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Environmental Statement Volume 1: Main Report

# **ABERFELDY** VILLAGE MASTERPLAN

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# Chapter 1: Introduction

## INTRODUCTION

**1.1** This Environmental Statement (ES) has been prepared on behalf of The Aberfeldy New Village LLP (hereinafter referred to as 'the Applicant') in accordance with the statutory procedures set out in The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 as amended in 2018 and 2020[1] ('the EIA Regulations').

**1.2** The Applicant is seeking permission for a hybrid planning application in relation to land north of East India Dock Road (A13), east of the Blackwall Tunnel Northern Approach Road (A12) and to the south-west of Abbot Road (the "Site"), a Site Location Plan is presented in **Figure 1.1**. The hybrid planning application is formed of detailed development proposals in respect of Phase A for which no matters are reserved ("Detailed Proposals"), and outline development proposals for the remainder of the Site, with all matters reserved ("Outline Proposals"). The Detailed and Outline Proposals together are referred to as the Proposed Development.

**1.3** The Proposed Development comprises the comprehensive redevelopment of the Site. The Proposed Development will provide new retail and workspace floorspace along with residential dwellings and the pedestrianisation of the A12 Abbott Road vehicular underpass to create a new east to west route. The Proposed Development will also provide significant, high quality public realm, including a new Town Square, a new High Street and a public park.

**1.4** The Site falls within the administrative boundary of the London Borough of Tower Hamlets (LBTH).

**1.5** The Applicant is seeking permission for the following (herein referred to as the 'Proposed Development'):

*Hybrid application seeking detailed planning permission for Phase A and outline planning permission for future phases, comprising: Outline planning permission (all matters reserved) for the demolition of all existing structures and redevelopment to include a number of buildings (up to 100m Above Ordnance Datum (AOD)) and up to 141,014m$^2$ Gross External Area (GEA) of floorspace comprising the following mix of uses:*

- *Residential (Class C3);*
- *Retail, workspace, food and drink uses (Class E);*
- *Car and cycle parking;*
- *Formation of new pedestrian route through the conversion of the existing vehicular underpass;*
- *Landscaping including open spaces and public realm; and*
- *New means of access, associated infrastructure and highways works.*

*In Full, for residential (Class C3), retail, food and drink uses and a temporary marketing suite (Class E and Sui Generis), together with access, car and cycle parking, associated landscaping and new public realm, and private open space.*

**1.6** **Figure 1.1 and Figure 1.2** respectively show the Site location and an indicative red line boundary with the extent of the detailed part of the Detailed Proposals shown in grey shading and the extent of the Outline Proposals shown in blue shading.

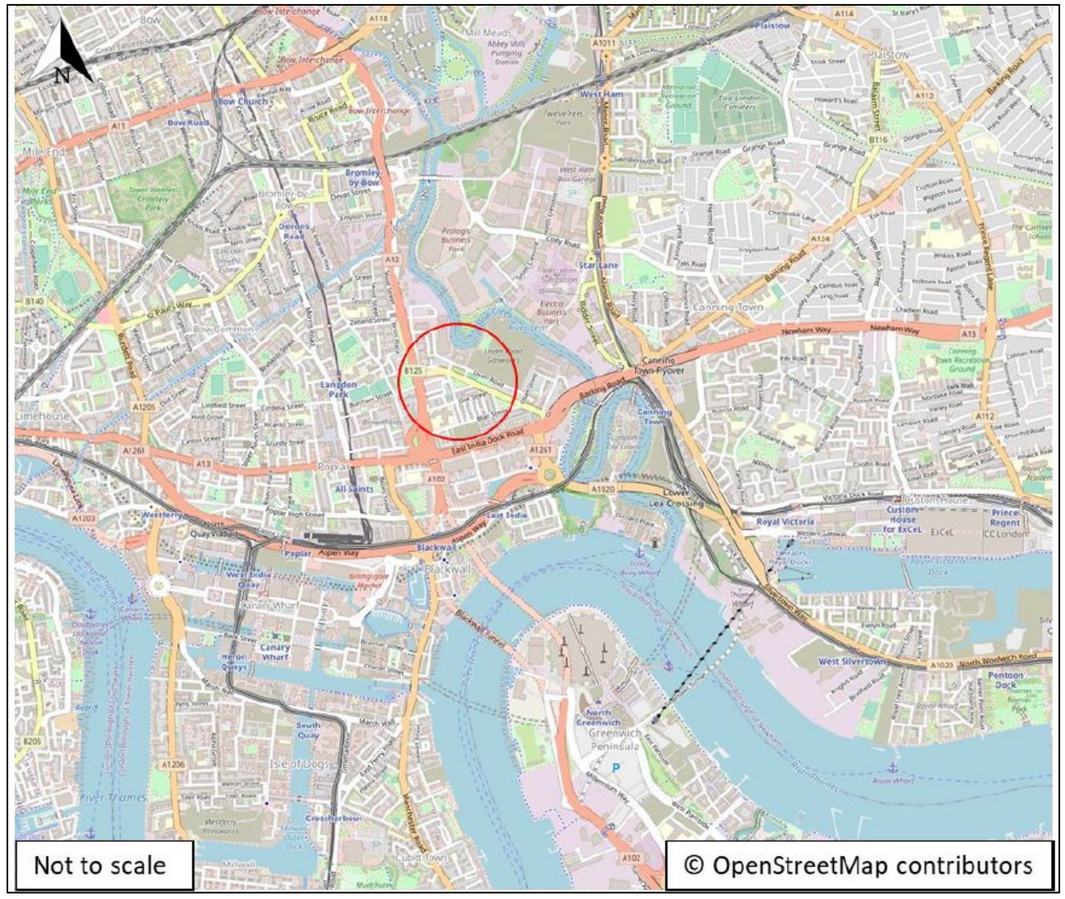
**1.7** The Detailed Proposals of the Proposed Development comprise Phase A and the Outline Proposals of the Proposed Development comprise the remainder of the Site, i.e., Phases B, C and D. Further details of the Proposed Development are presented within **ES Volume 1, Chapter 4: The Proposed Development.**

**1.8** Environmental Impact Assessment ('EIA') is a process carried out which examines available environmental information to ensure that the likely significant environmental effects of certain projects are identified and assessed before a decision is taken on whether a project is granted planning permission. This means environmental issues can be identified at an early stage and projects can then be designed to avoid or to minimise adverse environmental effects, and appropriate mitigation and monitoring can be implemented.

**1.9** Given the scale and nature of the Proposed Development, it is considered to constitute 'EIA development' under the EIA Regulations, and as such an EIA has been undertaken and reported upon within this ES. A Scoping Report was sent to the LBTH on the 12th August 2021, detailing the proposed scope of topics included and excluded as part of the ES. A formal Scoping Opinion was received by the LBTH on the 8th September 2021 which responded to the Scoping Report. A copy of the Scoping Report is presented within **ES Volume 3, EIA Methodology – Annex 1** and a copy of the formal Scoping Opinion received by LBTH can be found within **ES Volume 3, EIA Methodology – Annex 2.**

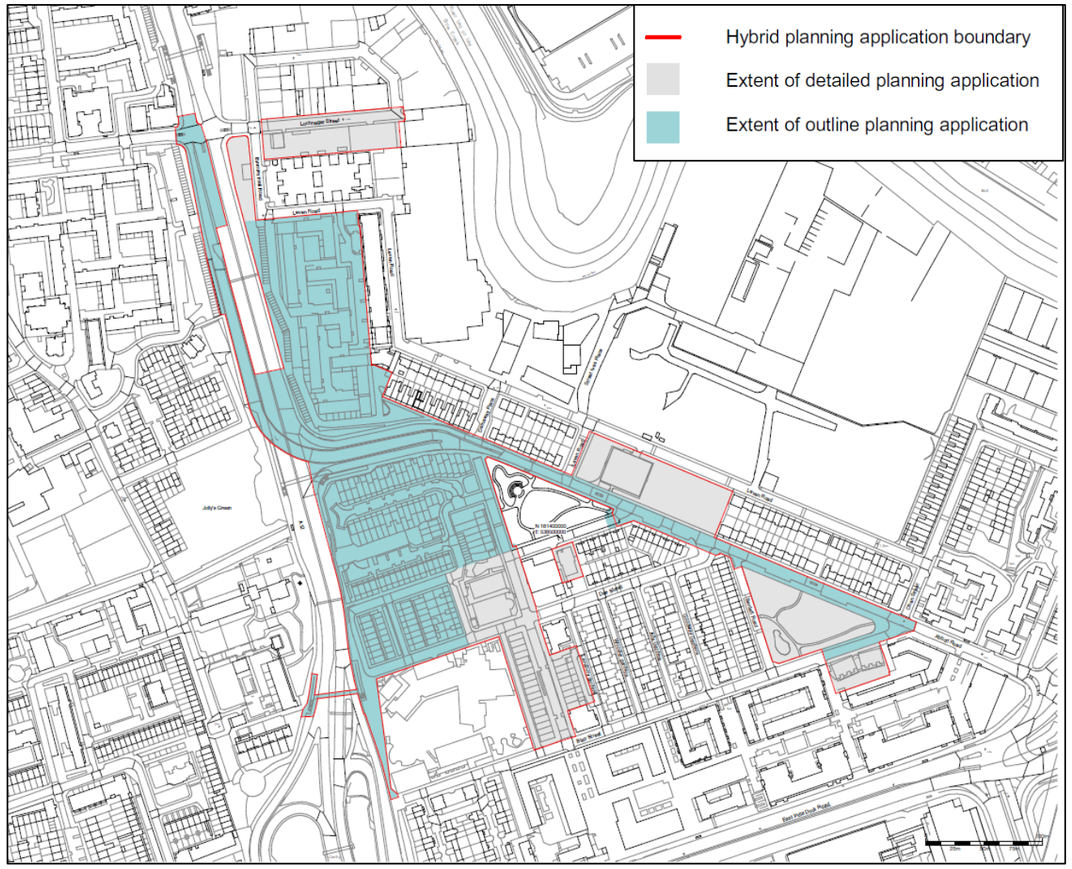
**1.10** In accordance with the EIA Regulations, this ES describes the likely significant environmental and socio-economic effects of the Proposed Development during demolition and construction and on subsequent completion and occupation.

**Figure 1.1 Site Location**




[1] *The Town and Country Planning ('Environmental Impact Assessment) Regulations 2017 (as amended in 2018 and 2020)*

**Figure 1.2 Indicative Red Line Boundary**




**SITE INFORMATION**

**1.11** The Site covers an area of 8.14 hectares(ha) and is approximately centred at National Grid Reference: Easting 538412, Northing 181392. The LBTH will determine the planning application and will be reviewing the EIA. Due to the scale and nature of the Proposed Development, it will also be referrable to the Greater London Authority (GLA).

**1.12** The Site's immediate surroundings currently comprises a mix of residential, commercial uses and transport infrastructure. The Site is bordered by:

- Bromley Hall School and Lochnagar Street and industrial land to the north;
- B125 Abbott Road and Leven Road to the east;
- Culloden Primary School and residential areas off Blair Street (including those built within Phases 1-3 as part of the earlier Outline Planning Permission) to the south; and,
- A12 and properties on Joshua Street to the west.

**1.13** The Site currently consists of the following buildings:

- Abbott Road;
- Aberfeldy Street;
- Balmore Close;
- Blairegowrie Court;
- Heather House;
- Jura House;
- Kilbrennan House;
- Nos. 33-35 Findhorn Street;
- Tartan House;
- The Aberfeldy Practice, 2A Ettrick St (building to be retained);
- 384 Abbott Road (building to be retained);
- Thistle House;
- Aberfeldy Neighborhood Centre;
- Lochnagar Street;
- Nairn Street Estate; and
- Leven Road Open Space and Braitwaite Park.

**1.14** Leven Road Open Space and Braithwaite Park are included within the Proposed Development and will be retained and enhanced as public open space.

**1.15** The majority of the above buildings will require demolition as part of the Proposed Development. Further details on the demolition and construction works associated with the Proposed Development are presented within **ES Volume 1, Chapter 5: Demolition and Construction**.

**1.16** Further detail on the existing baseline context is presented within **ES Volume 1, Chapter 2: Alternatives and Design Evolution**, **ES Volume 1, Chapters 6-14, and ES Volumes 2-3.**

## THE LEGISLATIVE REQUIREMENTS FOR AN EIA

**1.17** Applications for development that are covered by the EIA Regulations are termed 'EIA Applications'.

**1.18** The requirement for an EIA is based on the likelihood of significant environmental effects arising from a proposed development; and it is either mandatory or conditional depending on the classification of the development project. EIA applications are divided into Schedule 1 and Schedule 2 applications under the EIA Regulations.

**1.19** Schedule 1 developments constitute those that are likely to have significant effects on the environment, such as major chemical or petrochemical projects and construction of ground or air transport infrastructure, and for which EIA is mandatory. For all other developments which fall under the project descriptions in Schedule 2, the need for an EIA is determined based on set criteria as follows:

- It is within one of the classes of development stated in Schedule 2; AND
- EITHER it exceeds the applicable threshold criteria for that class of development in Schedule 2; OR it is to be carried out in part or all of a 'sensitive area[2]'; AND
- It is likely to have significant effects on the environment by virtue of factors such as its nature, size or location.

**1.20** The EIA Regulations Schedule 2 Part 10(b), states that for "*urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas*", the thresholds which determine the need for a development to be screened for the potential for environmental effects comprise:

- "(i) the development includes more than 1 hectare of urban development which is not dwelling / house development; OR
- (ii) the development includes more than 150 dwellings; OR
- (iii) the overall area of the development exceeds 5 hectares".

**1.21** In accordance with the above, further consideration has been given as to the potential for likely significant environmental effects associated with the Proposed Development, as the Proposed Development seeks permission for more than 150 dwellings.

**1.22** Given the proposed scale and nature of the Proposed Development, and the Site location, it is considered that the Proposed Development has the *potential* to generate likely significant environmental effects, in relation to socio-economics; traffic and transport; noise and vibration; flood risk and drainage; archaeology; air quality; daylight, sunlight and overshadowing; wind microclimate; townscape, built heritage and visual; and climate change aspects.

**1.23** Therefore, the Proposed Development constitutes 'EIA development' under the EIA Regulations. As such, the Applicant has undertaken an EIA and the results of this are presented in this **ES (Volumes 1, 2 and 3)** which has been submitted alongside the planning application.

**1.24** Regulation 18(3) of the EIA Regulations requires that an ES includes the information set out in Part 1 of Schedule 4 that is reasonably required to assess the environmental effects of the Proposed Development and which the Applicant can, having regard to current knowledge and methods of assessment, reasonably be required to compile. The information required under Paragraph 1 of Schedule 4 of the EIA Regulations and its location within this ES is presented in **ES Volume 3, Appendix Introduction – Annex 1.**

### *Competent Experts*

**1.25** This EIA has been carried out by Trium Environmental Consulting LLP ('Trium') and several technical specialists. Regulation 18 of the EIA Regulations requires an applicant to *"(a) … ensure that the environmental statement is prepared by competent experts;'* and also requires that *'(b) the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts",* to ensure the completeness and quality of the ES. In accordance with this requirement, the following statement is provided:

*"Trium is an environmental consultancy specialising in urban regeneration and property development projects in the UK, with a specific focus in London. Trium's Partners and Employees have extensive experience in managing the environmental issues and impacts surrounding large scale, high profile urban regeneration development projects. The Partners and Employees of Trium have, over the course of their careers to date (including with former employers), project directed, managed or contributed to over 450 EIAs within the residential, retail, leisure, commercial, cultural, infrastructure and industrial sectors. They have particular expertise in London based development projects. Trium's lead EIA coordinator for Aberfeldy Village Masterplan has over 17 years' experience of managing EIA's within the UK".*

**1.26** The technical specialists are identified within the introductory table of each of the technical chapters of this ES (**ES Volume 1, Chapters 6 to 14 and ES Volume 2: Townscape, Visual Impact and Heritage Assessment**). The relevant expertise and experience of each technical specialist which provides further detail on those preparing the ES is provided in **ES Volume 3, Appendix Introduction – Annex 2.**

## STRUCTURE OF THE ES

**1.27** This ES comprises of three volumes and a separate Non-Technical Summary (NTS) document:

- **ES Volume 1: Main Report** – a document which forms the main body of the ES and which comprises the following non-technical and technical chapters:
  - Chapter 1: Introduction;
  - Chapter 2: EIA Methodology;
  - Chapter 3: Alternatives and Design Evolution;
  - Chapter 4: The Proposed Development;
  - Chapter 5: Demolition and Construction;
  - Chapter 6: Socio-Economics;
  - Chapter 7: Traffic and Transport;
  - Chapter 8: Air Quality;
  - Chapter 9: Climate Change
  - Chapter 10: Noise and Vibration;
  - Chapter 11: Archaeology;
  - Chapter 12: Water Resources, Drainage and Flood Risk;
  - Chapter 13: Wind Microclimate;
  - Chapter 14: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare;
  - Chapter 15: Effect Interactions;
  - Chapter 16: Likely Significant Effects;
  - Chapter 17: Mitigation and Monitoring; and
  - Chapter 18: Glossary and Abbreviations.
- **ES Volume 2: Townscape, Visual Impact and Heritage Assessment (TVIHA)**
  - Part 1: Townscape and Visual Impact Assessment (TVIA) document accompanied by a full set of views and verified images; and
  - Part 2: Built Heritage Assessment.
- **ES Volume 3: Technical Appendices** – comprises background data and information, including supporting technical reports, tables, figures and surveys. The following appendices are included;
  - **Appendix Introduction**
    - Annex 1: EIA Wayfinding
    - Annex 2: Statement of Competence
  - **Appendix Methodology**
    - Annex 1: EIA Scoping Report
    - Annex 2: EIA Scoping Opinion
    - Annex 3: EIA Scoping Opinion Response

[2] *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (amended), 2(1) "sensitive area"*

  - Annex 4: Cumulative Schemes List and Map
  - Annex 5: Cumulative Schemes Assessment Matrix
- **Appendix Demolition and Construction**
  - Annex 1: Outline Construction Environmental Management Plan (CEMP)
- **Appendix Socio Economics**
  - Annex 1: Socio-Economics Planning Policy Context
  - Annex 2: Education and Healthcare Facilities within Local Impact Area
- **Appendix Air Quality**
  - Annex 1: Glossary
  - Annex 2: Traffic Data
  - Annex 3: Model Verification Study
- **Appendix Climate Change**
  - Annex 1: Trium Climate Change Technical Note
- **Appendix Noise and Vibration**
  - Annex 1: Introduction to Noise
  - Annex 2: Glossary of Terms
  - Annex 3: Legislation, Policy and Guidance
  - Annex 4: Unattended Survey Results – P1
  - Annex 5: Unattended Survey Results – P2
  - Annex 6: Unattended Survey Results – P3
  - Annex 7: Unattended Survey Results – P4
  - Annex 8: Statistical Analysis of Background Sound Levels – P1
  - Annex 9: Statistical Analysis of Background Sound Levels – P2
  - Annex 10: Statistical Analysis of Background Sound Levels – P3
  - Annex 11: Statistical Analysis of Background Sound Levels – P4
  - Annex 12: Daytime Noise Contour, 1.5m
  - Annex 13: Night-time Noise Contour, 1.5m
  - Annex 14: ANC Acoustics Ventilation and Overheating Risk Categories
  - Annex 15: Traffic Data
- **Appendix Water Resources, Drainage, Flood Risk**
  - Annex 1: Flood Risk Assessment
  - Annex 2: Drainage Strategy
  - Annex 3: Thames Water – Potable Water Supply Correspondence
  - Annex 4: Sustainable Urban Drainage System (SuDS) Proforma
- **Appendix Archaeology**
  - Annex 1: Archaeological Desk Based Assessment
- **Appendix Wind Microclimate**
  - Annex 1: Policy and Guidance
  - Annex 2: Technical Appendix
- **Appendix Daylight, Sunlight, Overshadowing; Light Pollution and Solar Glare**
  - Annex 1: Planning Policy
  - Annex 2: Methodology and Baseline Results
  - Annex 3: Scenario Overviews and Window Maps
  - Annex 4: Daylight and Sunlight Results
  - Annex 5: Overshadowing Results
  - Annex 6: Solar Glare Results
- **Appendix Built Heritage**
  - Annex 1: Built Heritage Statement

### *Non-Technical Summary*

**1.28** A Non-Technical Summary ('NTS') document has been prepared and comprises part of the ES, as required by the EIA Regulations. The NTS is a document that is submitted as part of the planning application which provides a concise summary of the ES written in non-technical language. The NTS presents a summary of the Proposed Development, the alternatives considered by the Applicant, the residual likely significant environmental and socio-economic effects and any identified mitigation measures.

## LOCATION OF THE INFORMATION WITHIN THE ES

**1.29** Regulation 18(3) of the EIA Regulations states that an ES should include at least:

> *"a description of the proposed development comprising information on the site, design, size and other relevant features of the development;*
>
> *a description of the likely significant effects of the proposed development on the environment;*
>
> *a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
>
> *a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;*
>
> *a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*
>
> *any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected."*

**1.30** In addition, Regulation 18(3), requires that an ES includes the information set out in Schedule 4 of the EIA Regulations and that is reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile.

**1.31** A 'wayfinding' document setting out where the above information in addition to that required under Schedule 4 of the EIA Regulations can be located within this ES is presented in **ES Volume 3: Appendix Introduction – Annex 1**.

**1.32** A glossary of terms is included in **ES Volume 1, Chapter 18: Glossary and Abbreviations** for reference.

## ES AVAILABILITY AND COMMENTS

**1.33** The ES is available for viewing on the LBTH'S planning portal (Search and comment on planning applications (towerhamlets.gov.uk).

**1.34** A paper copy of the ES is not currently available for viewing by the public at the LBTH'S Planning Department due to Covid-19 in line with temporary guidance issued by the Ministry of Housing, Communities & Local Government[3].

[3] *https://www.gov.uk/guidance/consultation-and-pre-decision-matters*

**1.35** Comments on the planning application can be forwarded to the LBTH at the following address:

Tower Hamlets Council
Town Hall
Mulberry Place
5 Clove Crescent
E14 2BG

**1.36** Electronic Copies of the NTS are available free of charge, for further details or to request an electronic copy of the NTS contact hello@triumenv.co.uk or Tel: +44 (0) 203 887 7118 or by post at the address below:

Trium Environmental Consulting LLP
4 Cavendish Square
London
W1G 0PG

**1.37** Printed copies of the NTS and ES and electronic copies of the ES can also be purchased from Trium Environmental Consulting LLP; for further details contact hello@triumenv.co.uk or Tel: +44 (0) 203 887 7118 or by post at the address above.

# Chapter 2: EIA Methodology

## INTRODUCTION

**2.1** This chapter of the ES sets out the overall approach to, and methodology for, undertaking the EIA. It details the process for identifying the environmental issues (or 'topics') to be included in the EIA and the method of assessing the likely significant effects that have the potential to arise as a result of the Proposed Development, both during the demolition and construction works, and on completion and occupation of the Proposed Development.

**2.2** Further detail on how the assessment methodology is applied to each topic is presented within the respective technical chapters of this **ES Volume 1, Chapters: 6 - 14**.

## OVERVIEW OF THE PLANNING APPLICATION

### *Form of the Planning Application*

**2.3** The Applicant is seeking permission for a Proposed Development that includes both outline and detailed Proposals. As such, the level of detail submitted as part of the planning application relating to each element of the Proposed Development varies.

**2.4** The Proposed Development will be delivered across four phases; Phase A, B, C and D. Phase A involves demolition of all existing structures and comprises the detailed element of the Proposed Development (the 'Detailed Proposals'), and Phases B, C and D forms the outline element of the planning application (the 'Outline Proposals'). The boundaries of the Phases are illustrated on **Figure 2.1**. Refer to **ES Volume 1, Chapter 5: Demolition and Construction** for the Demolition Plan.

**2.5** The Outline Proposals of the planning application reserve all matters for later approval by the LBTH through the submission of reserved matters applications (RMAs').

**2.6** The Town and Country (Development Management Procedure) (England) Order 2015 ('DMPO') sets out requirements and guidance for outline planning applications. In accordance with the DMPO, the following matters are reserved for later approval for the Outline Proposals:

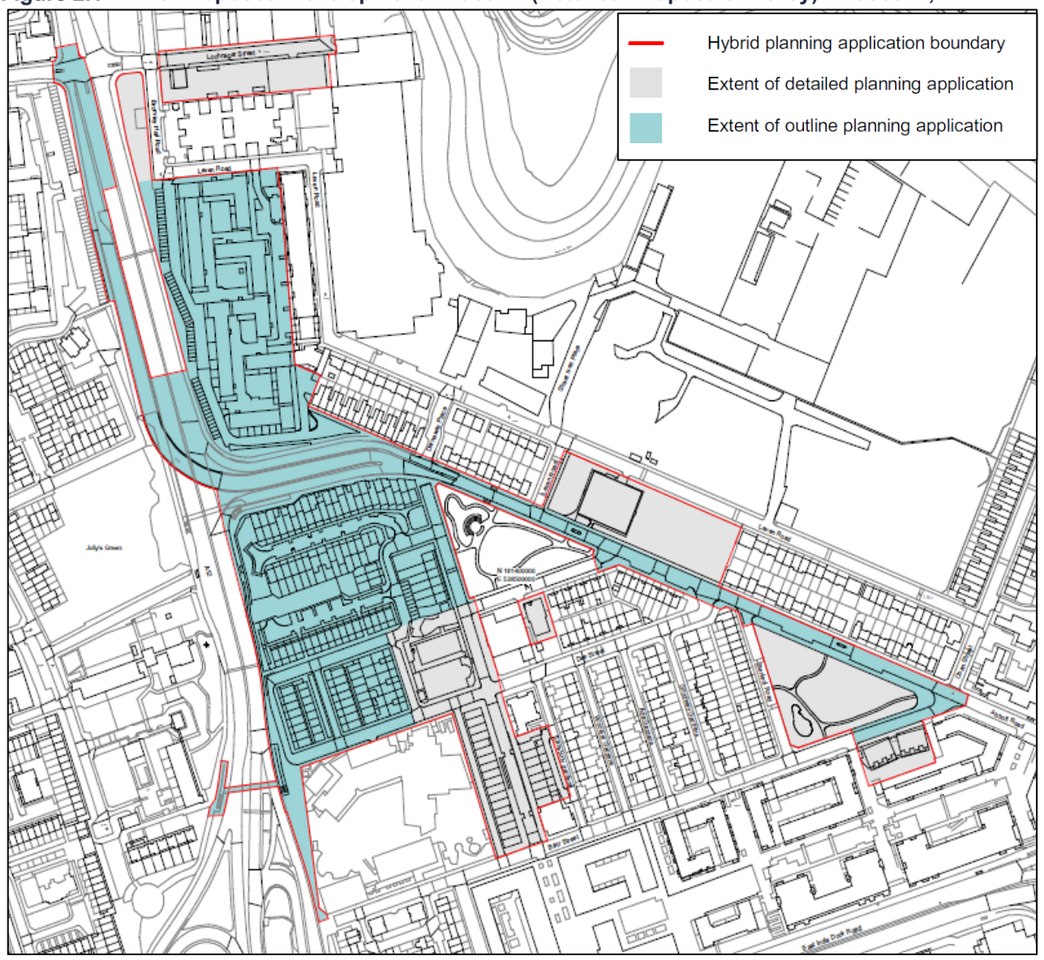
- **Amount of Development** – The specifics in terms of exact amount of floorspace for each land use sought for approval is not provided at this stage. Instead, a defined maximum land use quantum proposed within allocated land parcels for each Use Class is provided. As further described within **ES Volume 1, Chapter 4: The Proposed Development**, the specific amount of development is set out for each land use class for the Detailed Proposals and specifies an 'up to maximum' amount of development for each land use class proposed for the Outline proposals. The Development Specification sets out the Land Use Quantum and Land Use Distribution across the Site;
- **Layout** – As defined in the DMPO "the way in which buildings, routes and open spaces within the development are provided, situated and orientated in relation to each other" is reserved. Although reserved, the planning application seeks outline approval of parameters associated with the layout of the land uses and associated key open spaces and routes as set out in the Parameter Plans;
- **Scale** – As defined in the DMPO "*the height, width and length of each building in relation to their surroundings*" is reserved. However, in compliance with the DMPO, the planning application seeks approval for the maximum scale of the buildings from existing ground levels as shown on Parameter Plans;
- **Appearance** – As defined in the DMPO "the aspects of a building or place within the development which determine the visual impression the building or place makes, including the external built form of the development, its architecture, materials, decoration, lighting, colour and texture" are reserved. However, the planning application seeks approval for a set of guiding design parameters through the Design Code, which will guide the detailed design and establish principles and/ or a framework in relation to the appearance of the buildings which are to be applied for at a reserved matters stage;
- **Landscaping** – As defined in the DMPO "the treatment of land (other than buildings) for the purpose of enhancing or protecting the amenities of the site and the area in which it is situated and includes— (a) screening by fences, walls or other means; (b) the planting of trees, hedges, shrubs or grass; (c) the formation of banks, terraces or other earthworks; (d) the laying out or provision of gardens, courts, squares, water features, sculpture or public art; and (e) the provision of other amenity features" is reserved. An illustrative landscape masterplan is also submitted with the planning application which illustrates how the development may come forward in the future in terms of open space and landscaping. The illustrative masterplan is used for informative purposes only and is not used as the basis of assessment within the EIA; and
- **Access** – As defined in the DMPO "means the accessibility to and within the site, for vehicles, cycles and pedestrians in terms of the positioning and treatment of access and circulation routes and how these fit into the surrounding access network" is reserved. Primary, Secondary and Tertiary Routes (Pedestrian / Cyclist) within the site and Vehicle and Pedestrian Site Access locations to the site are defined for the Outline Proposals within the Parameter Plans.

**2.7** The Outline Proposals of the planning application provide the Applicant with flexibility as to the uses that could be brought forward within this element of the Site. The Detailed Proposals of the planning application are seeking approval for detailed plans showing the layout, scale, appearance, landscape, access and a quantum of development.

**2.8** An Illustrative Masterplan, inclusive of landscape character, has also been prepared to alongside the planning application. The Illustrative Masterplan encompasses the Detailed Proposals of the Proposed Development in combination with a deliverable scheme that could come forward within the parameters sought for approval in the Outline Proposals.

**2.9** Further details of the Proposed Development sought for approval and assessed within this ES are presented within **ES Volume 1, Chapter 4: The Proposed Development.**

**Figure 2.1 The Proposed Development Phase A (Detailed Proposals - Grey) Phases B, C AND D**



### *Basis of Assessment*

**2.10** The assessments contained within each of the technical assessments (**ES Volume 1, Chapters 6 to 14** *and in* **ES Volume 2)** are based on the Proposed Development sought for approval as illustrated on the Parameter Plans, Development Specification and Design Codes for the Outline Proposals and the detailed plans and Area and Accommodation Schedule sought for approval for the Detailed Proposals. The information assessed differs in each technical discipline but is set out clearly in each chapter.

### *Assessment of the Outline Proposals in the EIA – Phases B, C and D*

**2.11** The outline planning application includes a set of control documents which describe the principal components of the Outline Proposals of the Proposed Development, provide parameters that guide future RMAs', and act as controls to limit development within the parameters set. These documents set out the information required to allow the impacts of the outline proposals of the Proposed Development to be identified and assessed with sufficient certainty.

**2.12** The Control Documents that comprise the Outline proposals and for which outline planning permission is sought are as follows:

- **Development Specification** – a document which defines and describes the principal components of the Proposed Development, including the form and content of the outline planning application as well as the parameters for future RMA's. The Development Specification outlines the maximum amount of development that could come forward across the site; land use quantum (maximum areas per non-residential Use Class) and distribution for both residential and non-residential uses, open space provision, access arrangements, building heights and density across the Proposed Development. The Development Specification includes the maximum number of residential units within the Outline Proposals and an indicative residential unit type and tenure mix based on the site wide affordable housing provision, illustrative masterplan and policy requirements. Land Use Classes which could be bought forward in each plot has also been specified, including potential flexibility for which uses come forward for each plot.
- **Parameter Plans** – present outline parameters associated with the scale, layout, uses, and access for the Proposed Development, comprising:

| Parameter Plan | Drawing Reference |
|---|---|
| Site Location Plan | 3663 - LB - ZZ - 00 - DR - A - 000001 |
| Existing Site Plan | 3664 - LB - ZZ - 00 - DR - A - 000002 |
| Existing Buildings Plan | 3665 - LB - ZZ - ZZ - DR - A - 000003 |
| Existing Site Levels | 3666 - LB - ZZ - 00 - DR - A - 000004 |
| Existing Site Sections | 3667 - LB - ZZ - XX - DS - A - 000005 |
| Demolition Plan | 3663 - LB - ZZ - 00 - DR - A - 000010 |
| Indicative Construction Phasing | 3663 - LB - ZZ - 00 - DR - A - 000011 |
| Parameter Plan - Outline and Full Application Areas | 3663 - LB - ZZ - 00 - DR - A - 000020 |
| Parameter Plan - Building Plots | 3663 - LB - ZZ - 00 - DR - A - 000021 |
| Parameter Plan - Proposed Site Levels – Lower Ground Floor | 3663 - LB - ZZ - 00 - DR - A - 000022 |
| Parameter Plan - Proposed Site Levels – Basement Level | 3663 - LB - ZZ - B1 - DR - A - 000023 |
| Parameter Plan – Principal Public Realm Areas | 3663 - LB - ZZ - 00 - DR - A - 000024 |
| Parameter Plan – Access and Circulation | 3663 - LB - ZZ - 00 - DR - A - 000025 |
| Parameter Plan – Land Use Basement | 3663 - LB - ZZ - 00 - DR - A - 000026 |
| Parameter Plan – Land Use – Lower Ground Floor | 3663 - LB - ZZ - 00 - DR - A – 000027 |
| Parameter Plan - Land Use - Upper Ground Floor | 3663 - LB - ZZ - 00 - DR - A – 000028 |
| Parameter Plan - Land Use - First Floor | 3663 - LB - ZZ - 00 - DR - A - 000029 |
| Parameter Plan - Land Use – Upper Floors | 3663 - LB - ZZ - 00 - DR - A - 000030 |
| Parameter Plan – Building Heights | 3663 - LB - ZZ - 00 - DR - A - 000031 |
| Parameter Sections 01 | 3663 - LB - ZZ - 00 - DR - A – 000040 |
| Parameter Sections 01 | 3663 - LB - ZZ - 00 - DR - A - 000041 |

**2.13** **Design Code** – provides a design framework to secure the vision, character and quality of the detailed design which will be sought for approval through subsequent RMA's. The Design Codes define a set of 'rules' that need to be applied to the detailed design of the Outline Proposals. Some of the guidelines within the Design Code are mandatory and will be followed in future RMAs, providing certainty with regards to the quality and character of the Proposed Development. Other guidelines (recommended) have a degree of flexibility so that alternative design solutions can be arrived at where they result in a high-quality outcome. Recommended guidelines can be expressed as preferable or optional. The planning application is submitted alongside an architectural Design Code prepared by the project architects. The Design Codes further refine the Parameter Plans and define the final form of the Proposed Development. The Design Codes have also been informed by the findings of the environmental assessment work –specifically, the EIA has identified likely **significant adverse effects** in respect of Air Quality, Noise and Vibration, Climate Change, Wind Microclimate, Daylight, Sunlight, Overshadowing and Townscape and Visual Impact Assessment. As such, mitigation measures in respect of these technical topics have been defined and are presented within the ES and Design Codes. This is to ensure that the detailed design incorporates the required measures to render any residual effects relating to these topics insignificant. Further detail is provided in **ES Volume 1, Chapter 3: Alternatives and Design Evolution** and **Chapter 4: The Proposed Development** as well as the technical chapters of this ES (**ES Volume 1, Chapter 6 - 14** and **ES Volume 2**).

**2.14** The Development Specification, Parameter Plans, and Design Codes set out the information required to allow the environmental and socio-economic impacts and effects of the Proposed Development to be identified with sufficient certainty for the Outline Proposals.

### *Maximum Scale of Development*

**2.15** As defined by the Development Specification, the planning application seeks approval for both residential and non-residential land uses across both components (outline and detailed plots) of the Proposed Development.

**2.16** The massing related technical studies of the EIA (wind microclimate, daylight, sunlight, overshadowing, and (built) heritage, townscape and visual) provide an assessment of the likely environmental effects of the maximum scale and layout parameters sought for approval, as per the Parameter Plans and taking into consideration any controls specified within the Design Codes and as presented in a 3D massing model.

**2.17** The maximum scale and layout parameters reflect the maximum built form of development being sought for approval across the Outline Proposals of the site where design parameters are applicable. The maximum (rather than the minimum) built form is the most likely development massing configuration for the Proposed Development. The likely environmental effects of the Proposed Development have been defined on the basis of the maximum built form of development as per the maximum scale and layout parameters for the Outline Proposals.

### *Illustrative Masterplan*

**2.18** An Illustrative Masterplan has also been included within the DAS, which exemplifies one way in which future development could come forward in accordance with the Parameter Plans and Design Code, for the Outline Element of the Proposed Development.

**2.19** An assessment of the Illustrative Masterplan is not required with respect to the EIA as it shows only one way in which the Proposed Development could come forward, rather than being subject to the permission that is being sought (i.e., the maximum parameters).

**2.20** However, for some technical assessments it is appropriate to also consider the Illustrative Masterplan. The Outline Parameters representing the maximum quantum have been assessed alongside the Illustrative Masterplan in the Wind Microclimate assessment, presented in **ES Volume 1: Chapter 13: Wind Microclimate**, and the Daylight, Sunlight and Overshadowing assessment presented in **ES Volume 1: Chapter 14: Daylight, Sunlight and Overshadowing**, to demonstrate that acceptable conditions in relation to these topics can be achieved in a scheme within the maximum outline parameters sought for approval, albeit the assessment of impacts and classification of effects are based on the Outline Proposals and Detailed Proposals.

**2.21** The assessments undertaken of the Illustrative Masterplan do not form the main assessment in the EIA and are instead supplementary to the assessment of the parameters, provided purely for informative purposes for the LBE. The methodology for each respective assessment is provided within the relevant ES Chapter.

**2.22** In addition, the socio-economic assessment applies the breakdown in the residential and non-residential units of the Illustrative Masterplan to allow a reasonable level of assessment to be undertaken. This is explained further below.

*Quantum of Development*

**2.23** As defined by the Development Specification, the planning application seeks approval for both residential and non-residential land uses across the Proposed Development as a whole.

**2.24** As such, the EIA has determined appropriate assessment scenarios that have been applied for the technical assessments which consider use classes and floorspace quantum, on a topic-by-topic basis, to ensure that a reasonable worst-case assessment is being undertaken and the likely significant environmental effects are identified and addressed.

**2.25** In terms of traffic and transport (and the road traffic noise and air quality assessments), the EIA assesses the maximum amount of development across the entire Proposed Development and across the mix of uses sought for approval as a reasonable worst-case scenario. In terms of traffic and transport related effects, the upper limits on the amount of development sought for approval represents the worst case, as a greater amount of floorspace or number of residential units for example leads to a higher trip generation. Where flexible uses are proposed (i.e., the Use Class E, Use Class E (g)(i)) the use class which would generate the greatest number of trips has been used to define traffic and transport, air quality and noise effects.

**2.26** In terms of socio-economics, the EIA also assesses the maximum amount of development across the entire Proposed Development and across the mix of uses sought for approval. However, the maximum quantum of development does not represent a reasonable worst case in relation to non-residential land uses which generate employment. Therefore, a minimum quantum of development for non-residential land uses which would generate employment has been defined within the Development Specification. Therefore, the EIA assesses the minimum amount of development for the employment in terms of the smallest area permissible as well as the least employment generating uses as a reasonable worst case. These areas are defined in **ES Volume 1, Chapter 6: Socio-Economics**.

**2.27** In respect of the residential uses sought for approval across the outline component of the planning application, the socio-economics assessment assesses the land uses and floorspace areas as defined within the Development Specification that would generate the reasonable worst-case effects. When assessing the effects of the Proposed Development on social infrastructure, the majority of the assessments use the maximum unit number sought for approval, as a worst case to calculate the maximum population yields, applying the Illustrative Masterplan's unit and tenure mix as a reasonable assumption.

**2.28** The potential effects where the maximum residential unit number is considered are the following:

- Demand for primary healthcare;
- Demand for primary school education;
- Demand for secondary school education; and
- Open space and play space.

**2.29** The potential effects where the minimum residential unit number (Illustrative Masterplan's as presented within **ES Volume 1, Chapter 4: The Proposed Development**) is considered to understand the worse-case scenario are the following:

- Housing provision; and
- Residential expenditure.

### *Assessment of the Detailed Components of the Planning Application in the EIA – Detailed Proposals*

**2.30** The Detailed Proposals of the Planning Application (Phase A) is accompanied by a full set of detailed planning drawings including Demolition Plans; General Arrangement Plans, Site Sections, Façade drawings and Elevations of the various elements of the Detailed Proposals. It is also accompanied by Landscape drawings which include Ground Level, Podium Level and Roof Level General Arrangement Plans as well as a site wide Illustrative Landscape Masterplan. The Detailed Proposals of the Planning Application is also accompanied by an Area Schedule which defines the fixed floorspace areas for the various land Use Classes proposed within Phase A, and an Accommodation Schedule with a total unit number and a proposed residential unit mix and tenure type. The EIA uses this information as the basis of assessment for the Detailed Proposals.

### *Assessment of Demolition and Construction*

**2.31** As the Proposed Development is phased, assessment scenarios have been considered within **ES Volume 1, Chapter 7: Traffic and Transport, Chapter 8: Air Quality, Chapter 10: Noise and Vibration, Chapter 13 Wind Microclimate and Chapter 14: Daylight Sunlight and Overshadowing** to determine any potential effects during periods of the construction of the Proposed Developments (such as peak period of construction activities associated with the construction of Phase A). Further information in regard to the phased delivery of the Proposed Development is defined within **ES Volume 1, Chapter 5: Demolition and Construction.**

**2.32** The above chapters have considered the following assessment scenarios:

- Potential effects as result of demolition and construction activities;
- Potential effects as a result of a peak period of construction activities which coincide with the occupation of the Detailed Proposals whilst the Outline Proposals are still under construction (Year 4);
  - The Proposed Development is phased with Phase A (applied for in detail) to be constructed first and first occupation of the first buildings within Phase A will occur whilst construction activities for Phase B-D are underway. Therefore, an assessment of this period within the construction program has been considered where relevant for each technical assessment. This assessment scenario considers if any introduced sensitive receptors will experience potentially adverse effects as a result of ongoing construction activity across the Site. Given the uncertainty regarding the Outline Proposals this approach has been undertaken to capture the likely significant effects in relation to transport, air quality, noise and vibration and socio-economics.
  - The wind microclimate assessment considers the likely environmental effects of the Detailed Proposals (Phase A) as well as maximum scale and layout parameters sought for approval, as per the Parameter Plans and taking into consideration any controls specified within the Design Codes and as presented in a 3D massing model.
- Potential effects as a result of the fully complete and operational Proposed Development; and
- Potential cumulative effects as a result the Proposed Development and any defined cumulative schemes.

**2.33** Further details in regard to each assessment scenario is described within each technical ES chapter.

## EIA GUIDANCE AND POLICY

### *EIA Guidance*

**2.34** The EIA has been prepared in accordance with applicable legislation, guidance, and case law for the preparation of such documents. Specifically, this ES has been undertaken in accordance with the Institute of Environmental Management and Assessment (IEMA) Quality Mark indicator checklist and with due consideration to the following:

- At a European level, reference has been made to the European Commission's (EC) various EIA guidance documents available here: *http://ec.europa.eu/environment/eia/eia-support.html ;*
- At a domestic level, reference has been made to the Ministry of Housing for Communities and Local Government's overarching Planning Practice Guidance[1];
- In addition, the Department for Transport ''Design Manual for Roads and Bridges, Sustainability and Environment[2]' has been referred to as applicable;
- In relation to publications from professional bodies, reference has been made to the IEMA publications as these include best practice/suggested improvements to the EIA process. This includes:

[1] *http://www.gove.uk/guidance/environmental-impact-assessment*

[2] *Highways England, 2020. Design Manual for Roads and Bridges 'Sustainability and Environment' – LA104 Environmental assessment and monitoring.*

- IEMA ES Review Criteria (COM3-6)[3];
- IEMA 'Guidelines for Environmental Impact Assessment' (2004)[4];
- IEMA 'Special Report into the State Environmental Impact Assessment Practice in the UK' (2011)[5];
- IEMA 'Shaping Better Quality Development' (2015)[6];
- IEMA 'Delivering Better Quality Development' (2016)[7];
- IEMA 'Delivering Proportionate EIA' (2017)[8];
- IEMA 'Materials and Waste in EIA' (2020)[9];
- IEMA 'Major Accidents and Disasters in EIA: A Primer' (2020)[10];
- IEMA 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (2017)[11]; and
- IEMA 'Environmental Assessment of Road Traffic' (1993)[12].

**2.35** Whilst primarily written for major infrastructure projects, reference is also made to guidance/advice notes published by the Planning Inspectorate in relation to National Infrastructure Planning[13] where appropriate, as these can include relevant/helpful information.

### *Planning Policy*

**2.36** The EIA has considered relevant national, regional, and local planning policy and guidance as summarised below.

#### *National Planning Policy and Guidance*

**2.37** The EIA has been undertaken having regard to the National Planning Policy Framework[14] (NPPF). The NPPF sets out the Government's economic, environmental and social planning policies for England. The policies contained within the NPPF articulate the Government's vision of sustainable development, which are intended to be interpreted at a local level, to meet the requirements of local aspirations.

