floor										
R1/250	UNKNOWN	W1/250	23.36	19.83	15.11%	0.65	0.57	13.61%	36.96%	36.28%
R2/250	UNKNOWN	W2/250	22.29	19.44	12.79%	0.85	0.70	17.69%	47.00%	22.70%
		W3/250	22.19	19.38	12.66%					
		W4/250	23.70	20.43	13.80%					
1st Floor										
R2/251	BEDROOM	W2/251	25.53	22.10	13.44%	1.19	1.06	10.59%	63.72%	11.51%
35 SKERRIES ROAD										
Gnd Floor										
R1/260	UNKNOWN	W1/260	21.38	18.97	11.27%	0.94	0.80	14.74%	50.96%	11.85%
		W2/260	21.13	18.80	11.03%					
		W3/260	22.78	20.10	11.76%					
R2/260	UNKNOWN	W4/260	17.75	15.59	12.17%	0.55	0.50	8.99%	29.38%	2.88%
1st Floor										
R1/261	BEDROOM	W1/261	24.66	21.85	11.39%	1.11	1.01	9.10%	59.28%	14.74%
33 SKERRIES ROAD										
Gnd Floor										
R1/270	UNKNOWN	W1/270	19.64	17.84	9.16%	2.82	2.75	2.34%	100.00%	0.00%
		W2/270	64.08	62.44	>27					
		W3/270	64.04	62.50	>27					
		W4/270	18.57	17.13	7.75%					
		W5/270	17.23	15.83	8.13%					
		W6/270	63.66	62.20	>27					
1st Floor										
R2/271	BEDROOM	W2/271	23.29	21.51	7.64%	1.06	1.00	6.13%	52.21%	3.11%
31 SKERRIES ROAD										
Gnd Floor										
R1/280	UNKNOWN	W1/280	14.41	14.26	1.04%	6.10	6.02	1.33%	98.84%	0.00%
		W2/280	16.54	16.22	1.93%					
		W3/280	0.00	0.00	0.00%					
		W4/280	17.58	16.80	4.44%					
		W5/280	18.37	17.30	5.82%					
		W6/280	16.36	16.39	-0.18%					
R2/280	KITCHEN	W7/280	19.13	18.43	3.66%	0.77	0.75	2.59%	#N/A	#N/A
1st Floor										
R1/281	BEDROOM	W1/281	22.91	21.42	6.50%	1.04	0.99	4.99%	49.94%	5.50%

Room/Floor	Room Use	Window	%VSC			% Daylight Factor			Proposed No Sky	
			Exist	Prop	% Loss	Exist	Prop	% Loss	% of Room Area	% Loss of Existing
29 SKERRIES ROAD										
Gnd Floor										
R1/290	KITCHEN	W1/290	19.30	18.37	4.82%	0.77	0.75	2.09%	52.75%	2.67%
R2/290	UNKNOWN	W2/290	17.41	16.20	6.95%	6.33	6.11	3.42%	100.00%	0.00%
		W3/290	18.19	17.47	3.96%					
		W4/290	17.95	17.30	3.62%					
		W5/290	0.00	0.00	0.00%					
		W6/290	17.94	17.29	3.62%					
		W7/290	18.12	17.48	3.53%					
27 SKERRIES ROAD										
Gnd Floor										
R1/300	UNKNOWN	W1/300	15.27	15.24	0.20%	0.62	0.61	1.46%	45.77%	0.73%
		W2/300	16.49	16.44	0.30%					
		W3/300	19.53	19.24	1.48%					
R2/300	UNKNOWN	W4/300	19.23	18.88	1.82%	0.43	0.43	0.46%	#N/A	#N/A
1st Floor										
R1/301	BEDROOM	W1/301	22.04	21.32	3.27%	0.92	0.91	1.74%	45.66%	0.12%
25 SKERRIES ROAD										
Gnd Floor										
R1/310	UNKNOWN	W1/310	19.67	19.23	2.24%	0.45	0.45	0.22%	34.15%	0.22%
R2/310	UNKNOWN	W2/310	18.90	18.67	1.22%	0.53	0.52	1.32%	43.54%	0.73%
		W3/310	19.01	18.72	1.53%					
		W4/310	20.21	19.81	1.98%					
1st Floor										
R2/311	BEDROOM	W2/311	21.81	21.41	1.83%	0.96	0.95	0.63%	44.51%	-0.95%