**2.38** As relevant to the EIA, specifically to the scope, methodology and assessment of effects for the EIA technical topics, the NPPF has been considered throughout the undertaking of the EIA and preparation of the ES.

**2.39** The EIA has also referred to the Planning Practice Guidance (PPG), which is an online resource. The PPG aims to make planning guidance more accessible, and to ensure that the guidance is kept up to date.

#### *Strategic Planning Policy and Guidance*

**2.40** As relevant to the EIA technical topic scope, methodology or assessment of effects, the ES has regard to the following key strategic planning documents. Any additional regional planning policy and guidance documents considered relevant to the technical assessments will also be considered:

- The London Plan: The Spatial Development Strategy for Greater London (March 2021)[15] – hereafter referred to as 'the London Plan'; and
- Supplementary Planning Guidance (SPG) (i.e. further guidance on policies in the London Plan that cannot be addressed in sufficient detail in the plan itself). The relevant SPG's are referenced accordingly throughout the technical topics.

#### *Local Planning Policy and Guidance*

**2.41** As relevant to the EIA technical topic scope, methodology or assessment of effects, the ES has had to regard to the following key local planning policy and guidance documents.

*London Borough of Tower Hamlet's (LBTH) Local Plan*

**2.42** The LBTH's new Local Plan[16] was adopted by the Council in January 2020. The 'Local Plan 2031: Managing Growth and Sharing Benefits' supersedes the previous Local Plan 2010[17], which consisted of the Core Strategy (2010)[18] and Managing Development Document (2013)[19].

**2.43** The Local Plan 2031 is the principal document guiding development and growth within the LBTH, and provides spatial policies, development management policies and site allocations to guide development within the borough.

**2.44** The Site is partially located within the Ailsa Street Site Allocation, as designated under the new Local Plan 2031[16]. The site allocation outlines a number of design principles and delivery considerations for new developments. The design principles include the provision of appropriate building heights, scale and massing and the avoidance of significant adverse environmental impacts. This includes the provision of an active and well-defined street frontage along Lochnagar Street and create a stronger east-west link between the River Lea and the Langdon Park DLR station and improve the quality and introduce an active square at the corner of the A12 and Lochnagar Street.

**2.45** The Site is located within the Draft Leaside Area Action Plan (2021)20[20] under Site: LS-A, which aims to improve the quality and connectivity of the area, encourage new employment, access to community facilities and policies relating to the type and quality of open spaces and homes in the area.

**2.46** The Site is also located within the Poplar Riverside Opportunity area which is considered to have an indicative capacity of providing 9,000 homes and 3,000 jobs[20].

**2.47** The Site is grouped under the Lower Lea Valley Opportunity Area, which across the area, has the potential capacity to provide a minimum of 32,000 new homes and 50,000 indicative employment capacity[21].

**2.48** Any additional planning policy and guidance documents considered relevant to the technical topics scope, methodology or assessment of effects which are covered by the EIA are also considered; these are identified in the relevant sections of this ES (**ES Volume 1, Chapters 6 - 14** and **ES Volume 2)**.

**2.49** In addition, where relevant to the assessment, the ES also presents a summary of any pertinent recognised industry guidance documents.

#### *Other Guidance*

**2.50** In addition to any relevant planning policies that inform the scope, methodology or assessment of effects, as relevant, the technical topic chapters of the ES will present a summary of any pertinent recognised industry guidance documents

## EIA SCOPING AND CONSULTATION

### *Consultation*

**2.51** Consultation with the LBTH and public engagement has helped inform the design of the Proposed Development. **ES Volume 1, Chapter 3: Alternatives and Design Evolution** of this ES provides a review of the alternatives considered by the Applicant and the design evolution of the Proposed Development, specifically in relation to environmental considerations and the pre application consultation process and feedback.

**2.52** The Planning Application is supported by a Planning Statement[22] and a Statement of Community Involvement[23] which together summarise the wider consultation that has been undertaken with various consultees and local residents throughout the pre-application consultation process.

### *EIA Scoping*

**2.53** Scoping forms one of the first stages of the EIA process and it is through EIA scoping that the Local Planning Authority ('LPA') (in this case the LBTH) and other key statutory and non-statutory consultees are consulted on those environmental topics that should be included in the scope of the EIA.

*[3] Institute of Environmental Management and Assessment, undated; EIA Quality Mark – ES Review Criteria COM 3-6.*
*[4] Institute of Environmental Management and Assessment, 2004, Guidelines for Environmental Impact Assessment.*
*[5] Institute of Environmental Management and Assessment, 2011. The State of Environmental Impact Assessment Practice in the UK.*
*[6] Institute of Environmental Management and Assessment, November 2015. Shaping Better Quality Development.*
*[7] Institute of Environmental Management and Assessment, 2016; Delivering Better Quality Development.*
*[8] Institute of Environmental Management and Assessment, 2017; Delivering Proportionate EIA.*
*[9] Institute of Environmental Management and Assessment, 2020; Materials and Waste in EIA.*
*[10] IEMA, 2020, Major Accidents and Disasters Guidelines*
*[11] Institute of Environmental Management and Assessment, 2017, Assessing Greenhouse Gas Emissions and Evaluating their Significance'*
*[12] Institute of Environmental Management and Assessment, 1993 'Environmental Assessment of Road Traffic'*
*[13] https://infrastructure.planninginspectorate.gov.uk/*
*[14] DCLG, 2021; 'National Planning Policy Framework.'*
*[15] GLA, 2021; 'The London Plan: The Spatial Development Strategy for Greater London - March 2021.'*
*[16] London Borough of Tower Hamlets, 2020 Local Plan 2031: Managing Growth and Sharing Benefits*
*[17] London Borough of Tower Hamlets, 2010, Local Plan*
*[18] London Borough of Tower Hamlets, 2010, Core Strategy Development Plan Document, 2025*
*[19] London Borough of Tower Hamlets, 2013, Managing Development Document – Development Plan Document*
*[20] GLA, 2021; 'The London Plan: The Spatial Development Strategy for Greater London - March 2021.'*
*[21] Mayor of London, London Assembly, Lower Lea Valley Opportunity Area, Adopted 2007.*
*[22] DP9, 2021, Aberfeldy New Village Planning Statement*
*[23] Lowick, 2021, Aberfeldy New Village Statement of Community Involvement*

**2.54** The process of EIA scoping and consultation is important to the development of a comprehensive and balanced ES. Views of consultees have helped to identify specific issues that require further investigation as part of the EIA process.

**2.55** The main purpose of the EIA scoping process is to establish the approach to the EIA. This includes:

- Identification of the availability of existing baseline data and appropriate baseline surveys to be undertaken;
- Identification of sensitive receptors;
- Identification of potential environmental considerations and potential environmental effects;
- Identification of the topics to be included within the scope of the EIA and the methodology for assessment;
- Identification of any topics that can be scoped out of the EIA, with justification provided as to why likely significant residual environmental effects are not anticipated;
- Definition of the methodology for the assessment of the likely significant environmental effects; and
- Identification of other development schemes to be considered within a cumulative effects assessment.

**2.56** A request for an EIA Scoping Opinion from the LBTH and statutory consultees in line with Regulation 18(4) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, as amended in 2018 and 2020[1] ('the EIA Regulations')[24] was submitted to the LBTH on 12th August 2021. The request was made in the form of a Scoping Report (Aberfeldy New Masterplan EIA Scoping Report').

**2.57** The LBTH issued their Scoping Opinion on 8th September 2021. The Aberfeldy New Masterplan EIA Scoping Report, along with LBTH Scoping Opinion is provided in **ES Volume 3, Appendix: EIA Methodology – Annex 1**.The EIA Scoping process has informed the content of the ES. A response to the key components of the Scoping Opinion is provided in **ES Volume 3, Appendix: EIA Methodology – Annex 2.**

**2.58** A summary of the key scoping consultation points have been presented within the introductory table of each technical chapter **ES Volume 1, Chapters 6 - 14,** with **ES Volume 2** providing an in text summary of the consultation undertaken.

**2.59** The EIA Scoping Report was submitted with a redline boundary plan which included areas of land with the potential to be included within the planning application boundary. The final decision on their inclusion was taken prior to the receipt of the Scoping Opinion following agreement with the LBTH on the best approach in securing the delivery of works to those areas of land now not included within the redline boundary.

**2.60** Also following the submission of the EIA Scoping Report, the maximum building height of the Proposed Development has increased from 96m AOD to 100m AOD. This increase will not result in any material change to the scope and approach of the technical environmental assessment and therefore the approach outlined within the EIA Scoping Report (and the LBTH EIA Scoping Opinion, as relevant) remains valid.

### *'Scoped-In' Aspects*

**2.61** The potentially significant environmental issues that were identified during the EIA Scoping process and that have been addressed within this EIA are listed below:

- Socio-economics; (ES Volume 1: Chapter 6).
- Traffic and Transport; (ES Volume 1: Chapter 7).
- Air Quality; (ES Volume 1: Chapter 8).
- Climate Change; (ES Volume 1: Chapter 9).
- Noise and Vibration; (ES Volume 1: Chapter 10).
- Archaeology (Buried Heritage); (ES Volume 1: Chapter 11).
- Water Resources, Flood Risk and Drainage (ES Volume 1: Chapter 12).
- Wind Microclimate; (ES Volume 1: Chapter 13).
- Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare; (ES Volume 1: Chapter 14).
- Built Heritage (ES Volume 3).
- Townscape and Visual Impact Assessment; (ES Volume 3).
- Health is addressed through a Health Impact Assessment that is presented as a stand-alone Health Impact Assessment. The Health Impact Assessment has been undertaken in accordance with the London Healthy Urban Development Unit Planning for Health Rapid Heath Impact Assessment (HUDU Rapid HIA) tool which is the most appropriate guidance for such assessments. The Health Impact Assessment has not been fully integrated into the ES; primarily due to the differing methodologies and the approach to categorisation of likely effects. However, in acknowledgment of their interface and the need to consider impacts to population and human health, the main findings and conclusions of the Health Impact Assessment have been reviewed and the single significant effect identified (relating to the potential effect on healthcare services, i.e. GPs) is also reported in **ES Volume 1, Chapter 6: Socio-economics**, and so is also presented in **ES Volume 1, Chapter 16: Likely Significant Effects and Conclusions**. **Table 2.1** presents a wayfinding table of where the topic of human health has been considered within the ES and the Planning Application.

**Table 2.1 Human Health Wayfinding Table**

| Topics | How the Human Health has been Considered |
|---|---|
| Air Quality | The ES has considered the potential impact of changes to air quality on human health (both receptors external to the Site, and for future occupants and visitors at ground floor within the Proposed Development), from dust generated during the enabling and construction works, and from introduced sources associated with the Proposed Development, including transport emissions (i.e. servicing) when operational. |
| Health | Health has been specifically considered with the Heath Impact Assessment (HIA) which forms a standalone document submitted in support of the planning application. |
| Daylight, Sunlight and Overshadowing | The ES and planning application has considered the potential impact of the Proposed Development on human health from Daylight, Sunlight, Overshadowing and Solar Glare – particularly the effect of change in conditions at highly sensitive receptor locations within the Site (public amenity areas) and surrounding local area (refer to **ES Volume 1, Chapter 14: Daylight, Sunlight, Overshadowing, Solar Glare and Light Pollution)** and on future residents at the Site. An internal daylight sunlight assessment forms a standalone document submitted in support of the planning application. |
| Ground Conditions | Human Heath is considered as a sensitive receptor within the Phase 1 Ground Conditions Report **Refer to ES Volume 3, Appendix Methodology – Annex 2.** |
| Noise and Vibration | The ES has considered the potential impact of the Proposed Development on human health from noise and vibration – particularly the effect of the predicted change in noise and vibration levels at high sensitive receptor locations within the Site and surrounding local area and on future residents at the Site, from both the demolition and construction, and operational phases. **Refer to ES Volume 1, Chapter 10: Noise and Vibration** |
| Socioeconomics | The ES has considered the impact of the Proposed Development on the local social infrastructure arising from the new residential population, such as doctors (GPs), amenity and playspace areas, etc. Consideration is also given to other aspects that are linked to health, such as the local economy in terms of employment opportunities and local spending, which in turn has direct and indirect benefits on the population at the local and borough spatial levels, as well as new provision of public realm to benefit both future occupants and visitors to the Site, as well as the wider community. Refer to **ES Volume 1, Chapter 6: Socio-Economics.** |
| Traffic Transport | The ES has considered the impact of the Proposed Development on existing and future road users. The assessment also takes account of pedestrians along the surrounding road network, in terms of their amenity, fear and intimidation; their potential for severance from places and other people; and with regard to the risk for accidents and their safety**.** Refer to **ES Volume 1, Chapter 7: Traffic and Transport.** |
| Water Resources, Flood Risk and Drainage | The ES has considered the impact of the Proposed Development on the existing and proposed drainage network. The assessment also takes account of water quality and flood risk**.** Refer to **ES Volume 3, Appendix Water Resources, Flood risk and Drainage – Annex 1 and Annex 2.** |
| Wind Microclimate | The ES has considered the wind microclimate interactions with human health through the assessment of safety breaches and comfort criteria for the Proposed Development. Refer to **ES Volume 1, Chapter 13: Wind Microclimate.** |

[24] *Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018*

| Topics | How the Human Health has been Considered |
|---|---|
| Demolition and Construction | A Construction Environmental Management Plan (CEMP) and Logistics Plan (CLP) would be adhered to in advance of works commencing on-site, to manage the potential impacts from the works (including those on human health) and subsequent construction of the Proposed Development. The CEMP would include key matters relating to health impact including public safety, and amenity and site security. An Outline CEMP has been produced to accompany this planning application. **ES Volume 3, Appendix Demolition and Construction – Annex 1**. |

*Scoped-Out Disciplines*

**2.62** The Scoping Report identifies the technical topics that have been scoped out of (i.e. excluded from) the EIA. The approach to these technical topics has been agreed with LBTH as part of the EIA scoping exercise. The justification for scoping out these topics from the EIA, as well as the points raised by the LBTH in respect of the approach can be found within the Scoping Report and Scoping Opinion presented in **ES Volume 3, Appendix: EIA Methodology – Annex 1 and Annex 2** and **Annex 3**. The technical topics scoped out of the EIA and the justification for doing so are summarised below:

- **Ecology and Biodiversity:** A Preliminary Ecological Appraisal (PEA) has been prepared for the Site and will be presented as a stand-alone document to accompany the planning application .This concludes that the existing Site is of low ecological value and that there is low potential to support foraging, commuting and roosting bats, moderate potential to support nesting birds and no potential to support black redstart. However, the presence of invasive / non-invasive species (INNS), including Virginia Creeper and Buddleia has been confirmed. LBTH response to the Scoping Report identified that Ecology and Biodiversity should be included as a standalone aspect within the ES based on the PEA submitted alongside the scoping report, did not include the final application site boundary, therefore a proper assessment could not be provided by LBTH, resulting in their decision being to scope in this aspect. As the existing Jolly's Green open space is no longer included within the application site / red line boundary and the existing open spaces are to be improved, it is considered that there is no requirement for this aspect to be included within the ES. The Proposed Development is unlikely to result in significant effects. Further justification on the approach to the scoping out of ecology and biodiversity of the ES is provided within **ES Volume 3, Appendix Methodology – Annex 3**. Ecological enhancements included in the design of the Proposed Development are discussed in **ES Volume 1, Chapter 4: Proposed Development**.
- **Daylight, Sunlight and Overshadowing - Internal:** The potential for daylight and sunlight availability within the newly proposed residential units and within the newly created public realm is dependent on the design of the Proposed Development, and is a design consideration, rather than an EIA issue. Therefore, the assessment of daylight and sunlight availability (including overshadowing) within the Proposed Development itself will not form part of the ES but will be presented as a separate standalone report submitted in support of the planning application. This approach was agreed within the LBTH within the Scoping Opinion received 8th September 2021, as presented within **ES Volume 3, Appendix Methodology – Annex 3**.
- **Geoenvironmental (Ground Conditions, Groundwater and Land Take and Soils)**: Based on the information and risk assessment obtained within the Phase A Preliminary Geo-Environmental and Geotechnical Risk Assessment which indicates that the risk to construction workers, future site users, neighbours and resources such as groundwater, is low to moderate. It is therefore considered that through the use of standard mitigation and monitoring measures, this topic can be Scoped Out of the ES. This was agreed with the LBTH through their Scoping Opinion, received 8th September 2021. The mitigation and management measures with respect to ground conditions, groundwater, land take and soils will be addressed in **ES Volume 1, Chapter 17: Mitigation and Monitoring**.
- **Project Vulnerability**: A review of the IEMA guidance (2020) 'Major Accidents and Disasters in EIA: A Primer[25] has been undertaken, and the approach which was followed in the EIA Scoping Report is considered to align with this new guidance. As per the guidance, the Proposed Development has been screened to determine its potential to result in likely significant effects from major accidents and natural disasters. It is considered the Proposed Development would be unlikely to result in significant effects from most major accidents and natural disasters. The potential for flooding (from either fluvial or pluvial) sources have been considered within **ES Volume 1, Chapter 12: Water Resources, Flood Risk and Drainage.** The potential for strong winds is considered within **ES Volume 1, Chapter 13: Wind Microclimate** and any potential for Solar Glare is considered within **ES Volume 1, Chapter 14: Daylight, Sunlight, Overshadowing, Solar Glare and Light Pollution**, as relevant. The potential for ground contamination and UXO risk has been considered as part of the ES and mitigation measures are provided within **ES Volume 1, Chapter 17: Mitigation and Monitoring Schedule.** As such, and in line with the approach followed during the preparation of the EIA Scoping Report, an assessment of the Proposed Development's vulnerability to major accidents and natural disasters has been screened out of further assessment in the EIA. This ES will therefore not specifically consider the issue of major accidents and natural disasters any further. This approach aligns with that of the view by LBTH that a stand-alone project vulnerability (major accidents and disasters) chapter is not necessary, and that the risks will be assessed across the other aspects of the ES.
- **Waste**: Waste has been scoped out of the EIA as no significant effects are anticipated on the local waste management infrastructure and landfill capacity and in line with IEMA Guidance[34]. The approximate type and quantities / volumes of demolition and construction waste that are expected to be generated by the Proposed Development, the target value for re-use of demolition and construction waste and an outline of the relevant waste aspects of the CEMP will be provided. An Operational Waste Management Strategy (OWMS) will be prepared and submitted as a standalone document as part of the planning application. has also been prepared and submitted with the Planning Application. The approximate type and quantities / volumes of operational waste that are expected to be generated by the operational Proposed Development and an outline of CEMP is be provided within **ES Volume 1, Chapter 5: Demolition and Construction, ES Volume 3, Appendix Demolition and Construction – Annex 1**, and **ES Volume 1: Chapter 17: Mitigation and Monitoring**. This approach was agreed with the LBTH within their Scoping Opinion received 8th September 2021, and presented within **ES Volume 3, Appendix Methodology – Annex 3.**
- **Materials**: LBTH response to the Scoping Report states that a materials assessment and associated chapter should be scoped into the ES (as provided within **ES Volume 3, Appendix EIA Methodology – Annex 2)**, unless it can be adequately justified that no likely significant effects on materials will occur during the demolition and construction, and operation of the Proposed Development. Further justification on this point is therefore provided below:
  - Demolition and Construction: During demolition and construction, it is anticipated that materials for constructing the Proposed Development will be sourced from the site, in terms of any 'waste for recovery'[26] and within the LBTH and London.
  - In accordance with IEMA's guide to Materials and Waste in Environmental Impact Assessment[27], materials are considered to be sensitive receptors and include *"physical resources that are used across the lifecycle of a development. Examples include concrete, aggregate, asphalt, bricks, ballast, mortar, glass and timber."*
  - Mitigation: IEMA's guide to Materials and Waste in Environmental Impact Assessment refers to different types of mitigation measures to prevent or reduce adverse effects relating to materials and waste:
  - Primary mitigation measures: are *"an intrinsic part of the development, and do not require additional action to be taken"*[28]; for example, choosing to refurbish an existing building, rather than demolish it;
  - Secondary mitigation measures: are "foreseeable actions brought out by the environmental assessment process, and that have not previously been achieved through primary and tertiary mechanisms"[29]; for example, the implementation of a Procurements Strategy or Construction Environmental Management Plan (CEMP) (or equivalent) or Operational Waste Management Strategy; and
  - Tertiary mitigation measures: are "those that are in place with or without the iterative EIA process" and include "those that will be undertaken to meet existing legislative requirements, of those that are

[25] *IEMA, 2020, Major Accidents and Disasters Guidelines*
[26] *Defined by IEMA's guide to Materials and Waste in Environmental Impact Assessment (2020) as 'waste' materials that go through an acceptable recovery process, to lose their status as 'waste' and become materials for other uses.*
[27] *IEMA, (2020); IEMA guide to: Materials and Waste in Environmental Impact Assessment.*
[28] *IEMA, (2020); IEMA guide to: Materials and Waste in Environmental Impact Assessment (page 19).*
[29] *IEMA, (2020); IEMA guide to: Materials and Waste in Environmental Impact Assessment (page 27).*

considered standard practices used to manage commonly occurring environmental effects" [30]; for example, sending waste to active and permitted waste management sites, which have to adhere to the requirements of the Environmental Permitting Regulations[31], whereby carrying out certain types of activity (such as receiving waste for landfill) requires an active and permitted waste management site to hold an environmental permit to do so.

- In view of the above, measures will be implemented to reduce the quantity of materials used during the construction of the Proposed Development. The key construction materials will be:
- Recovered from off-site sources (e.g. donor sites) as far as reasonably practicable;
- Sourced locally as far as reasonably practicable;
- Sourced in accordance with The Green Guide to Specification[32] to reduce the environmental impact of the construction of the Proposed Development by an informed and responsible selection of construction materials and components (for example, for the floors, roofs, walls, windows, insulation and landscaping of the Proposed Development);
- Reclaimed or recycled materials, where feasible;
- Sourced via a defined Procurement Strategy, which will select materials with a percentage of recyclable content where feasible;
- Managed via the implementation of a CEMP (or equivalent), which will include measures such as:
    - A 'just-in-time' material delivery system to avoid materials being stockpiled and spoiled during bad weather;
    - Consideration of material quantity requirement to avoid over-ordering and generation of waste materials; and
    - Designated storage area for new building materials, to reduce the risk of damage / spoiling.
- Measures such as the above shall be implemented pursuant to planning conditions; therefore, it is considered that significant adverse effects of the demolition and construction of the Proposed Development on materials would be unlikely.
- On the basis of the above, an assessment of demolition and construction effects on materials is scope out; however, the ES sets out:
    - The approximate type and quantities / volumes of materials that are anticipated to be required for the construction of the Proposed Development;
    - The sustainability credentials of materials (if known); and
    - The commitment to undertaking the measures outlined above.

- Any necessary mitigation measures relating to the above points are included in **ES Volume 1, Chapter 17: Mitigation and Monitoring**. These measures could be secured through a condition by the LBTH.
- The EIA Scoping Opinion requested consideration of decommissioning of the Proposed Development. Consideration of the decommissioning of the Proposed Development is not a requirement of the EIA Regulations relevant to this project, and therefore has not been assessed in the EIA or discussed any further in this ES.

## EIA METHODOLOGY

**2.63** Detailed methodologies for the assessment of each of the environmental topic areas scoped into the EIA are provided within each technical ES Chapter (**ES Volume 1, Chapters: 6 - 14** and **ES Volume 2**), however, in general terms, the assessments have been based upon:

- Understanding the baseline condition, either through:
    - Desk-top studies;
    - Site surveys;
- Understanding the policy context and the implications for assessment, including:
    - Consideration of relevant legislation;
    - Consideration of relevant planning policies (national, regional and local);
- Identify potentially sensitive receptors that could be impacted by the Proposed Development;
- Identification of potential environmental impacts, with an evaluation of their likely magnitude, and resultant effects in terms of their nature, scale, geographic extent, duration and whether they are direct or indirect or transboundary, involving either:
    - The use of technical guidance and best practice; and/or
    - Expert opinion.
- Consideration of the requirement for any specific mitigation; and
- Consultation with any interested and affected parties.

**2.64** How the Proposed Development might affect the environment relies on predictions about what impact a certain action will have. Some predictions can be made using mathematical or simulation models (i.e. quantitative assessment). Other impacts are less easy to predict in quantitative terms, and in such cases, the EIA attempts to quantify the anticipated scale of impact using professional judgement (i.e. qualitative assessment).

**2.65** As part of the EIA, an iterative approach has been adopted where significant environmental effects have been identified and avoided where possible in the first instance through consideration of alternative design solutions and design refinements, as reported upon within **ES Volume 1, Chapter 3: Alternatives and Design Evolution**. Where able, opportunities to reduce or control impacts and effects have been identified and incorporated into the Proposed Development (i.e. primary mitigation[33]). In addition, the design process seeks to promote opportunities to enhance the beneficial environmental effects of the Proposed Development.

**2.66** Mitigation is the term used to refer to the process of avoiding where possible and, if not, minimising, controlling and/or off-setting potentially significant adverse effects of a development. Mitigation measures can relate to the masterplanning stage; detailed design stage; the construction stage; or the activities associated with the operation of the completed Proposed Development. Where mitigation has been embedded within the Proposed Development to avoid or reduce potentially significant effects, these are described within **ES Volume 1, Chapter 4: The Proposed Development**. Where relevant these measures are also described within the technical chapters of the ES (**ES Volume 1, Chapters: 6 to 14** and **ES Volume 2**).

**2.67** In accordance with the EIA Regulations, as amended in 2018 and 2020, the method behind the EIA process generally considers the existing conditions of the area into which the Proposed Development is being introduced (the ***baseline***), providing a ***future baseline*** in some cases where the area around the site is undergoing extensive, planned, change and is evolving rapidly, and makes reasonable predictions of the likely change (the ***impact*** – in terms of magnitude) that may occur, during both its construction and when the development is completed and operating as proposed. The predicted impact is considered in terms of key environmental and social aspects (***receptors***) found within the surrounding area, and based on their sensitivity to change, the scale of the resulting change experienced by the receptor / resource (the ***effect***) is then determined along with a statement on whether the effect is significant or not.

**2.68** Any mitigation measures required to reduce or eliminate significant adverse effects are then considered and assessed, with the resulting residual effect scale being determined. Effects resulting from a combination of the Proposed Development and other surrounding schemes (***cumulative schemes***) are also assessed. All the likely effects of the Proposed Development are reported (within this ES) and the likely significant effects are specifically highlighted. The ES is then considered by the relevant planning authority (in this case, the LBTH) when deciding whether to grant planning permission for the Proposed Development.

### *Baseline Conditions*

**2.69** The baseline comprises existing information, or information collected through baseline surveys undertaken during the course of the EIA process. This information has been used in the ES to present (within each of the individual technical ES Chapters (**ES Volume 1, Chapters: 6 to 14** and **ES Volume 2**) an up to date description of the current baseline conditions of the site and surrounding area.

**2.70** The purpose of the EIA is to predict how environmental conditions may change as a result of the Proposed Development. The assessment of the nature and scale of a predicted change is undertaken against a reference

[30] *IEMA, (2020); IEMA guide to: Materials and Waste in Environmental Impact Assessment (page 20).*
[31] *The Environmental Permitting (England and Wales) Regulations 2016*
[32] *BRE, (2009); The Green Guide to Specification, Fourth Edition.*
[33] *IEMA July 2016, Environmental Impact Assessment Guide to: Developing Quality Development) https://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf.*

condition, known as the 'baseline'. In most cases, the baseline represents the environmental condition of the site being assessed and the surrounding area at the time of the assessment.

**2.71** For most technical disciplines, the baseline has been taken as the existing conditions within the site. However, in some cases it may be necessary to apply a 'future' baseline. This is relevant when considering the peak construction year once the development is open but not yet completed and fully occupied. A future baseline is also used for when considering potential effects when the development is complete and fully operational.

**2.72** Where this is required, the approach to defining the future baseline has been explained (with reference to the assessment scenarios) within the relevant technical ES Chapter (for example **ES Volume 1, Chapter 7: Traffic and Transport**, **ES Volume 1, Chapter 8: Air Quality**, **ES Volume 1, Chapter 10: Noise and Vibration**).

### *Evolution of the Baseline*

**2.73** In accordance with the requirements of the EIA Regulations, as amended in 2018 and 2020, consideration as to how the existing baseline condition may evolve in the future in the absence of the Proposed Development. The EIA Regulations state (Schedule 4(3)):

> *"A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge."*

**2.74** This requirement has been addressed in the ES (within each of the individual technical ES Chapters (**ES Volume 1, Chapters: 6 to 14** *and* **ES Volume 2**) under the heading '*Evolution of the Baseline Condition*'. The description of the evolved baseline has been characterised by interpreting an indeterminate point in the future, for a scenario which assumes that all the committed developments are built[34], in the absence of the Proposed Development being implemented. For the Built Heritage, Townscape and Visual Impact Assessments, consideration has also been given to the natural evolution of relevant features, though this is considered in the context of the existing uses (both onsite and in the surrounding area) and their likeliness to affect any natural evolution.

**2.75** The likely evolution of the baseline conditions will be quantified where possible. Where not possible, a qualitative review will be presented. The approach taken to providing an outline of the evolution of the baseline will be described within each of the individual technical ES Chapters (**ES Volume 1, Chapters: 6 - 14** and **ES Volume 2**).

## *Sensitive Receptors*

**2.76** The EIA has identified and assessed the impacts to and effects on potential receptors which may arise from the demolition of the existing Site and construction of the Proposed Development, and once the Proposed Development is completed and operational.

**2.77** Within each of the technical assessments *(***ES Volume 1, Chapters 6 - 14** and **ES Volume 2**), a list of receptors is presented, which are considered to have the potential to be affected by the Proposed Development.

**2.78** The receptors identified within the technical assessments have been identified from a review of the available information collected as part of the description of the surrounding environmental and socio-economic context, and from historic and currently available information relating to the Site itself. Potential receptors have also been identified from a review of the description of the Proposed Development (**ES Volume 1, Chapter 4: The Proposed Development**) sought for approval and the potential impacts and resultant effects which may occur as a result of newly introduced receptors of the Proposed Development.

### *Covid-19*

**2.79** During the preparation of this ES, government measures implemented in response to the Covid-19 situation have limited / restricted the completion of some site visits, monitoring activities that would be typically undertaken, and potentially influenced the data obtained through surveys undertaken. Where relevant, this is reported in the individual technical ES Chapters (**ES Volume 1, Chapters: 6 - 14** and **ES Volume 2**).

**2.80** Published guidance applicable to an individual technical topic has been considered where relevant, which provides guidance as to undertaking assessments during the Covid-19 pandemic. Where this is available and relevant to the technical topic, this has been referenced within the technical chapter.

## *Impact Assessment*

**2.81** Impact assessments are undertaken for the following stages of the Proposed Development:

- During the demolition and construction works; and
- Once the Proposed Development is complete and operational.

### *Demolition and Construction Effects*

**2.82** The **ES Volume 1, Chapter 5: Demolition and Construction** provides an outline of the anticipated demolition and construction programme, as well as related activities and aspects (i.e. enabling works, excavation volumes and construction material quantities, HGV movements and HGV routing). Demolition and construction assumptions were developed based on the Illustrative Masterplan in combination with professional judgment at this stage. The use of the Illustrative Masterplan for this purpose was considered appropriate and reasonable due to the similarities between the Illustrative Masterplan and the Maximum Parameters of the Outline Proposals of the Proposed Development.

**2.83** The programme represented is based on reasonable assumptions in terms of the sequencing of the works and site logistics that will be implemented. The programme is considered achievable based on the current level of demolition and construction planning and anticipates the period of construction works are continuous across the Site.

**2.84** The programme presents some overlapping construction activities both within and between the phases and therefore assumes multiple construction activities occurring across the site. It is also assumed that impacts of a higher magnitude over a shorter duration are considered to be potentially greater in terms of the likely effect on a receptor, than an impact of lower magnitude spread over a longer duration. The EIA, therefore, assesses the worst-case effects (in terms of magnitude of impact) as a result of multiple construction activities occurring on-site at any particular time.

**2.85** Due to the proposed construction phasing, an interim assessment has been considered appropriate for some of the technical assessments. This seeks to identify potential significant effects to the new receptors (occupants) within the Detailed Proposals (Phase A) during the construction of the Outline Proposals. In summary, the ES includes a quantitative assessment of the phased construction related effects for the following technical topics: traffic, air quality, noise and vibration, socio-economics and wind microclimate. Further detail on the approach taken is identified within each technical chapter.

**2.86** The information presented within **ES Volume 1, Chapter 5: Demolition and Construction** has informed the demolition and construction impact assessments of each technical ES Chapters (**ES Volume 1, Chapters: 6 to 14** *and* **ES Volume 2**).

**2.87** Within the construction impact assessments, standard environmental controls required under legislation and best practice guidance will be considered (i.e. embedded mitigation) and will be clearly presented within the respective technical ES Chapter as to how they are accounted for within the corresponding assessment and summarised within **ES Volume 1, Chapter 17: Mitigation and Monitoring.**

**2.88** The construction assessments will also identify (where required) the need for any additional or bespoke environmental management or mitigation measures in order avoid, prevent, reduce or off-set any significant adverse effects identified.

**2.89** A description of any proposed monitoring arrangements will also be identified and would define (where appropriate) the procedures regarding the monitoring of the relevant significant adverse effects, the types of parameters to be monitored and the monitoring duration.

**2.90** All the measures proposed within the technical ES Chapters will be compiled and presented in a mitigation and monitoring schedule within **ES Volume 1, Chapter 17: Mitigation and Monitoring**.

**2.91** It is anticipated that any required construction related environmental management / mitigation and monitoring measures identified within the ES would be secured and controlled through appropriate a Construction Environmental Management Plan (CEMP) and Construction Logistics Plan (CLP) (further discussed within **ES Volume 1, Chapter 17: Mitigation and Monitoring**). An outline CEMP is provided within **ES Volume 3, Appendix Demolition and Construction – Annex 1**, with the requirement for a final CEMP secured by means of a suitably worded planning condition to be attached to the planning permission. Key mitigation and management controls have been presented in this ES and these should be pulled through into the final CEMP.

[34] *The approach adopts the rationale that if there are committed developments identified (i.e. existing and/or approved projects) to come forward in the future, this would account for a 'natural change' to the baseline scenario.*

*Completed and Occupied Development Effects*

**2.92** The ES presents a description of the Proposed Development in **ES Volume 1, Chapter 4: The Proposed Development** in order to provide suitable context to enable the assessment of potential and likely significant environmental effects. The impact assessment of the Proposed Development is based on the information contained within the Control Documents and Detailed Proposal Documents as described in **ES Volume 1, Chapter 4: The Proposed Development**. In addition, where necessary to inform the impact assessments, information on the illustrative masterplan has been taken from other documents that have been prepared for the purposes of and which, are submitted alongside the planning application, for example, the Design and Access Statement, Energy and Sustainability Strategy, Planning Statement and Transport Assessment. Where information from these documents have been relied upon, the information has been presented within the ES.

**2.93** The impact assessment has been undertaken against an appropriate baseline condition for the technical topic in question. However, where relevant to an individual technical assessment, the Proposed Development has been assessed against a future baseline. This then means that the impact assessments account for potentially sensitive receptors found within the existing baseline conditions and any additional potentially sensitive receptors that may be apparent within the surrounding area in the future. The specific methodology for assessment of the Proposed Development (including the parameters assessed to predict a reasonable worst case assumption) has been set out within the technical chapters of **ES Volume 1 (Chapters 6-14** and **ES Volume 2)**.

**2.94** For traffic and transport alone, the Proposed Development has been assessed delivery of up to 2,997m$^2$ (GIA) of workspace. These areas are designed to be smaller units which could include incubators, maker spaces, studios, co-working and managed workspaces. The workspace floor area assessed includes the Phase A temporary marketing suite (Sui Generis), which is expected to revert to retail once its use as a marketing suite is no longer required. As the temporary marketing suite is expected to function more akin to an office, with peak hour employee trips and visitors throughout the day, it was considered by the transport consultants based on professional judgement that it is most appropriate to assess the use as part of the workspace trip generation. The socioeconomic assessment differs in approach where it assesses the temporary marketing suite as retail. Both assessments provide a reasonable worst case.

## *Cumulative Effects*

*Effect Interactions (Intra-project effects)*

**2.95** Intra-project cumulative effects from the Proposed Development itself on surrounding sensitive receptors during the construction works and also once the Proposed Development is completed are considered within this ES (**ES Volume 1, Chapter 15: Effects Interactions**). Effect interactions occur as interactions between effects associated with just one project, i.e. the combination of individual effects arising as a result of the Proposed Development, for example effects in relation to noise, airborne dust or traffic on a single receptor.

**2.96** Effect interactions from the Proposed Development itself on particular receptors at the site and surrounds have been considered during the demolition and construction works and also once the Proposed Development is completed and operational. Dependent on the relevant sensitive receptors, the assessment focuses either on key individual receptors or on groups considered to be most sensitive to potential effect interactions. The potential interaction of residual effects that are of minor, moderate or major scale (see section 'Assessment Criteria' below for further details), are considered within this assessment. Based on the definitions of what negligible effects comprise for each of the technical assessments, these do not warrant further consideration in relation to cumulative effects and therefore are not pulled through into the assessment of effect interactions. Only residual effects described as minor and above are therefore considered in the assessment of effect interactions.

**2.97** There is no established methodology for assessing the impact of cumulative effects on a particular receptor. Therefore, the interaction of a combination of individual effects are determined to be either 'not significant' or 'significant', and a scale of the combined effects (minor, moderate or major) is not applied. However, the European Commission has produced guidelines to assist EIA practitioners in developing an approach which is appropriate to a project. These guidelines[35] have been used to develop an approach which uses the defined residual effects of the Proposed Development (as presented within the technical chapters of the ES) to determine the potential for effect interactions. If one of the individual effects is significant the combination of effects would be regarded as 'significant'. If none of the individual effects are significant, consideration will be given as to whether or not the combination of many not significant effects could result in a combined significant effect, based on professional opinion[36].

**2.98** Consideration of effect interactions are presented within the ES in a separate chapter titled 'Effect Interactions' (**ES Volume 1, Chapter 15: Effect Interactions**).

*Cumulative Effects with Other Committed Developments (Inter-project Effects)*

**2.99** The EIA Regulations, as amended in 2018 and 2020 require that, in assessing the effects of a particular development proposal, consideration should also be given to the likely significant effects arising from the "*cumulation with other existing and/or approved projects*" (Schedule 4, 5(e)).

**2.100** Cumulative effects can occur as interactions between the effects associated with a number of projects in an area which may, on an individual basis be insignificant, but together (i.e., cumulatively), result in a significant effect. Cumulative effects arising from the Proposed Development in combination with 'other existing and / or approved projects' ('committed developments') will be considered throughout the ES. The potential for cumulative effects arising during the enabling and construction works, and once the Proposed Development is complete and operational, will be considered. Each individual technical chapter of the ES will present an assessment of the cumulative effects of the Proposed Development coming forward alongside the cumulative schemes.

**2.101** The cumulative schemes that are considered within the ES are typically located within a 2km radius from the site, as this spatial extent is considered appropriate for determining cumulative effects in this locality. Additional cumulative schemes have been considered outside this radius as appropriate, considering the additional schemes requested by LBTH within their EIA Scoping Opinion.

**2.102** With regards to traffic and transport considerations, major schemes beyond the 1km radius may also be accounted for to acknowledge the spatial connection with the Proposed Development via the local road network. It should be noted that the approach to the assessment of cumulative effects is synonymous with the impact assessment methodology by virtue of the fact that deriving a future road traffic baseline would account for road traffic movements associated with the cumulative schemes as background road traffic growth, many of which are likely to be more than 1km distant on the road network from the site. Cumulative schemes within the surrounding area for the purpose of the traffic and transport, air quality and noise and vibration assessment have considered in regard to road traffic and its associated effects. This approach is entirely appropriate, given the potential for wider reaching traffic and transport impacts through the highway network.

**2.103** Generally, the cumulative schemes to be included within a cumulative effects assessment will either have:

- Full planning consent, proposed schemes pending a decision, or a resolution to grant consent; and
- Produce an uplift of more than 10,000 m$^2$ (Gross External Area (GEA)) of mixed-use floorspace, or over 150 residential units; or
- Are office to residential conversions (granted under the General Permitted Development Order) giving rise to over 150 residential units.

**2.104** These parameters have been set to allow for an initial screening exercise to determine the schemes that, based on the scale of redevelopment (amount and mix of uses), could potentially have a cumulative effect with the Proposed Development and should be considered further within the cumulative effects assessment of the EIA. By applying these parameters to all the schemes coming forward, the cumulative effects assessment of the EIA becomes more focused on the larger schemes (i.e. those with the potential to interact in a cumulative manner), rather than trying to assess all applications for planning permission, including proposals for smaller, domestic applications such as loft and garage conversions, or small scale changes of use.

**2.105** The cumulative schemes considered within the EIA are included in **ES Volume 3, Appendix EIA Methodology – Annex 4** within this Chapter. Cumulative schemes to be assessed within the ES were presented within the EIA Scoping Report, additional cumulative schemes presented by LBTH have been included within this list as appropriate. Each technical chapter identifies which cumulative schemes have been considered, a table presenting this has been included within **ES Volume 3, Appendix EIA Methodology – Annex 5**. Where cumulative schemes have not been considered, justification has been provided.

**2.106** The Townscape Visual Impact approach to the cumulative assessment focuses on the additional effects of the Proposed Development on top of the cumulative baseline (i.e. as if the cumulative schemes were in place).

[35] *European Community (1999); Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.*

[36] *The methodology for determining a significant in-combination effect has been defined by the HS2 Phase 2a: West Midlands – Crewe Scoping and Methodology Report (July 2017) and the published HS2 Phase 2a Environmental Statement Volume 1 Introduction and Methodology and Volume 2 Community Area Reports (July 2017). The methodology for assigning significance to in combination effects has been specifically included in this ES to assess if there are any combination effects would result in a significant effect.*

The GLVIA acknowledge this as one of two main assessment approaches which are acceptable. It is considered that this approach is best suited to an urban environment, in which the cumulative effects between the Proposed Development and other schemes can be complex (including situations in which the effect of the Proposed Development could be lessened or removed entirely by cumulative schemes) and because, as also acknowledged in the GLVIA, it may not be considered reasonable to assess the effect of many complex schemes other than the Proposed Development in the manner required by the alternative approach, known as the 'combined effects' approach.

## *Assessment Criteria*

### *Terminology and Definitions*

#### *Reference to 'Impact' and 'Effect'*

**2.107** It is noted that the terms 'impact' and 'effect' are distinctly different. Having gained an understanding of the likely impact it is then important to know whether the change in environmental or socio-economic conditions results in a significant environmental effect. The impacts of the Proposed Development may or may not result in significant effects on the environment, depending on the sensitivity of the resource or receptor and potentially other factors (such as duration). The assessment of the likely significant effects of the development is a requirement identified by Schedule 4 of the EIA Regulations, as amended in 2018 and 2020.

#### *Receptor Sensitivity and Magnitude of Impact*

**2.108** To achieve a consistent approach across the different technical topics addressed within this ES, assessments broadly define the **sensitivity of the receptors** that could be affected by the Proposed Development and the **magnitude of impact or change from the appropriate baseline conditions** to derive the **resultant effect**.

**2.109** Terminology to describe the sensitivity of receptors and magnitude of impact or change from the baseline conditions is broadly as follows:

- High;
- Medium;
- Low;
- Negligible; and
- No Impact (in relation to magnitude of impact or change only).

**2.110** Each of the technical assessments provide further detail on the definition of each of the above terms specific to the topic in question and also provides the criteria, including sources and justifications, for quantifying the different levels of receptor sensitivity and 'impact magnitude'. Where possible, this has been based upon quantitative and accepted criteria (for example, national standards for air quality and noise), together with the use of value judgement and expert interpretation.

### *Identification of an Effect Scale*

**2.111** The basis for determining the resultant effect generally considers the sensitivity of the receptor and magnitude of impact or change from the appropriate baseline conditions. A generic matrix that combines the sensitivity of the receptor and the magnitude of impact to identify the resultant effect is provided within **Table 2.2.** Where a technical topic area uses a different process for determining the scale of effect, it is noted within the relevant chapter.

**Table 2.2 Scale Of Effects**

| Receptor Sensitivity | Magnitude of Impact | | | |
|---|---|---|---|---|
| | High | Medium | Low | Negligible |
| High | Major | Major | Moderate | Minor |
| Medium | Major | Moderate | Minor | Negligible |
| Low | Moderate | Minor | Negligible | Negligible |
| Negligible | Minor | Negligible | Negligible | Negligible |

[37] *Landscape Institute & Institute of Environmental Management and Assessment (2013); Guidelines for Landscape and Visual Impact Assessment: Third Edition, Routledge, London*

**2.112** **Table 2.3** provides the broad definition of the 'scale' of the resultant effect i.e. definitions of Major, Moderate, Minor and Negligible effects. The definitions in **Table 2.2** may be adjusted to suit the technical topic in question; where this is the case revised definitions of effect scale are presented in the technical assessments of this ES.

**2.113** Where there is 'No Effect' this is stated.

**Table 2.3 Broad Definitions of The Scale of The Resultant Effect**

| Scale of Effect | Description |
|---|---|
| **Major** | These effects may represent key factors in the decision-making process. Potentially associated with sites and features of national importance or could be important considerations at a regional or district scale. Major effects may also relate to resources or features which are unique to a receptor and which, if lost, cannot be replaced or relocated. |
| **Moderate** | These effects, if adverse, are likely to be important at a local scale and on their own could have a material influence on decision-making. |
| **Minor** | These effects may be raised as local issues and may be of relevance in the detailed design of the project but, are unlikely to be critical in the decision-making process. |
| **Negligible** | Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error, these effects are unlikely to influence decision-making, irrespective of other effects. |

### *Effect Nature*

**2.114** **Table 2.4** provides a definition of the 'nature' of the resultant effect i.e. definitions of Adverse, Beneficial and Neutral. Effects that are major, moderator or minor in nature are defined in terms of nature, negligible effects are not defined.

**2.115** Within the TVIA Effects are assessed as beneficial, adverse, or neutral. This is in line with guidance in the GLVIA[37] which states that a professional judgement should be made as to whether effects can be described as *'…positive or negative (or in some cases neutral) …'* (see GLVIA paragraph 5.37 in reference to landscape/ townscape, and paragraph 6.29 (from which the preceding quoted extract is taken) for visual effects). The assessment as beneficial or adverse is a 'net equation', since with regard to the receptor that is being assessed, there may be both positive and negative effects as a result of the development.

**Table 2.4 Definition of The Nature Of The Resultant Effect**

| Nature of Effect | Description |
|---|---|
| **Adverse** | Detrimental or negative effects to an environmental / socio-economic resource or receptor.<br>The quality of the environment is diminished or harmed. |
| **Beneficial** | Advantageous or positive effect to an environmental / socio-economic resource or receptor.<br>The quality of the environment is enhanced. |
| **Neutral** | Where the quality of the environment is preserved or sustained or where there is an equal balance of benefit and harm |

### *Geographic Extent of Effect*

**2.116** The ES (**Volumes 1** and **2**) identifies the geographic extent of the identified effects. At a spatial level, 'Site' or 'local' effects are those affecting the application site and neighbouring receptors, while effects upon receptors in the LBTH beyond the vicinity of the Site and its neighbours are at a 'district / borough' level. Effects affecting London are at a 'regional' level, whilst those which affect different parts of the country, or England, are considered being at a 'national' level.

### *Effect Duration*

**2.117** For the purposes of the ES, effects that are generated as a result of the demolition and construction works (i.e. those that last for this set period of time) will be classed as 'temporary'; these maybe further classified as either 'short term' or 'medium-term' effects depending on the duration of the demolition and construction works that generate the effect in question. Effects that result from the completed and operational phases of the Proposed Development are classed as 'permanent' or 'long-term' effects.

*Direct and Indirect*

**2.118** The ES identifies whether the effect is 'direct' (i.e. resulting without any intervening factors) or 'indirect' or 'secondary' (i.e. not directly caused or resulting from something else).

*Residual Effects*

**2.119** Where mitigation measures are identified to either eliminate or reduce adverse effects, these will be incorporated into the ES, for example either through the design, or will be translated into construction commitments; or operational or managerial standards / procedures.

**2.120** The ES will then highlight the 'residual' effects (those effects which remain following the implementation of suitable mitigation measures) and classifies these in accordance with the terminology defined above.

*Effect Significance*

**2.121** Following identification of an effect, the effect scale, nature, geographic extent and duration and whether the effects are direct or indirect, using the above summarised terminology, a clear statement is then made within the ES as to whether the effect is significant or not significant. As a general rule, the following applies:

- 'Moderate' or 'major' effects are deemed to be 'significant';
- 'Minor' effects are 'not significant', although they may be a matter of local concern; and
- 'Negligible' effects are 'not significant' and not a matter of local concern.

## STRUCTURE OF TECHNICAL ASSESSMENTS

**2.122** This ES reports on the potential (before mitigation) and residual (after mitigation) environmental effects of the Proposed Development during the demolition and construction works and on subsequent completion and operation. The ES also concludes with a summary of the likely significant beneficial, neutral and adverse environmental effects of the Proposed Development (**ES Volume 1, Chapter 16: Likely Significant Effects and Conclusions***)*.

**2.123** Each of the environmental topics considered in the EIA has been assigned a separate chapter in **ES Volume 1 (Chapter 6 to 14** inclusive) and **ES Volume 2**. Within each of the **ES Volume 1** technical chapters the assessment is presented and reported in the following format:

- An Introductory Table - setting out the author of the technical topic assessment, identification of relevant appendices, key topic related considerations and consultation as part of the EIA Scoping Report / Opinion;
- Assessment Methodology – an explanation of the approach to defining the baseline conditions and assessment scenarios and evolved baseline conditions, the approach to undertaking the impact assessment (construction and operation, and any key assumptions made) and the definitions of the nature and scale of effect and what effects are deemed to be significant;
- Baseline Conditions – a description of the baseline conditions of the site and surrounding area (as relevant to the technical topic in question – may include / be based upon a future baseline);
- Receptors and Receptor Sensitivity – identification of the existing and introduced (new) receptors on the site and in the surrounding area that may be affected by the Proposed Development and identification of their sensitivity;
- Potential Effects – an assessment of the likely significant effects of the Proposed Development during demolition and construction and on completion, setting out the impacts and effects associated with each aspect of the assessment and an evaluation of their significance against defined criteria without the implementation of mitigation;
- Site Suitability – a description of site suitability assessments undertaken for the Proposed Development, included where relevant to the technical topic;
- Mitigation Measures, Monitoring and Residual Effects - a description of the mitigation measures that are being committed to and a summary of the residual effects of the Proposed Development;
- Assessment of Future Environment – an assessment of the likely significant effects of the Proposed Development in relation to both an evolution of the baseline conditions and any in combination effects with the agreed committed development; and
- Likely Significant Effects – a short statement confirming which residual effects are considered to be significant.

**2.124 ES Volume 2** which comprises the Townscape, Visual Impact and Heritage Assessment, is structured as follows (noting that the assessment has been split into Part 1 – Townscape and Visual Impact, and Part 2 – Heritage):

Part 1: Townscape and Visual Impact Assessment

- Introduction - setting out the purpose of the volume;
- Planning Policy and Guidance - identification of relevant townscape and visual planning policy and guidance;
- Assessment Methodology - an explanation of the assessment framework, with reference to guidance relevant to townscape and visual assessments;
- Baseline Conditions - assessment of the current site condition and overview of the townscape baseline conditions;
- The Proposed Development - an assessment of the demolition and construction effects, and of the design quality of the completed Proposed Development;
- Views and Visual Impact Assessment - an assessment of the visual effects of the Proposed Development;
- Townscape Assessment - an assessment of the townscape effects of the Proposed Development;
- Mitigation – consideration of any mitigation measures;
- Cumulative Effects - an assessment of the effects of the Proposed Development in conjunction with relevant cumulative schemes;
- Residual Effects and Conclusion – a summary of the effects of the Proposed Development.

Part 2: Built Heritage Assessment

- Introduction - setting out the purpose of the volume;
- Legislation, Planning Policy and Guidance - identification of relevant heritage legislation, and planning policy and guidance;
- Assessment Methodology - an explanation of the assessment framework, with reference to guidance relevant to heritage assessments;
- Baseline Conditions - assessment of the current site condition and overview of the baseline heritage conditions;
- Potential Demolition and Construction Effects – an assessment of the effects of the construction of the Proposed Development on heritage receptors;
- Potential Completed Proposed Development Effects – an assessment of the effects of the completed Proposed Development on heritage receptors;
- Summary - a summary of the effects of the Proposed Development.

## ASSUMPTIONS AND LIMITATIONS

**2.125** The principal assumptions that have been made, and any limitations that have been identified, in undertaking the EIA are set out below. Assumptions specifically relevant to each technical topic have been set out in each technical chapter of the ES:

- Baseline conditions have been established from a variety of sources, including historical data, but due to the dynamic nature of certain aspects of the environment, conditions at the site and surrounding land uses may change;
- It is assumed that information received from third parties is accurate, complete and up to date;
- The assessments contained within each of the technical assessment chapters of the ES (**ES Volume 1, Chapters: 6 – 14** and **ES Volume 2**) are based on the assumption that mitigation measures are implemented – as set out in application drawings, through regulatory regimes or via the management controls, within **ES Volume 1, Chapter 4: The Proposed Development** and **ES Volume 1, Chapter 5: Demolition and Construction**, as well as the mitigation and monitoring measures outlined within **ES Volume 1, Chapter 17: Mitigation and Monitoring**;
- Demolition and construction works across the site would take place substantially in accordance with the programme of works described in **ES Volume 1, Chapter 5: Demolition and Construction**;
- The aim of the EIA is not to assess the Proposed Development's compliance / performance against planning policy, as this is considered within the Planning Statement that is submitted alongside the planning application. Instead reference is made to relevant national, regional and local policy and guidance to inform the scope of the assessment, the assessment methodologies applied, and the existence of any sensitive receptors to be considered;
- Where detailed information has not been available, reasonable assumptions have been made, and have been clearly set out, based on the professional experience of the author of the ES Chapter based on other developments of similar type and scale, to enable assessment of likely significant effects; and
- Cumulative Schemes identified are assumed to be implemented in accordance with the information that is publicly available and subject to the same regulatory regimes and good practice management controls as identified for the Proposed Development.

# Chapter 3: Alternatives and Design Evolution

## INTRODUCTION

**3.1** This ES Chapter summarises the main design alternatives considered by The Aberfeldy New Village LLP (the Applicant) and details the environmental considerations (including opportunities and constraints) that have influenced the design. Following this, a narrative is provided on the evolution of the selected option for the Site, focusing on key design modifications that were made during the design process. Environmental considerations which have influenced the design evolution process are discussed where relevant.

## SITE AND SURROUNDING CONTEXT

### *Site Description*

**3.2** The Site is irregular in shape and bordered by Bromley Hall School and Lochnagar Street to the north; B125 Abbott Road and Leven Road to the east; Culloden Primary School and residential areas off Blair Street to the south, beyond which lies the A13; and, A12 and properties on Joshua Street to the west. It currently comprises predominantly residential uses, refer to **Figure 3.1**. Some non-residential buildings are located on or in close proximity to the Site these include:

- Existing retail and community uses along Aberfeldy Street;
- St Nicolas Church adjacent to Millennium Green;
- Culloden Primary School on Dee Street;
- The unoccupied, listed Bromley Hall School to the north of the Site; and
- The existing Aberfeldy Community Centre. As a result of the emerging development, more non-residential uses are proposed in close proximity to the Site. These include:
- A health centre, pharmacy, new relocated community centre and new retail units as part of Phase 3 of the Aberfeldy Village Development;
- Retail and workspace on the Poplar Riverside development at Leven Road; and
- A potential new secondary school on Leven Road.

**3.3** The Site currently consists of the following buildings, which are listed below:

- Abbott Road;
- Aberfeldy Street;
- Balmore Close;
- Blairgowrie Court;
- Heather House;
- Jura House;
- Tartan House;
- Thistle House;
- Kilbrennan House;
- Nos. 33-35 Findhorn Street;
- 2a Ettrick Street ;
- 384 Abbott Road (Poplar Works);
- Lochnagar Street;
- Aberfeldy Neighbourhood Centre;
- Nairn Street Estate; and,
- Leven Road Open Space and Braithwaite Park.

**3.4** Photos of the Site are provided below in **Figure 3.1**. The location of the Site and its surrounding context is illustrated in **Figure 3.1**. The buildings listed above are presented in **ES Volume 1, Chapter 5: Demolition and Construction, Figure 5.1**.

**3.5** Aberfeldy is one of the most physically and geographically segregated parts of the borough, with the A12 and A13 road networks splitting the estate from the rest of Poplar and Blackwall.

## THE ABERFLEDY VILLAGE MASTERPLAN (PHASES 1-3)

**3.6** The Aberfeldy Village Masterplan received outline planning consent in 2012 (the '2012 OPP'). Phases 1, 2 and 3a of the original masterplan have been completed on site and are now occupied. Phase 3b of the masterplan is currently under construction and nearing completion. The Proposed Development replaces the development that would have come forward under Phases 4-6 of the 2012 OPP.

**3.7** The key concept for the Aberfeldy Village masterplan was to create a series of new routes in and around the site, a narrative which continues into the proposals for the New Aberfeldy Masterplan. The completed phases offer a variety of new homes across a series of medium rise, high density courtyard buildings all of which are arranged around a central linear park, East India Green, which features soft planting and informal play spaces. Lower, more domestic scale buildings sit adjacent to the neighbouring site, whilst taller more robust buildings are located along the A13 to provide a degree of protection to this urban edge.

**3.8** Upon completion of Phase 3b, Aberfeldy Village will collectively provide 901 new homes, in addition to extending the non-residential offer of Aberfeldy Street to the south, with a pharmacy, new community centre, and health centre. This is in addition to the facilities in earlier phases which include a residents clubhouse and gym.

### *Poplar Works*

**3.9** Poplar Works recently opened on the Nairn Street Estate, which forms part of the Aberfeldy Village Masterplan site. It was built on the site of underused garages on the estate which run parallel to the A12, therefore utilising a difficult space to create much needed space for work and culture. There are a total of forty studios over two sites, as well as training spaces, a small production unit and a cafe.

**3.10** Poplar Works provides studios and workshop spaces for fashion professionals. It is a hub which will help small businesses to grow as well as creating employment opportunities in Poplar. The goal of Poplar Works is to help people and businesses reach their full potential.

**3.11** Poplar Works is a partnership between Poplar HARCA, London College of Fashion, UAL and The Trampery. The initiative has been supported by the Mayor of London and is part of the Fashion District.

**3.12** Whilst Poplar Works brings many benefits to the community in terms of workspace, promoting creativity and supporting students and local businesses, the repurposing of the existing garages has also brought with it additional benefits including aesthetic improvements to the street and the public realm and the buildings themselves which provide a buffer to noise and air pollution along Nairn Street

## LOCAL ENVIRONMENTAL CONTEXT

### *Existing and Emerging Heights*

**3.13** The Site itself is characterised predominately by low rise development (up to four storeys). However, its surroundings have a diversity of heights. Directly to the east of Aberfeldy Street and Abbott Road an area of two storey terrace homes reside, to the south-east buildings of four to ten storeys have recently been constructed as part of Phases 1-3a of the Aberfeldy Village development, and to the north Bromley Hall School sits at just one storey.

**3.14** To the north east along Poplar Riverside, developments with significant height are emerging with proposed buildings reaching twenty one storeys; similarly to the north west, the proposals for the Teviot Estate regeneration would bring some taller buildings and increase heights in this area. **Figures 3.3** indicates the land uses of the existing area proposed emerging development. **Figure 3.4** indicates the existing building heights for the site, surroundings and that of emerging development around the Site.

**3.15** To the west of the Site, it is predominately two to four storey buildings which sit adjacent to the Brownfield Estate which includes Balfron Tower and Carradale House at twenty six and eleven storeys respectively.

### *Townscape and Built Heritage*

**3.16** There are no listed buildings within the Site and the Site is not located within a Conservation Area (CA). The nearest conservation areas are, see **Figure 3.2**:

- The Balfron Tower Conservation Area is located approximately 15m west of the Site;
- The St Frideswide's Conservation Area, approximately 150m to the south west;
- The Langdon Park Conservation Area, approximately 100m to the north west;
- Naval Row Conservation Area, approximately 300m to the south;
- The All-Saints Conservation Area, approximately 300m to the south west;;
- Lansbury Conservation Area approximately 450m to the west;
- Limehouse Cut Conservation Area approximately 175m to the north;
- St Matthias Church, Poplar Conservation Area approximately 600m to the southwest; and
- Three Mills Conservation Area approximately 950m to the north.

**Figure 3.1 Existing Site Context and Immediate Surroundings**


**Photo 1:** East India Green, Aberfeldy Village

**Photo 2:** Aberfeldy Street meanwhile initiative

**Photo 3:** View along Dee Street to Balfron Tower

**Photo 4:** Culloden Street and Dee Street

**Photo 5:** Dee Street pedestrian underpass

**Photo 6:** St Nicholas Church, Aberfeldy Street

**Photo 7:** View looking west along Balmore Close

**Photo 8:** Entrance to pedestrian underpass along Abbott Road

**Photo 9:** Pedestrian underpass under the A12

**Photo 10:** Jolly's Green

**Photo 14:** Poplar Works development along Nairn Street

**Photo 16:** Looking south along Nairn Street












**Figure 3.2 Conservation Areas and Listed Buildings Surrounding the Site**

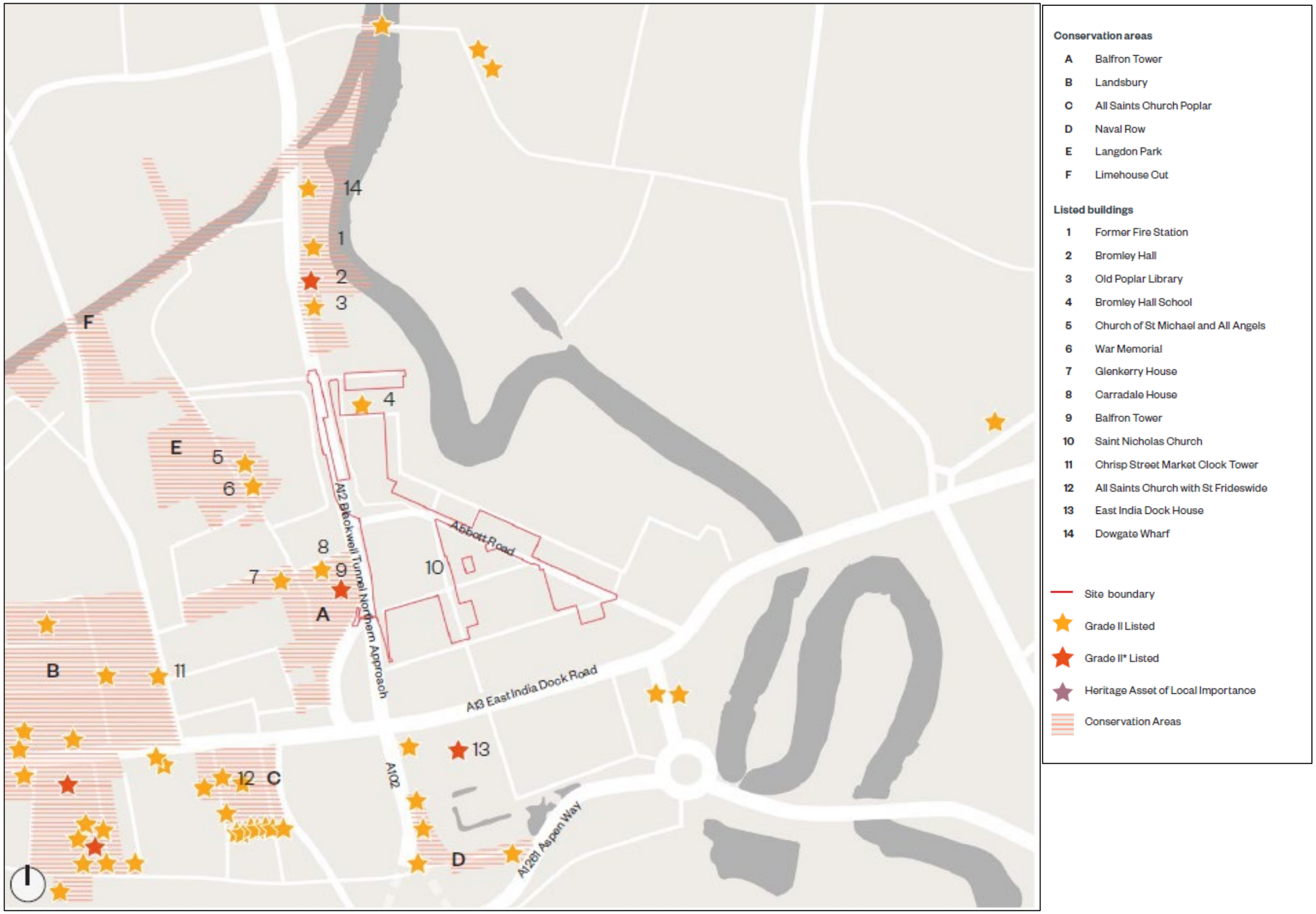


**Figure 3.3 Existing Land Uses and Proposed Uses for Emerging Development**

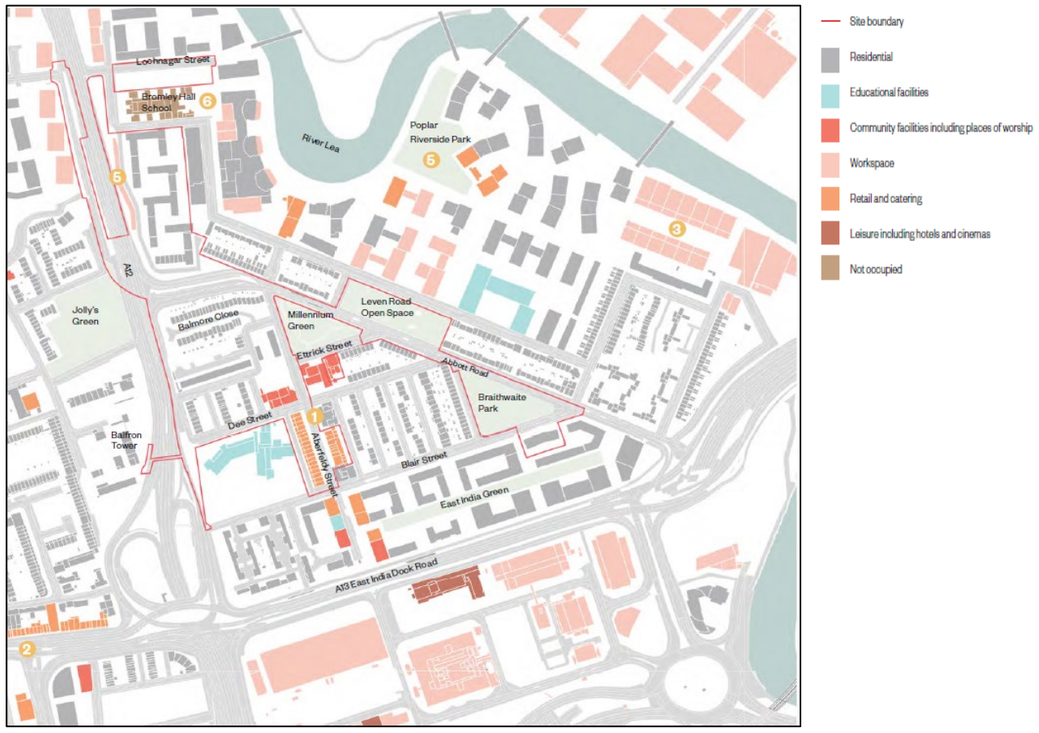



**Figure 3.4 Existing Building Heights and Height of Surrounding Area Including Emerging Development**


3.17 There are no listed buildings located within the Site, however the following listed buildings (**Figure 3.2**) are located in the surrounding area.

- The Balfron Tower, St Leonard's Road (Grade II* listed) approximately 15m to the west);
- Carradale House, St Leonard's Road approximately 99m to the west;
- Glenkerry House, Burcham Street approximately 190m to the west;
- Church Of St Michael and All Angels & War Memorial, St Leonard's Road approximately 196m to the to the west;
- Former Bromley Hall School, Bromley Hall Road to the north but south of Lochnagar Street;
- Poplar Public Library, Gillender Street approximately 120m to the north;
- Bromley Hall, Gillender Street (Grade II*) approximately 160m m to the north;
- Former Fire Station, Gillender Street approximately 230m to the north;
- Church of St Michael and All Angels, St Leonard's Road approximately 196m to the west;
- Former Financial Times Print Works, East India Dock Road (Grade II*) approximately 170m to the south;
- All Saints' with St Frideswide Church (Grade II) approximately 473m to the south west;
- Poplar Baths (Grade II) approximately 590m to the west;
- St Matthias Church (Grade II) approximately 790m to the south west;
- Susan Lawrence and Elizabeth Lansbury Schools (Grade II) approximately 640m to the west;
- Chrisp Street Market Clock Tower (Grade II) approximately 620m to the west; and;
- East India Dock Pumping Station (Grade II) approximately 420m to the south; and
- Plaque on Modern Dock Wall Facing West, East India Dock Road approximately 620m to the south.

3.18 The full list of conservation areas and listed buildings assessed within the EIA are presented within **ES Volume 2: Townscape, Visual Impact and Heritage Assessment**.

### *Transport*

3.19 The site is surrounded by major transport infrastructure, including the A12 and A13, two major north-south and east-west routes respectively, which create significant severance between the site and the rest of the Borough and reinforce the neighbourhood as an urban island.

3.20 The Site benefits from a Public Transport Accessibility Level (PTAL) rating ranging between 3 (poor) to 4 (moderate) which is in part due to the bus route which runs through the site, accessed by the 309, 108,115 and D8 bus routes. Additionally, the closest station to the Site is Langdon Park Docklands Light Railway Station, located approx. 275m to the west of the Site. Bromley-By-Bow London Underground Station is located approximately 800m north of the site. Cycleway 3 forms the main strategic cycle route in the vicinity of the site and provides a connection into Central London. There are a number of cycle routes in the vicinity of the site including the Cycleway 3 which runs along the A13 East India Dock Road.

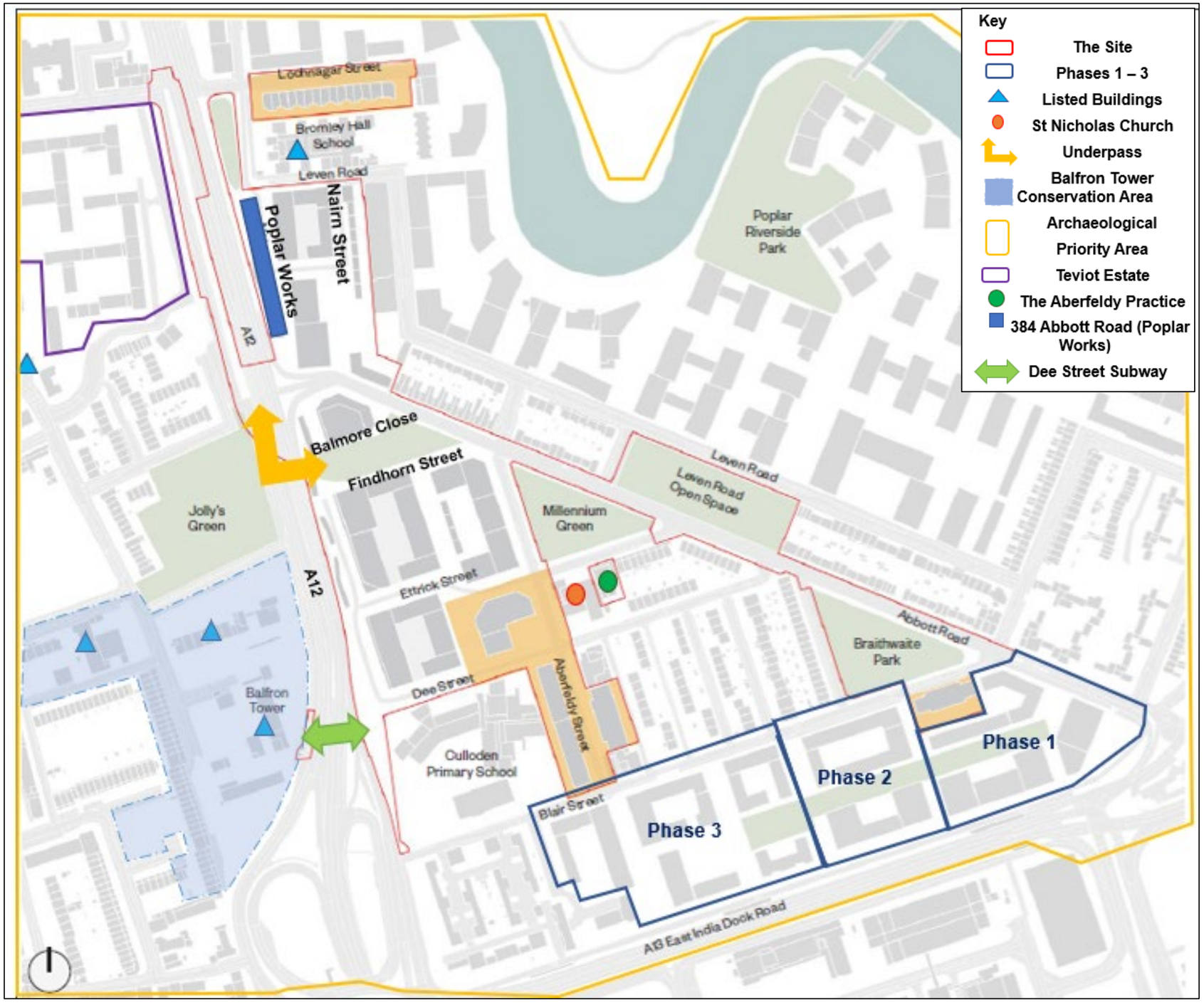
3.21 Currently there are no cycle routes within the Aberfeldy Island, and the closest cycle route is the CS3 to the south. There are two pedestrian underpasses connecting the site to the west under the A12: one from Abbott Road and another from Dee Street. Both of these underpasses are in poor condition and considered unpleasant and unsafe. In addition, these are not cycle friendly.

3.22 There is very little access to public transport within the site itself, only the 309 bus route goes through the site, connecting it to Canning Town. There are other bus routes along the A12 and A13 connecting to Central London.

3.23 Within 15 minutes walking distance there are a number of DLR stations with trains running regularly to Central London. Despite being in close proximity, the access to these facilities is not obvious and easy.

3.24 The site is very well connected with the wider area, but poorly connected to the immediate context, which has an isolating effect on this neighbourhood.

**Figure 3.5 Environmental Constraints Map on Proposed Buildings**



### *Air Quality*

**3.25** The A12 to the west of the site and the A13 (East India Dock Road) both generate $NO_2$ and $PM_{10}$ levels in excess of the boroughs objectives and as a result the site is located within a designated Air Quality Management Area (AQMA). The AQMA encompasses all main roads within the borough and covers the entire southern and eastern areas of the borough.

### *Noise*

**3.26** Similar to air quality, the A12 and the A13 both generate high noise levels, in excess of 75dB. The A12 carries 6 lanes of busy traffic and bus lanes, whilst the A13 carries 4 lanes of traffic and plus bus lanes.

### *Archaeology*

**3.27** The Site is located within the Lea Valley Archaeological Priority Area (Tier 3).

### *Social Infrastructure and Housing*

#### *Education*

**3.28** The Proposed Development is located within Poplar Planning Area of LBTH's School Place Planning Strategy, which is home to 14 primary schools. There are currently 890 Reception places available in the Poplar catchment area. There are 9 secondary schools in LBTH with a total pupil roll of 9,003, and overall capacity of 10,444 places

#### *Healthcare*

**3.29** A planning obligation is proposed as part of the Section 106 Agreement for this Hybrid Application to secure the re-provision of The Aberfeldy Islamic and Cultural Centre and Mosque. The Section 106 Agreement associated with the Extant Permission required the Faith Centre's re-delivery and thus it is proposed that this is transposed to the new Section 106 Agreement. The existing GP Practice at 2a Ettrick Street will be re-provided under phase 3b of the Extant Permission within a new, larger Health Centre. Therefore, as this building will be vacant and at the heart of the Masterplan and in close proximity to the new Town Square, the Applicant is currently exploring the Faith Centre's relocation as part of a future change of use application. There are 8 GP practices within one-mile of the site, with a total of 92,630 registered patients and 42.4 FTE GPs. This gives rise to an average of 2,185 patients per FTE GP, which is higher than the HUDU benchmark of 1,800 patients, and the average for the LBTH Clinical Commissioning Group (CCG) (of 2,026 patients per FTE GP).

**3.30** Within the Low Impact Area (LIA), there are six dental practices, with closest to Site being the All Saints Dental Care (640m). There are a total of 19 dentists working in the six dental practices. Currently, National Health Service (NHS) Choices does not provide information on the number of patients registered with the dentist practices but based on the existing population of the LIA this equates to around 2,240 population per dentist which is above the best practice benchmark of 2,000.

#### *Open Space*

**3.31** The Site is located to the southwest of the meandering River Lea, which feeds in to Bow Creek and ultimately the River Thames. At present, nearby water spaces are typically difficult to access due to major infrastructure and lack of pedestrian routes. This will change as surrounding development comes forward.

**3.32** Leven Road Open Space and Braithwaite Park are located within the Site. There are a number of green areas and parks in close proximity to the Site, including Millennium Green, East India Green and Jolly's Green.. The Site is within walking distance of these spaces, connections which will be retained and enhanced in order to promote their use.

**3.33** The closest large green areas are Langdon Park and Jolly's Green, within 12 and 6 minutes walking distance respectively. Despite being so close, they are not easily accessible due to the severance caused by the A12 and the poor character of the existing underpasses which cross the A12.

#### *Housing*

**3.34** There are 330 existing homes to be demolished within the new masterplan area, which are summarised within **Table 3.1**.

**Table 3.1. Existing Homes to be Demolished**

| Dwelling Size | Social Rent | | Leaseholders/Freeholders | |
|---|---|---|---|---|
| | *Homes* | *Hab Room* | *Homes* | *Hab Room* |
| 1 Bedroom | *39* | *78* | *8* | *106* |
| 2 Bedroom | *71* | *213* | *28* | *91* |
| 3 Bedroom | *123* | *491* | *38* | *153* |
| 4 Bedroom | *15* | *75* | *4* | *20* |
| 5 Bedroom | *2* | *12* | *0* | *0* |
| 6 Bedroom | *2* | *12* | *0* | *0* |
| **TOTAL** | ***252*** | ***881*** | ***78*** | ***370*** |

**3.35** The decant strategy submitted alongside the planning application[1] provides further details and sets out the relocation options that will be available to existing residents that currently reside in the homes that are to be demolished to make way for the new scheme. The proposed phasing strategy and approach to redevelopment will allow all residents the opportunity to move only once and stay on the Aberfeldy Estate should they so wish. Poplar HARCA have given an undertaking to all affected residents to work with them on a one to one basis to establish their housing needs and provide a relocation solution that is tailored to those needs.

### *Ecology*

**3.36** The site survey of the Site identified only common and widespread urban habitats of limited ecological value. The introduced shrub habitat was present in ornamental planting across the Site. This included numerous trees, most of which were young birch (Betula pendula), cherry (Prunus avium), holly (Ilex aquifolium), elder (Sambucus nigra) and Lawson's cypress (Chamaecyparis lawsoniana). Identification of herbs included greater plantain (Plantago major), dove's-foot cranesbill (Geranium molle), flatweed (Hypochaeris radicata) and ryegrass (Lolium sp.).

**3.37** The buildings and hardstanding possess no vegetation, and all surfaces are sealed and impermeable. The Site is considered to have negligible potential to support all notable and/or protected species with the exception of nesting birds. Nesting bird value is associated with the woody shrubs and trees on site, which are considered to have moderate potential to support nesting birds.

**3.38** The buildings and trees on site have negligible potential to support roosting bats as they did not provide any potential access or egress points or suitable roosting area. This is primarily due to the fact that the school buildings are relatively new and well maintained and that the trees are generally young in nature.

### *Flood Risk*

**3.39** The Site is located within Flood Zone 3, in close proximity to the River Lea. The site therefore has a 1 in 100 or greater probability of the river flooding each year. However, the Site, benefits from the flood defences along the river which lowers this risk.

[1] DP9 Decant Strategy 05/10/21 Update Document

## FUTURE ENVIRONMENTAL CONTEXT

### Policy Designations

**3.40** The Site is partially located within the Ailsa Street Site Allocation, as designated under the new Local Plan 2031. The Ailsa Street Site Allocation outlines a number of design principles for new developments including the provision of appropriate building heights, scale and massing as well as the provision of an active and well-defined street frontage along Lochnagar Street, a stronger east-west link between the River Lea and the Langdon Park DLR station and the creation of an active square at the corner of the A12 and Lochnagar Street.

**3.41** The Site is also located within the Draft Leaside Area Action Plan (2021) under Site: LS-A, which aims to improve the quality and connectivity of the area, encourage new employment, access to community facilities and policies relating to the type and quality of open spaces and homes in the area.

**3.42** The Site is located within the Poplar Riverside Opportunity Area which is considered to have an indicative capacity of providing 9,000 homes and 3,000 jobs.

**3.43** The Site is grouped under the Lower Lea Valley Opportunity Area, which across the area, has the potential capacity to provide a minimum of 32,000 new homes and 50,000 indicative employment capacity.

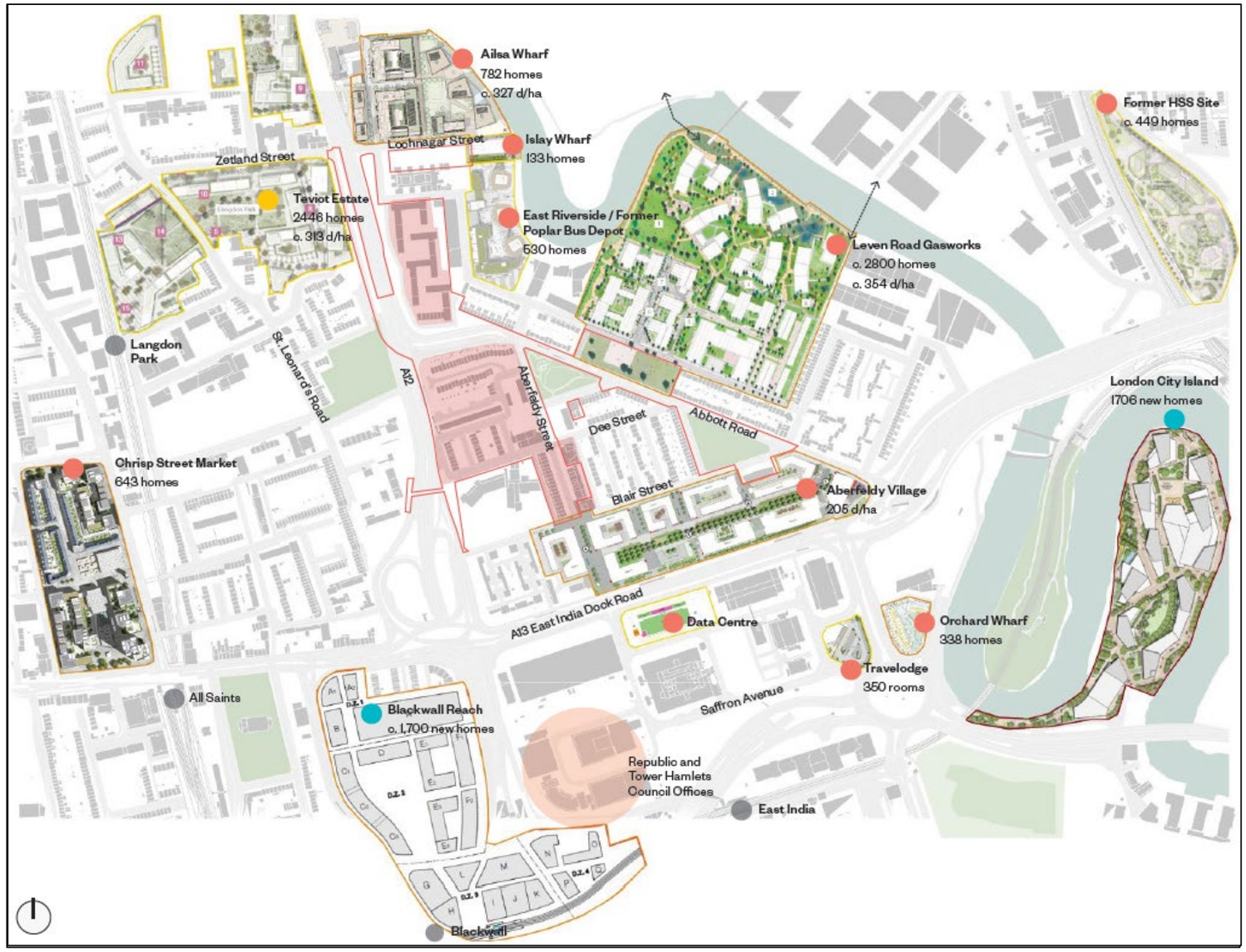
### *Approved Schemes and Heights*

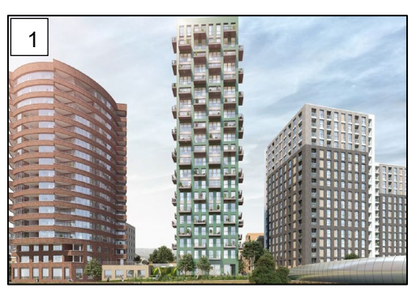
**3.44** The area around Aberfeldy Estate and along the River Lea is changing rapidly and will continue to change as a result of the new and emerging development in the Leaside area which surrounds the site (**Figure 3.6)**. New developments both in the pipeline and with planning approval include:

- Islay Wharf (1);
- East Riverside / Former Polar Bus Depot (2);
- Leven Road Gasworks (3)
- Chrisp Street Market (4);
- Ailsa Wharf (5);
- The Teviot Estate (6);
- Poplar Riverside (7); and
- Blackwall Reach (8).

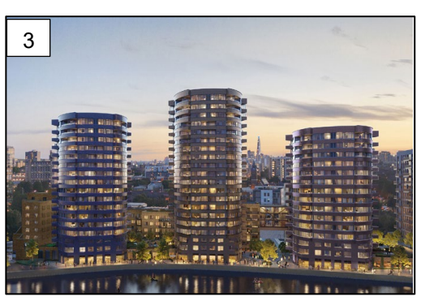
**3.45** This changing context has informed the proposed masterplan, in terms of its layout, proposed massing, use and movement and open space strategy. By responding to this changing surrounding context, it will help to create an active, liveable and well-connected neighbourhood which responds to the needs of the community both now and in the future.

**Figure 3.6 Future Environmental Context with Emerging Development**

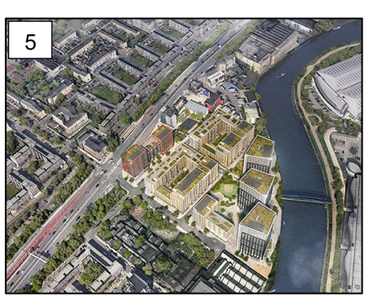










## ALTERNATIVES ANALYSIS

**3.46** The following sections review the alternatives to the Proposed Development that have been considered by the Applicant including:

- The Do-Nothing / No Development Alternative;
- Alternative Sites; and
- Alternative Designs.

### *Do Nothing / No Development Alternative*

**3.47** The Do-Nothing / No Development Alternative refers to the option of leaving the Site in its current state. Aberfeldy is one of the most physically and geographically segregated parts of the borough, with the A12 and A13 road networks splitting the estate from the rest of Poplar and Blackwall. The Do-Nothing would not be desirable as the existing housing estate in in a poor state of repair and need in need of improvement. The Do-Nothing option on the Site has therefore not been considered in further detail as the Site represents an opportunity to be redeveloped to provide much needed housing and public realm enhancements to the Aberfeldy Estate in accordance with The London Borough of Tower Hamlets Regeneration Delivery Plan2.

**3.48** Regeneration of this nature will lead to both new residential floorspace and employment opportunities which leads to other direct and indirect socio-economic benefits that would otherwise not be realised should the site be left in its current state.

**3.49** In addition, connected open space areas are limited within the existing area of Poplar. The Proposed Development, through the construction of new public open space, the pedestrianisation of the vehicular underpass and a new Healthy Street connecting new and existing open spaces (see **ES Volume 1, Chapter 4: The Proposed Development**) will result in new areas for existing and proposed residents as well as facilitating pedestrian movement from the east to the west of Poplar.

### *Alternative Sites*

**3.50** No alternative sites or locations have been considered for the Proposed Development. The Site is identified for regeneration by LBTH in their Regeneration Delivery Plan.

### *Alternatives Designs*

**3.51** The Design Evolution section of this chapter sets out the key design considerations and the framework principles which have guided the evolution of the Proposed Development. The design has evolved as a result of these starting principles. No wholescale alternative designs have been developed, which differ from these starting principles, however the design of the Proposed Development has emerged and evolved in response to feedback from the pre-application consultation process (both in terms of the public consultation process and the pre-application discussions with LBTH, Transport for London (TfL) and the Greater London Authority (GLA)) as well as design development, and input in relation to the technical and environmental design aspects of the scheme.

**3.52** Where design options have been influenced by environmental considerations and assessment work, this has been discussed within the Design Evolution section of this chapter as relevant.

## CONSULTATION

### *Statutory Stakeholder Consultation*

**3.53** The application is referable to the GLA as it exceeds the relevant thresholds set out in The Town and Country Planning (Mayor of London) Order 2008. Accordingly, the GLA has been involved in formal pre-application discussions with the Applicant and LBTH from an early stage with ongoing pre-application discussions.

### *Pre-application Discussions*

**3.54** Pre-application discussions have been held with the Council and the GLA on the evolving masterplan since 2019. The evolving masterplan was presented to the LBTH's Conservation and Design Advisory Panel (CADAP) on 12th July 2021 and 9th August 2021.

**3.55** Consultation has also taken place with other statutory consultees including Historic England.

**3.56** Pre-application meetings on the evolving masterplan have been held regularly. The principal meeting topics included:

- Planning Policy and Land Use;
- Design and Townscape;
- Transport; and
- Open spaces and Public Realm.