**Liverpool Football Club**  
**Sunlight results for proposal job 14 11 December 2019**

Available sunlight as a percentage of  
annual unobstructed total (1486.0 Hrs)

Annual Unobstructed Total (1,000 hrs)										
		Existing %			Proposed %					
Room use	Window Ref	Summer	Winter	Total	Summer	Winter	Total	% Loss of Summer	% Loss of Winter	% Loss of Total
24 ALROY ROAD										
LIVINGROOM	W1/100	25.00	14.00	39.00	25.00	14.00	39.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/100	31.00	9.00	40.00	31.00	9.00	40.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/100	14.00	0.00	14.00	14.00	0.00	14.00	0.00%	0.00%	0.00%
BEDROOM	W1/101	29.00	8.00	37.00	29.00	8.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W2/101	29.00	8.00	37.00	29.00	8.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W3/101	29.00	8.00	37.00	29.00	8.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W1/102	39.00	11.00	50.00	39.00	11.00	50.00	0.00%	0.00%	0.00%
BEDROOM	W2/102	39.00	11.00	50.00	39.00	11.00	50.00	0.00%	0.00%	0.00%
BEDROOM	W3/102	39.00	11.00	50.00	39.00	11.00	50.00	0.00%	0.00%	0.00%
22 ALROY ROAD										
LIVINGROOM	W4/100	26.00	14.00	40.00	26.00	14.00	40.00	0.00%	0.00%	0.00%
LIVINGROOM	W5/100	32.00	8.00	40.00	32.00	8.00	40.00	0.00%	0.00%	0.00%
LIVINGROOM	W6/100	15.00	0.00	15.00	15.00	0.00	15.00	0.00%	0.00%	0.00%
BEDROOM	W4/101	30.00	7.00	37.00	30.00	7.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W5/101	30.00	7.00	37.00	30.00	7.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W6/101	30.00	7.00	37.00	30.00	7.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W4/102	40.00	11.00	51.00	40.00	11.00	51.00	0.00%	0.00%	0.00%
BEDROOM	W5/102	41.00	11.00	52.00	41.00	11.00	52.00	0.00%	0.00%	0.00%
BEDROOM	W6/102	41.00	10.00	51.00	41.00	10.00	51.00	0.00%	0.00%	0.00%
20 ALROY ROAD										
LIVINGROOM	W1/110	27.00	12.00	39.00	27.00	12.00	39.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/110	33.00	7.00	40.00	33.00	7.00	40.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/110	16.00	0.00	16.00	16.00	0.00	16.00	0.00%	0.00%	0.00%
BEDROOM	W1/111	31.00	6.00	37.00	31.00	6.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W2/111	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W3/111	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
18 ALROY ROAD										
LIVINGROOM	W6/110	27.00	12.00	39.00	27.00	12.00	39.00	0.00%	0.00%	0.00%
LIVINGROOM	W7/110	34.00	7.00	41.00	34.00	7.00	41.00	0.00%	0.00%	0.00%
LIVINGROOM	W8/110	16.00	0.00	16.00	16.00	0.00	16.00	0.00%	0.00%	0.00%
BEDROOM	W4/111	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W5/111	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W6/111	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W2/112	33.00	7.00	40.00	33.00	7.00	40.00	0.00%	0.00%	0.00%
16 ALROY ROAD										
LIVINGROOM	W1/120	27.00	12.00	39.00	27.00	12.00	39.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/120	34.00	7.00	41.00	34.00	7.00	41.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/120	16.00	0.00	16.00	16.00	0.00	16.00	0.00%	0.00%	0.00%
BEDROOM	W1/121	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W2/121	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W3/121	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W1/122	32.00	7.00	39.00	32.00	7.00	39.00	0.00%	0.00%	0.00%