**3.57** Due to the nature of the Proposed Development the Applicant has been working closely with TfL and have met regularly for pre-application discussions. TfL recognise the opportunity that the closure of the underpass to through traffic presents and that it could deliver transformation change to the local area by creating a high volume east-west walking and cycling connection.

**3.58** The Applicant has also engaged in statutory consultation exercises for a number of emerging policy documents including the draft Leaside Area Action Plan, the draft Tall Buildings Standard Procedure Document (SPD), the adopted High Density Living SPD and the adopted Planning Obligations SPD. The Applicant has submitted representations as a key stakeholder with substantial land interests in Tower Hamlets and London with a view to promoting development at Aberfeldy and raising the profile of key local issues such as addressing the severance caused by the A12.

### *Public Consultation*

**3.59** Public consultation has been ongoing for the last two years. This includes the formation of the Residents' Steering Group (RSG) which monitors and scrutinises all aspects of the masterplan and whose feedback has directly informed and shaped the scheme to date. The project team have also undertaken the unique approach of consulting with young people, to ascertain their priorities and aspirations for the area.

**3.60** **Table 3.1** outlines below a list of the engagement undertaken in support of the new masterplan.

**Table 3.1. Engagement Activity Undertaken**

| Month | Engagement Activity |
|---|---|
| June 2019 | Listening exercise undertaken by Poplar HARCA with residents in the Nairn Street, Abbott Road and Leven Road area to discuss priorities in relation to regeneration. |
| August 2019 | Listening exercise undertaken by Poplar HARCA with residents in Aberfeldy West to discuss regeneration priorities. |
| June – July 2020 | Planning for Real consultation exercise with residents, with 280 residents taking part, generating over 2,500 ideas and suggestions. |
| September – October 2020 | Residents endorse regeneration masterplan, with 93.1% in favour of the plans on a 91.1% turnout in estate ballot |
| Ongoing | ZCD Architects working with pupils from Culloden and Langdon Park schools to hear their ideas to improve Aberfeldy, culminating in the creation of a Young Person's Manifesto that has helped to shape the masterplan (see below). Distribution of Poplar HARCA newsletters on the Aberfeldy regeneration. |
| November – December 2020 | First round of consultation held on the proposals with the wider Poplar community. Consultation pack describing the initial proposals/questionnaire issued to 4,881 households and businesses in the area 'Meet the team' consultation webinars were held on the following dates:<br>- Tuesday 17th November; and<br>- Saturday 21st November. |
| December 2020 | Residents' Steering Group (RSG) workshop to discuss the residential element of the new masterplan. |
| January 2021 | RSG workshop to discuss priorities and aspirations for the existing and proposed open spaces. |
| February 2021 | RSG workshop to discuss proposed enhancements to the existing streets. |
| March 2021 | RSG workshop to discuss new community, leisure and retail spaces. |
| April 2021 | Site walkabout with the RSG to discuss detailed Phase A proposals. |
| May 2021 | Door-knocking exercise held with Aberfeldy Village Phase 3 residents to find out more about what they |

[2] *London Borough of Tower Hamlets, Regeneration Delivery Plan, 2019*

| | |
|---|---|
| | like and don't like about their development, to inform the latest plans |
| July 2021 | Consultation pack describing updated masterplan proposals/questionnaire issued to 4,906 households and businesses in the area. |
| August 2021 | RSG meeting with Transport for London Presentation to LB Tower Hamlet's Strategic Development Committee (SDC) on the masterplan proposals – Monday 16th August |
| September 2021 | Public consultation event at the Aberfeldy Neighbourhood Centre: 4th September March 2021 RSG workshop<br>Virtual Community Forum in partnership with the London Borough of Tower Hamlets: 6th September<br>Site visit and briefing tour with LBTH councillors, Thursday 9th September |

**3.61** As described above, the design process has involved listening to children and young people. Secondary school pupils developed a manifesto which clearly sets out their wishes for their new neighbourhood. The design team have worked to these requests. As designs have evolved the young people have had opportunity to check the manifesto has been met. Other residents and local people, including local councillors and planning officers, have been engaged in the young people's work.

**3.62** ZCD Architects, supported by Levitt Bernstein, Morris and Company and LDA delivered as an engagement programme for young people who, in turn, provided l feedback to steer the design.

**3.63** Their manifesto is evidence of their everyday issues. They know Aberfeldy well and recognise its short comings. Their input has had an impact on the design of all communal and open spaces within the masterplan, the connections between these spaces, the supporting community uses, meanwhile opportunities and beyond.

**3.64** Design considerations by the design team have incorporated within the masterplan, in response to feedback from children and young people, in their manifesto and in early design discussions, include:

- Improved connectivity between homes, community infrastructure and open spaces for pedestrians and cyclists (**Figure 3.7** details the community connections across the area);
- Improved road safety for pedestrians and cyclists and an improved environment to walk around;
- More and improved access to shared green spaces, with these spaces offering play opportunities for all ages;
- Improved play and hang out opportunities for teenagers including a bucket swing, climbing frame and social benches and improved opportunities for diverse ball games. Improved opportunities for adventurous play and exercise including a good outdoor gym, bouldering and parkour. Informal hard spaces for scooting, skating and skateboarding. More incidental and informal doorstep play;
- Improved lighting to key routes subject to biodiversity considerations;
- Improved overlooking throughout;
- More intergenerational spaces;
- Enhanced school street;
- Growing spaces (private and communal);
- Quiet spaces;
- Spaces for community events;
- Diverse and welcoming neighbourhood;
- More natural areas, greening, rooftop gardens and biodiversity. Rain gardens and reduced run off;
- Low carbon design;
- Sufficient refuse stores;
- Meanwhile uses such as markets, pop ups, bike stores, car free areas and spaces to grow food; and
- Welcoming signage.

## DESIGN EVOLUTION

**3.65** The following sections of this chapter describe the design evolution processes undertaken by the Applicant's Design Team and is structured around the initial design brief, the key design changes, the outcomes following pre-application consultation meetings and public consultation that have led to the final design of the Proposed Development. The design process looked at numerous different design iterations and options based on an initial design concept for the Site. The variations of the scheme emerged in response to input from comments made during the consultation process as well as design development and the technical aspects of the scheme from environmental analysis.

**3.66** The EIA team has worked alongside the Design Team to ensure that 'mitigation by design' principles have been incorporated into the evolving scheme, and so the evolution of the design has included, where relevant, consideration of environmental effects and issues.

### *Design Considerations*

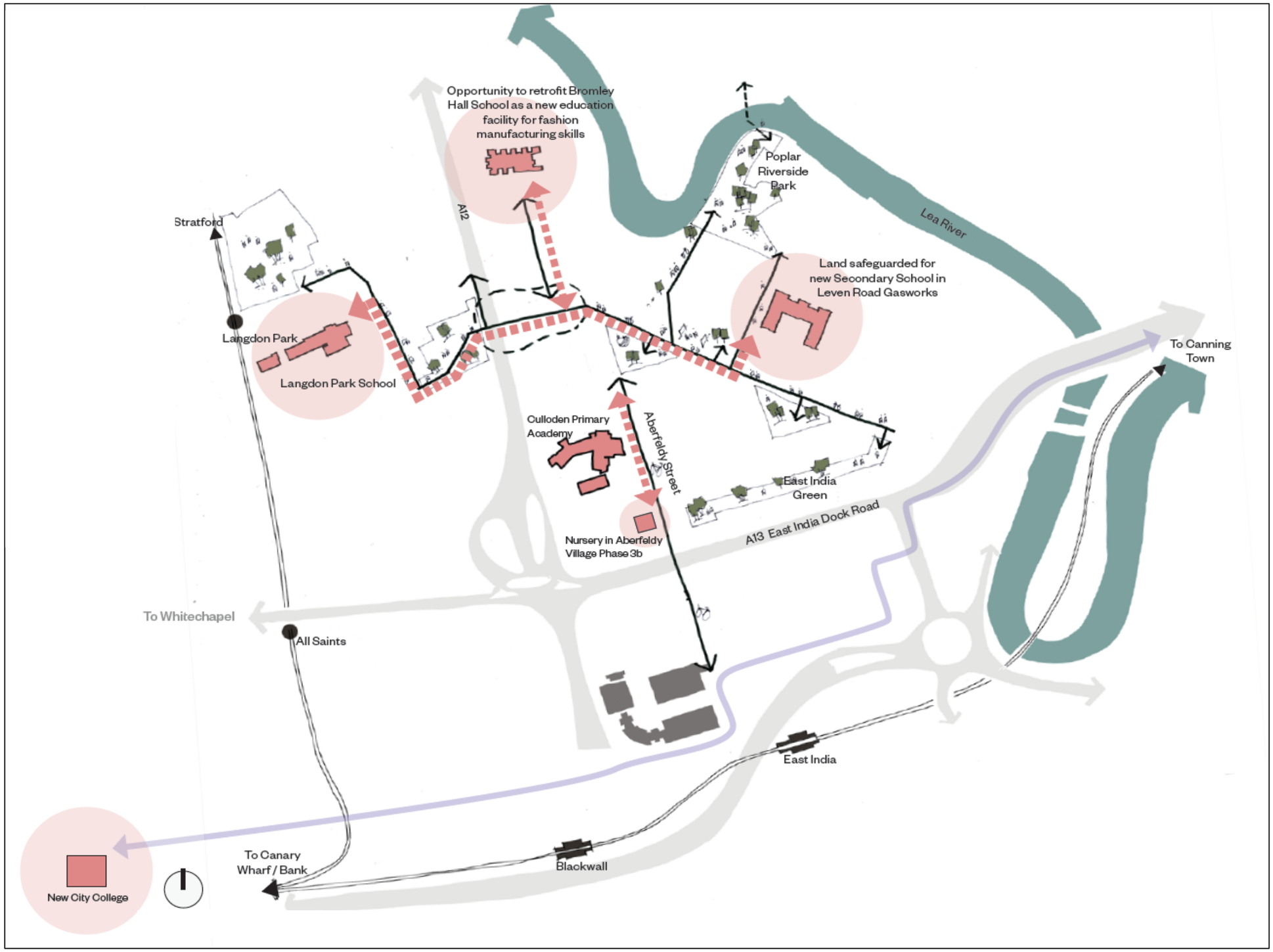
**3.67** Aberfeldy is located within a triangular shaped urban island, which is severed by the River Lea to the east, the A13 to the south and the A12 to the west/north west. The design of the Proposed Development has evolved whilst giving consideration to the site and surrounding context.

**3.68** The key considerations during the design evolution of the Proposed Development are presented below:

- Respond to and address the severance caused by the strategic infrastructure that surrounds the site (A12, A13 and River Lea);
- Improve pedestrian connectivity between the Site and the west of the A12 by repurposing or improving the existing vehicular and pedestrian underpasses;
- Improve the character and environment of the existing Dee Street underpass;
- Improve connectivity and permeability within the Site generally and ensure that pedestrian movement within the site stitches into the surrounding movement network including any emerging connections;
- Create a new public green open space at the heart of the Proposed Development;
- Create new public spaces throughout the Proposed Development;
- Improve the existing green spaces of Leven Road Open Space and Braithwaite Park and connect the green spaces along a Healthy Street;
- Traffic calm Abbott Road and make it more pedestrian friendly;
- Retain and integrate existing mature trees into new public realm where possible;
- Continue the narrative of Poplar Works and introduce a new creative hub parallel to the A12;
- Improve the retail offer along Aberfeldy Street and promote it as a Local Centre;
- Consider the noise and air quality impact of the A12 and create a buffer to this through landscaping and buildings to help minimise the noise and air quality impact of the A12 on the site;
- Consider the location of heritage assets and listed buildings in close proximity to the site and their architectural character, including Balfron Tower, Carradale House, Glenkerry House, Bromley Hall School and Saint Nicholas Church;
- Consider the Site's location with the Poplar Riverside Opportunity Area, and the opportunity to locate taller buildings along the A12, whilst responding to the listed landmarks of Balfron Tower and Bromley Hall School;
- Consider the location of the site in proximity to surrounding conservation areas, notably the Balfron Tower Conservation Area;
- Consider the existing and emerging built form adjacent to the Site when determining the scale and massing of the Proposed Development; and
- Consider the Site's location within Flood Zone 3 and the proximity of the River Lea and River Thames.

**3.69** Each of the above consideration in combination with the surrounding environmental context and consultation with various statutory bodies and the public, led to a collaborative process with the Design Team and various technical assessments. These are described in more detail below as a number of these considerations led to mitigation measures being embedded into the scheme to avoid, reduce, and offset potentially adverse environmental effects.

**Figure 3.7 Important Community Connection Across the Proposed Development**



### *Initial Scheme / Initial Design Concept*

**3.70** Through the design process and following public consultation, pre application meetings and two Quality Review Panels (QRPs), a number of changes were made in relation to the following aspects of the Proposed Development:

- Site Layout and redline boundary; and
- Building massing;

#### *Site Layout and Redline Boundary*

**3.71** The initial masterplan of the Proposed Development (refer to **Figures 3.8-3.11**) was initially developed and included two scenarios to allow for the inclusion or exclusion of the Culloden Academy School. The redline boundary of Scenario A did not include the existing Culloden Primary School site and therefore no school was proposed on the Site, whilst Scenario B considered a proposal which included the school site and relocation of the school to another part of the Site within the redline boundary. The intention was to submit a Hybrid planning application that would allow the delivery of both of the Proposed Development Scenarios.

**3.72** The initial masterplan for Scenario A included 1,250 homes with new workspace and retail units on the lower floors, the enhancement of three existing open spaces and new open public space that replaced the existing vehicular underpass and A12 junction.

**3.73** The initial masterplan for Scenario B was designed to be consistent with Scenario A, but included the existing school site. This allowed the school to be relocated away from the A12 to be located adjacent to open public space. The provision of homes was increased to approximately 1,575 homes and the workspace provision increased because of the extension of the proposed Enterprise Yard.

**3.74** The question regarding the inclusion of the existing school site within the redline boundary has had a significant impact on the various iterations of the site layout. Early in Stage 1 the site layout for Scenario B was amended to respect the school site boundary, with no buildings positioned partially on and off the school site. This resulted in the size of the courtyard buildings adjacent to the A12 changing, making them less equal in size. The street network changed to reflect the new site layout with Ettrick Street staggered rather than Dee Street, which is now retained along its existing alignment. The previous iteration of the masterplan realigned Dee Street to be staggered to better connect with the Dee Street underpass entrance for Scenario B.

**3.75** To enable the move of Culloden Primary Academy to be explored in more detail the decision was made during Stage 2 to only progress with the site layout for Scenario A (Culloden Primary Academy remaining in its current location). The site layout has been developed in such a way to allow a future stand-alone application to come forward if relocation of the school was to be agreed.

**3.76** During early iterations of the masterplan there were two distinct parcels of land within the redline boundary, the area to the south of Balmore Close which included the residual phases of the original outline planning application (phases 4-6), the Culloden Primary Academy site and the Nairn Street Estate to the north of the existing vehicular underpass. During Stage 0 the redline was extended to include Balmore Close and the land containing the approach to the vehicular underpass. This allowed the original two parcels of land to be combined into one large parcel therefore improving north south connections and omitted the considerable severance of the A12 junction and underpass approach. This change also allowed a significant new open space to be proposed and a significant increase in density of the Proposed Development.

**3.77** The land to the north of Bromley Hall school was later included in the redline boundary to reprovide the houses located on Balmore Close.

**3.78** The Site boundary has also undergone several further changes over the duration of the design process, which has resulted in amendments to the site layout. The redline was extended to include the vehicular underpass (including the A12 junction), the land to the north of the Bromley Hall School along Lochnagar Street, the allotments between the A12 and Bromley Hall School, the existing pedestrian underpass at Dee Street, the existing vehicular underpass and the slip road connecting the underpass to the A12. Towards the end of the design process the Millennium Green was omitted from the redline. **Figures 3.8-3.11** below illustrates the various iterations of the masterplan for the site layout.

**Figure 3.8 Scenario A**

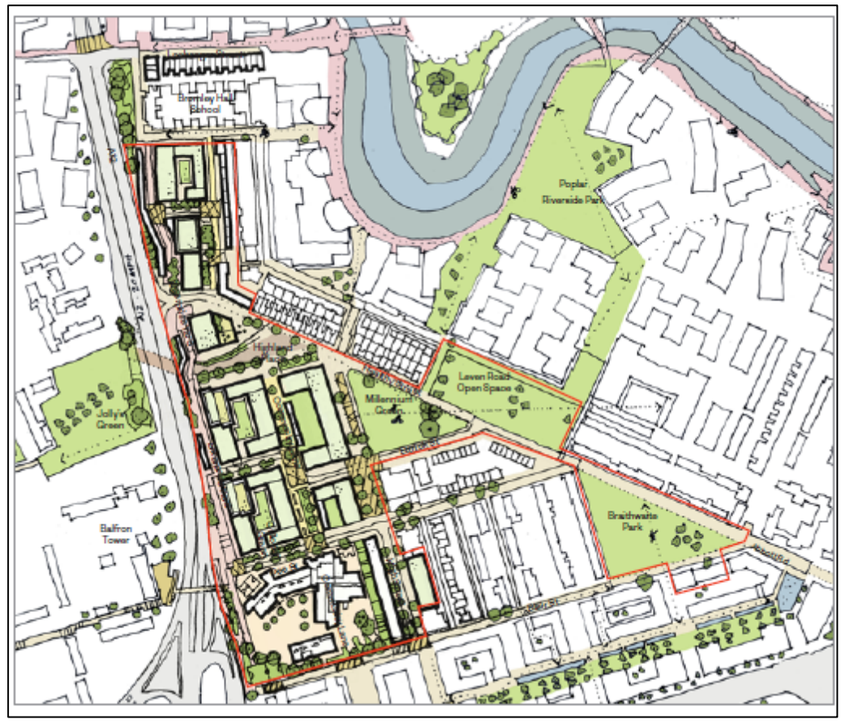



**Figure 3.9 Scenario B**

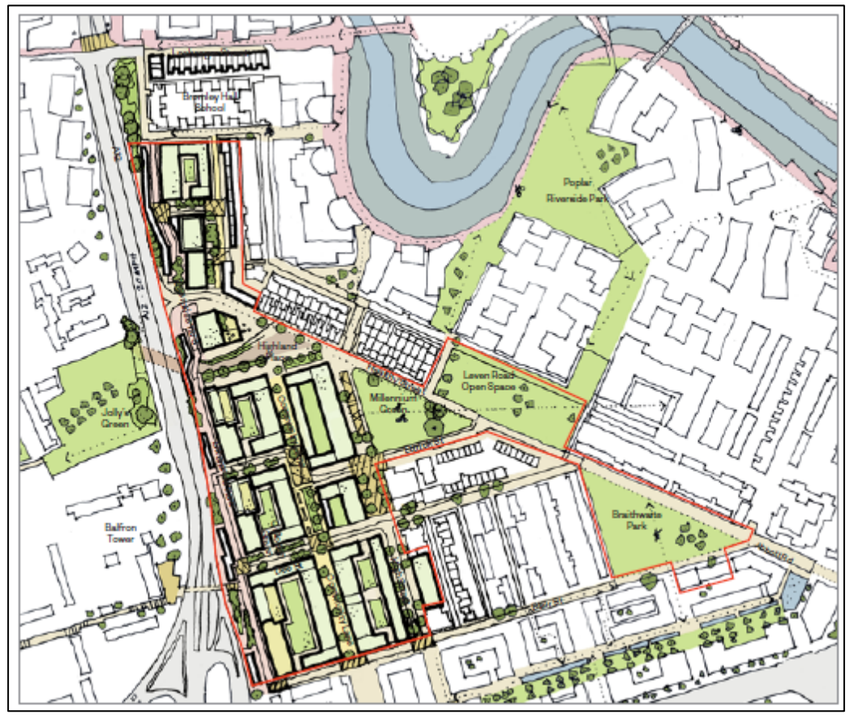


**Figure 3.10 Scenario A**

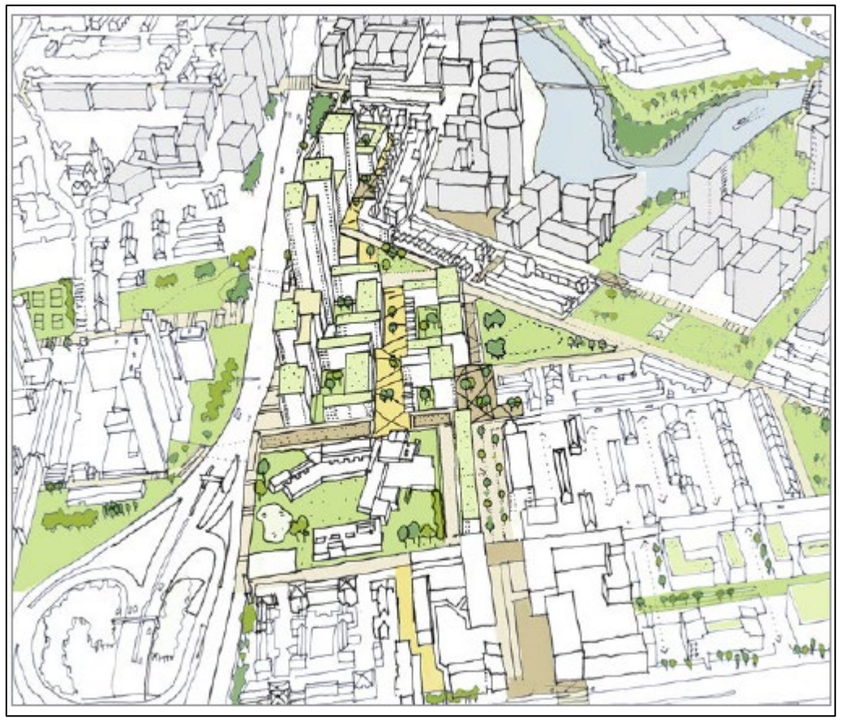
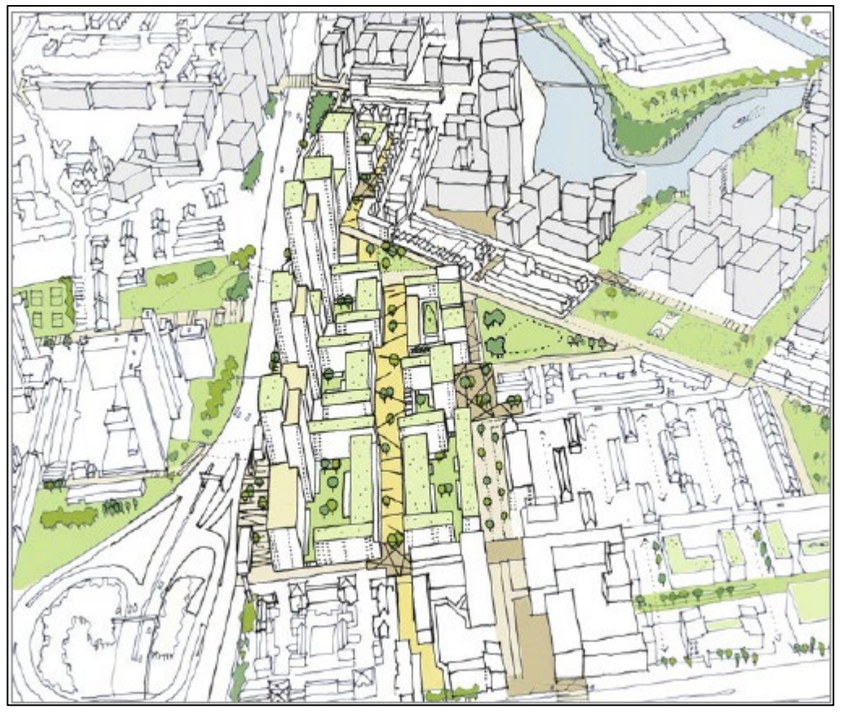


**Figure 3.11 Scenario B**

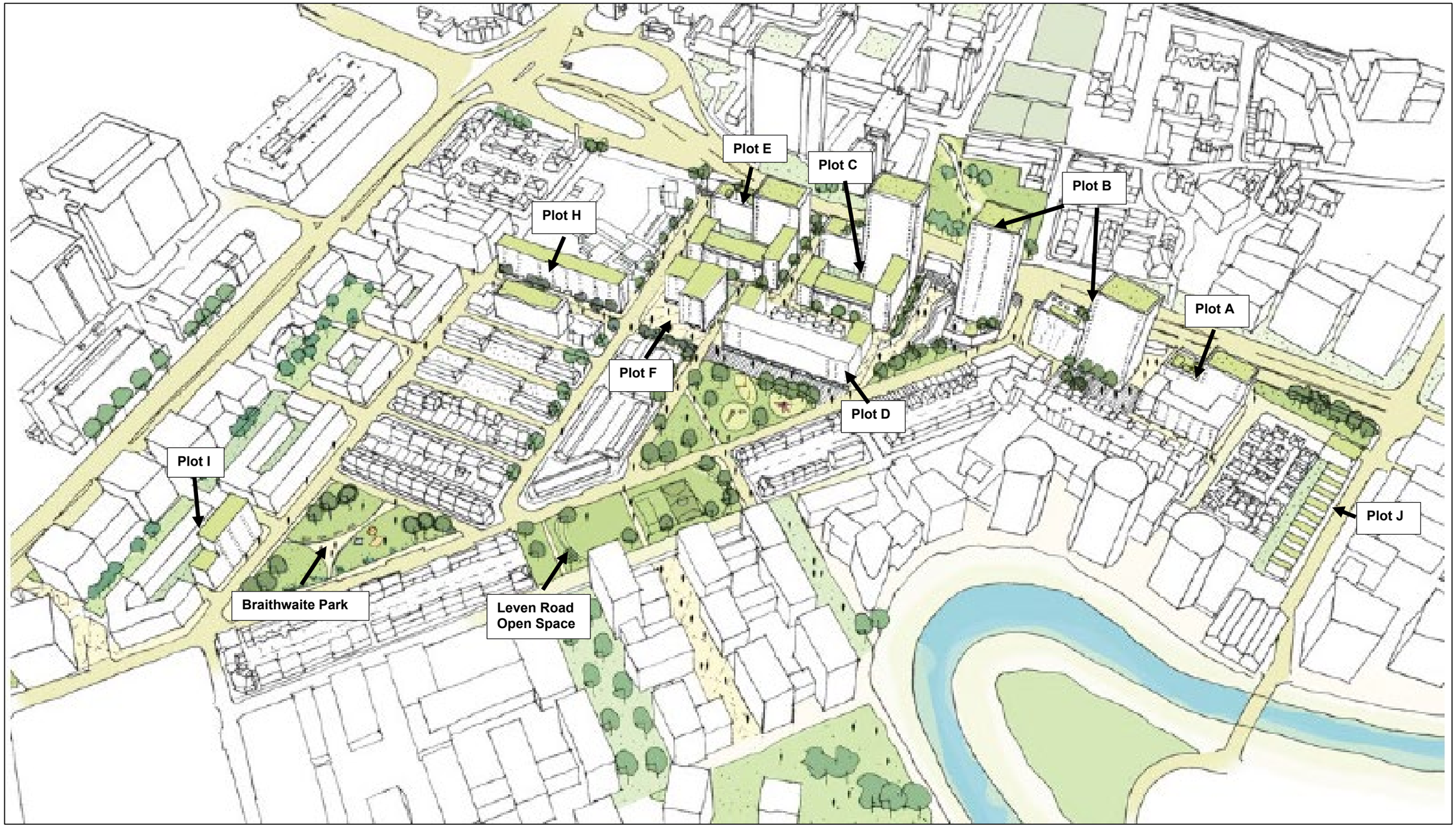


**3.79** The following ***environmental considerations*** were assessed during the evolution of the site layout:

- **Noise and Vibration:** The western boundary of the site runs along the A12, and as a result, the design team have investigated design opportunities to amend the site layout to create an acoustic barrier to reduce noise levels within the site. Buffer buildings, housing nonresidential workspace uses that replicate the existing Poplar Works buildings, were introduced along a large portion of the western boundary acting as a significant buffer between the A12 and the proposed residential land uses to the east of the Site. The location of the buffer building reduces noise and air pollution to the homes within the lower floors of the residential buildings, the new north south Enterprise Yard and the workspaces facing onto it.
- The Site layout of the residential buildings along the western boundary adjacent to the A12 also underwent a number of iterations to reduce gaps in the buildings to improve the acoustic conditions of the Proposed Development beyond.
- **Heritage:** The redevelopment of the Site considered the presence of St Nicholas' Church (not a designated heritage asset) within the Site. As such, the Proposed Development has sought to reinstate the importance of St Nicholas' Church as a civic presence in the area by creating a new public Town Square in front of the Church and pedestrianising Aberfeldy Street at the Church's entrance.
- **Transport and Access:** During pre-application discussion with LBTH and TfL it was confirmed that an A12 and Abbott Road junction was required to be retained in some form. Working closely with the Transport Consultants, iterations of the Site layout were tested to identify the best location for the new junction and different options to improve the pedestrian crossing. Following extensive consultation, the decision was made to extend Abbott Road to align to its historic route and create a new A12 junction further to the north. It was at this stage that the decision was made to retain and pedestrianise the underpass rather than create at grade A12 crossing, improving east connections between east and west Poplar and by doing so delivering one of the key Framework Principles

**3.80** **Figure 3.12** below illustrates a later iteration of the site layout.

**Figure 3.12 Iteration of Site Layout**



*The Evolution of Building Massing, Orientation and Building Heights*

**3.81** The approach to height and massing respects and responds to the scale of the existing Site context and also strives to achieve variation in building heights, adding diversity and interest to the roofscape and streetscape whilst also following the principles of the masterplan threads. There are a range of building typologies including family houses, courtyard buildings and towers which create this variety in the proposed urban fabric.

**3.82** **Figure 3.13** shows the massing evolution during stage 2 design development. Early in stage 2 the primary scenario to take forward was Scenario B (with the school site). The first massing sketch shows Scenario B massing with five distinct taller buildings ranging from 18 to 28 storeys. The two taller buildings opposite the Balfron were identified by LBTH as being problematic so the decision was made to not redevelop the school site, therefore removing one of the taller buildings, and to reduce the height of building E from 18 to 14 storeys (shown in the second sketch). The final massing design development step was to rationalise the massing and propose a cluster of three tall buildings around the new underpass – away from the Balfron's skyspace. The Proposed Development's heights have therefore been guided by the following principles:

- Respecting the height of adjacent and future developments;
- Responding to the Balfron Tower and The Balfron Tower Conservation Area; and
- Marking key thresholds and spaces with taller buildings.

**3.83** **Respecting the height of adjacent and future developments -**Tower Hamlets, and in particular the area around Aberfeldy Estate and along the River Lea, is changing rapidly and will continue to change because of the new and emerging development in the Leaside area which surrounds the site. This changing context has informed the Proposed Development proposed massing.

**3.84** There are tall buildings adjacent or in close proximity to the Proposed Developed at present and also many more emerging tall buildings which have been granted planning permission (**Figure 3.6**) and will therefore change the character and appearance of the surroundings. The location and heights of these tall buildings, both existing and proposed, have been important to consider in the development of the Proposed Development and have helped to inform the massing and building heights.

**3.85** The Proposed Development's final massing and building heights step down significantly at the edge of the site, ensuring that the cluster of three buildings at Highland Place is clearly defined. This will avoid the merging of tall buildings clusters in existing, emerging, or future developments. Tall buildings are positioned in such a way as to avoid breaking the silhouette of any tall buildings clusters when seen from the southern bank of the Thames riverfront.

**3.86** In response to feedback received from LBTH, the GLA and Historic England as part of the design development process, the scheme has undergone a number of changes to the massing and building heights. The number, height and location of the tall buildings has seen the most change over the course of the design of the Proposed Development.

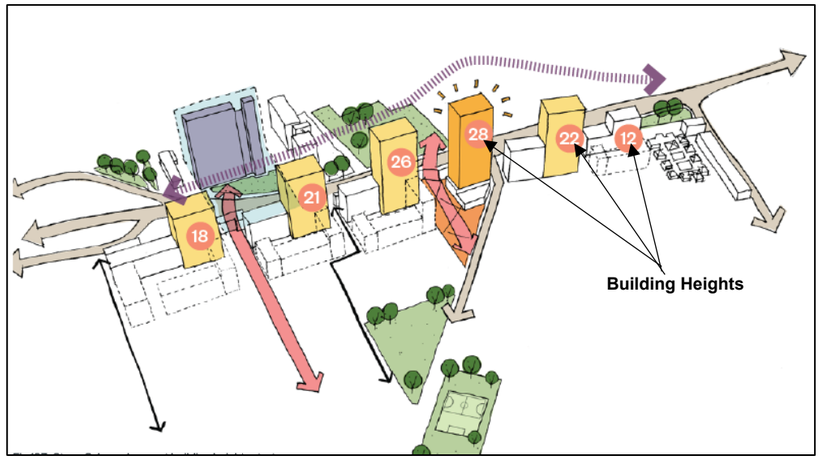
**3.87** **Responding to the Balfron Tower and The Balfron Tower Conservation Area -** Significant changes have been made to minimise any impact on heritage assets in consultation with LBTH, the GLA and Historic England. A sensitive response to Balfron Tower (Grade II* listed) and consideration of the borough designated views towards Balfron required the preservation of sky space surrounding Balfron and resulted in the redistribution of height and massing across the masterplan. The proposed tall buildings are located to mark the new underpass at Highland Place and to consolidate density away from Balfron Tower, which is also a Borough designated landmark. Buildings in the vicinity of Balfron Tower are lower and so will not undermine the existing building's impact and imposing scale. By keeping buildings in this area low, the 'sky-space' around Balfron Tower and the Balfron Tower Conservation Area will be protected, ensuring that the Proposed Development and the historic buildings read as separate and distinct from one another (views of Balfron Tower and existing tall buildings within the area are shown in **Figure 3.1**)

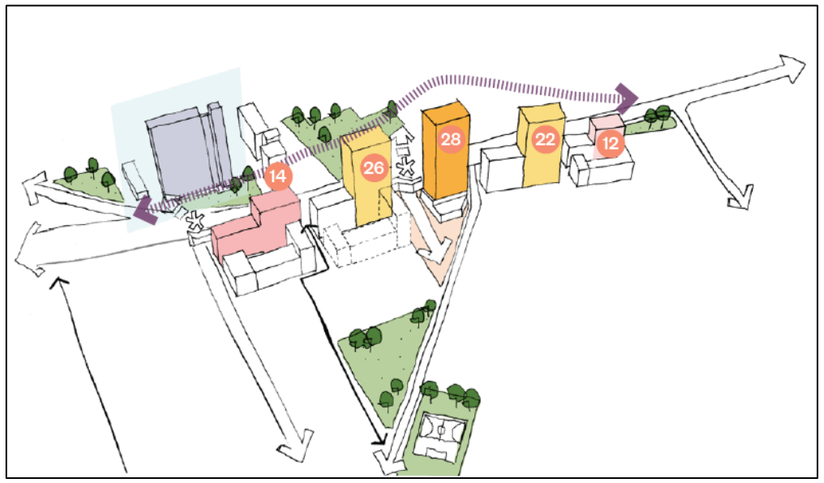
**3.88** The buildings which will sit directly across the A12 from Balfron Tower have been designed to be horizontal in form and their architectural expression will emphasise this horizontality. Vertical elements which would break the building line and interfere with the silhouette of the Balfron Tower will be avoided.

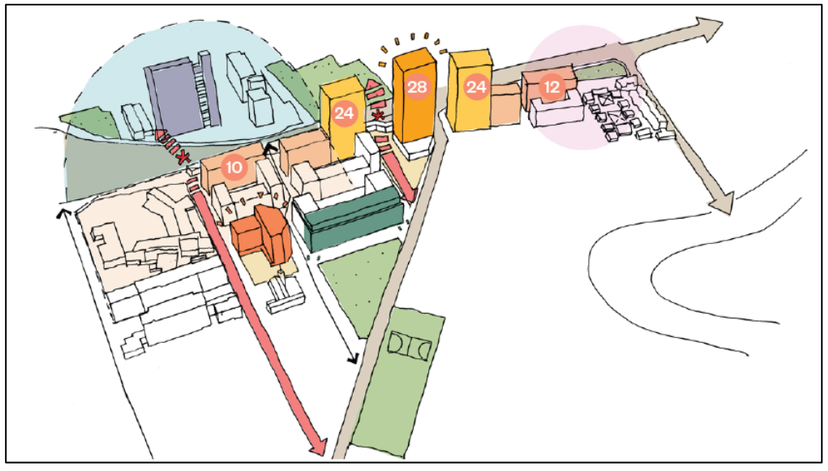
**3.89** The massing and building heights have also evolved with consideration to the key views within and surrounding the site. This is in accordance with **Policy D9** of the London Plan which requires that long-range, mid-range and immediate views are given careful consideration in the design of tall buildings. The testing of views has formed a key part of the pre-application process and influenced the heights strategy.

**Figure 3.13 Massing Evolution**

*(In each image, the numbers represent story heights. The Purple building is Balfron Tower and the pale blue represents sky space. The orange tall building represents the land mark building).*



**3.90** The London Borough of Tower Hamlets Local Plan also designates two views which are of relevance to this application, including:

- View 5 from Langdon Park to Balfron Tower and Canary Wharf in the background (**ES Volume 2, Townscape, Visual Impact and Heritage Assessment**); and
- View 6 from East India Dock Road to Balfron Tower and Canary Wharf in the background (**ES Volume 2, Townscape, Visual Impact and Heritage Assessment**).

**3.91** **Marking key thresholds and spaces with taller buildings** – The design has recognised the role that tall buildings play in strengthening legibility, identity and sense of place which has been discussed at length with LBTH. The location of tall buildings at Highland Place - a key node beside the A12 - will mark the new east-west pedestrian and cycle route providing a safe connection between neighbourhoods on either side of this busy road. The buildings strengthen the sense of arrival at this evolving urban quarter from both the northern and southern approaches along the A12, whilst also marking improved connectivity and accessibility more generally throughout the neighbourhood. In turn this promotes better integration of Aberfeldy Village with other areas including the earlier phases of Aberfeldy Village, DLR stations, the River Lea, Aberfeldy Street and Chrisp Street Market

**3.92** The Highland Place Tall Buildings Cluster has been designed to take account of the 'Principles of Tall Buildings Clusters' set out in figure 8 of Policy D.DH6 of the Local Plan. The cluster of three tall buildings will display variation in height and a clear hierarchy of importance. The tallest element, which marks the entrance to the repurposed underpass and acts as a terminus to Abbott Road, will be expressed differently to its neighbours, both of which are slightly lower. This is the key moment of height and tall buildings which could undermine this cluster are not proposed in other areas of the masterplan.

**3.93** The tallest building (100m AOD) is located at a central gateway to the site marking a new public open space at Highland Place and the new pedestrian/cycle underpass below the A12 connecting East and West Poplar.

**3.94** An additional marker building, Building F which is part of Phase A, defines new public space - Town Square - at the intersection of the High Street and Dee Street opposite St Nicholas' Church. Building I and Building D form strong backdrops to the key green spaces of Braithwaite Park and Millennium Green respectively **(ES Volume 1, Chapter 4: The Proposed Development, Figure 4.29).**

*Wind Microclimate*

**3.95** The design team have worked closely with the specialist wind consultants. The scheme has been tested a number of times in a wind tunnel facility in which a scale model of the proposal is placed to accurately measure predicted wind speeds that are likely to be experienced around the site with the development in place. In August, a mitigation workshop was carried out following the results of earlier wind tunnel testing of the proposals which had identified a number of strong winds across the Site. At this mitigation workshop a number of changes were made to the proposals including:

- Colonnade setback at the northern elevation of Plot E;
- Chamfering the north-western corner of Plot E;
- Colonnade setback at the southern elevation of Plot C;
- Chamfering the south-western corner of Plot C;
- Chamfering the north-western corner of Plot B3;
- Chamfering the southern corners of Plot B2;
- Colonnade setback at the northern elevation of Plot B1;
- Chamfering the north-western corner of Plot B1;
- Colonnade setback at the southern elevation of Plot A; and
- Chamfering the south-western corner of Plot A1.

**3.96** These changes have not been reported in the wind mitigation chapter as the proposals were still in the refinement stage. Further wind tunnel testing was then carried out on three separate occasions in September where the illustrative scheme and the landscaping strategy was tested to demonstrate that a scheme could be achieved within the maximum parameters with acceptable wind conditions. It was during these wind tests that massing alterations, specifically for wind mitigation for Plot C were undertaken. This comprised increasing the chamfer on the south-western corner and introducing a colonnade on the western elevation. In October the final scheme was tested the results of which are report in **ES Volume 1, Chapter 13: Wind Microclimate.**

*Daylight, Sunlight and Overshadowing*

**3.97** The Architects have also worked closely with sunlight, daylight and overshadowing specialists over the course of the design. The max parameters were tested iteratively for daylight and sunlight impacts upon neighbours and external open spaces as well as daylight and sunlight within the Proposed Development. In total, the masterplan was tested as a whole five times, with an additional 5 tests on undertaken on localised areas and the scheme was amended accordingly based on the results of the assessments.

**3.98** For the Detailed Proposals, the changes were implemented to Phase A blocks H1-2 and H3 to mitigate the impacts upon external receptors and align to those of the extant consent.

**3.99** For the Outline Proposals, changes were implemented to Plots C-D to mitigate impacts upon 199-225 Abbott Road, and to Plots A, B and C to mitigate impacts primarily upon Leven Road Phase 3 and Atelier Court.

**3.100** In general, amendments to massing consisted of set-backs, gaps in between blocks, chamfered corners, stepping back from the most affected receptors, and removal of massing/units in the most sensitive areas.

## *Framework Principles*

**3.101** As a result of the design considerations and through the designs evolution, a number of principles have informed the design of the Proposed Development, as detailed below and shown in **Figure 3.14** below. These include:

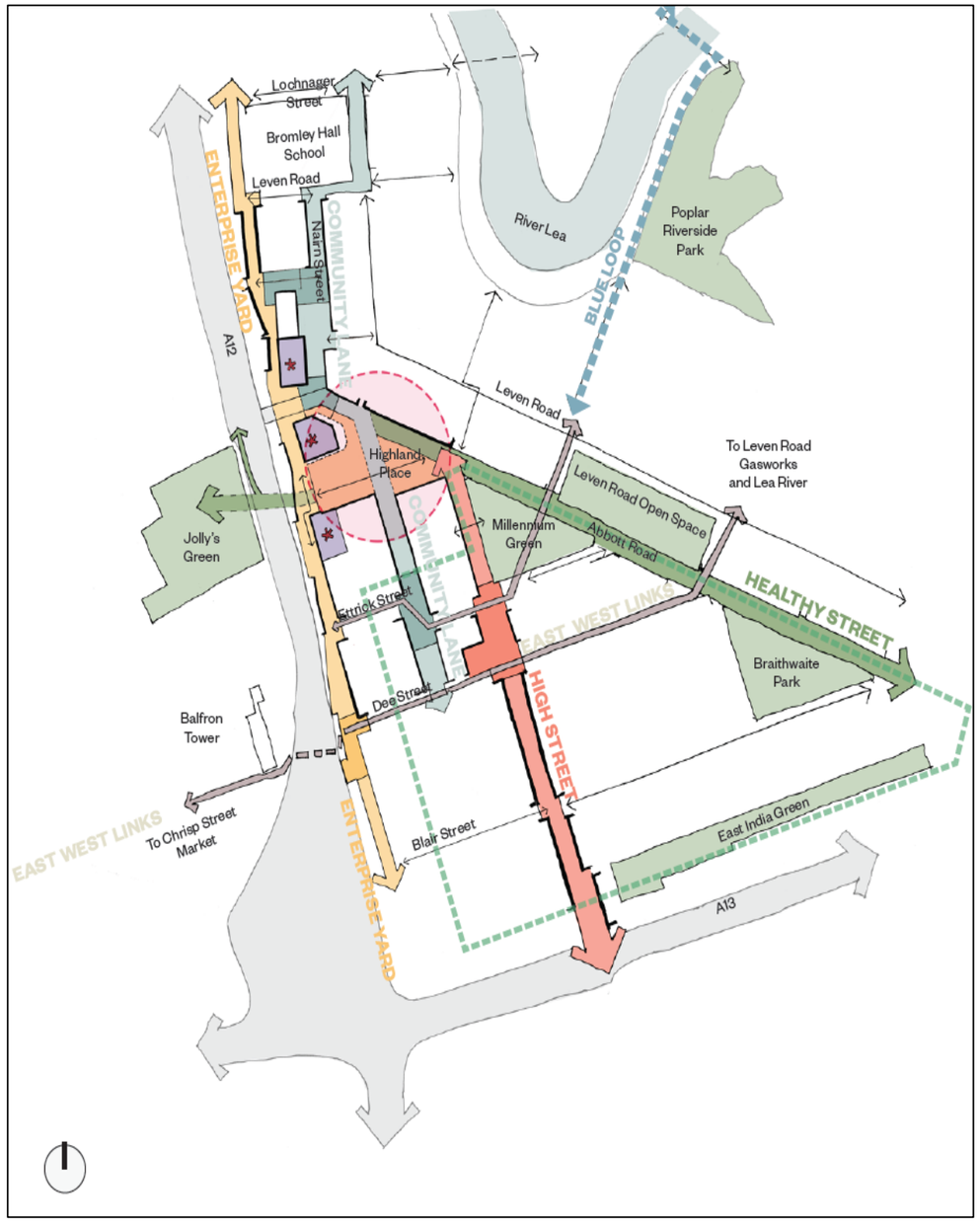
- **The Threads of the Masterplan**: Six masterplan threads made up of existing and new routes through the site form the framework of the masterplan and have been integral in arriving at the masterplan layout. These include:
- **The Healthy Street:** A green loop which connects a network of public spaces with pedestrian and cycle friendly routes. Abbott Road is at the center of this enabling stronger east west connections and route to the repurposed underpass beneath the A12.
- **The High Street:** Enhancing Aberfeldy Street, improving the non-residential and retail offer and promoting it as the Local Centre
- **Enterprise Yard:** A creative link, which continues the narrative of Poplar Works, that offers opportunities for local and independent businesses whilst improving north south connectivity.
- **Community Lane:** A informal neighbourhood street, which is residential in character, connecting north south through the masterplan from Leven Road in the north to Blair Street in the south. It encourages independent play for children with soft landscaping and doorstep play areas.
- **East West Links:** Historic streets which have been reinstated to improve permeability within and through the site.
- **The Blue Loop:** An improved connection with the River Lea which encourages its use as a leisure route and connects into the wider blue network.

**3.102** These principals have driven the scheme and result in a number of benefits across the proposals including:

- **Unlocking of the site to overcome the severance caused by the A12:** The Proposed Development unlocks the Site and helps to reintegrate it into its surroundings by repurposing the vehicular underpass for pedestrians and cyclists and creating a new vehicular connection with the A12 further north, whilst transforming Abbott Road into a Healthy Street which seeks to reduce the volume and speed of traffic entering or passing by the Site in this location. The repurposed underpass, which also includes improvements to the Slip Road, creates an improved connection to the west of the A12 and access to Jolly's Green and Chrisp Street Market. This strategic connection will benefit Aberfeldy and the wider community. It is marked by a tall buildings cluster on Highland Place, acting as a key local landmark set within a unique new urban park at the heart of the neighborhood. The underpass will provide a well lit, safer route and better connect the existing and proposed green spaces, local centres and transport hubs. The proposed underpass will be safer as it has been designed with clear sight lines, it will be an activated space and it will be much wider than the existing narrow pedestrian underpasses that turn multiple corners. Collectively this will help to promote walking and cycling, and sustainable travel. Collectively this improves legibility and signals this wider area infrastructure transformation.

- **A child friendly neighbourhood that focuses on health and play for the first time in London:** The masterplan will be a place for all ages of the community. This will benefit the community, help them feel safer from traffic, experience less pollution with more green space. The spaces surrounding Culloden Primary Academy, including Kirkmichael Road and the land adjacent to the A12, or School Square, will also be improved in order to enhance the overall quality of the public realm and the experience for those travelling to and from school.
- **A network of accessible open spaces:** Fundamental to the principles of the masterplan is the network of green open spaces, connected by pedestrian and cycle priority routes which promote and encourage active and healthy lifestyles. The existing open spaces of Leven Road Open Space and Braithwaite Park will be improved and connected by a pedestrian priority 'Healthy Street' along Abbott Road. Other existing open spaces such as Millennium Green and Jolly's Green will also benefit from this. The masterplan also proposes several new open spaces, including:
- *Highland Place which combines the repurposed underpass, a new landscaped park and the Residents Hub at the base of the landmark building B3. This space creates opportunities for recreation, whilst stitching the northern and southern parts of the Site together and removing the severance created by the A12 and the existing vehicular underpass whilst also providing the opportunity to connect to the Tower Hamlets Green Grid Strategy.*
- *The Town Square is a flexible market square adjacent to St Nicholas Church which performs an important civic and social function for the neighbourhood. The Town Square offer opportunities for a diverse range of community events including markets, music, theatre, games, exhibitions and community gatherings.*
- *Nairn Square and Culloden Green are landscaped moments along Community Lane North and South, respectively, which have a play focus and offer doorstep play opportunities for the family homes located along Community Lane.*
- **Enhancement of Poplar Riverside and the River Lea**: The Blue Loop is an improved connection to the River Lea, via Poplar Riverside Park, linking into the new routes proposed on the Leven Road Gasworks development. It will also link into the proposed new bridges across the River Lea to give access to the Leaway and the wider River Lea Park. Collectively this encourages the use of the River Lea as a leisure route, better facilitating recreation opportunities along its duration, and connecting into the wider blue **network;**
- **Establishment of a new local centre and improve the retail offer:** The masterplan will be a truly mixed-use neighbourhood with a revitalised High Street and local centre at its heart, running north-south along the existing route of Aberfeldy Street from Blair Street in the south to Abbott Road in the north. It will act as an important connection between Phase 3b of the previously approved Aberfeldy Village Masterplan and this new Aberfeldy Village Masterplan. A variety of uses will be found along the High Street including retail, food and beverage, community functions with St Nicholas Church and smaller independent shop units;
- **Support for local enterprise and talent:** Enterprise Yard will create employment opportunities and space for creative industries and enterprise parallel to the A12. It has been designed as a continuation of the creative narrative of the successful Poplar Works development along Nairn Street, which offers workspaces to fashion graduates and local independent businesses. The spaces will be located in purpose built shallow buildings, which act as both a physical and noise barrier between the busy A12 and the new Aberfeldy neighbourhood, and will be flexible and adaptable for a variety of uses. Additional workspaces will also be provided in the lower and upper ground floors of the residential buildings opposite, contributing to a mixed **use neighbourhood;**
- **Consideration of the areas rich history and diverse community:** The Proposed Development has evolved out of analysis of the site and its surroundings. It considers the heritage of East Poplar and the local community. Each thread of the masterplan adds its own unique character to the neighbourhood, offering a variety of new homes and private and communal spaces; and
- **A sensitive townscape and placemaking strategy which respect heritage assets:** The placemaking strategy has been carefully designed to consider the relationship of the Proposed Development with its existing context. The location of tall buildings at Highland Place, a key node beside the A12 mark the new east-west connection and strengthen the sense of arrival at this evolving urban quarter from both northern and southern approaches along the A12. The tallest building is located at the central gateway to the site, adjacent to Jollys' Green. An additional marker building, Building F, defines the Town Square, and buildings I and J form strong backdrops to the key green spaces of Braithwaite Park and Millennium Green respectively. Integral to the placemaking strategy has been the preservation of sky-space around Balfron Tower and the protection of key Borough Designated views. Buildings also decrease in scale to the north of the site, where they are in closer proximity to Bromley Hall School.

**Figure 3.14 Threads of the Masterplan**



# Chapter 4: The Proposed Development

## INTRODUCTION AND OVERVIEW OF THE PLANNING APPLICATION

**4.1** This chapter of the ES presents a description of the Proposed Development sought for approval. It provides relevant and sufficient information on the Proposed Development to aid the identification and assessment of potential impacts and likely effects across the technical topic areas addressed within the EIA as presented within **ES Volume 1, Chapters 6 – 14 and ES Volume 2, Townscape, Visual Impact and Heritage Assessment.**

**4.2** Further details on the Aberfeldy Village Masterplan, referred to as the Proposed Development, can be found within the Design & Access Statements (DAS) and both the detailed plans and parameter plans that have been submitted in alongside the planning application which is both detailed and outline.

## DESCRIPTION OF THE PROPOSED DEVELOPMENT

### *Overview of the Proposed Development*

**4.3** The Proposed Development will provide a mixed-use residential scheme comprising 24 buildings of varying height comprising:

- Up to 1,628 residential units Residential (Class C3) of which 277 units will be in detail and up to 1,351 units will be in outline[1];
- Retail, workspace, food and drink uses (Class E);
- Car and cycle parking;
- Formation of new pedestrian / cycle route through the conversion of the existing vehicular underpass;
- Landscaping including open spaces and public realm; and
- New means of access, associated infrastructure, and highway networks.

**4.4** The 16 building plots (see **Figure 4.1**) comprise 24 buildings referred to as Buildings A- J The height of the Proposed Development varies across the 24 buildings from 2 stories to 28 stories. The Proposed Development comprises one basement below Building Plot B3.

**4.5** A significant new public open space will be created at the centre of the site with good connections to existing public open spaces to the east and west, with improvements to public open spaces within the redline boundary. The proposed public realm will comprise up to 10,854m$^2$ across the site (including both existing and new open space). A total of 4,439m$^2$ of communal amenity will be provided across the Proposed Development. Public realm works will lie within Phase A, the detailed proposals of the Proposed Development.

**4.6** A new access point to facilitate the Proposed Development from the A12 onto Abbott Road will be provided. This will include a proposed right turn bus gate at the new A12/Abbott Road junction. Changes to the A12 / Lochnagar Street junction will be provided as an additional northbound approach lane. Improvements to the existing Dee Street subway will also be provided. In addition, the pedestrianisation of Abbott Road vehicular underpass will deliver an enhanced pedestrian and cycle connection from Aberfeldy to the west of the A12 via the pedestrianisation of the existing vehicular underpass.

**4.7** The Proposed Development will deliver an enhanced pedestrian and cycle connection from Aberfeldy to the west of the A12 via the pedestrianisation of the existing vehicle underpass. The Aberfeldy New Village LLP ('the Applicant') is aware that there are aspirations for enhancement works to be undertaken at Jolly's Green which include a desire for a direct route to it via the proposed new underpass. The Proposed Development does not include these works to Jolly's Green and the rationale for that is set out in the Planning Statement. However, in order to appraise the context of the Proposed Development the Applicant has considered an illustrative scheme for works to Jolly's Green – both to show a new connection directly to it and also wider enhancement works to the park itself. The Applicant is however willing to work with the Council and other relevant stakeholders to consider how these works might be delivered in the future and further detail on that is set out in the Planning Statement. The Applicant is aware that there are aspirations for enhancement works to be undertaken at Jolly's green however, the Proposed Development does not include these works at Jolly's Green. The Proposed Development will include key proposed public open space throughout the Proposed Development.

**4.8** A planning obligation is proposed as part of the Section 106 Agreement for this hybrid application to secure the re-provision of The Aberfeldy Islamic and Cultural Centre and Mosque. The Section 106 Agreement associated with the Extant Permission required the Faith Centre's re-delivery and thus it is proposed that this is transposed to the new Section 106 Agreement. The existing GP Practice at 2a Ettrick Street will be re-provided under phase 3b of the Extant Permission within a new, larger Health Centre. Therefore, as this building will be vacant and at the heart of the Masterplan and in close proximity to the new Town Square, the Applicant is currently exploring the Faith Centre's relocation as part of a future change of use application.

**4.9** The Proposed Development will provide car parking provision onsite. This will be provided on street and within three podium car parks. Some existing residents have a right to car parking and this parking will be re-provided as part of the Proposed Development. Where possible, car parking will be designed to allow repurposing in the event of a shift away from car use, rendering car parking surplus to requirement. Provision for electrical car charging points will also be made.

**4.10** The Proposed Development will be built out in four phases. Phase A is in detail whilst outline permission is sought for Phases B, C and D of the planning application (areas within the detailed and outline elements of the application are presented within **Figure 4.1**).

**4.11** Further details of the phased delivery and subsequent occupations of the Proposed Development is provided within **ES Volume 1, Chapter 5: Demolition and Construction**.

**4.12** The Buildings which are to be included within Phase A (detailed) include:

- Building Plot F,
- Building Plots H1-2 / Building Plot H3,
- Building Plot I and
- Building Plot J.

**4.13** The outline elements of the application comprise the following plots (refer to **Figure 4.1 and Figure 4.2**):

- Building Plots A1-2;
- Building Plot A3;
- Buildings Plots B1-2;
- Building Plots B3, B4;
- Building Plot B5;
- Building Plots C1-4;
- Building Plot C5;
- Building Plot C6;
- Building Plots D1-4 and
- Building Plots E1-3.

### *Parameter Plans*

**4.14** Outline permission is sought for the majority of the Site, specifically Phase B-D of the Aberfeldy Village Masterplan, with all matters reserved for future consideration. The planning application is accompanied by a set of Control Documents (Parameter Plans and a Design Code) for Phase B-D. The Control Documents build in a sufficient level of flexibility into the design to allow for detailed designs to come forward with the Reserved

[1] *For the outline proposals, a minimum number of units has not been established. The EIA assesses a worst-case scenario for potential environmental effects, which in the case of residential uses would derive from a maximum number of units and the resulting maximum number of new residential occupants. However, the assessment of on-Site employment and housing provision once the Proposed Development is completed and occupied is based on the proposed illustrative area schedule and the associated land uses as explained in* ***ES Volume 1, Chapter 2: Methodology****. The Illustrative schedules used as part of the socioeconomic assessment provided within this chapter.*

Matter applications. The following Plans and Parameter Plans **(Table 4.1)** describe the existing Site and the Proposed Development:

**Table 4.1 Existing Plans / Parameter Plans**

| Existing Site Plans / Parameter Plans | |
|---|---|
| Site Location Plan | Parameter Plan - Principal Public Realm Areas |
| Existing Site Plan | Parameter Plan - Access and Circulation |
| Existing Buildings Plan | Parameter Plan - Land Use Basement |
| Existing Site Levels | Parameter Plan – Land Use – Lower Ground Floor |
| Existing Site Sections | Parameter Plan - Land Use - Upper Ground Floor |
| Demolition Plan | Parameter Plan - Land Use - First Floor |
| Indicative Construction Phasing | Parameter Plan - Land Use – Upper Floors |
| Parameter Plan - Outline and Full Application Areas | Parameter Plan – Building Heights |
| Parameter Plan - Building Plots | Parameter Sections 01 |
| Parameter Plan - Proposed Site Levels – Lower Ground Floor | Parameter Sections 01 |
| Parameter Plan - Proposed Site Levels – Basement Level | |

## *Design Code*

**4.15** The Design Code has been prepared to provide a series of illustrated rules and standards which will guide the future phases of the development of the Site. The Design Code has been produced to:

- Ensure high quality design and the development of a sustainable community;
- Define the public realm spaces and hierarchy of the development plots for the buildings in the masterplan;
- Define the character of the physical environment and the requirements on the proposed plots and buildings to support and reflect that character;
- Provide a level of consistency so the Site as a whole is developed in a coherent manner in line with the masterplan vision and design principles;
- Ensure accessible and inclusive design for all; and
- Communicate masterplan requirements for future reserved matters application(s) for individual development proposals over the life of the Proposed Development.

**Figure 4.1 Building Plots and Construction Phasing**

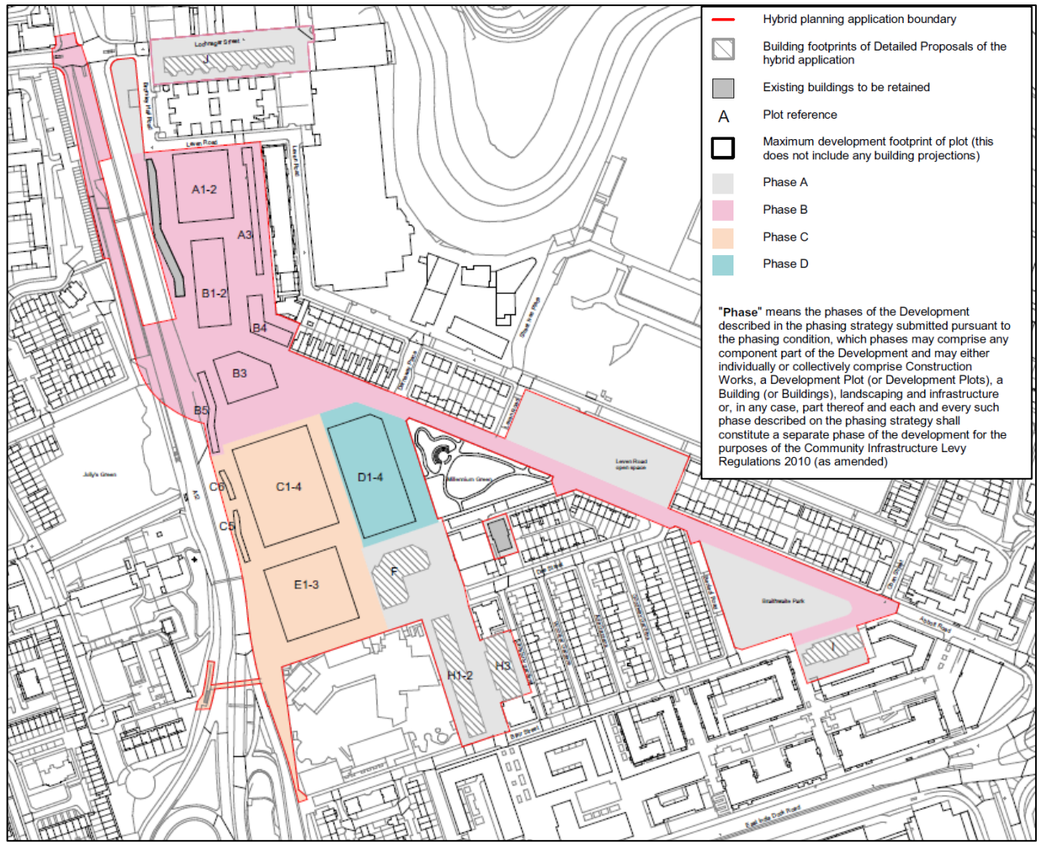
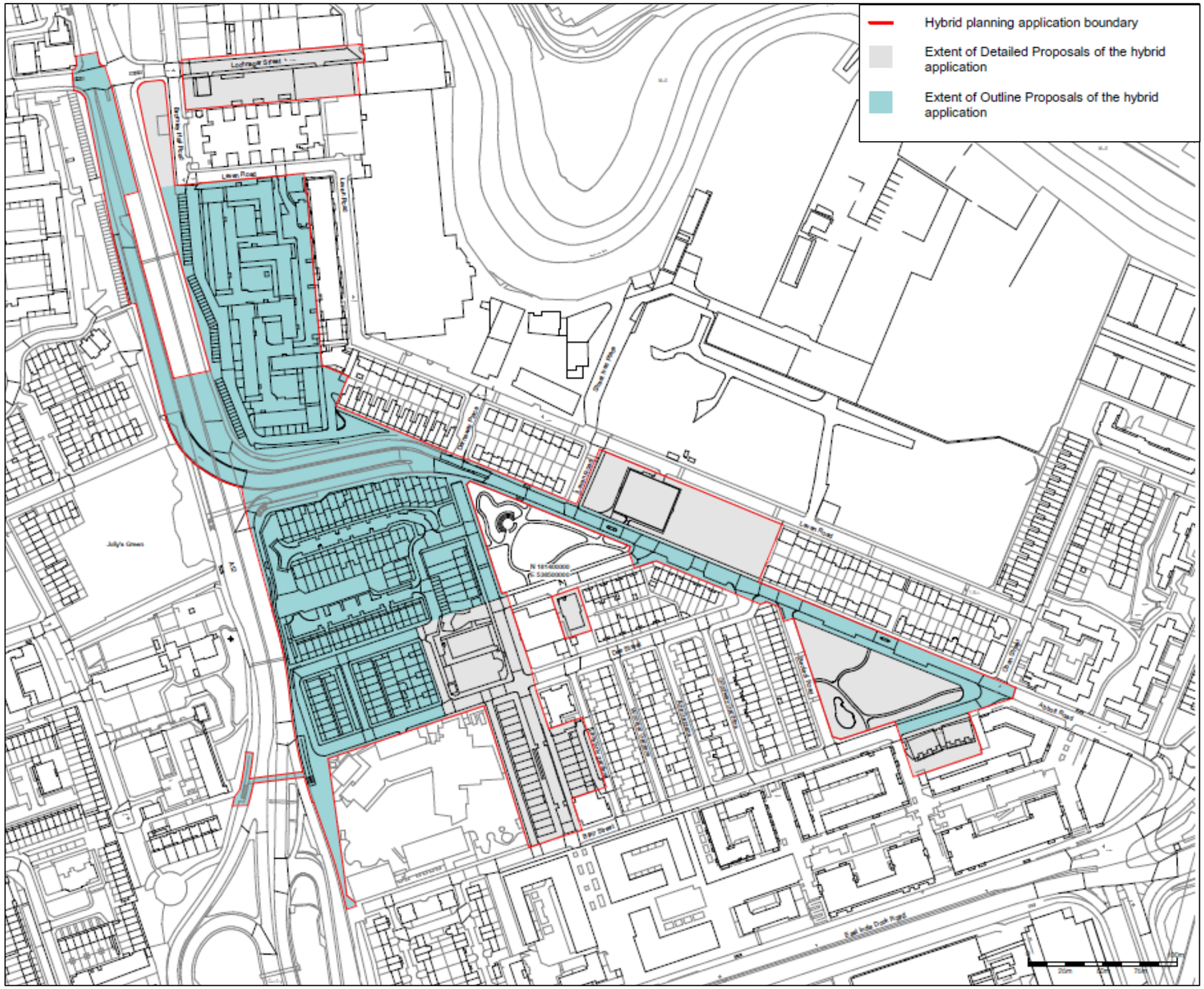


**Figure 4.2 Extent Of Outline and Detailed Planning Application**



## QUANTUM OF DEVELOPMENT

### *Maximum Amount of Development*

**4.16** In terms of the land uses proposed and the amount or 'quantum' of development, the planning application either specifies the amount of development proposed for each land use class for the detailed proposal or specifies an 'up to maximum' amount of development for each land use class proposed for the outline proposals. This builds in a degree of flexibility for the future detailed design of the outline part within a site wide maximum.

**4.17** The EIA has assessed the fixed / detailed massing and quantum of development for those aspects of the Proposed Development that fall within the detailed proposals of the planning application (i.e. Phase A). For the outline proposals of the planning application (i.e. Phases B-D) a minimum number of units has not been established. The EIA assesses a worst-case scenario for potential environmental effects, which in the case of residential uses would derive from a maximum number of units and the resulting maximum number of new residential occupants. However, the assessment of on-Site employment and housing provision once the Proposed Development is completed and occupied is based on the proposed illustrative area schedule (Table 4.14 and Table 4.15) and the associated land uses as explained in ES Volume 1, Chapter 2: Methodology. An overview of the maximum amount of development sought for approval is presented in **Table 4.2** as Gross Internal Area (GIA) and Gross External Area (GEA). **Table 4.3** and **Table 4.4** provide the land use areas broken down by Phase A (detailed) and Phase B, C and D (outline) (GEAm$^2$).

**Table 4.2 Maximum Amount of Development for the Hybrid Application**

| Land Use | GIA (m$^2$) | GEA (m$^2$) |
|---|---|---|
| Residential | 150,606.5 | 166,703.2 |
| Workspace | 2702.3 | 3,199.4 |
| Retail | 2,366.2 | 2,585.7 |
| Marketing | 295 | 317 |
| **TOTAL** | **155,970** | **172,805.3** |

**Table 4.3 Proposed Land Uses and Amount of Development – Detailed Proposals**

| Use Class | Detailed Part GEA (m$^2$) |
|---|---|
| Residential | 30,133 |
| Retail | 1,341 |
| Marketing | 317 |
| **TOTAL** | **31,791** |

**Table 4.4 Proposed Land Uses and Maximum Amount of Development – Outline Proposals**

| Use Class | Outline Part GEA (m$^2$) |
|---|---|
| Residential | 132,413.6 |
| Residents' Hub | 1,557.6 |
| Car Park (podium) | 2,599 |
| Workspace | 3,199.4 |
| Retail | 1,244.7 |
| **TOTAL** | **141,014.30** |

### *Residential Unit Numbers and Tenure Mix*

**4.18** The Proposed Development will provide for up to 1,628 residential units across a range of tenure types and unit sizes. **Table 4.5** and **Table 4.6** presents the proposed residential unit mix and tenure types across the Detailed and Outline Proposals of the Proposed Development.

**4.19** Phase A of the Proposed Development will provide 37 accessible homes whilst phases B-D will up to 120 accessible homes, equating to a total of 10% of homes which are to be accessible across the Proposed Development (combination of homes across Phases A-D).

**Table 4.5 Detail Proposals – Residential Unit Mix**

| Unit Type | No. of Private | No. of Socially Rented | No. of Intermediate | Total |
|---|---|---|---|---|
| Studio | 12 | - | - | **12** |
| 1 Bedroom | 70 | 10 | 1 | **81** |
| 2 Bedroom | 90 | 24 | 10 | **124** |
| 3 Bedroom | 9 | 30 | - | **39** |
| 4 Bedroom | - | 17 | - | **17** |
| 5 Bedroom | - | - | - | **-** |
| 6 Bedroom | - | 4 | - | **4** |
| **TOTAL** | **181** | **85** | **11** | **277** |

**Table 4.6 Outline Proposals – Illustrative Housing Mix**

| Unit Type | No. of Private | No. of Socially Rented | No. of Intermediate | Total |
|---|---|---|---|---|
| Studio | 102 | - | - | **102** |
| 1 Bedroom | 406 | 81 | 44 | **531** |
| 2 Bedroom | 494 | 66 | 26 | **586** |
| 3 Bedroom | 13 | 106 | - | **119** |
| 4 Bedroom | - | 12 | - | **12** |
| 5 Bedroom | - | - | - | **0** |
| 6 Bedroom | - | - | - | **1** |
| **TOTAL** | **Up to 1015** | **Up to 226** | **Up to 70** | **Up to 1,351** |

## LAYOUT, MASSING AND SCALE

**4.20** The Proposed Development layout is illustrated in **Figure 4.1**. The Proposed Development consists of primarily residential land use, ground floor flexible commercial, business and workspace uses as well as provision for new and improved public realm areas across the Proposed Development.

**4.21** Maximum building heights vary across each plot of the Proposed Development (see Figure 4.8). The heights within the Proposed Development range between up to 9m AOD2 and 100m AOD2. The maximum building heights for each phase are summarised within **Table 4.7**. Building heights for each plot of the Proposed Development are expressed in AOD and are shown in Parameter Plan - Building Heights.

**4.22** Building heights for Phases B-D, the outline proposals, are taken from Parameter Plan - Building Heights. These heights illustrate the limits of vertical deviation for the outline proposals of the Proposed Development.

**4.23** The buildings designed in detail are of lower massing compared to that of the outline buildings in order to align with the existing surrounding context towards the south of the Site.

**4.24** The tallest of the buildings are located along Enterprise Yard adjacent to the A12 (**Figure 4.8**). Medium buildings across the Proposed Development have been positioned along Aberfeldy Street, Millennium Green and The Square (Figure 4.8). Smaller rise buildings are located around perimeter of the Site and these have

[2] *Above Ordnance Datum*

been designed to fit into the existing surroundings. Medium buildings will provide key areas of public realm across the Proposed Development.

**4.25** The massing of the Proposed Development has been purposefully stepped up in height to the north and west to minimise impacts to the existing residential properties and St Nicholas Church.

**4.26** A selection of cross sections been provided as part of the parameter plans being submitted alongside the outline proposals of the planning application; these are shown in **Figures 4.3-4.7**.

**Figure 4.3 Parameter 01 - Section 01**

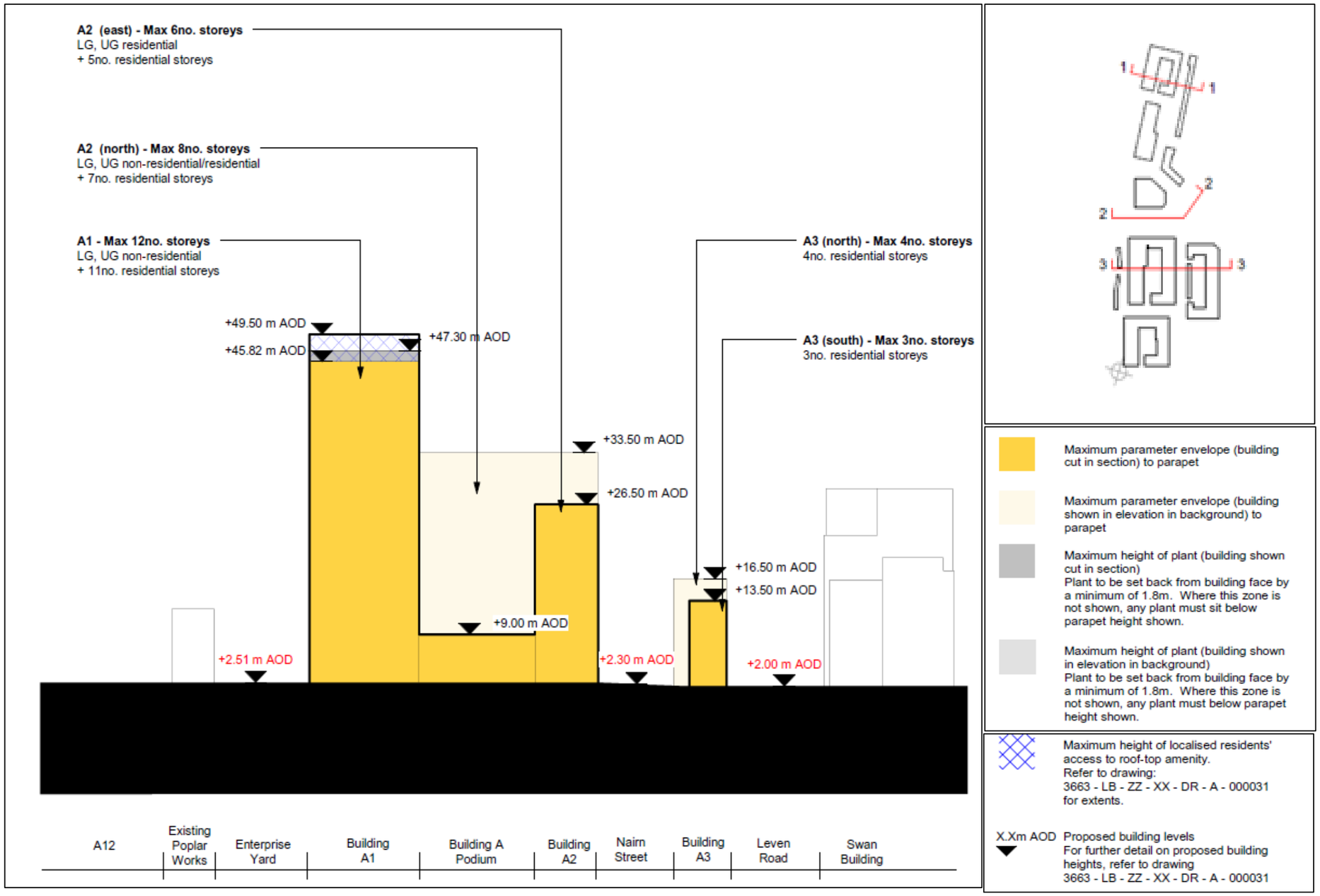
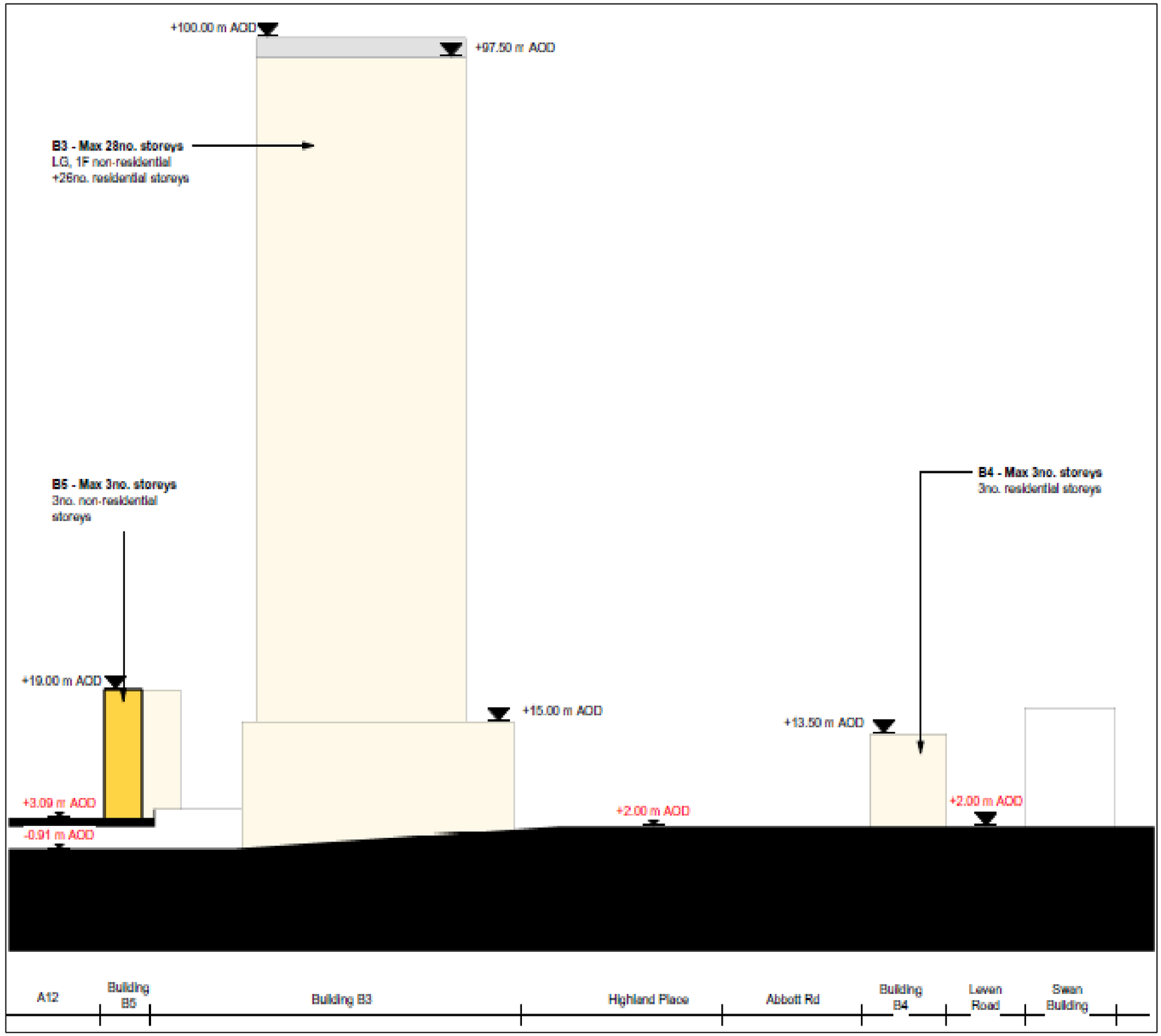
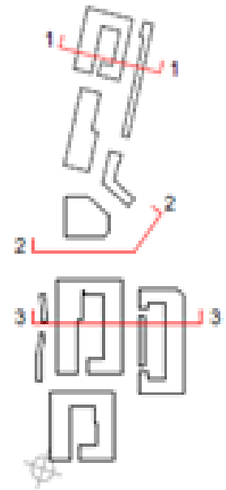


**Figure 4.4 Parameter 01 - Section 02**




Maximum parameter envelope (building cut in section) to parapet

Maximum parameter envelope (building shown in elevation in background) to parapet

Maximum height of plant (building shown cut in section)
Plant to be set back from building face by a minimum of 1.8m. Where this zone is not shown, any plant must sit below parapet height shown.

Maximum height of plant (building shown in elevation in background)
Plant to be set back from building face by a minimum of 1.8m. Where this zone is not shown, any plant must below parapet height shown.

Maximum height of localised residents' access to roof-top amenity.
Refer to drawing:
3663 - LB - ZZ - XX - DR - A - 000031
for extents.

X.Xm AOD Proposed building levels
For further detail on proposed building heights, refer to drawing
3663 - LB - ZZ - XX - DR - A - 000031

**Figure 4.5 Parameter 01 - Section 03**

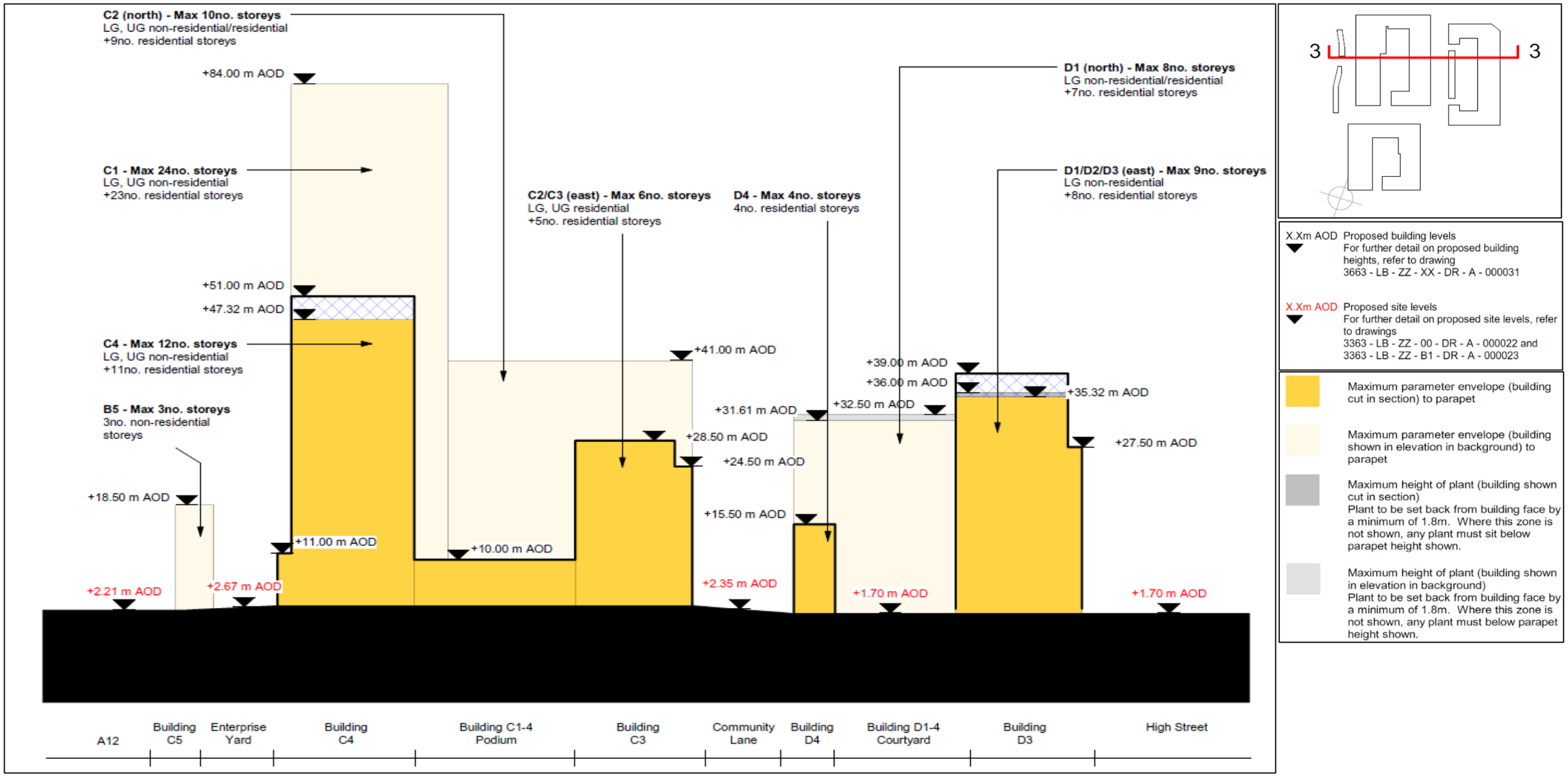


**Figure 4.6 Parameter 02 – Section 01**

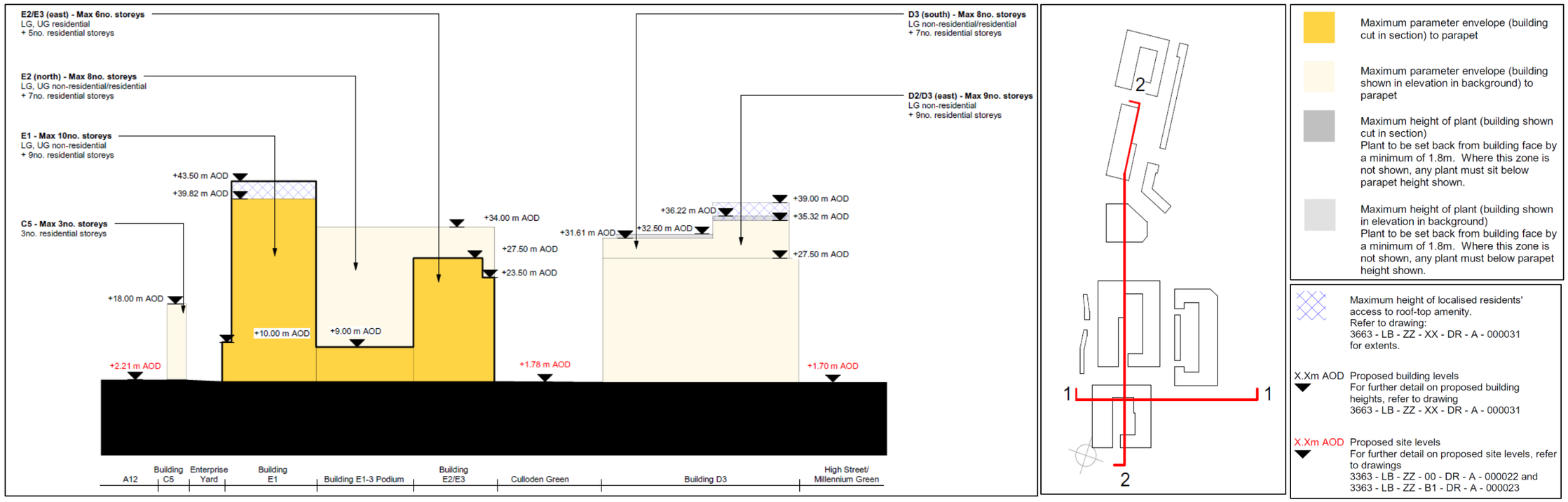



**Figure 4.7 Parameter 02 – Section 02**

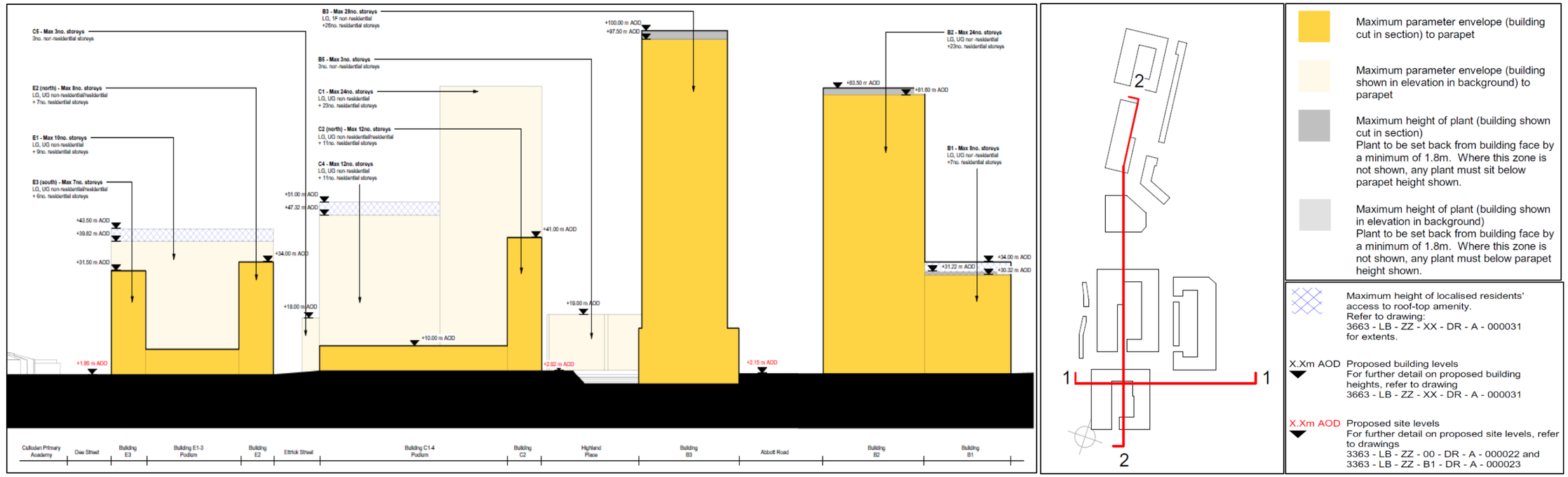


**Table 4.7 Maximum Building Height (AOD) And Storeys (Detailed Proposals Provided Only)**

| Plot | Maximum AOD | Storeys |
|---|---|---|
| **Detailed Plots** | | |
| **Plot F** | 42.73 | Ground plus 11 storeys |
| **Plot H** | Buildings H1/2: 30.87<br>Building H3: 25.17 | Buildings H1/H2: Ground plus 7 storeys<br>Building H3: Ground plus 5 storeys |
| **Plot I** | 39.38 | Ground plus 10 storeys |
| **Plot J** | 26.90 | Ground plus 5 storeys |
| **Outline Plots** | | |
| **Plot A** | 49.5 | - |
| **Plot B** | 100 | - |
| **Plot C** | 84 | - |
| **Plot D** | 39 | - |
| **Plot E** | 43.5 | - |

## *Detailed Buildings – Phase A*

### *Building Plot F*

**4.27** Building Plot F is located towards the southern corner of the Site, adjacent to Building Plot E1-3 and north of Building Plot H1-2 along Aberfeldy Street. Building Plot F will be part ground plus 11 storeys with a maximum AOD of 42.73m and part ground plus 6 storeys.

**4.28** The ground floor of Building Plot F will be dedicated entirely to the provision of the main entrance lobby, retail, marketing suite, cycle storage and plant areas. Floors 1 – 11 are predominantly residential, with some plant space included on the first floor, containing studio, one, two and three-bedroom units with living space and private balconies / terraces. The rooftop includes a communal roof terrace and plant.