		Existing %			Proposed %					
Room use	Window Ref	Summer	Winter	Total	Summer	Winter	Total	% Loss of Summer	% Loss of Winter	% Loss of Total
14 ALROY ROAD										
LIVINGROOM	W6/120	27.00	11.00	38.00	27.00	11.00	38.00	0.00%	0.00%	0.00%
LIVINGROOM	W7/120	34.00	6.00	40.00	34.00	6.00	40.00	0.00%	0.00%	0.00%
LIVINGROOM	W8/120	16.00	0.00	16.00	16.00	0.00	16.00	0.00%	0.00%	0.00%
BEDROOM	W4/121	32.00	6.00	38.00	32.00	6.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W5/121	32.00	5.00	37.00	32.00	5.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W6/121	32.00	5.00	37.00	32.00	5.00	37.00	0.00%	0.00%	0.00%
BEDROOM	W2/122	34.00	7.00	41.00	34.00	7.00	41.00	0.00%	0.00%	0.00%
W3/122		36.00	7.00	43.00	36.00	7.00	43.00	0.00%	0.00%	0.00%
12 ALROY ROAD										
LIVINGROOM	W1/130	25.00	11.00	36.00	25.00	11.00	36.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/130	32.00	4.00	36.00	32.00	4.00	36.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/130	14.00	0.00	14.00	14.00	0.00	14.00	0.00%	0.00%	0.00%
BEDROOM	W1/131	37.00	10.00	47.00	37.00	10.00	47.00	0.00%	0.00%	0.00%
BEDROOM	W2/131	30.00	4.00	34.00	30.00	4.00	34.00	0.00%	0.00%	0.00%
BEDROOM	W1/132	47.00	13.00	60.00	47.00	13.00	60.00	0.00%	0.00%	0.00%
BEDROOM	W2/132	45.00	9.00	54.00	45.00	9.00	54.00	0.00%	0.00%	0.00%
10 ALROY ROAD										
LIVINGROOM	W6/130	25.00	11.00	36.00	25.00	11.00	36.00	0.00%	0.00%	0.00%
LIVINGROOM	W7/130	33.00	4.00	37.00	33.00	4.00	37.00	0.00%	0.00%	0.00%
LIVINGROOM	W8/130	15.00	0.00	15.00	15.00	0.00	15.00	0.00%	0.00%	0.00%
BEDROOM	W3/131	30.00	4.00	34.00	30.00	4.00	34.00	0.00%	0.00%	0.00%
BEDROOM	W4/131	38.00	10.00	48.00	38.00	10.00	48.00	0.00%	0.00%	0.00%
BEDROOM	W3/132	38.00	7.00	45.00	38.00	7.00	45.00	0.00%	0.00%	0.00%
BEDROOM	W4/132	37.00	11.00	48.00	37.00	11.00	48.00	0.00%	0.00%	0.00%
8 ALROY ROAD										
LIVINGROOM	W1/140	25.00	11.00	36.00	25.00	11.00	36.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/140	36.00	6.00	42.00	36.00	6.00	42.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/140	20.00	0.00	20.00	20.00	0.00	20.00	0.00%	0.00%	0.00%
BEDROOM	W1/141	38.00	10.00	48.00	38.00	10.00	48.00	0.00%	0.00%	0.00%
BEDROOM	W2/141	34.00	4.00	38.00	34.00	4.00	38.00	0.00%	0.00%	0.00%
6 ALROY ROAD										
LIVINGROOM	W6/140	26.00	12.00	38.00	26.00	12.00	38.00	0.00%	0.00%	0.00%
LIVINGROOM	W7/140	37.00	7.00	44.00	37.00	7.00	44.00	0.00%	0.00%	0.00%
LIVINGROOM	W8/140	19.00	0.00	19.00	19.00	0.00	19.00	0.00%	0.00%	0.00%
BEDROOM	W3/141	34.00	4.00	38.00	34.00	4.00	38.00	0.00%	0.00%	0.00%
BEDROOM	W4/141	39.00	10.00	49.00	39.00	10.00	49.00	0.00%	0.00%	0.00%
4 ALROY ROAD										
LIVINGROOM	W1/150	18.00	10.00	28.00	18.00	10.00	28.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/150	38.00	5.00	43.00	38.00	5.00	43.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/150	17.00	0.00	17.00	17.00	0.00	17.00	0.00%	0.00%	0.00%
BEDROOM	W1/151	38.00	7.00	45.00	38.00	7.00	45.00	0.00%	0.00%	0.00%
BEDROOM	W2/151	38.00	7.00	45.00	38.00	7.00	45.00	0.00%	0.00%	0.00%
BEDROOM	W1/152	36.00	10.00	46.00	36.00	10.00	46.00	0.00%	0.00%	0.00%
2 ALROY ROAD										
LIVINGROOM	W6/150	19.00	10.00	29.00	19.00	10.00	29.00	0.00%	0.00%	0.00%
LIVINGROOM	W7/150	39.00	7.00	46.00	39.00	6.00	45.00	0.00%	14.29%	2.17%
LIVINGROOM	W8/150	20.00	2.00	22.00	20.00	1.00	21.00	0.00%	50.00%	4.55%
BEDROOM	W3/151	39.00	9.00	48.00	39.00	8.00	47.00	0.00%	11.11%	2.08%
BEDROOM	W4/151	39.00	9.00	48.00	39.00	8.00	47.00	0.00%	11.11%	2.08%
BEDROOM	W2/152	37.00	10.00	47.00	37.00	9.00	46.00	0.00%	10.00%	2.13%
73 ANFIELD ROAD										
Gnd Floor										
UNKNOWN	W2/160	6.00	0.00	6.00	4.00	0.00	4.00	33.33%	0.00%	33.33%
UNKNOWN	W3/160	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%