### *Building Plot H*

**4.29** Plot H will comprise 2 buildings (Buildings H1-3). Building Plot H1-2 will be jointly connected and lie on the western side of Aberfeldy Street whilst Building Plot H3 will lie on the eastern side. Buildings within Plot H are located adjacent to Blair Street and Lansbury Gardens.

**4.30** Building Plot H1-2 range in height between 29.58 and 30.87m AOD. Building Plot H3 height ranges between 20.35 and 25.17m AOD.

**4.31** The ground floor levels comprise of entrance lobbies, retail units with common facilities, plant and cycle storage. The general arrangement of floors one to seven comprise of one, two, three and four-bedroom residential units including living space and private balconies / terraces. Across buildings H1/3, levels above ground floor include a mix of one, two, three and four- bedroom units including living space and private balconies / terraces. A communal terrace on each side of the building will be located on the fifth floor.

### *Building Plot I*

**4.32** Building Plot I is located south of Blair Street and east of Blairgowrie Court. The building comprises ground floor plus 10 storeys with a maximum AOD of 39.38m.

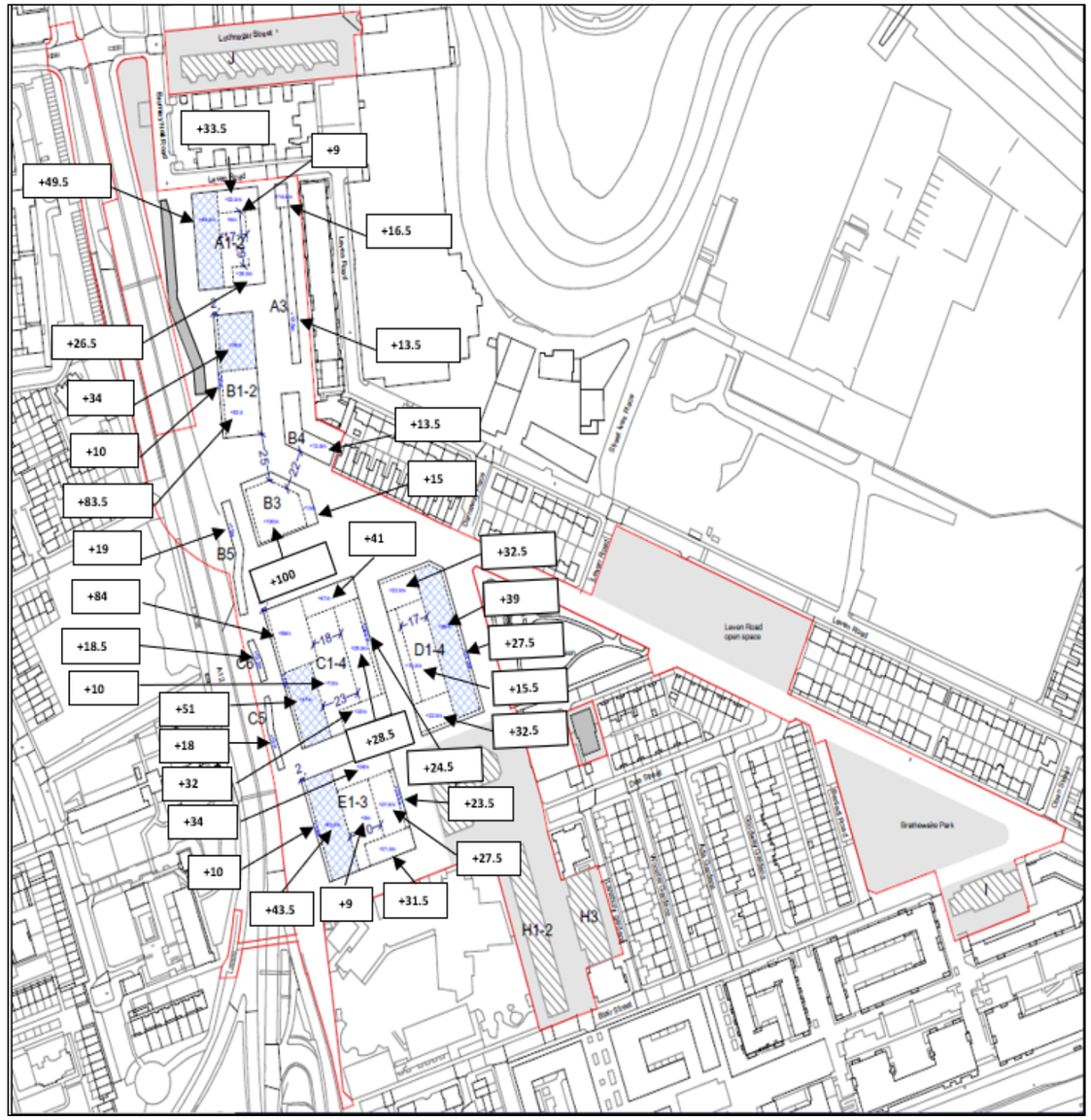
**4.33** Ground floor uses across Building Plot I include residential amenity, plant, general storage, cycle storage and two two-bedroom residential units with private spaces to the front and rear. Floors 2-10 will include a mix of one- and two-bedroom residential units with living space. A communal terrace on the east side of the building will be located on the sixth floor whilst another communal terrace will be on the west side of the building on the seventh floor.

### *Building Plot J*

**4.34** Building Plot J is located adjacent to Bromley Hall Road and Lochnagar Street. Building Plot J varies between 1, 2 and 5 storeys with a maximum height (AOD) of 26.90m.

**4.35** Ground Floor uses across Building Plot J include an entrance lobby and plant / cycle storage and residential uses comprising a mix of three, four and six-bedroom residential units with private gardens. The town houses will provide 4 and six-bedroom homes across one and two storeys whilst the maisonette block with provide 3-bedroom residential units across from ground level upwards. Plot J will also provide roof lights for the existing residential units, private roof terraces to the residential units and green roofs.

**Figure 4.8 Maximum Building Heights (AOD) Across Outline Proposals**



### *Outline Plots – Phases B-D*

**4.36** Each building contained within the outline parameter plans is limited in the amount it can deviate horizontally. The maximum building footprints are limited by the Building Plots Parameter Plan. Details within this plan display the maximum building footprint and development zone allowing for a 2m zone for potential building projections.

### *Plots A – E*

**4.37** Details within this Building Plots parameter plan display the maximum building footprint and development zone, allowing for a 2m zone for potential building projections.

**4.38** The various uses for Building Plots A-E, described on the parameter plans comprise:

- Basement Level Use: the only basement across the Proposed Development, within Building B3, is dedicated to non-residential frontage (Class E) use.
- Lower Ground Level Uses: Across the residential plots, the lower ground floors may include non-residential frontage and residential frontage **(Figure 4.9)**.
- Upper Ground Floor Level Uses: Across the buildings which include upper ground floor levels, these buildings will include areas of residential and non-residential frontage (**Figure 4.10)**.
- First Floor Level Uses: Across the first-floor levels, there will be a mix of residential and non-residential frontage. Buildings B5, C5 and C6 will be entirely non-residential frontage whilst the remaining buildings will be residential frontage **(Figure 4.11)**.
- Upper Floors Level Uses: Within the upper floor levels, buildings B5, C5 and C6 include non-residential frontage whilst the remaining buildings include entirely residential frontage **(Parameter Plan – Land Use - Upper Floors Drawing No. 3663 - LB - ZZ - XX - DR - A – 000030)**.

**Figure 4.9 Lower Ground Floor Level Land Uses**

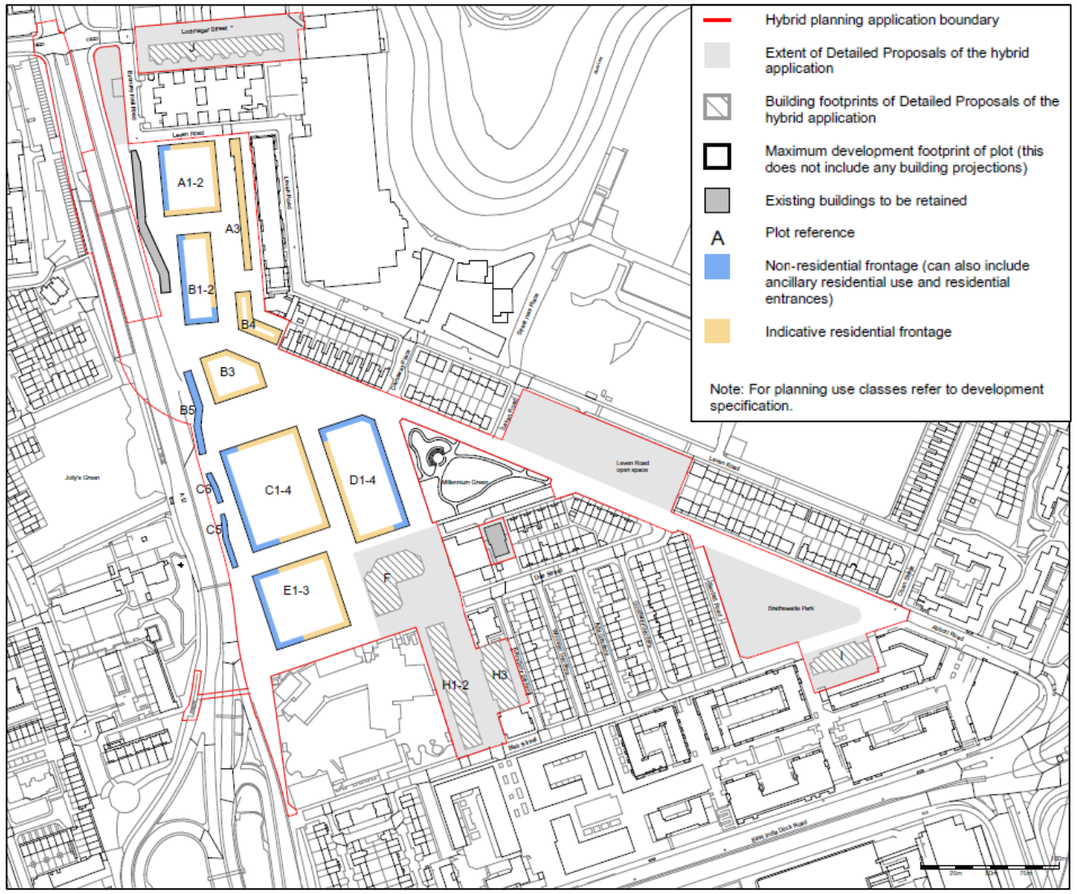
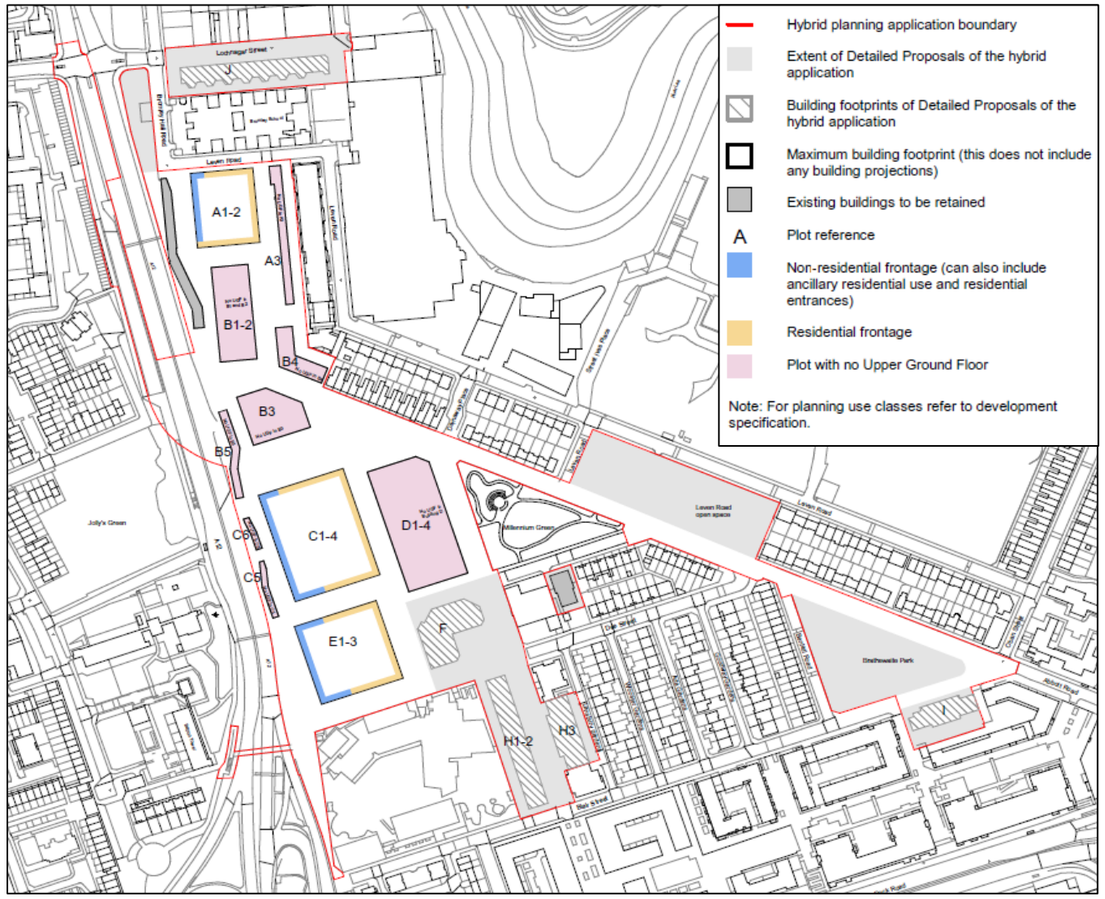



**Figure 4.10 Upper Ground Floor Level Land Uses**



### *Building Plots A*

**4.39** Plot A is located adjacently to the A12 on the west Site and Leven Road located to the north and east. Building Plot A1-2 ranges in height between 9 and 49.5m AOD. Building Plot A3 ranges in height between 13.5 and 16.5m AOD.

**4.40** Ground floor uses across Building A-2 will contain non-residential and residential use. These uses will be split across a lower and upper ground floor. Ground floor uses across Building A3 will comprise residential use. Across buildings A1-3, upper floors will be residential.

### *Building Plots B*

**4.41** Across Building Plot B, there are 4 buildings (Buildings B1-5). Building B1-2 are jointly connected and located directly south of Buildings A1-2 and lies adjacently to Enterprise Yard. Building B3 is located south of Buildings B1-2. Building Plot B4 lies to the east of Building Plot 1-2 with Leven Road located on the east side of Building Plot B4. Building Plot B5 lies adjacent to the A12 and Building Plot B3.

**4.42** Across Plot B, buildings range in height between 10 and 100m AOD. Buildings Plots B1-2 ranges between 10 and 83.5m in height. Building Plots B3 is the tallest building within this Plot and across the entire Proposed Development ranging between 15 and 100m AOD in height. Building Plot B4 will be a of maximum 13.5m AOD and Building Plot B5 will be a maximum of 19m AOD in height.

**4.43** Ground floor uses within Building Plots B1-2 will comprise both non-residential and residential use. Building Plot B3 and Building Plot B4 ground floor uses will comprise residential use only and Building Plot B5 located adjacent the A12 is commercial with no residential use. Upper floor uses across Building Plots B1-2, B3 and B4 comprise residential use only.

### *Building Plots C*

**4.44** Building Plot C is located south-west of Jolly's Green. Building Plot C is made up of 3 buildings (Buildings C1-C6). Buildings Plots C1-4 are connected whilst Building Plots C5 and C6 stand as individual. Buildings Plots C1-4 are located south of Building Plot B3. The buildings are positioned in the centre of the Proposed Development. Building Plots C5 and C6 are located adjacent to the A12 with Building Plots C1-4 located east of Building Plots C6 and 6.

**4.45** Building heights across Building Plots C1-4 range between 10 and 84m AOD. Building C5 will be a maximum of 18m AOD in height. Building Plot C6 will be a maximum of 18.5m AOD in height.

**4.46** Ground floor uses across Buildings C1-4 comprise both residential and non-residential use split across upper and lower ground floor. Upper floor uses across Buildings C1-4 will comprise residential use. Ground floor uses and upper floor uses across Buildings C5 and C6 comprise non-residential use.

### *Building Plots D*

**4.47** Buildings within Plot D comprises Buildings D1-4. These are all jointly connected and lie to the western side of the Site Boundary. Plot D is located adjacently to the west of Millennium Green and on the eastern side of Building Plots C1-4.

**4.48** Plot D ranges in height between 15.5 and 39m AOD in height.

**4.49** Ground floor uses across Buildings Plots D1-4 will comprise residential and non-residential uses. The upper floor use will be residential.

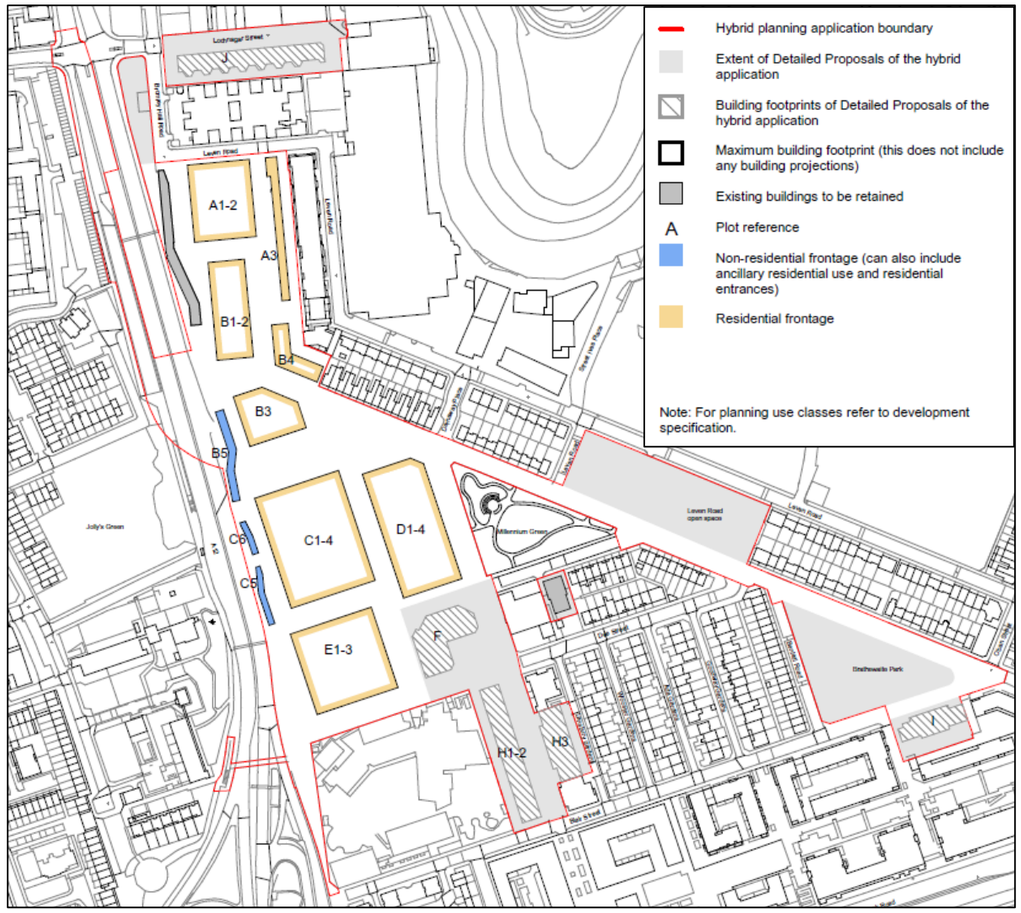
### *Building Plot E*

**4.50** Buildings within Plot E included Buildings E1-3 which are all jointly connected. Plot E lies to the south of Buildings C1-4 and to the north of Culloden Primary Academy.

**4.51** Plot E ranges in height between 9 and 43.5m AOD in height.

**4.52** Ground floor and upper ground floor uses across Building Plots E1-3 will be residential and non-residential use. This will be split across and upper and lower ground floor. Upper floors will be residential.

**Figure 4.11 First Floor Level Land Uses**



## APPEARANCE

### *Detailed Building Plots – Phase A*

*Building Plot F*

**4.53** The plinth includes curtain wall glazing which defines the shop fronts allowing the tenants to provide signage with the framework of the building. The key corners of the plinth will be designed to create a symmetrical sloping edge to promote and block East-West routes across the masterplan. The plinth will be designed to step out by 2.9m around the Town Square, to provide roof terraces for the units and Level 1. The precast elements will be textured and patterned to promote the cultural present across the Aberfeldy Village as it is today. The middle façade will be designed to benefit the users with the inclusion of large format windows and brick clad balconies. The crown of the façade will be designed with 'folded' precast elements. The windows will be visually elongated by metal panels below and above the windows. The panel above will provide discrete ventilation into the apartments. The windows will include a 800mm high sill to promote views out of the habitable rooms. The pier and opening will be defined by bonded brickwork piers that will define the openings. The band and balcony are distinguished from the infill by a darker mortar. Balconies will be tied into the design of creating a range of views for the residents. The façade material palette for Plot F will include rich red tones in combination with textured applications of precast concrete (**Figure 4.12)**.

*Building Plot H1- and H3*

**4.54** The base of Buildings H and H2 will comprise a large format curtain wall glazing which will define the shop fronts and provided opportunities for the tenants to present their signage. The key corners of the building will encourage circulation around the building. The precast elements will be designed to give a textured effect with a patterned design. The precast plinth transitions into red brick to signify the communally accessible homes of the building. The insects of the building will be comprised of a more horizontal design. The window openings will be designed with a metalwork panel above the window and vertically connected by a portion of bonded brick below each of the windows. An 800mm high sill will promote views out of the habitable rooms of the apartments. The pier and opening will be defined by bonded brickwork piers. The solid brickwork piers will be a light brick with a light coloured mortar. The balconies will be designed with a 300mm solid plate metal upstand to limit the views of the balconies from the street below. The base of Building H3 will be designed with a large format curtain wall glazing which will define the shop fronts and also provide the tenants with opportunities to add their own signage. The key corners of the Building will be inset in order to encourage circulation around the corners. The precast elements of the building will be a textured design and patterned to express the cultural diversity of the existing Site today. There will be 3 blocks designed in a light sand coloured brick to be broke up with vertically arranged windows. The insets of Building H3 will be designed to host access desks and outboard balconies. The façade material palette for Plot H is characterised by terracotta and sand / beige brickwork tones in combination with a variety of precast concrete (**Figure 4.13** and **Figure 4.14)**.

*Building Plot I*

**4.55** The base will include plum/pink coloured brickwork which will detain and define the inset residential entrance. The large format glazing of the building will provide active frontage from the immediate street scape. The body of the building has been designed to benefit the user experience with large format with large format windows and dual aspect balconies. The crown of the building will be expressed as a rippled precast to act as a solid balustrade to the roof terraces and the plant screen on the central roof. The window openings are bound by a metal panel above the window to ventilate the apartments. An 800mm sill will promote the views from the habitable rooms windows. The band and balcony will be designed with a soldier brickwork and precast datum to also define the balconies. The façade materiality includes primarily sandy, grey brickwork tones set against a rich plum base (**Figure 4.15)**

*Building Plot J*

**4.56** The datum of Building J will include textured brickwork to run along the public facing elevations. This will not be present on the rear garden facing facades where a calmer elevation will be used to provide a backdrop for Bromley Hall School. To the north of the maisonette block, windows have been designed to benefit internal arrangements. The north-eastern corner has been designed to provide shelter to the communal terrace. The southern elevation has been designed to be characterised by a stepping rood terraces which is accessible from the kitchens of each unit. Roofs will be capped with a delicately detailed precast concrete. The townhouses will employ the same elevation as the maisonette block but at a smaller scale. The body and terraces of Plot J Is designed to be primarily clad in rich red brickwork with a flush faced colour matched mortar. The window openings are to be visually elongated by a metalwork panel above the window and a portion of textured brickwork below each of the windows. The panel above the windows will provide ventilation of the apartments. An 800mm sill will promote views out of the apartment's habitable rooms. The façade materiality of Plot J includes rich red tones in combination with textured applications of precast concrete (**Figure 4.16)**

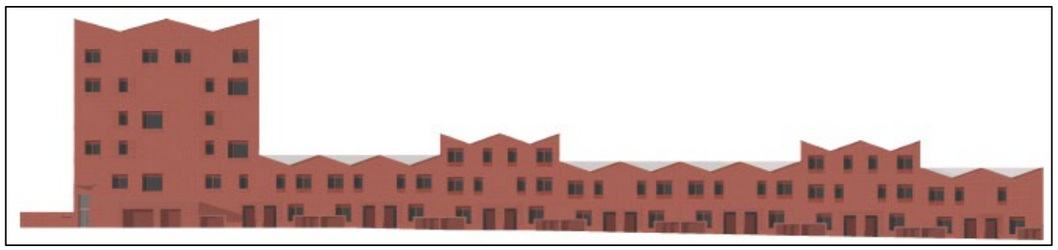
**Figure 4.12 Façade Design Building Plot F (North Elevation)**

**Figure 4.13 Façade Design Building Plot H/2 (East Elevation)**

**Figure 4.14 Façade Design Building Plot H3 (East Elevation)**

**Figure 4.15 Façade Design Building Plot I (North Elevation)**

**Figure 4.16 Façade Design Building Plot J (North Elevation)**



### *Outline Building Plots – Phases B-D*

**4.57** The Design Code stipulates a number of design controls that will ensure that the Buildings (Buildings A, B, C, D and E) will all be similar in their architectural appearance. All buildings with the exception of Building B3 will share the same general façade appearance, with high quality brick façades, glazing with metal window frames and concrete plinths to the lower non-residential floors. The façade of Building B3 will be a durable, robust and high-quality cast material, glazing with metal window frames and a two-storey concrete plinth.

**4.58** Blank façades will be avoided in areas overlooking the public realm areas so that the public realm benefits from surveillance by the surrounding residential uses. Balconies will be recessed on the homes facing the A12 and in the taller buildings (B2, B3 and C1) of the Proposed Development. Projecting balconies will be provided to all other homes within the Proposed Development.

**LANDSCAPING**

**4.59** The landscape design for the Proposed Development will create connections to the existing surrounding public green spaces which include;

- Millennium Green,
- Braithwaite Park;
- East India Green;
- Leven Road Open Space; and,
- Poplar Riverside Park.

**4.60** As part of the Proposed Development, certain existing open spaces will be relandscaped creating a more open space with a range of uses and will lie within Phase A, the detailed proposals of the planning application. These open spaces include Leven Road Open Space and Braithwaite Park. Millennium Green is not included within the Site boundary however, the delivery of the Millennium Green improvements will be subject to a separate S106 agreement.

**4.61** **Figure 4.18** details the Principal Public Realm Areas across the Outline Proposals of the Proposed Development.

**4.62** The landscape design comprises various Character Areas. These Character Areas have been defined across the Proposed Development and are shown within **Figure 4.17**, and detailed below:

### *Character Areas*

#### *Healthy Street*

**4.63** The new Healthy Street will run along the existing Abbott Road and will be a green spine connecting the series of public open spaces. The existing Leven Road Open Space and Braithwaite Park will be improved as part of the detailed proposals of the Proposed Development. Leven Road Open Space will become a hub for sporting, fitness and play. There will be new seating, paving and outdoor gyms. New tree planting to enhance the existing trees will be provided. Braithwaite Park re-provisions include a mix of activity. The Proposed Development includes provision of children's play space and paving.

**4.64** A new civic space on Highland Place is proposed. The Proposed Development will deliver an enhanced pedestrian and cycle connection from Aberfeldy to the west of the A12 via the pedestrianisation of the existing vehicle underpass. The Aberfeldy New Village LLP ('the Applicant') is aware that there are aspirations for enhancement works to be undertaken at Jolly's Green which include a desire for a direct route to it via the proposed new underpass. The Proposed Development does not include these works to Jolly's Green and the rationale for that is set out in the Planning Statement. The Applicant is aware that there are aspirations for enhancement works to be undertaken at Jolly's green however, the Proposed Development does not include these works at Jolly's Green. The Proposed Development will include key proposed public open space throughout the Proposed Development.

#### *Aberfeldy Street*

**4.65** The current Aberfeldy Street will be re-provided with a mix of retail and community facilities. The proposed layout will retain the existing street alignment and mature trees, with new buildings with non-residential uses located at the ground floor with residential above. Balconies will be positioned to overlook Aberfeldy Street. The Square, a new proposed public open space positioned adjacently to Building F and St. Nicholas Church, will be used for community events or local markets.

**4.66** Kirkmichael Road will become closed to traffic (as its existing state) to create a Play Street. Lansbury Gardens will be transformed into a functional residential street which will provide pedestrian, cycle and vehicle access and parking to the existing homes. New tree planting will provide greenery to the street and break up the arrangement of parking.

**4.67** The Aberfeldy Street will act as a key route for connecting the various Building Plots and previous phases of the Aberfeldy Masterplan. The Aberfeldy Street will also promote walking, cycling and the use of public transport. It will prioritise access to pedestrian and cyclists through the implementation of traffic calming measures. The street will be designed to be leafy and green in character with soft landscaping implemented to encourage outdoor interactions.

#### *Community Lane*

**4.68** Community Lane is a residential north-south route. The street provides connections to Leven Road to Culloden Primary School. Community Lane is intended to be family and particularly child friendly. Community Lane will be car-free to encourage pedestrian and cyclist movement. Front doors will be located directly onto the street with the buildings lower in massing to facilitate a residential feel. Soft landscaping will be provided in order to encourage doorstep play and provide doorstep scale access to nature and green space. This will green and open the space the north of Community Lane and Nairn Street which is currently considered an area with deficient in access to nature in the LBTH green grid strategy[3].

**4.69** The Community Lane character area will include Nairn Square in the north and Culloden Green in the south which will provide areas for social opportunities. A mix of dedicated and playable opportunities and multiple play areas will be designed to cater for several ages, groups and abilities.

#### *Enterprise Yard*

**4.70** Enterprise Yard will run parallel to the A12 and connecting Poplar Works to the north and Blair Street to the south. Residential courtyard buildings are proposed in buildings to the east of Enterprise Yard with non-residential uses at ground floor level to ensure active frontage.

**4.71** The East West Links will improve permeability and connectivity within the masterplan and its surroundings, allowing pedestrians and cyclists to move freely through the neighbourhood between the north-south routes of the Aberfeldy Street, Community Lane and Enterprise Yard.

**4.72** Other public realm in the form of courtyard buildings and roof terraces will contribute to the over public realm strategy across the Proposed Development. Courtyard Buildings will be developed within the Outline Proposals of the planning application whilst the Roof terraces are contained within the Detailed Proposals.

[3] *London Borough of Tower Hamlets, 2017, 'Green Grid Strategy'*

**Figure 4.17 Illustrative Landscape Character Areas**

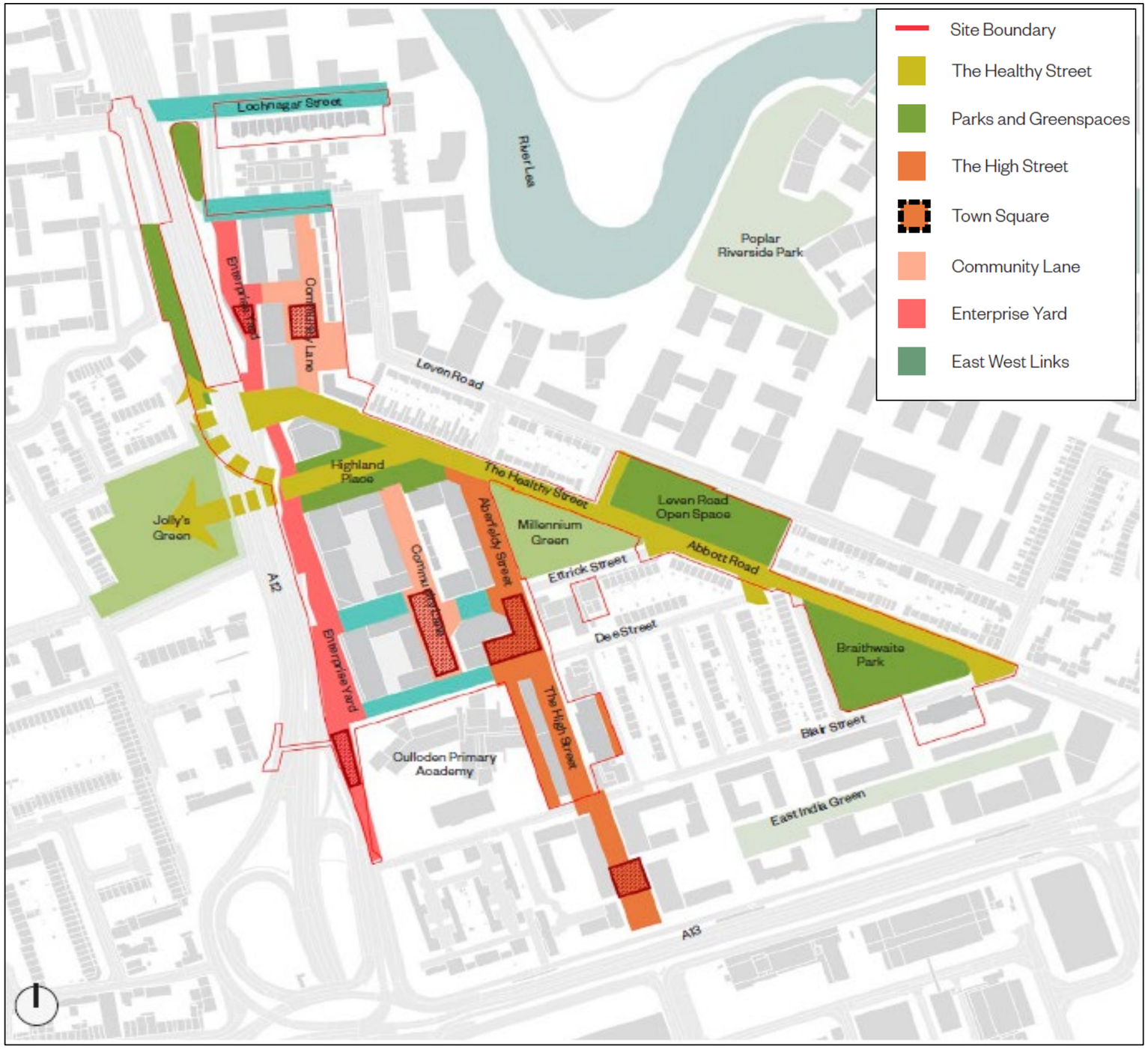
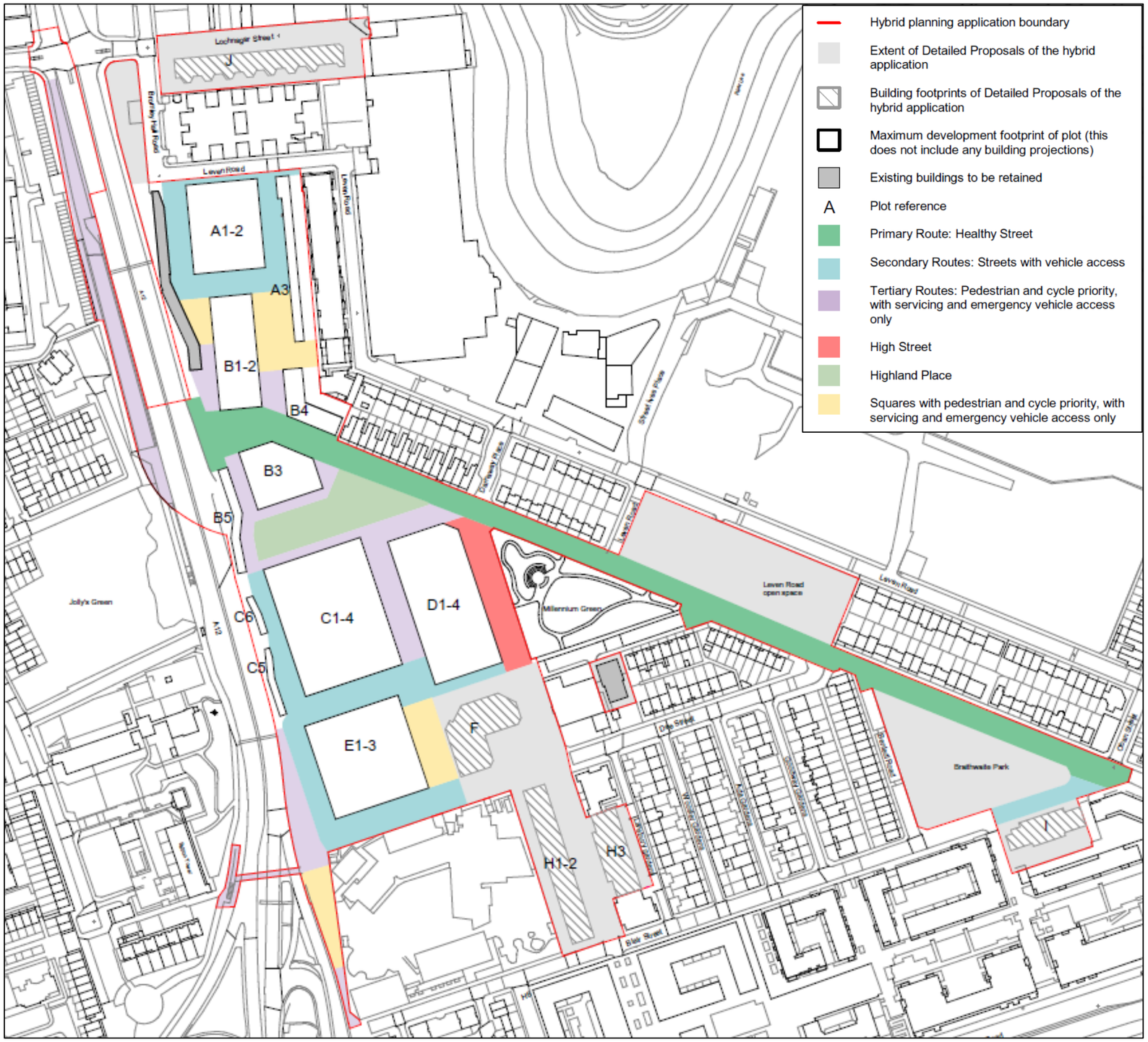


**Figure 4.18 Principal Public Realm Areas**

**4.73**



### *Podiums Buildings*

**4.74** Three podium level communal spaces have been included within the Outline Proposals of the planning application and are included across Plots A, C and E. The communal spaces have been designed to be inclusive and accessible. Plots A, C and E provide 80% play space to 20% communal space

### *Allotments*

**4.75** A small section of land located adjacently to Plot J currently comprises a makeshift allotment area. The new proposed public realm in this area will be centred on community togetherness and well-being with the community garden at its centre. The existing allotments will be built upon and expanded into a new interactive area and functioning community garden.

### *Roof Gardens / Terraces*

**4.76** Roof garden design will be spread across the Outline Proposals of the planning application. Across the roof gardens, their design will provide a variety of activity and promote socialisation within these areas.

**4.77** Roof Terraces are located within Plots F, H3 and I, included within the Detailed Proposals of the planning application. The roof terraces across these Buildings will provide communal space for relaxation, exercise, work, small gatherings, and events. There will be a variety of hard and soft surfaces, with hard surfaces for circulation, formal activity with a texture and interest. The soft surfaces will include grass, provide informal relaxation as well as operating as a flexible multifunctional space. The planting across the roof terraces will include a variety of texture, seasonality and flowers. The roof terraces will encourage biodiversity with the provision of wildlife installations, bird baths and bird feeding stations.

**4.78** Across the roof terrace in Building F, the plant included on the roof terrace (smoke extractor) will determine the organisation of the space. Planting and a patterned open metal mesh, 1.8m high will be topped with a slim metal pergola. The screen and the pergola will be covered in climbers. Formal seating and tables will be provided across Building F roof terrace. Individual semi-mature multi-stemmed large shrubs / small trees will be provided in the corners to control the views out of the space. Paving will be provided in a Dutch clay paver to emphasise the residential character of the space.

**4.79** Across Building H3, there will be two small roof terraces arranged with a simple rectilinear raised planting bed. Paving would be created in a Dutch Clay paver to enhance the residential feel. Across Plot I, there will be two roof terraces located on the eastern and western shoulders of the building. Both terraces are designed with structures, seating and plating being centrally located. There will be a tessellated hexagonal pattern of raised planted and informal seating structures as the main characterising element which will bring greenery into these spaces. The planting will have a variety of texture, seasonality, and flowers. The roof gardens will encourage biodiversity through the use of wildlife installation, bird baths and bird feeding stations.

### *Planting Strategy*

**4.80** New trees are proposed which compliment the existing canopy and character of mature trees. The tree planting strategy will strengthen the wider green connections strategy, provide shade in the summer and shelter in cooler and winter months. Up to 424 new trees will be planted across the Proposed Development, provided on ground plane level within the public realm areas and across three Level 1 podiums. There are 18 trees proposed on the roof terraces which will form part of Phase A and further tree planting will be spread across Phases B-D roof terraces, in accordance with the Design Code.

**4.81** **Figure 4.19** indicates the existing and proposed new tree strategy across the Proposed Development. **Figure 4.20** indicates the proposed species and tree removal. Other planting has been designed across the Proposed Development to offer different habitat value, colour, texture, size and suitably located based on their individual growing requirements.

**4.82** The podiums and roof terraces will include climbing plants to add a vertical element to the roof gars, flower-rich ornamental perennials, grass and shrub planting which has been designed to suit the podium and upper-level microclimate wind conditions.

### *Tree Removal*

**4.83** The existing tree structure has been considered and plays a key role with the design of the masterplan landscape layout. To compliment the existing canopy and character of the mature trees, the illustrative masterplan proposes substantial planting of new trees. To facilitate the Proposed Development, out of the 193 trees surveyed, 66 will be removed (**Figure 4.20**) including sycamore, silver birch, buddleia, Norway Maple (a uniform group lining the roadside), paperbark maple, crab apple; a group of Portuguese Laurel, small leaved lime and Swedish whitebeam; Common Whitebeam, Rowan, bay, weeping willow, hazel and elder.

**Figure 4.19 Existing Tree Retention and Proposed**

**Figure 4.20 Proposed Species and Tree Removal**


### *Public Open Space*

**4.84** In addition to the built floorspace set out above, the Proposed Development includes areas of 3,473m$^2$ open space including:

- A new public Park, called 'Highland Place';
- A new Town Square;
- A local square, 'Culloden Green';
- An allotment area, the 'Allotments'; and
- Improvements to Leven Road Open Space and Braithwaite Park.

### *Communal Amenity*

**4.85** Communal amenity will be provided in the form of ground floor courtyards, level 1 Podiums, and Roof Gardens. In respect of the Detailed Proposals, the following amount of communal amenity is provided:

- Plot F – 337m$^2$;
- Plot H – 130m$^2$; and
- Plot I – 176m$^2$; and

### *Child Play Space*

**4.86** The Proposed Development will provide dedicated play space provision which will be calculated in line with the London Borough of Tower Hamlet's play space calculator. Phase A play space is presented in **Table 4.8**

**Table 4.8 Phase A Playscape Requirements**

| Age Group | Requirement | Quantum Proposed |
|---|---|---|
| Aged 0-4 | 643m$^2$ | 643m$^2$ |
| Aged 5-11 | 564m$^2$ | 564m$^2$ |
| Aged 12-18 | 634m$^2$ | 62m$^2$ |
| **Total** | **1,842m$^2$** | **1,014m$^2$** |

**4.87** Due to the indicative phasing, the 0–4-year-old play provision for Plot F will be in a temporary location next to Plot F in the future Phase D. Its permanent location will be delivered as part of Phase C.

**4.88** Play space provision for the under 5s and 5-11 year olds will be provided on-site and the final provision is subject to alteration for each Phase of the Outline Proposals, determined by the final mix of the residential units (by size and tenure) applied for at each RMA stage. The play and open space plans for the illustrative scheme provided in the Design and Access Statement demonstrates how the required play space for the child yield generated by the accommodation schedule as assessed in this chapter, can be met, demonstrating how it will be possible to meet the requirements of the LBTH within the Site.

*Lighting Strategy*

**4.89** The lighting strategy proposes the re-use and reconfiguration of existing light columns present across the existing Site. The lighting strategy will ensure the streets are lit to meet LBTH highway standards. The new lighting strategy will include new medium height street light columns to tie in with the existing columns, along the new highway layouts of the A12 bus/gate junction, Ettrick Street and Dee Street. This strategy will also be applied to Lochnagar Street to provide lighting for Plot J and the immediate area outside Plot I along Blair Street (**Figure 4.21**).

**4.90** The underpass lighting will create a distinctive character and fun atmosphere with the lighting used to represent this. The lighting strategy will include vibrant and colourful wall up and down lighting to create a sense of safeness and security.

**4.91** External lighting will be designed to be compatible with surrounding residential receptors as required by BS EN 12464-2. Areas of the wider masterplan around the pedestrian priority areas will include low height street columns as standard. Areas of feature lighting such as tree up lighting, integrated furniture lighting and landscape features at night are also proposed.

**Figure 4.21 Development Lighting Strategy**


## ACCESS, PARKING AND SERVICING

### *Vehicle Access*

**4.92** The existing Site is accessible by pedestrians/cyclists from multiple locations along A12 and A13, with the roads being accompanied by suitable crossing facilities (pedestrian/cyclist subways and signalised crossings). The existing pedestrian/cyclist subways are however unpleasant, enclosed, provide poor lighting and lack surveillance (passive and controlled). An Active Travel Zone (ATZ) assessment was undertaken analysing the crossing facilities in proximity of the Site and along key journeys.

**4.93** Vehicles access the Site from A12 (north) and A13 (south). Access from A12 is via a slip road which provides entry directly onto the northern side of Abbott Road. Access from A13 leads to the southern side of Abbott Road. Both access points provide entry to all areas of Aberfeldy Village.

**4.94** The proposed pedestrianised underpass will provide an easier and attractive method to cross the infrastructural barrier of the A12, separating pedestrians and cyclists from any potential interaction with vehicular traffic, which is higher along the A12. The other access points for pedestrians, cyclists and vehicles will remain unchanged in location; however, footways and the road network will be improved with general maintenance.

**4.95** Additionally, the Dee Street subway will be improved significantly as part of the Proposed Development, which will not only benefit future residents of the Site, but existing residents and schoolchildren of the Culloden Primary Academy as well.

**4.96** The principles of vehicle access to the Site will remain the same as part of the Proposed Development. A new junction will be provided to the A12 to replace the existing underpass with on and off slip. **Figure 4.22** shows a plan setting out the general access and movement strategy for vehicles at the Proposed Development.

### *Pedestrian And Cycle Access*

**4.97** Pedestrian and cycle access is shared across the Site with the Proposed Development providing a primary cycle route linking the east and west. The strategy has also been designed to allow prioritisation of pedestrian and cycle movements throughout the Proposed Development, with the implementation of traffic calming measures where vehicular access is required and helping create a safe environmental for all road users.

**4.98** Pedestrian routes are dispersed across the Proposed Development to allow movement across the Site without depending on vehicular means.

**4.99** The reprovisions of the current A12 vehicular underpass, will allow connections to the surrounding area possible. The strategy for the underpass has been designed to accommodate the potential future cycle demand across the area (see **Figure 4.23** for an illustrative design).

**4.100** Community Lane is the main north south internal pedestrian and cycle route with emergency access only.

**4.101** Abbott Road will provide direct access through the re-purposed underpass to link the Aberfeldy Estate to Chrisp Street Market to the west. Abbott Road will also provide access to Canning Town to the east.

**4.102** The network of secondary streets has been designed to promote slower traffic movement throughout the Proposed Development with greater pedestrian and cyclist activity.

**4.103** The existing Dee Street pedestrian underpass will also be upgraded to strengthen the east to west connections.

**Figure 4.22 General Access and Movement Strategy**

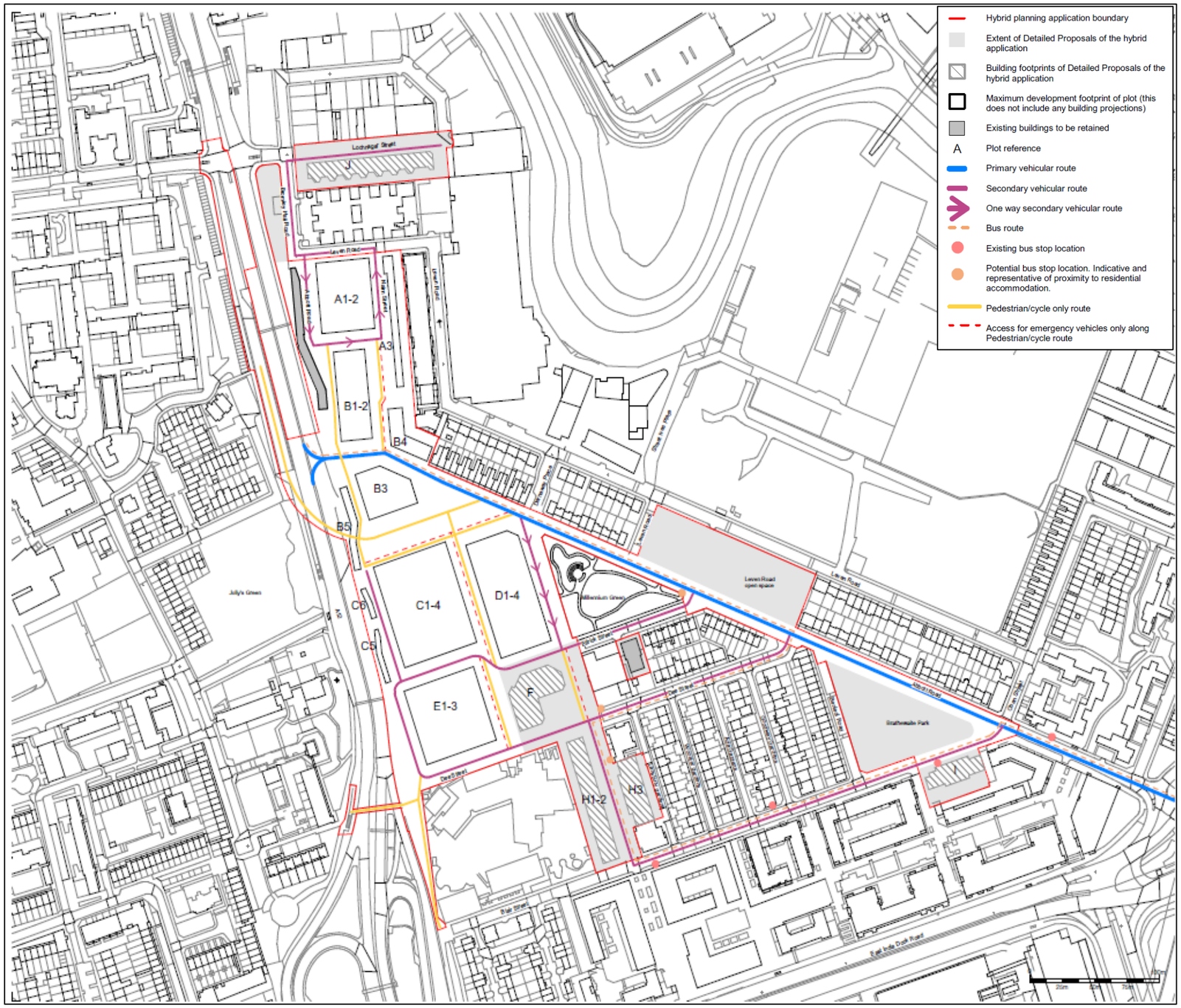


**Figure 4.23 Illustrative Visualisation of The Proposed Basement Design and Underpass**


### *Car Parking*

**4.104** Most parking on the existing Site is located on-street. The Site is located within Controlled Parking Zone (CPZ) Zone B3, which restricts parking to permit holders Monday to Friday between 8:30am and 5:30pm.

**4.105** The Proposed Development will be car-lite except for Blue Badge parking spaces for all land uses. However, returning residents are permitted to apply for a parking permit due to their existing car parking spaces being removed. A total of 71 returning residents have applied for the permit and in order to protect local parking amenity, new residents would be prohibited from obtaining on-street parking permits. There are 149 private car parking spaces and 92 public CPZ spaces that would be directly affected by the Proposed Development.

**4.106** The residential development will deliver 3% Blue Badge parking, which equates to 50-spaces. Parking will be provided on-street and within the development (i.e., podium parking). One Blue Badge space is included for commercial uses. Accessible car parking spaces will be provided close to building entrances to reduce time and distance travelling between vehicle and building. **Table 4.9** provides the breakdown of car parking across the Proposed Development.

**4.107** A car club operator will be approached to establish the business case for providing a car club service to meet the needs of residents who do not own cars. Car club operators will be approached for expressions of interest. Car club provision will be as follows:

- One space with the Phase A development;
- One space with the Phase B development;
- One space with the Phase C development; and
- One space with the Phase D development.

**4.108** This equates to four car club parking spaces within the Proposed Development and is adequate to accommodate the potential demand from future residents and employees.

**Table 4.9 Car Parking Spaces across the Proposed Development**

| Phase | Maximum Car Parking Type | | |
|---|---|---|---|
| | Permit Parking Spaces | Accessible Parking Spaces | Car Club Spaces |
| A | 5 | 9 | 1 |
| B* | 31 | 17 | 1 |
| C* | 35 | 18 | 1 |
| D* | 0 | 6 | 1 |
| TOTAL | 71 | 50 | 4 |

Notes: * - Indicative breakdown of car parking across the Proposed Development for the Outline Proposals

### *Cycle Parking*

**4.109** **Table 4.10** provides a breakdown of the proposed cycle parking spaces for the Detailed Proposals only (Phase A). Across the Outline Proposals, the cycle parking provision across Phases B-D will meet the London Plan Policy, as they come forward at RMA stages.

**4.110** Cycle parking provision (both long and short stay) for each proposed land use will be compliant with the London Plan (2021) and will be designed in accordance with TfL's London Cycle Design Standards (LCDS). The London Plan uses the formally used land-use codes and has not transferred over to the new land uses; therefore, cycle parking standards are based around the land uses outlined with the London Plan 2021.

**Table 4.10 Cycle Parking Provision - Phase A**

| Phase | Cycle Parking Type | | |
|---|---|---|---|
| | Long Stay | Short Stay | Total |
| A | 503 | 126 | 629 |

### *Servicing*

**4.111** Deliveries and servicing of the existing units is currently undertaken from the public highway such as in the form of parking bays and sections of single or double yellow lines without loading restrictions.

**4.112** The section of Aberfeldy Street that functions as a local high street is serviced both from Aberfeldy Street itself and from the streets to the rear of the commercial units; Kirkmichael Road and Lansbury Gardens. There is little to no space for servicing of these units off the public highway, which can cause issues on the narrow streets when parking pressure is high.

**4.113** Six dedicated on-street loading bays are proposed which will accommodate 8m rigid lorries will be provided. The proposed location for loading bays for the residential and commercial properties ensures access to all buildings can be achieved from each bay.

**4.114** The following loading bays are proposed:

- 2 Aberfeldy Street, western side of the road;
- 1 Dee Street, eastern side of the road, west of building E1;
- 1 Ettrick Street, northern side of the road, south of building C3;
- 1 Abbott Road, southern side of the road, north of building B3; and
- 1 Nairn Street, southern side of the road, north of building B1.

**4.115** In addition to these dedicated loading bays, sections of single and double yellow line markings are proposed to allow for flexible loading and drop-off when required. Furthermore, several of the proposed residential blocks will allow loading off-street, including Block A, Block C and Block E.

**4.116** A draft Delivery and Servicing Plan (DSP) has been produced as a standalone document in order to manage refuse, delivery and service vehicle arrangements and overall accessibility. While it is recognised this will be a live document that will need to be adapted over the life of the development, the DSP sets out a range of

management strategies and measures to ensure the Site can be readily serviced in an efficient and safe manner without inconveniencing others.

**4.117** By providing more formalised servicing space within the Site and introducing more management of deliveries the impact of deliveries and servicing on new and existing residents, visitors, and employees of the Site will be reduced, improving quality of life and making the Site more sustainable.

### *Refuse Strategy*

**4.118** In line with LBTH Policy, four strategies have been included within the design of the Proposed Development. These include:

- Traditional communal Eurobin collections – Buildings F, H1, H2 and H3;
- SULO underground collection;
- Traditional individual wheelie bin collections – Building J; and,
- Portable waste compactors in podiums – Buildings A, B, C, D & E.

**4.119** Bin stores are located on the ground floors of each core and have been designed to minimise their frontage and impact onto the public realm.

**4.120** Three proposed collection points for the buildings are served by the compactors – which are located within each of the courtyard building's podium car park.

**4.121** Buildings within Phase A of the Proposed Development are to be served by four collection points. Three of these collection points are traditional Eurobin collection and the fourth to be located in Building J.

**4.122** Residential houses within Phase A and B of the Proposed Development will be provided with individual wheelie bin collection points.

**4.123** **Figure 4. 24** indicates the proposed refuse strategy across the Proposed Development (inclusive of both outline and detail applications).

### *Refuse Management*

**4.124** Refuse management will be required across the Proposed Development. This will be provided by an on-site facilities management team.

**4.125** The compactor refuse strategy will require a managed solution. The contractor will be required to move the refuse for the residential stores into the compactor using a tow tractor. The refuse stores have been designed to allow for these to be emptied every two days.

**4.126** Compactors are located within the three podium car parks; two within Phase C and one within Phase B. Refuse generated from Phase B will be transferred from Building B1 and B2 into Building A. In Phase C, refuse will be transferred from Building B3, Building C and Building D, and will be collected in Building C. Building E will serve itself with the refused from the three refuse stores moved to the podium car park.

**4.127** **Figure 4.25** indicates refuse management across the Proposed Development.

## ENVIRONMENTAL DESIGN ASPECTS

### *Flooding Risk and Drainage*

**4.128** The Flood Risk Assessment states that finished floor levels of the Proposed Development should be set to a minimum 0.15m above adjacent ground levels and above peak flood levels in the 2100 climate change breach scenario. Where this is not possible, sleeping accommodation (bedrooms) should be- provided at first floor and above.

**4.129** For the retail element of the application, finished floor levels of the proposed unit should be set to a minimum of 0.15m above adjacent ground levels.

**4.130** Flood resistant and resilient construction techniques should be incorporated into the design of the buildings where appropriate.

**Figure 4.24 Refuse Strategy**

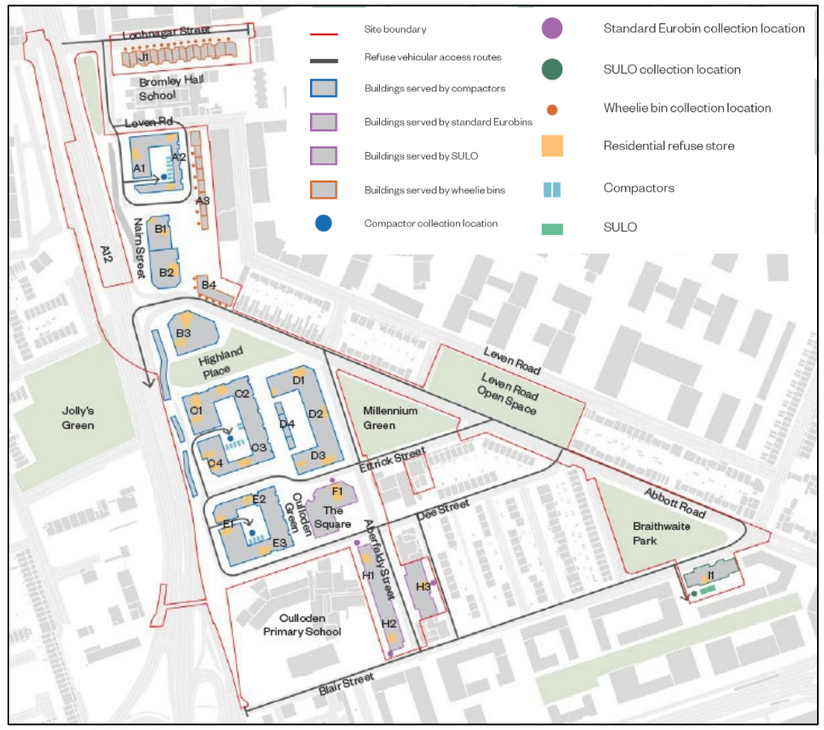
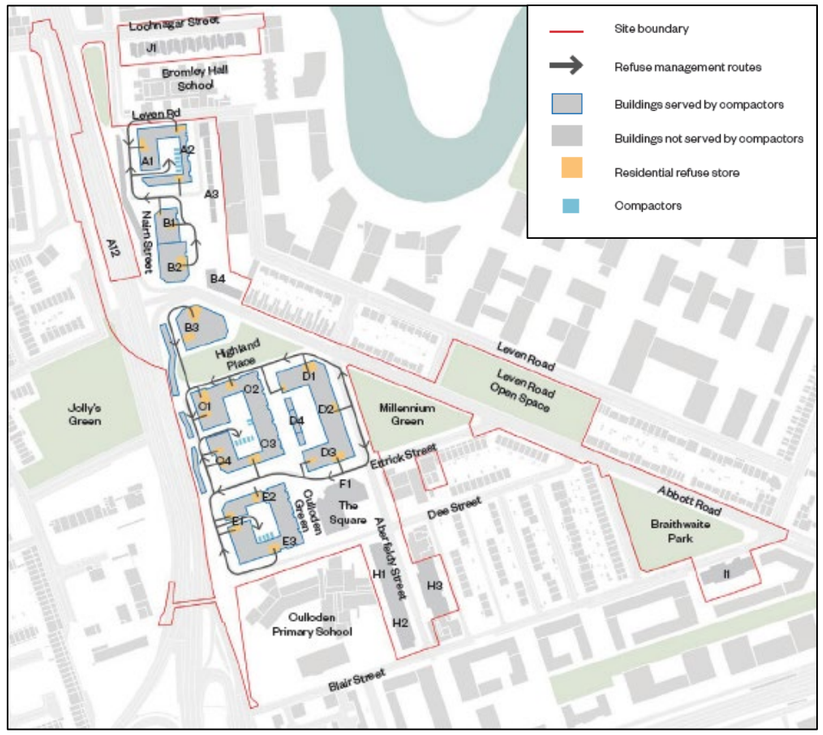



**Figure 4.25 Refuse Management**



*Foul Drainage*

**4.131** Due to the size and phasing of the Proposed Development, foul drainage from the Site will be spilt into 10 individual outfalls into the Thames Water combined network. The proposed strategy includes various connections to the existing Thames Water combined network. These are outlined below:

- Five connections to the Thames Water combined water sewer network are proposed for Phase A; and,
- Three new connections for Phase B.

*Proposed Surface Water Drainage Strategy*

**4.132** LBTH will be contacted to discuss the proposed surface water discharge rates for the Proposed Development

**4.133** A predevelopment enquiry has been submitted to Thames Water to confirm there is sufficient capacity within the Thames Water public sewer network to accommodate the Proposed Development.

**4.134** Hydraulic calculations indicate that the attenuation volume required for the Proposed Development to discharge at the proposed discharge rate of 19.05l/s for a 1 in 100 year + 40% climate change storm event is approximately 3,562m$^3$, which will to be confirmed during detailed design.

**4.135** The proposed surface water strategy will be developed to utilised sustainable drainage techniques (SuDS) to attenuate surface water at source and reduce risk of downstream flooding.

**4.136** Due to existing ground conditions and area of limited landscaping across the existing Site, the use of SuDS such as detention basins or ponds are not suitable, therefore the proposed strategy includes the use of blue roofs, high level podiums attenuation and below ground attenuation tanks. Each phase will have a separate drainage network. The breakdown of which across each phase is presented below.

*Phase A Strategy – Detailed Planning Application*

**4.137** Phase A is divided into 3 different locations therefore it is proposed that Block I1, J1, F1 H1 & H2 and H3 will drain separately into the closes Thames Water sewer. Each separate drainage strategy for Phase A is further discussed below.

**4.138** Block I1 – Surface water drainage strategy proposes a blue roof and a below ground attenuation tank. The approximate volume of attenuation for this building is 69m$^3$. Of which 34.2m$^3$ attenuation is provided by cellular attenuation crates and 35m$^3$ is provided by the blue/green roof.

**4.139** Block J1 - The proposed surface water drainage strategy proposed the use of a below ground attenuation tank. It is proposed to discharge surface water from Building J1 via gravity into Thames Water combined water sewer in Leven Road (TWMH3602) via a new connection. The approximate required storage for building J1 is 346m3 this is to be provided through the proposed cellular attenuation crates.

**4.140** Block F1 –blue roofs, high level podium attenuation and a below ground attenuation tank are proposed. The approximated volume of attenuation is 184m$^3$. It is proposed that a new connection will be made to the southeast corner of the building, branching into the Thames Water combined water sewer in Aberfeldy Street between manholes TWMH4313 & TWMH4312.

**4.141** Block H1 /H2 and H3 – The proposed surface water drainage includes two below ground attenuation tanks (one tanks serving Building H1 and H2 and the other tank serving Building H3) and blue / green roof areas. The approximate volume of attenuation for buildings H1&H2 is 161m$^3$, of which 49m$^3$ is provided through the blue roof and 112m$^3$ is provided through the below ground cellular attenuation crates. The approximate volume of attenuation for building H3 is 135m$^3$, of which 24m$^3$ is provided through the blue roof and 111.2m$^3$ is provided through the below ground cellular attenuation crates.

**4.142** Subject to CCTV conclusions, the proposed strategy thus far is to use new connections. If existing connections are identified, then there maybe the opportunity to reuse. This will be explored further within the detailed design elements.

*Phase B Strategy – Outline Planning Application*

**4.143** The proposed surface water strategy for the Phase B utilises sustainable drainage systems (SuDS) to attenuate surface water at source and reduce the risk of downstream flooding of the Thames Water sewer network. The strategy will also utilise a combination of blue roofs, high level podium attenuation and attenuation tanks.

**4.144** The proposed strategy for this area of the Proposed Development includes a total of three new connections to the existing Thames Water combined sewer network (subject to CCTV surveys);

- One connection to the Thames Water combined sewer network in Leven Road (TWMH3605), through a new connection serving the adjacent Block A1/A2 receiving a restricted discharge rate of 1.5l/s.
- One connection to the Thames Water combined sewer network in Abbott Road (TWMH3517 to TWMH2536), through a new connection serving Block A3, B1/B2 & B4 receiving a total restricted discharge rate of 3.5l/s.
- One connection to the Thames Water combined sewer network in Abbott Road (TWMH3516), through a new connection serving Blocks B3 and B5 receiving a total restricted discharge rate of 2.3l/s.

**4.145** To achieve the proposed discharge rates of 7.3l/s it an approximate volume of 862m$^3$ will require attenuation..

*Phase C Strategy – Outline Planning Application*

**4.146** The primary source of attenuation for Phase C will be below ground attenuation tanks with further attenuation to be provided via blue roofs and high levels podium attenuation.

**4.147** A new connection to the Thames Water network in Ettrick Street is proposed (TWMH4303), subject to a CCTV survey to identify an existing sewer and their state.

**4.148** Each block will attenuate and restrict flows separately before connecting to TWMH4303, the below summarises the proposed discharge rates and attenuation required for each block within phase C.

- Block C1/C2/C3/C4 will restrict discharge rate to 1.5l/s requiring a total 651m$^3$ attenuation of which 425m$^3$ is to be provided through below ground cellular attenuation crates and 238m$^3$ provided via blue roofs and high levels podium attenuation.
- Block C5 & C6 have been designed to have a shared flow control structure limiting discharge to 1l/s with attenuation however split both buildings to receive 10m$^3$ attenuation provided through below ground cellular attenuation crates. Flows from Blocks C5 and C6 are to be conveyed into a combined running along Ettrick Street to the east before discharging into TWMH4303.
- Block E1/E2/E3 the discharge rate will be restricted to 1.5l/s. This will require a total 563m$^3$ attenuation of which 400.4m$^3$ is to be provided via below ground cellular attenuation crates and 162m$^3$ provided via blue roofs and high levels podium attenuation.

**4.149** The total amount of attenuation to be provided for this phase will be 1,233m$^3$.

*Phase D Strategy – Outline Planning Application*

**4.150** The proposed surface water drainage strategy for the building Phase D has been made sustainable using a below ground attenuation tank and blue roofs and high levels podium attenuation.

**4.151** A new connection to the Thames Water combined water sewer in Ettrick Street (TWMH4302).

**4.152** The approximate volume of attenuation for Phase D is 576m$^3$, of which 490m$^3$ is to be provided via below ground attenuation crates and 87m$^3$ provided via and blue roof attenuation.

*Proposed Discharge Rates Summary*

**4.153** **Table 4.11** shows a breakdown of the volume of surface water drainage required to suit a 1 in 100-year storm event + 40% climate change, the proposed discharge rates and required attenuation volumes.

**Table 4.11 Proposed Surface Water Discharge Rates**

| Phase | Storm Event | Proposed Discharge Rate (l/s) | Required Surface Water Attenuation (m$^3$) |
|---|---|---|---|
| Phase A (Blocks I1, J1, F1, H1&H2 and H3 | 1 in 100 year + 40% CC | 6.25 | 896 |
| Phase B | 1 in 100 year + 40% CC | 7.3 | 865 |

| | | | |
|---|---|---|---|
| Phase C | 1 in 100 year + 40% CC | 4 | 1231 |
| Phase D | 1 in 100 year + 40% CC | 1.5 | 576 |
| **TOTAL** | | **19.05** | **3,568** |

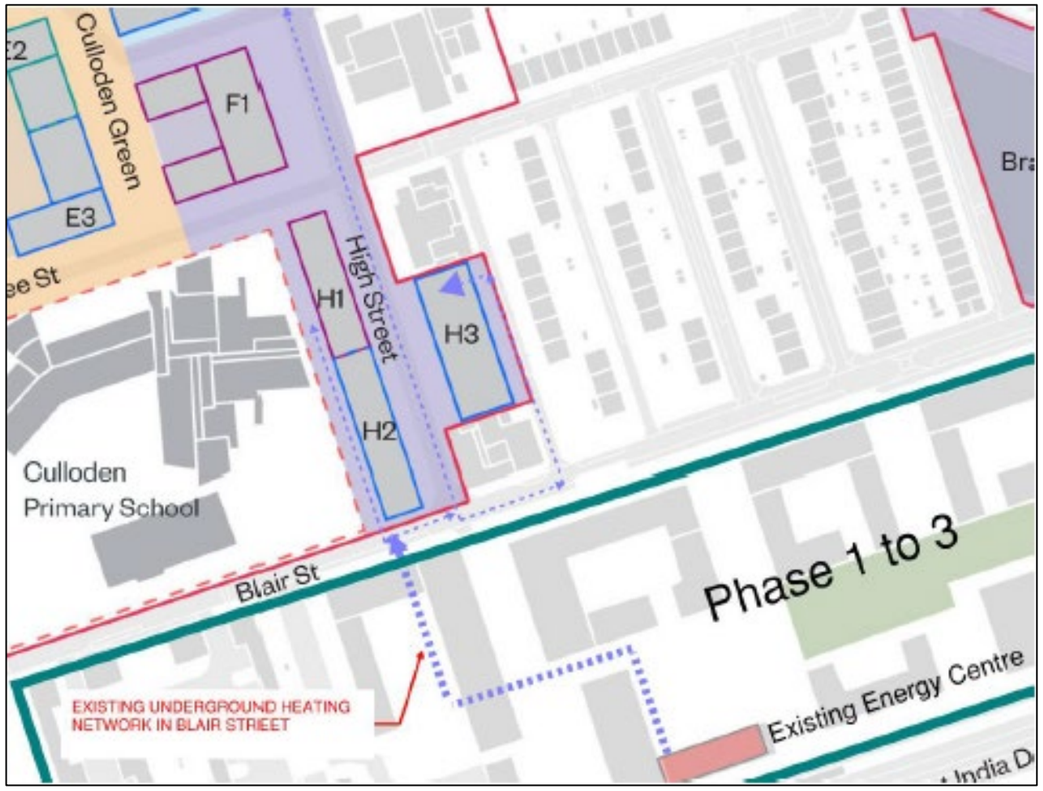
### *Energy Strategy*

**4.154** The energy strategy has been designed to ensure that opportunities to make use of the waste heat from neighbouring sites can be taken up. The below details the energy strategy across the detailed and outline elements of the planning application. **Figure 4. 26** illustrates the energy strategy across Phase A

**4.155** Detailed Application: Buildings H1-3 and F in Phase A will connect to the existing energy centre delivered as part of the earlier phases of the previous planning application in 2021. The energy centre has spare capacity and will accommodate the buildings referred to above. Once the energy centre reaches the end of its life, it will move away for the use of fossil fuels. Buildings I and J will be provided with their own air source heat pumps (ASHP's) and water-source heat pumps (WSHP's) and will be independent from the wider energy strategy.

**4.156** Outline Application: A new energy centre will be constructed and delivered as part of Phase B. The energy centre will be located within the base of Building A1-A2 and will be served by ASHP's on the roof of Building A1. The energy centre for the outline application will distribute heat intake rooms serving each of the apartment buildings. The hot water will then be distributed across individual heat intake units for each of the homes and non-residential units.

**Figure 4.26 Indicative Sustainability and Energy Strategy**




### *Wind Mitigation*

**4.157** Wind microclimate mitigation measures will be required to ensure that the wind conditions within the Proposed Development are suitable for the intended use throughout the year, however these will need to be determined through further testing of the Proposed Development at the Reserved Matters stage. An illustrative scheme was tested in order to demonstrate that a scheme with an appropriate wind environment could be achieved within the parameters and this is demonstrated in **ES Volume 1, Chapter 13: Wind Microclimate**.

## ILLUSTRATIVE SCHEME

**4.158** As set out in ES Volume 1, Chapter 2: EIA Methodology the illustrative scheme has been considered in **ES Volume 1, Chapter 6: Socio-Economics, ES Volume 1, Chapter 13: Wind Microclimate** and **ES Volume 1, Chapter 14: Daylight, Sunlight, Overshadowing and Solar Glare**. These assessments take account of the massing of the illustrative scheme, which is shown in Figure 4.28 below.

**4.159** The amount of development proposed as part of the Illustrative scheme per use class for the is provided within **Table 4.12.**

**Table 4.12 Illustrative Scheme Land Uses ($m^2$)**

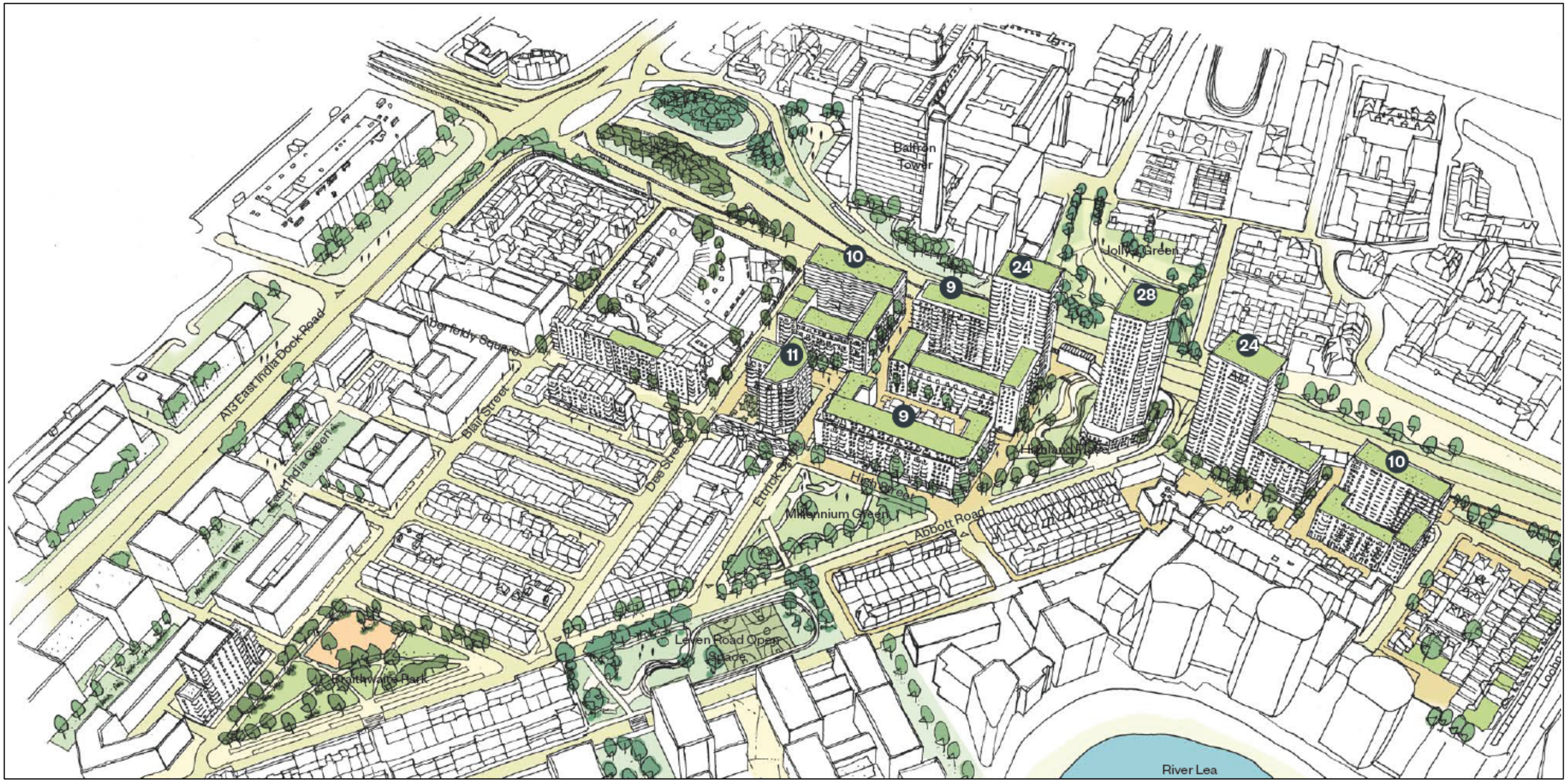
| Land Use | GIA ($m^2$) | GEA ($m^2$) |
|---|---|---|
| Residential | 147,444.4 | 162,901.2 |
| Workspace | 2,369.1 | 2,812.9 |
| Retail | 2,366.2 | 2,585.7 |
| Marketing | 295 | 317 |
| **TOTAL** | **152,474.7** | **168,616.8** |

**4.160** The Illustrative Scheme comprises 147,444.4$m^2$ GIA of residential floorspace and total of 1,595 residential units. **Table 4.13** presents the Indicative Illustrative scheme housing mix.

**Table 4.13 Illustrative Scheme Housing Mix**

| Unit Type | No. of Private | No. of Socially Rented | No. of Intermediate | Total |
|---|---|---|---|---|
| Studio | 117 | - | - | **117** |
| 1 Bedroom | 446 | 72 | 40 | **558** |
| 2 Bedroom | 583 | 109 | 36 | **728** |
| 3 Bedroom | 29 | 130 | - | **159** |
| 4 Bedroom | - | 29 | - | **29** |
| 5 Bedroom | - | - | - | **-** |
| 6 Bedroom | - | 4 | - | **4** |
| **TOTAL** | **1,175** | **344** | **76** | **1,595** |

**Figure 4.27 Illustrative Scheme**



# Chapter 5: Demolition and Construction

## INTRODUCTION

**5.1** This chapter of the ES describes the proposed programme of demolition and construction works, specifically the key activities that will be undertaken prior to the completion and operation of the Proposed Development. This chapter of the ES provides a description of the demolition and construction works for the purposes of identifying and assessing the potential demolition and construction related environmental impacts and resultant environmental effects of the Proposed Development. The assessment of these impacts and effects is reported within each technical topic chapter of this ES (**ES Volume 1, Chapters 6-14** and **ES Volume 2, Townscape Visual Impact and Heritage Assessment**).

**5.2** Planning for construction is broad at this stage in the planning process and may be subject to modification during the detailed planning of these works, particularly following appointment of a contractor and throughout preparation of various management plans including a Demolition Method Statement (DMS) and Construction Method Statements (CMS). The information presented within this ES Chapter is therefore based on reasonable assumptions made by The Aberfeldy New Village LLP (the 'Applicant') and the wider planning and design teams, specifically for projects which have involved consideration and management of complex issues such as working near to existing commercial and residential property, to busy main roads and in proximity to underground constraints and surface utilities and other infrastructure. The information presented within this ES Chapter is therefore suited to this stage of planning. It is also considered robust for the purposes of the Environmental Impact Assessment (EIA) in defining a reasonable worst-case scenario for the purposes of assessment and any non-material changes to the timings of works is not considered likely to affect the findings and conclusions of the technical assessments.

**5.3** Various environmental management controls will form the basis of a Construction Environmental Management Plan (CEMP) that will be implemented over the duration of construction works. An outline CEMP is presented in **ES Volume 3, Appendix Demolition and Construction – Annex 1**. Demolition and construction related management, mitigation and monitoring measures on a topic-by-topic basis are described within the relevant technical chapters of this ES, as well as summarised in **ES Volume 1, Chapter 14: Mitigation & Monitoring Schedule.** The CEMP will define, amongst other things, the hours of operation, dust control measures and vehicle emission control. In addition to the environmental management measures and procedures (such as noise control and dust suppression (etc.)), consideration shall also be given to construction materials quantities and best practice environmental standards for construction sites.

**5.4** In addition to the outline CEMP, other supporting management plans have been drafted and submitted in support of the Planning Application.

**5.5** It is anticipated that the implementation of the CEMP as well as required management plans (e.g. Dust Management Plan) will be secured through appropriately worded planning conditions. The CEMP and this Chapter are based on the London Borough of Tower Hamlets (LBTH) Code of Construction Practice and established good management principles. It is intended that the CEMP (and other plans, as relevant) will be 'live working' documents, and that the Principal Contractor's appointed representative will update the documents according with any amended construction environmental management measures as the scheme progresses.

**5.6** In addition, the Site will be registered with the UK's Considerate Constructors Scheme.

### *Anticipated Works and Programme*

#### *Summary of Anticipated Works*

**5.7** The anticipated works comprise phased residential and commercial development and associated demolition and public realm improvements. Phase A forms the Detailed Proposals and Phases B- D form the Outline Proposals (refer to **Figure 5.1** for The Indicative Demolition Plan and **Figure 5.2** for the Indicative Construction Phasing Plan). The works are summarised as:

- Phase A – Buildings F, H1 to H3, I, J and improvements to Braithwaite Park and Leven Road Open Space ;
- Phase B – Buildings A1 to A3, B1 to B5, and extensive highways and public realm alterations;
- Phase C – Buildings C1 to C4 and E1 to E3;
- Phase D – Buildings D1 to D4; and
- Public realm works to be delivered in each phase.

#### *Programme of Works*

**5.8** The current expectation is that the demolition and construction works would take approximately 128 months (10 years 8 months).

**5.9** **Table 5.1** and **Figure 5.4** show the indicative demolition and construction programme. The programme has been defined solely for the purposes of the EIA specifically, the assessment of the likely significant effects of the Proposed Development over the build programme and on completion and operation and for no other purposes.

**5.10** The indicative programme has been produced by an experienced construction manager and is representative of a programme that is reasonable and achievable. The programme presents the likely sequence of activities and is based on reasonable assumptions in terms of the sequencing of works and site logistics. If the construction programme does not commence or end by the period specified in this ES Chapter, and instead commences or ends at a later date, the timings for when environmental effects are realised will adjust to reflect any programme adjustment. **Figure 5.3** through to **Figure 5.12** which illustrates the sequence of construction identified on the programme of works**.**

**Table 5.1 Indicative Construction Timetable**

| Construction Task / Activity | Duration | Start Date (Quarter and Year) | Completion Date (Quarter and Year) |
|---|---|---|---|
| Phase A Site Establishment/ Demolition | 5 months | Q3 Year 1 | Q1 Year 2 |
| Phase A: Building Plot J | 19 months | Q3 Year 1 | Q1 Year 3 |
| Phase A: Building Plot F1 | 22 months | Q3 Year 1 | Q3 Year 3 |
| Phase A: Building Plots H1-H3 | 21 months | Q3 Year 1 | Q3 Year 3 |
| Phase A: Building Plot I1 | 23 months | Q4 Year 1 | Q4 Year 3 |
| Phase B Site Establishment/ Demolition | 5 months | Q3 Year 3 | Q4 Year 3 |
| Phase B: Building Plot B3 | 33 months | Q1 Year 4 | Q3 Year 6 |
| Phase B: Building Plots A1-2 | 22 months | Q2 Year 4 | Q1 Year 6 |
| Phase B: Building Plots B1-2 | 26 months | Q3 Year 4 | Q3 Year 6 |
| Highways: A12/B125 Junction | 15 months | Q4 Year 3 | Q4 Year 4 |
| Highways: Road Construction | 12 months | Q1 Year 5 | Q4 Year 5 |
| Highways: Underpass Pedestrianisation | 12 months | Q1 Year 6 | Q4 Year 6 |
| Phase C/D Site Establishment/ Demolition | 7 months | Q2 Year 6 | Q4 Year 6 |
| Phase C: Building Plots C1-4 | 30 months | Q1 Year 7 | Q3 Year 9 |
| Phase C: Building Plots E1-3 | 21 months | Q2 Year 8 | Q4 Year 9 |
| Phase D: Construction Site set-up | 1 month | Q3 Year 10 | Q3 Year 10 |
| Phase D: Building | 22 months | Q3 Year 10 | Q2 Year 12 |
| Public Realm, Landscape and Green space improvements (improvements to Braithwaite Park, Leven Road Open Space be undertaken in Phase A) | Completed in phases to suit building completions | | |