Room use	Window Ref	Existing %			Proposed %			% Loss of Summer	% Loss of Winter	% Loss of Total
		Summer	Winter	Total	Summer	Winter	Total			
UNKNOWN	W4/160	34.00	17.00	51.00	34.00	17.00	51.00	0.00%	0.00%	0.00%
UNKNOWN	W5/160	32.00	16.00	48.00	32.00	16.00	48.00	0.00%	0.00%	0.00%
UNKNOWN	W1/160	7.00	0.00	7.00	5.00	0.00	5.00	28.57%	0.00%	28.57%
UNKNOWN	W6/160	27.00	16.00	43.00	27.00	16.00	43.00	0.00%	0.00%	0.00%
<b>1st Floor</b>										
UNKNOWN	W1/161	29.00	17.00	46.00	29.00	17.00	46.00	0.00%	0.00%	0.00%
UNKNOWN	W2/161	26.00	16.00	42.00	26.00	16.00	42.00	0.00%	0.00%	0.00%
UNKNOWN	W3/161	25.00	15.00	40.00	25.00	15.00	40.00	0.00%	0.00%	0.00%
UNKNOWN	W4/161	20.00	16.00	36.00	20.00	16.00	36.00	0.00%	0.00%	0.00%
UNKNOWN	W5/161	16.00	11.00	27.00	16.00	11.00	27.00	0.00%	0.00%	0.00%
<b>Gnd Floor</b>										
UNKNOWN	W3/170	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
UNKNOWN	W4/170	12.00	0.00	12.00	7.00	0.00	7.00	41.67%	0.00%	41.67%
UNKNOWN	W5/170	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
UNKNOWN	W6/170	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
UNKNOWN	W7/170	4.00	0.00	4.00	2.00	0.00	2.00	50.00%	0.00%	50.00%
UNKNOWN	W8/170	20.00	4.00	24.00	18.00	4.00	22.00	10.00%	0.00%	8.33%
UNKNOWN	W9/170	35.00	19.00	54.00	34.00	19.00	53.00	2.86%	0.00%	1.85%
UNKNOWN	W10/170	24.00	20.00	44.00	24.00	20.00	44.00	0.00%	0.00%	0.00%
UNKNOWN	W13/170	21.00	4.00	25.00	19.00	4.00	23.00	9.52%	0.00%	8.00%
UNKNOWN	W14/170	37.00	18.00	55.00	35.00	18.00	53.00	5.41%	0.00%	3.64%
UNKNOWN	W15/170	24.00	21.00	45.00	24.00	21.00	45.00	0.00%	0.00%	0.00%
<b>1st Floor</b>										
UNKNOWN	W3/171	9.00	0.00	9.00	5.00	0.00	5.00	44.44%	0.00%	44.44%
UNKNOWN	W4/171	34.00	18.00	52.00	31.00	18.00	49.00	8.82%	0.00%	5.77%
UNKNOWN	W5/171	35.00	19.00	54.00	33.00	19.00	52.00	5.71%	0.00%	3.70%
UNKNOWN	W6/171	35.00	19.00	54.00	33.00	19.00	52.00	5.71%	0.00%	3.70%
UNKNOWN	W7/171	35.00	19.00	54.00	33.00	19.00	52.00	5.71%	0.00%	3.70%
<b>2nd Floor</b>										
UNKNOWN	W4/172	42.00	16.00	58.00	42.00	16.00	58.00	0.00%	0.00%	0.00%
UNKNOWN	W5/172	42.00	14.00	56.00	42.00	13.00	55.00	0.00%	7.14%	1.79%
UNKNOWN	W6/172	42.00	18.00	60.00	42.00	18.00	60.00	0.00%	0.00%	0.00%
UNKNOWN	W7/172	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
<b>75 ANFIELD ROAD</b>										
<b>Gnd Floor</b>										
UNKNOWN	W1/180	4.00	0.00	4.00	3.00	0.00	3.00	25.00%	0.00%	25.00%
UNKNOWN	W2/180	35.00	14.00	49.00	34.00	14.00	48.00	2.86%	0.00%	2.04%
UNKNOWN	W3/180	29.00	11.00	40.00	29.00	10.00	39.00	0.00%	9.09%	2.50%
UNKNOWN	W4/180	29.00	7.00	36.00	28.00	7.00	35.00	3.45%	0.00%	2.78%
UNKNOWN	W10/180	6.00	0.00	6.00	5.00	0.00	5.00	16.67%	0.00%	16.67%
UNKNOWN	W11/180	27.00	13.00	40.00	27.00	13.00	40.00	0.00%	0.00%	0.00%
UNKNOWN	W12/180	34.00	13.00	47.00	34.00	13.00	47.00	0.00%	0.00%	0.00%
<b>1st Floor</b>										
UNKNOWN	W1/181	6.00	0.00	6.00	3.00	0.00	3.00	50.00%	0.00%	50.00%
UNKNOWN	W2/181	36.00	18.00	54.00	35.00	18.00	53.00	2.78%	0.00%	1.85%
UNKNOWN	W3/181	31.00	15.00	46.00	31.00	15.00	46.00	0.00%	0.00%	0.00%
UNKNOWN	W4/181	33.00	11.00	44.00	32.00	11.00	43.00	3.03%	0.00%	2.27%
UNKNOWN	W5/181	20.00	4.00	24.00	20.00	4.00	24.00	0.00%	0.00%	0.00%
UNKNOWN	W7/181	7.00	0.00	7.00	6.00	0.00	6.00	14.29%	0.00%	14.29%
UNKNOWN	W8/181	28.00	17.00	45.00	28.00	17.00	45.00	0.00%	0.00%	0.00%
UNKNOWN	W9/181	35.00	17.00	52.00	35.00	17.00	52.00	0.00%	0.00%	0.00%
<b>2nd Floor</b>										
UNKNOWN	W1/182	6.00	0.00	6.00	4.00	0.00	4.00	33.33%	0.00%	33.33%
UNKNOWN	W2/182	32.00	20.00	52.00	31.00	20.00	51.00	3.13%	0.00%	1.92%
UNKNOWN	W3/182	17.00	18.00	35.00	17.00	18.00	35.00	0.00%	0.00%	0.00%

Room use	Window Ref	Existing %			Proposed %			% Loss of Summer	% Loss of Winter	% Loss of Total
		Summer	Winter	Total	Summer	Winter	Total			
UNKNOWN	W4/182	19.00	16.00	35.00	18.00	16.00	34.00	5.26%	0.00%	2.86%
UNKNOWN	W5/182	5.00	7.00	12.00	5.00	7.00	12.00	0.00%	0.00%	0.00%
UNKNOWN	W7/182	5.00	0.00	5.00	4.00	0.00	4.00	20.00%	0.00%	20.00%
UNKNOWN	W8/182	11.00	17.00	28.00	11.00	17.00	28.00	0.00%	0.00%	0.00%
UNKNOWN	W9/182	32.00	19.00	51.00	32.00	19.00	51.00	0.00%	0.00%	0.00%
<b>250 ANFIELD ROAD</b>										
<b>Gnd Floor</b>										
UNKNOWN	W1/190	22.00	1.00	23.00	22.00	1.00	23.00	0.00%	0.00%	0.00%
UNKNOWN	W2/190	14.00	10.00	24.00	14.00	10.00	24.00	0.00%	0.00%	0.00%
<b>1st Floor</b>										
UNKNOWN	W1/191	33.00	12.00	45.00	33.00	12.00	45.00	0.00%	0.00%	0.00%
UNKNOWN	W5/191	35.00	17.00	52.00	35.00	17.00	52.00	0.00%	0.00%	0.00%
UNKNOWN	W2/191	29.00	14.00	43.00	29.00	14.00	43.00	0.00%	0.00%	0.00%
<b>252 ANFIELD ROAD</b>										
<b>Gnd Floor</b>										
UNKNOWN	W3/190	19.00	10.00	29.00	19.00	10.00	29.00	0.00%	0.00%	0.00%
UNKNOWN	W5/190	26.00	7.00	33.00	26.00	7.00	33.00	0.00%	0.00%	0.00%
<b>1st Floor</b>										
UNKNOWN	W3/191	30.00	17.00	47.00	30.00	17.00	47.00	0.00%	0.00%	0.00%
UNKNOWN	W4/191	33.00	16.00	49.00	33.00	16.00	49.00	0.00%	0.00%	0.00%
<b>Gnd Floor</b>										
UNKNOWN	W2/200	23.00	7.00	30.00	23.00	7.00	30.00	0.00%	0.00%	0.00%
<b>1st Floor</b>										
UNKNOWN	W2/201	23.00	12.00	35.00	23.00	12.00	35.00	0.00%	0.00%	0.00%
<b>2nd Floor</b>										
UNKNOWN	W1/202	24.00	17.00	41.00	24.00	17.00	41.00	0.00%	0.00%	0.00%
<b>36 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
LIVINGROOM	W1/210	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/210	7.00	0.00	7.00	7.00	0.00	7.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/210	18.00	5.00	23.00	18.00	5.00	23.00	0.00%	0.00%	0.00%
<b>34 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
LIVINGROOM	W8/210	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
LIVINGROOM	W9/210	7.00	0.00	7.00	7.00	0.00	7.00	0.00%	0.00%	0.00%
LIVINGROOM	W10/210	14.00	1.00	15.00	14.00	1.00	15.00	0.00%	0.00%	0.00%
<b>32 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
LIVINGROOM	W1/220	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/220	7.00	0.00	7.00	7.00	0.00	7.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/220	18.00	5.00	23.00	18.00	5.00	23.00	0.00%	0.00%	0.00%
<b>30 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
LIVINGROOM	W9/220	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
LIVINGROOM	W10/220	7.00	0.00	7.00	7.00	0.00	7.00	0.00%	0.00%	0.00%
LIVINGROOM	W11/220	14.00	1.00	15.00	14.00	1.00	15.00	0.00%	0.00%	0.00%
<b>28 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
LIVINGROOM	W1/230	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
LIVINGROOM	W2/230	7.00	0.00	7.00	7.00	0.00	7.00	0.00%	0.00%	0.00%
LIVINGROOM	W3/230	18.00	4.00	22.00	18.00	4.00	22.00	0.00%	0.00%	0.00%
<b>26 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
LIVINGROOM	W10/230	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%

Room use	Window Ref	Existing %			Proposed %			% Loss of Summer	% Loss of Winter	% Loss of Total
		Summer	Winter	Total	Summer	Winter	Total			
LIVINGROOM	W11/230	7.00	0.00	7.00	7.00	0.00	7.00	0.00%	0.00%	0.00%
LIVINGROOM	W12/230	14.00	0.00	14.00	14.00	0.00	14.00	0.00%	0.00%	0.00%
<b>39 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
UNKNOWN	W1/240	5.00	0.00	5.00	5.00	0.00	5.00	0.00%	0.00%	0.00%
UNKNOWN	W2/240	3.00	0.00	3.00	3.00	0.00	3.00	0.00%	0.00%	0.00%
UNKNOWN	W3/240	21.00	4.00	25.00	21.00	4.00	25.00	0.00%	0.00%	0.00%
UNKNOWN	W4/240	3.00	0.00	3.00	3.00	0.00	3.00	0.00%	0.00%	0.00%
UNKNOWN	W5/240	5.00	0.00	5.00	5.00	0.00	5.00	0.00%	0.00%	0.00%
UNKNOWN	W6/240	17.00	4.00	21.00	17.00	4.00	21.00	0.00%	0.00%	0.00%
<b>31 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
UNKNOWN	W1/280	5.00	0.00	5.00	5.00	0.00	5.00	0.00%	0.00%	0.00%
UNKNOWN	W2/280	4.00	0.00	4.00	4.00	0.00	4.00	0.00%	0.00%	0.00%
UNKNOWN	W3/280	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
UNKNOWN	W4/280	4.00	0.00	4.00	4.00	0.00	4.00	0.00%	0.00%	0.00%
UNKNOWN	W5/280	5.00	0.00	5.00	5.00	0.00	5.00	0.00%	0.00%	0.00%
UNKNOWN	W6/280	17.00	4.00	21.00	17.00	4.00	21.00	0.00%	0.00%	0.00%
<b>29 SKERRIES ROAD</b>										
<b>Gnd Floor</b>										
UNKNOWN	W2/290	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
UNKNOWN	W3/290	5.00	0.00	5.00	6.00	0.00	6.00	-20.00%	0.00%	-20.00%
UNKNOWN	W4/290	3.00	0.00	3.00	3.00	0.00	3.00	0.00%	0.00%	0.00%
UNKNOWN	W5/290	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%
UNKNOWN	W6/290	3.00	0.00	3.00	3.00	0.00	3.00	0.00%	0.00%	0.00%
UNKNOWN	W7/290	5.00	0.00	5.00	6.00	0.00	6.00	-20.00%	0.00%	-20.00%

## Appendix 6: Design and Construction Phase Lighting Mitigation Strategy

### Design phase mitigation strategy

The design development process will apply the following primary mitigation where legally compliant, practicable and safe to do so, as outlined in Table 1 below.

Area of Influence / Activity	Primary Mitigation	Applicable Development Phase (Construction and/or Operation)
Lighting installation	LFC will ensure that suitable colour temperatures are selected for light sources where required to mitigate impacts on wildlife, reduce sky glow and minimise risk of human response to lighting where legally compliant, practicable and safe to do so.	C / O
Lighting installation	LFC will utilise applicable lighting standards from relevant British / European / UEFA standards to ensure lighting is appropriate to the work that is being undertaken, that areas are not over lit and to reduce wasted energy.	O
Lighting installation	<p>LFC will take measures to reduce obtrusive light, taking into account the safety and operational requirements of the site, including:</p> <ol style="list-style-type: none"> <li>1. Ensure that the reduction and control of obtrusive light is an integral part of the landscaping and built environment design process.</li> <li>2. Ensuring sensitive receptors and areas are considered during the lighting design process with a view to reducing obtrusive light.</li> <li>3. Specification of suitable photometric distribution during design development to reduce sky glow, control spill light and luminous intensity.</li> <li>4. Specification of suitable lighting control equipment to enable dimming or switching of light sources during times when artificial lighting is not required.</li> </ol>	C / O

Area of Influence / Activity	Primary Mitigation	Applicable Development Phase (Construction and/or Operation)
	5. Were appropriate apply supplementary photometric control methods such as baffles, shields or louvres.	
	6. Considering the position, tilt, orientation and mounting height of luminaires to reduce obtrusive light.	
Lighting installation	The limitations for obtrusive light obtained from the ILP GN01:2011 <sup>82</sup> provided in <b>Table 5.2</b> of this report should be adhered to during the construction and operational phase.	C/O
Lighting installation	Lighting levels should be selected from relevant British / European standards to ensure lighting is appropriate to the work that is being undertaken and that areas are not over lit. Refer to British Standard Light and Lighting – Lighting of work places Part 2: Outdoor work places BS EN 12464-2 2014 <sup>83</sup> .	C
Lighting installation	Temporary floodlighting should be mounted at a tilt of 0° and utilise a double asymmetrical photometric configuration. The ILP advises in GN01:2011 <sup>84</sup> that a maximum main beam angle of 70° should be utilised to minimise the effects of glare along with spill and upward light.	C
Lighting installation	Temporary lighting will be located and directed away from residential properties.	C
Lighting installation	LFC will monitor the effectiveness of lighting mitigation measures for the site. Monitoring will consist of surveys that will involve the measurement of lighting levels following the baseline assessment methodology with measurements compared against the assessment. Improvements will be carried out where necessary and practicable to do so,	C

<sup>82</sup> Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

<sup>83</sup> British Standard Light and Lighting – Lighting of work places Part 2: Outdoor work places BS EN 12464-2 2014.

<sup>84</sup> Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

Area of Influence / Activity	Primary Mitigation	Applicable Development Phase (Construction and/or Operation)
	along with periodic maintenance and inspections.	

### Construction phase mitigation strategy

It is anticipated that obtrusive light emissions produced during construction activities would be controlled through the implementation of a Construction Environmental Management Plan (CEMP). The mitigations incorporated within the CEMP will be informed by reference to the ILP GN01:2011<sup>85</sup> guidance notes and would include prevention measures, such as those provided within Table 2 as appropriate and set out requirements for ongoing monitoring and liaison with the local community, and LCC. These primary mitigation measures would be considered an integral part of the Proposed Scheme and considered as part of the Schedule of Mitigation. Therefore, effects of obtrusive light emissions are unlikely to be considered significant and will not be considered within the ES.

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<sup>85</sup> Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

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