**Figure 5.1 Indicative Demolition Phasing**

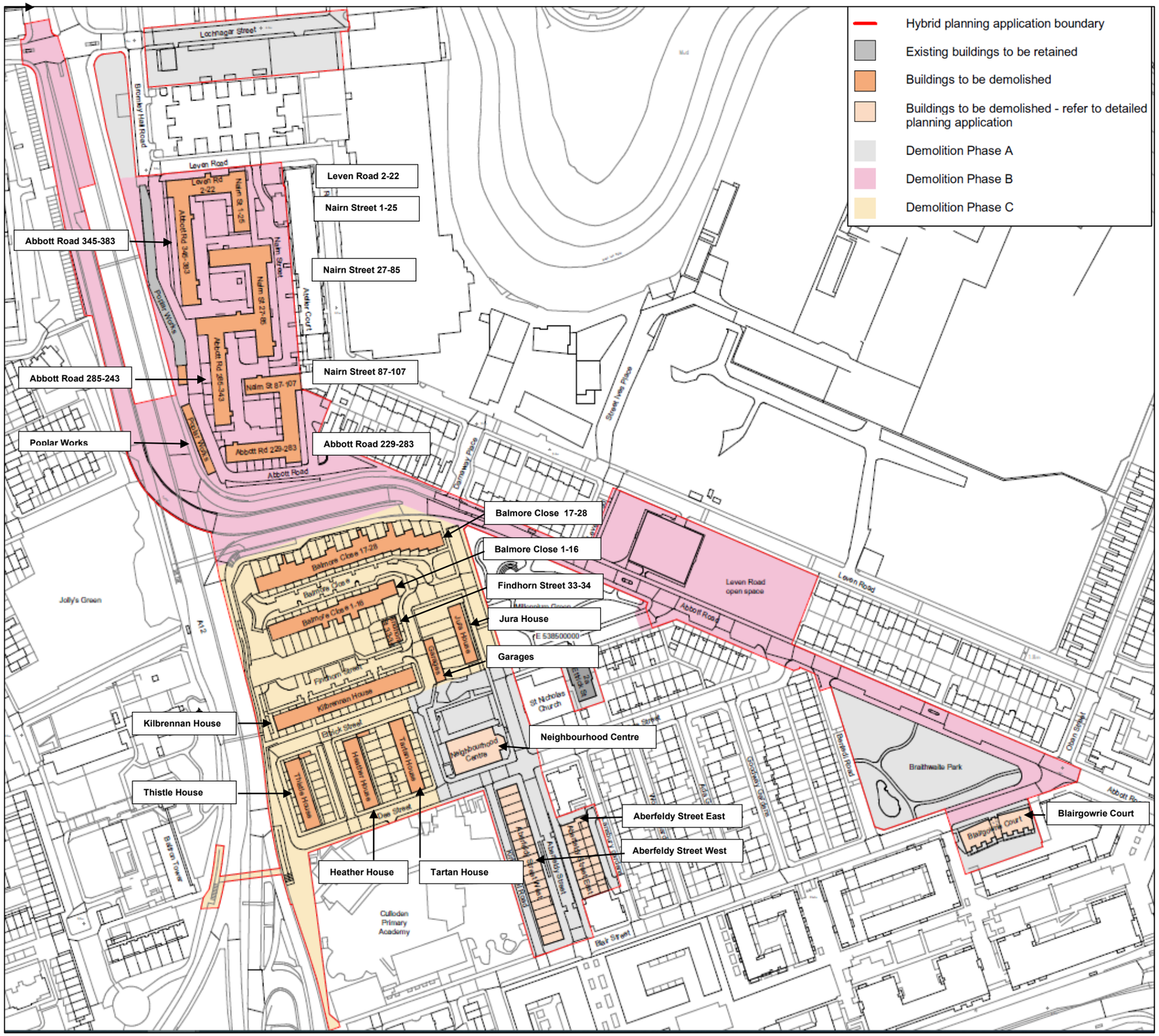


**Figure 5.2 Indicative Construction Phasing**

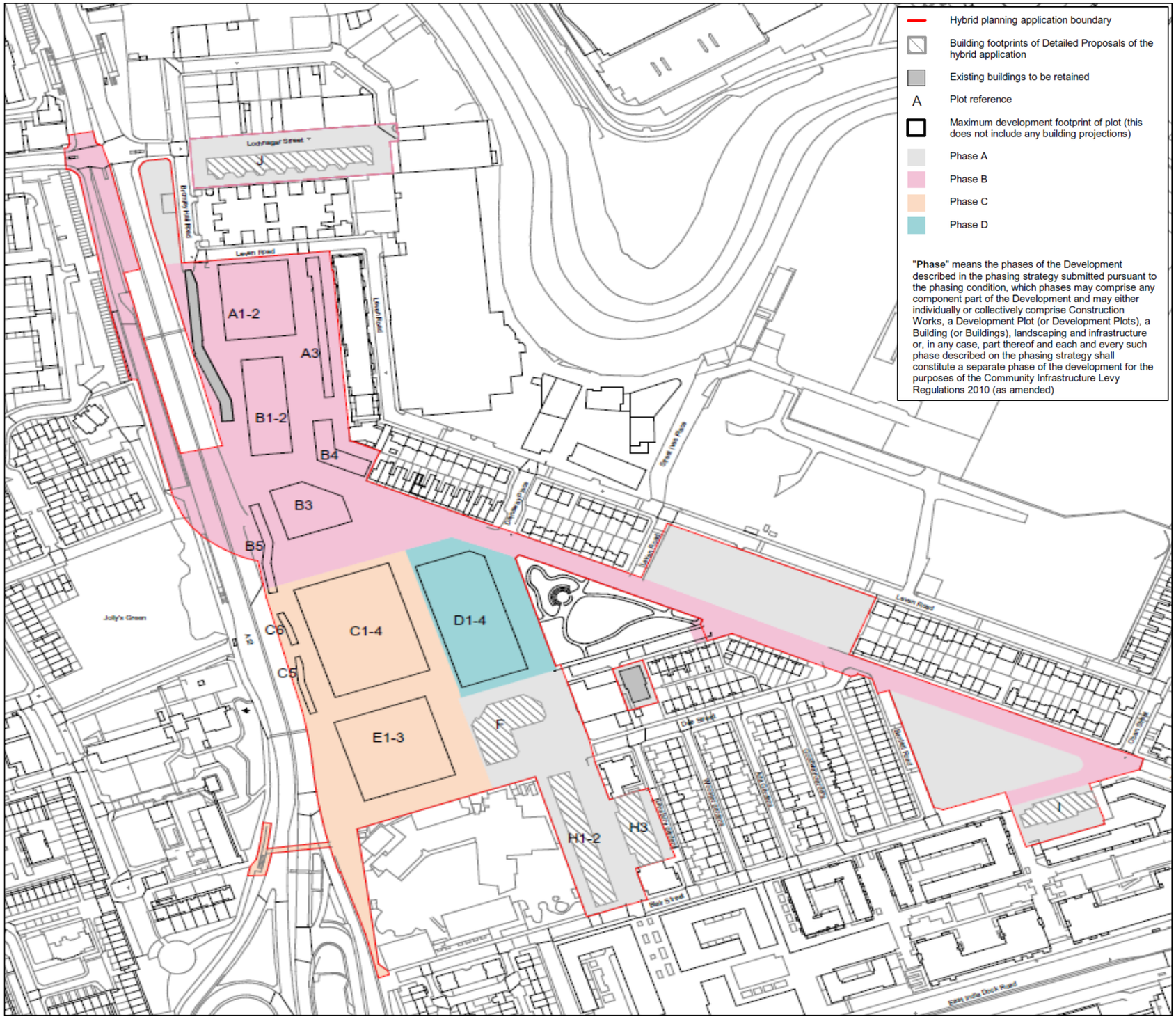


**Figure 5.3 Indicative Demolition and Construction Programme**

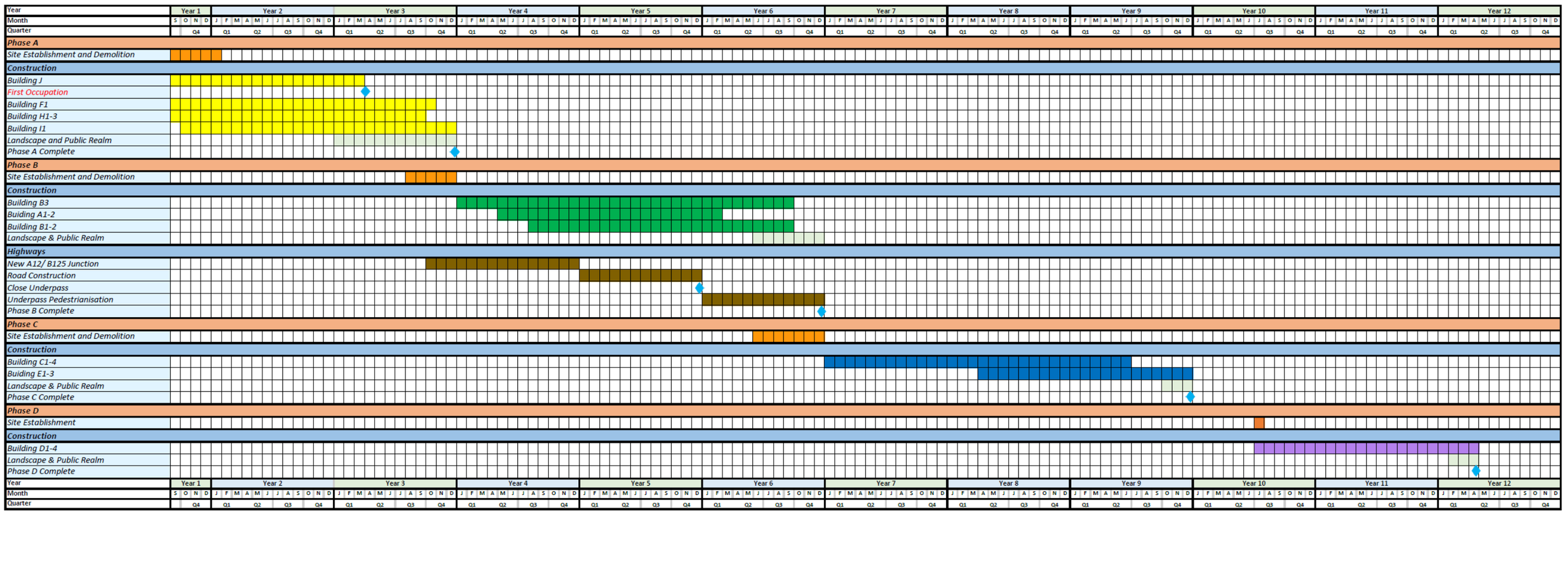


**Figure 5.4 Phase A Building J Construction. Year 1 Q3 To Year 3 Q1**

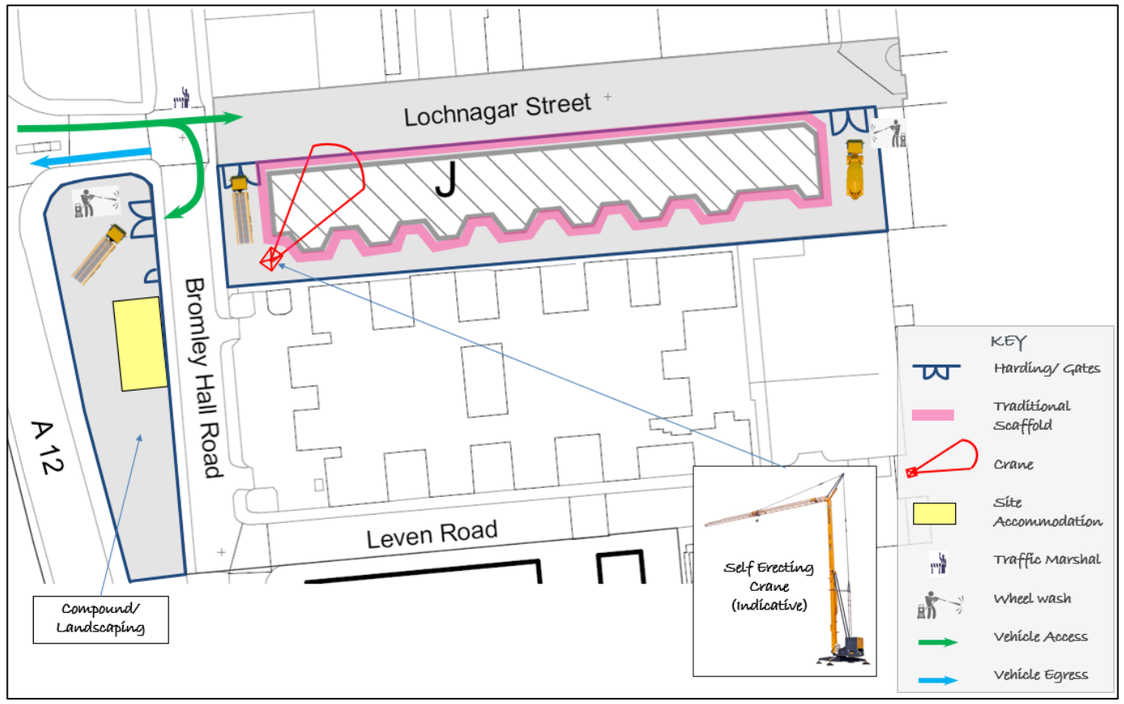



**Figure 5.5 Phase A Demolition For Buildings H1-H3 And F. Year 1 Q4**

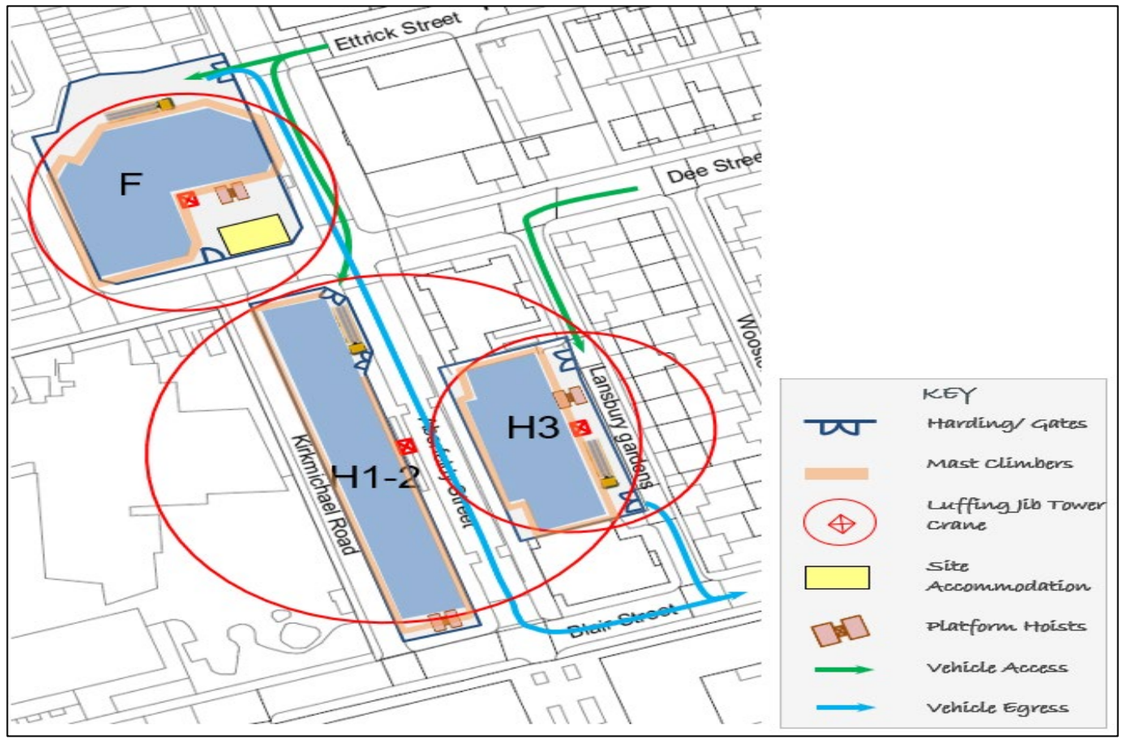



**Figure 5.6 Phase A Buildings H1-H3 And F Construction. Year 2 Q1 To Y3 Q4**

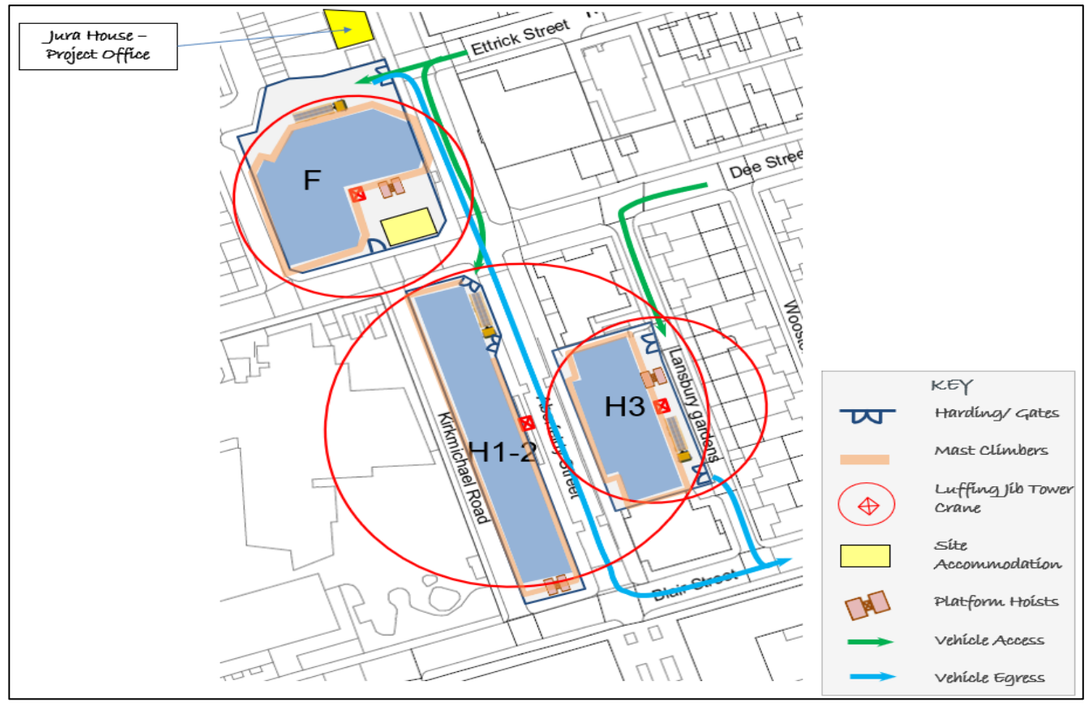



**Figure 5.7 Phase A. Demolition For Building I. Year 1 Q4/ Year 2 Q1**

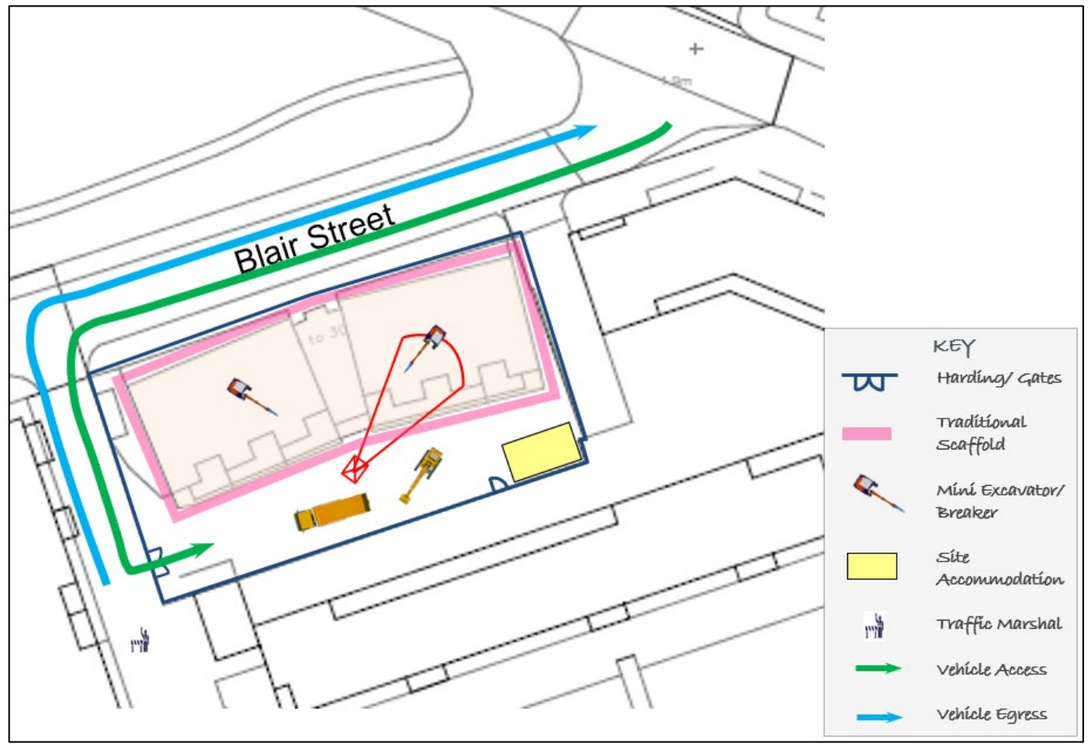


**Figure 5.8 Phase A Building I Construction. Year 2 Q1 To Year 3 Q4.**

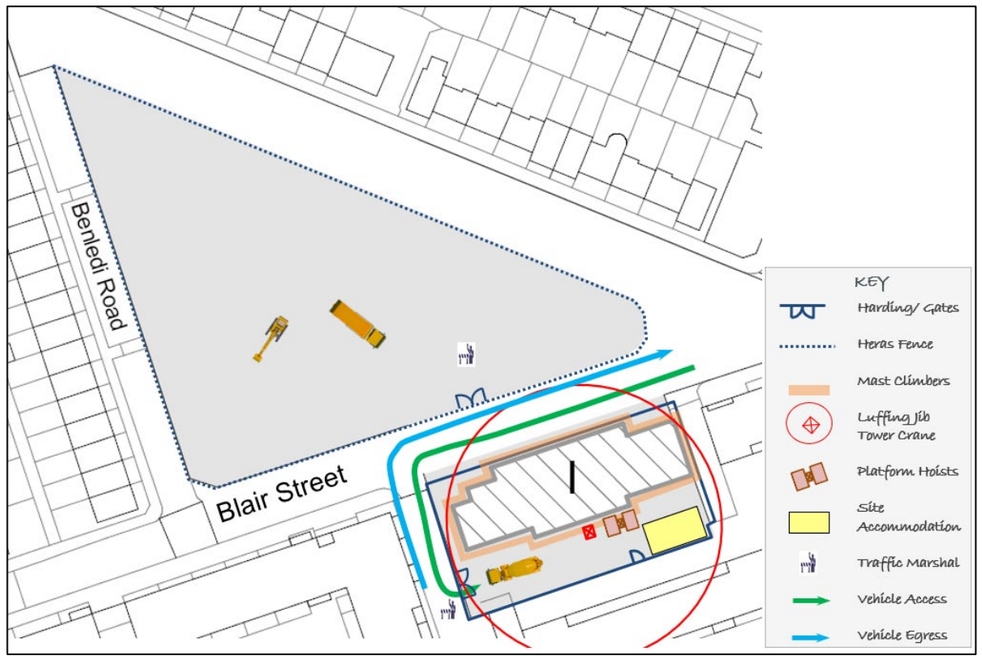



**Figure 5.9 Phase B. Demolition For Buildings A1-A3, B1-B5. Year 3 Q3 To Q4**

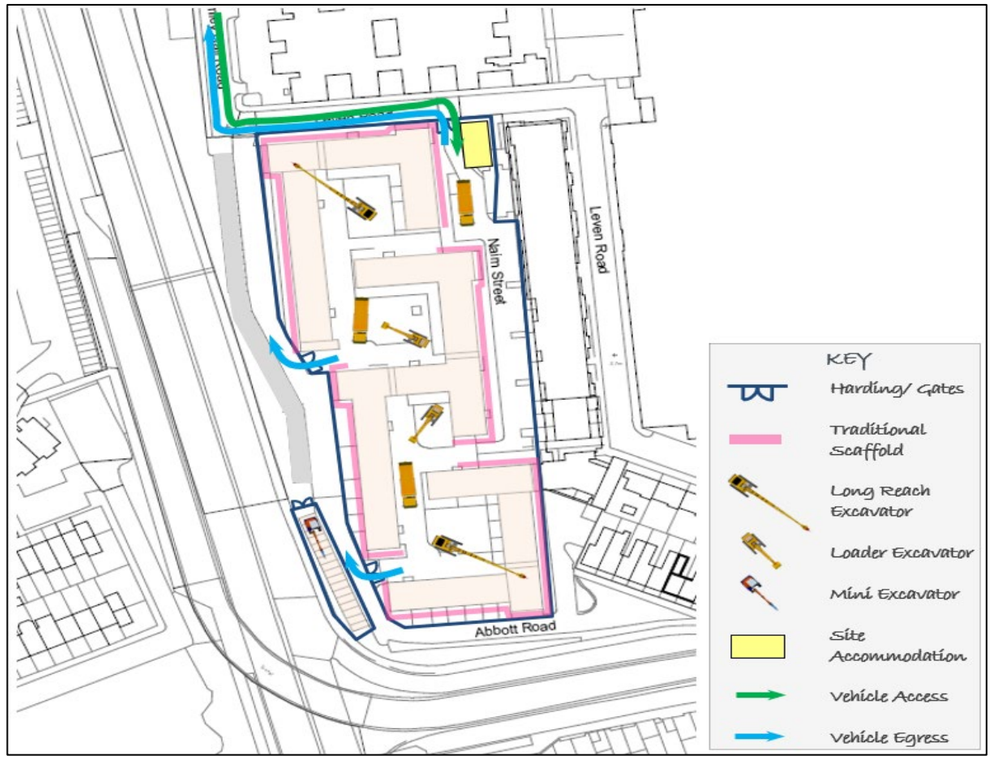



**Figure 5.10 Phase B. Buildings A1-A3, B1-B5 Construction. Year 4 Q1 To Year 6 Q3**

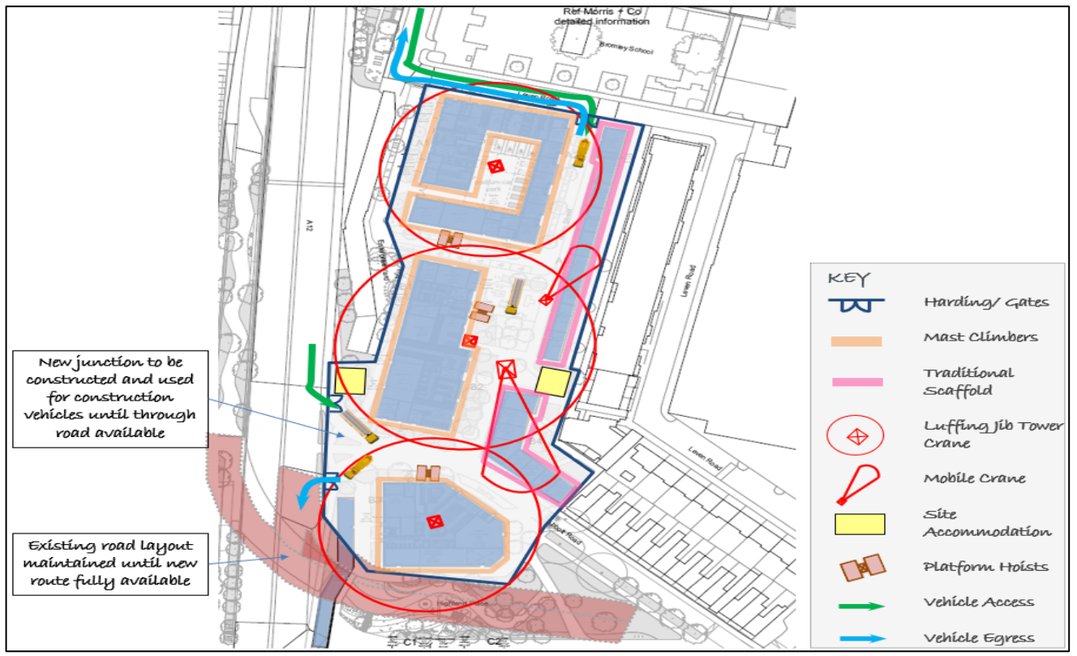



**Figure 5.11 Phase C And D Demolition For Buildings C1-C4, D1-D4 And E1-E3. Year 6 Q2-Q4**

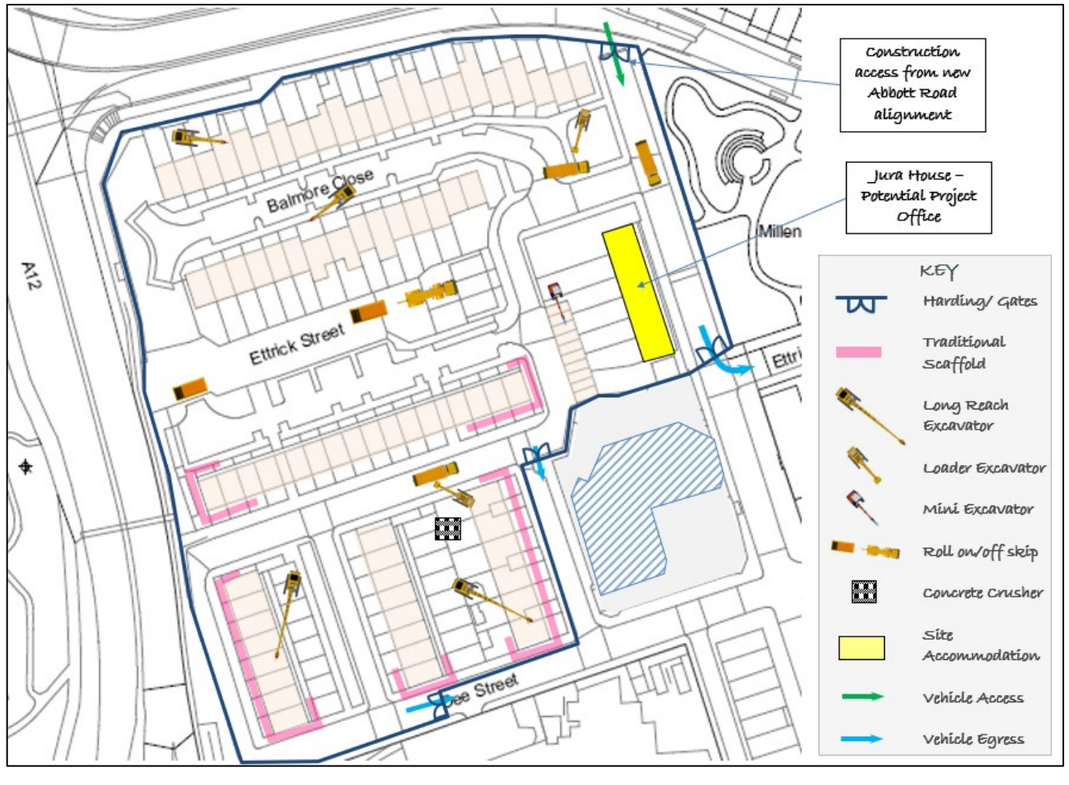


**Figure 5.12 Phase C. Buildings C1-C4 And E1-E3 Construction. Year 7 Q1 Year 9 Q4**

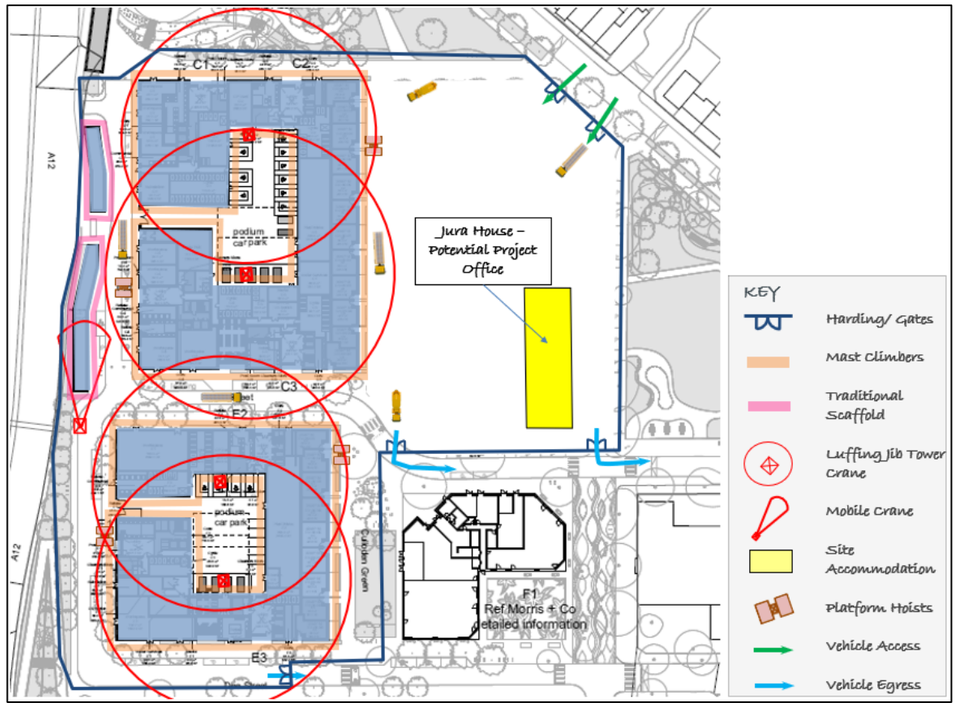
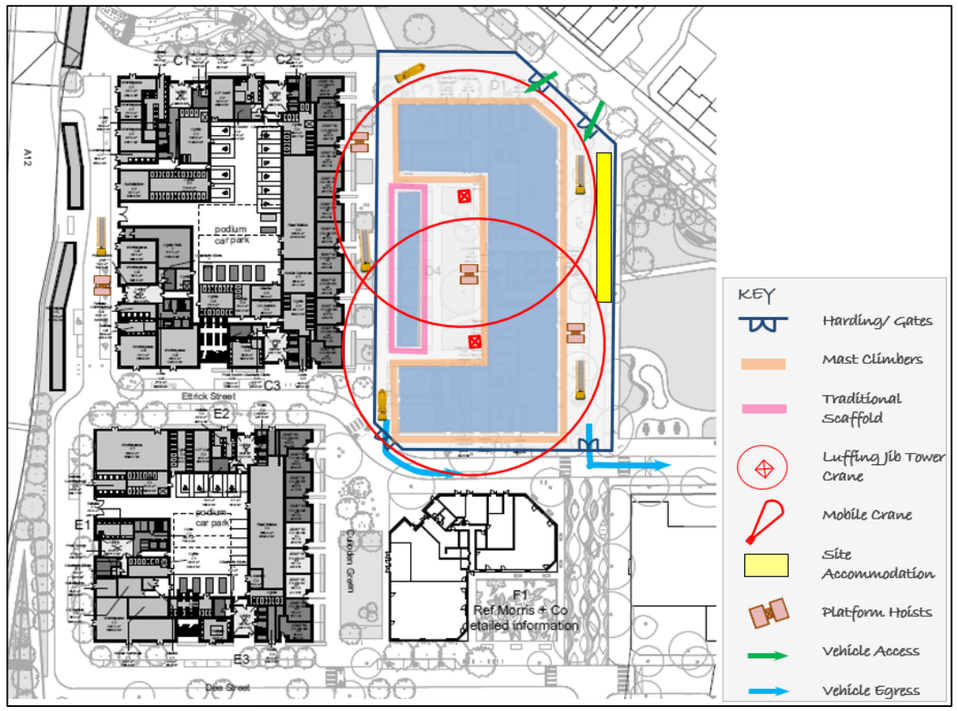



**Figure 5.13 Phase D. Buildings D1-D4 Construction. Year 10 Q3 To Year 12 Q2**




## DESCRIPTION OF WORKS

### *Site Establishment and Demolition Strategy*

**5.11** The principal function of site establishment is to prepare the Site area to allow demolition and construction to start whilst maintaining existing facilities and amenities. Site establishment and demolition will be undertaken in phases to suit the construction sequence. These works will include, but will not be limited to:

- Jura House, a residential block located on the Site of the final phase will be retained after vacant possession as a temporary Project Office (subject to future planning permission) for the works;
- The remainder of the Plots will be secured once vacated, and close boarded timber hoardings will be erected to the entire perimeter, with access gates for demolition and construction traffic in key locations;
- Live services to the Plots will be identified and terminated as required, with services to live buildings maintained or reconnected;
- Local alterations to utility supplies will be undertaken to allow temporary builders connections and to prepare for future permanent installations;
- Associated minor highway works to facilitate construction access will be undertaken; and
- Works to form the revised alignment of the B125 Abbott Road will be undertaken in Phase B. Early construction of the new junction with the A12 will allow construction traffic to access the Phase B Plots with reduced disruption of local streets.

**5.12** A number of surveys and investigations will need to be undertaken prior to the commencement of works on across the Site, as identified below, although it should be noted that it is likely that some of the surveys and investigations will need to be undertaken once the construction Plots are fully established to facilitate ease of access to the Site for exploratory purposes. The following surveys and investigations are envisaged:

- Condition survey of boundary walls and fences;
- Condition survey of roads and pavements;
- Condition survey of adjoining buildings;
- Existing utilities tracing;
- CCTV drain surveys;
- Party Wall surveys;
- Geotechnical and environmental surveys and remediation;
- Unexploded ordnance; and
- Asbestos surveys of the buildings to be demolished (after full vacant possession).

**5.13** All statutory, Local Planning Authority (LPA) consents and licences required to commence any on site activity will also be obtained ahead of the works commencing and give the appropriate notice period. These will include but not necessarily be limited to:

- Notices for works on the highway in accordance with the Highways Act 1980 and Road Traffic Act 1998;
- Hoarding, scaffold and crane licences for works on the perimeter boundary;
- Construction Phase Plan under Construction Design and Management (CDM) Regulations;
- Health and Safety Executive (HSE) F10 Notification;
- Demolition Method Statements (DMS) and Risk Assessments;
- Construction Method Statement (CMS) and Risk Assessments;

- Section 80 (Demolition Notice) Application;
- Section 61 (Noise Control) Application;
- Construction notices;
- Connections to existing statutory services and main sewers;
- Licence for discharge of water from the Site into the public sewer;
- Party wall act notices and agreements; and
- Approval of relevant demolition and construction related environmental management plans and other supporting documents).

### *Site Establishment & Welfare Facilities*

**5.14** Construction site areas will be made safe and secure prior to works commencing and the general public will be separated from the works, with the use of solid and well maintained, 2.4m high hoardings. Secure access points with wheel cleaning facilities will be established at all site access and egress locations. Pedestrian access points for operatives will generally be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided. Public access to neighbouring buildings will be safeguarded and will be entirely separate from construction areas.

**5.15** In addition to the use of Jura House as the main Project Office (subject to planning permission), site offices and associated welfare facilities for the workforce will be provided for each Plot. Contractors offices and welfare facilities will be established in temporary cabins as works progress. The locations will be identified in advance and agreed with the LBTH as part of the detailed construction and demolition logistics programming and approval of the DMS, CMS and CEMP. It is anticipated that further information and details on this will be submitted, pursuant to planning conditions in relation to construction and demolition management.

**5.16** Perimeter scaffolding with Monarflex sheeting will be designed to ensure that safe access for both pedestrians and vehicles accessing the retained neighbouring buildings and surrounding streets.

### *Demolition*

**5.17** Two methods of demolition will be adopted and will be refined following further risk assessment of the individual sites and surrounding areas. Taller buildings that lie alongside congested areas and public highways will be demolished using a "Top Down" method. 'Top-Down' demolition offers more control and accuracy over standard mechanical demolition methods. The Blair Street Plot where Building I is proposed in Phase one is an example where "Top Down" would be appropriate. The majority of buildings, where a safe buffer zone exists within the Site boundary, will be demolished by "High Reach" machines. This dual approach to demolition will ensure that high reach plant operated at a considerable distance from the public and is contained within the central areas of the Site. Further details of the methods to be applied follow below.

**5.18** The first areas of demolition will focus on both the Phase A construction areas. The area for Building Plot J has been previously demolished and once secured will be investigated and cleared of vegetation and below ground obstructions. Building Plots F, H and I will be secured, hoarded and prepared for demolition by top down or high reach methods.

**5.19** A "Soft Strip" will entail the removal of all internal furnishings, windows and roof plant, and will include the safe removal of asbestos within the existing buildings by a specialist contractor. Advanced building surveys will be carried out as part of the pre-demolition process following vacant possession of each building, including a full Refurbishment & Demolition (R&D) survey of materials containing asbestos. Waste arising from the soft strip will be separated on site into recyclable waste streams for processing off site.

**5.20** Top-Down demolition is undertaken by encapsulating the building with scaffolding and Monarflex, back propping the floors where required (subject to engineer's report) and lifting smaller machines into the building by crane. The building is then reduced a floor at a time. The arisings from the demolition shall either be loaded down stripped out lift shafts or lifted down in bins using a crane.

**5.21** For High Reach demolition of the central areas of the Site, buildings are demolished in a step like manner working through the structural bays on each floor using excavators fitted with long reach arms. Arisings on the floors will be scraped off periodically to keep the weight on the slabs to a minimum. Independent scaffolding and Monarflex will be used on key elevations and water hoses fed up through the machine arm assists dust suppression. Arisings on the ground will be processed for crushing using standard height machines.

**5.22** The buildings will primarily be dismantled using a combination of machine mounted pulverisers, crushers and shears. Water dousing will be carried out using recycled water where possible, to control dust. Noise levels will be controlled using best practice controls and management including the provision of screening where required. It is anticipated that the concrete materials recovered from the demolition process will be crushed, graded and stockpiled on site, and then ultimately reused on site. In the event of contaminated material being identified, the contaminated material will be segregated and removed from site to a suitable landfill.

### *Infrastructure Services*

**5.23** The Utilities and Foul Sewage Assessment prepared in support of this application identifies works required and connections to existing utilities. A strategy of new and temporary provision will be agreed as the design is further developed, notably for electrical substations where phase provision of proposed new substations will be planned, ensuring existing services are maintained.

**5.24** Various utilities and services exist on the Site. To eliminate the risks associated with live services, existing services will be identified and terminated prior to demolition commencing. Temporary services will be installed in advance of these terminations as necessary. All new cables and services will be clearly marked, located and identified.

### *Earthworks, Piling and Foundations*

**5.25** All of the proposed buildings are founded at ground level with the exception of Building Plot B3 in Phase B of the Outline Proposals which has a single level basement.

**5.26** New piled foundations will be required to support the new construction. Design is at an early stage and remains subject to further site investigations, but current expectation is that piles for Phase A Buildings will be Continuous Flight Auger (CFA), 600mm diameter and up to 20m deep. Phases B to D remain subject to future design development.

### *Substructure Construction Methodology*

**5.27** When demolition is complete at each building, a piling platform will be constructed using compacted crushed demolition arisings that will have been stockpiled for this purpose. Pile probing for below ground obstructions will be undertaken prior to forming the piling platform.

**5.28** Piling will be undertaken from a piling platform at the existing ground level. Excavation for below ground drainage, ground beams and pile caps will follow piling operations. Basement and ground level slabs will then be cast.

**5.29** A single piling rig is likely to be on site for each of the buildings in Phase A, although multiple rigs may operate on the larger phases in the future. Piling will be serviced by small crawler cranes and 360° excavators. Concrete will be delivered by ready mix trucks and placed directly from the vehicle's placement chute where possible.

**5.30** Fixed tower cranes, needed for building each superstructure, will be erected during the piling works and will be used to service the remaining substructure construction. Cranes will generally be positioned within the footprint of each of the taller buildings. Low rise structure will be constructed using smaller mobile cranes.

### *Superstructure*

**5.31** The superstructures to the residential buildings will be reinforced concrete framed with ribbon columns and flat slab floors. The concrete cores may be constructed ahead of the main frame by slip-forming or jump-forming. Consideration will be given in the detailed construction planning to utilising prefabricated elements, such as columns and staircases. Balconies will need to be carefully considered as the final detailing can dictate method and sequencing of the superstructure frames. It is envisaged that the final balconies design will allow a 'clip-on' approach, fixed to the external cladding.

**5.32** Fixed tower cranes will be used to assist with construction of the superstructures in a conventional manner on a floor by floor basis. Concrete will be placed by concrete pumps and placing booms.

**5.33** Access and edge protection will be incorporated in the design of the falsework system which could include climbing screens to contain construction operations for the taller buildings.

**5.34** The lifting equipment (e.g. mobile cranes, tower cranes, other lifting equipment such as elevated working platforms or forklifts etc) that will be required throughout the construction works is yet to be determined in detail. However, as part of the DMS and CMS, a lifting strategy will be developed and prepared in accordance with the detailed design and statutory obligations. The LBTH will be consulted throughout preparation of the lifting strategy to ensure an appropriate proposal is put forward for consent. All necessary permits and licenses (e.g. permits and over sailing licenses (where applicable) for tower cranes) will be secured, and risk assessments

and safe working instructions prepared and approved, ready for implementation by the contractor prior to the use of this type of equipment on site.

### *Envelope / Cladding*

**5.35** The new cladding will be a mixture of components for which specific methodologies will be developed once the design has been further developed. For the purposes of construction planning at this stage, it has been assumed that the inner skin of the perimeter walls to residential blocks would ideally be a Metsec, or similar SFS (Steel Framing System) which will allow earliest creation of a watertight environment for fit out works to commence.

**5.36** For the low rise buildings traditional scaffolding would be erected as concrete frames near completion for the construction of SFS, windows and membranes; followed by hand laid brickwork, or rendered rainscreen panels. For the taller buildings mast climber platforms may be used for access rather than scaffolding.

**5.37** Materials will be transported vertically by platform hoists. Mortar would be delivered as dry ready mix and stored on site in silos for daily preparation and use.

**5.38** The final operations for tower cranes will be to deliver roof materials, plant and equipment, after which they will be dismantled and removed. External hoists will remain in position throughout the envelope construction and to move fit out materials. Hoists will remain in position until permanent lifts are operational.

### *Fit-Out and External Works*

**5.39** Finishes and services fit out will commence once a level of temporary or permanent water tightness has been achieved, working from the lower floors upwards. The fit-out works will comprise the complete installation of finishes and services to the residential units, common areas and cores.

**5.40** As each building nears completion the construction site area will be reduced, and the local hard and soft landscaping areas released. Finally, the temporary site facilities and hoardings will be cleared and the final landscaping completed for the public realm.

### *Highways Works*

**5.41** The proposed project includes the realignment of the junction of the B125 (Abbott Road) and A12 including the pedestrianisation and landscaping of the current northbound underpass. The highways alterations will mostly be undertaken in Phase B. The junction and underpass will remain open throughout the demolition and construction to help mitigate the additional traffic flows. Early construction of the new junction (in year 4) will provide a direct construction access to Phase B from the A12.

**5.42** The new alignment of Abbott Road will be constructed through the Phase B Plot in parallel to construction of the buildings in year 5 and the underpass would be closed around the end of that year. The pedestrianisation and landscaping of the underpass would then be concluded in year 6, the final year of Phase B works.

### *Temporary Road, Footpath or Cycleway Closures over the Demolition and Construction Period.*

**5.43** Whilst construction planning is at an early stage it is recognised that there will be permanent and temporary closures and alterations to roads and footpaths to facilitate the works and public realm improvements. No designated cycle ways are currently anticipated to be affected. In addition to the realignment of the B125 previously described the following roads and footpaths are likely to affected and may be the subject of future Temporary Traffic Regulation Orders and/ or Hoarding & Scaffold Licence Applications within the Construction & Demolition areas indicated in **Figure 5.3** to **Figure 5.13**:

- Phase A. No road closures. Hoardings and scaffolds potentially required on footpaths to:
  - Aberfeldy Street
  - Kirkmichael Street
  - Blair Street
  - Dee Street
- Phase B. Phased alterations to the B125 as previously described including the new junction with the A12, plus road closures to:
  - Nairn Street
  - Abbott Road (South)
  - Oakes Mews (West) (pedestrian way)
- Phase C/D. Road closures to:
  - Balmore Close
  - Findhorn Street
  - Ettrick Street (West)
  - Culloden Street
  - Dee Street

## EMBEDDED CONSTRUCTION RELATED MITIGATION FOR EIA

**5.44** For the purposes of the technical assessments provided as part of this ES, the following construction related mitigation measures are taken as 'embedded' and so factored into the technical assessments to define the potential for likely significant effects. All other construction related mitigation that has been identified as being required to reduce the scale and so significance of residual effects or render residual effects insignificant is 'additional mitigation' and is presented in **ES Volume 1, Chapter 17: Mitigation and Monitoring Schedule**:

- Use of 2.4m high solid timber construction hoardings;
- Implementation of wheel cleaning facilities at all site access and egress locations;
- Use of Continuous Flight Auger piling techniques; and
- Re-use and re-cycling of demolition materials.

**5.45** Additionally, this also includes measures set out within the:

- The Control of Pollution Act (COPA) 1974[1] with particular reference to part III;
- The Environmental Protection Act 1990[2];
- The Control of Noise at Work Regulations 2005[3]; and
- The Health and Safety at Work Act 1974[4].

## ESTIMATED DEMOLITION QUANTITIES

**5.46** **Table 5.2** provides an estimate of the quantities of material likely to be generated as a result of the demolition works.

**Table 5.2 Demolition Quantities**

| Demolition Material | Demolition Quantities (Tonnes) |
|---|---|
| Crushed Concrete | 5,791 |
| Mixed Metals | 1,277 |
| Mixed Hard Waste | 872 |
| Masonry | 4,218 |
| Asphalt | 298 |
| Bituminous Felt | 230 |
| Glass | 185 |

[1] *UK Government, The Control of Pollution Act 1974*
[2] *UK Government, Environmental Protection Act 1990*
[3] *UK Government, Control of Noise at Work Regulations 2005*
[4] *UK Government, Health and Safety at Work etc. Act 1974*

| | |
|---|---|
| Plasterboard/ Plaster | 338 |
| Ceilings/ Insulation | 599 |
| Carpets/ Flooring | 126 |
| Cables | 39 |
| Timber | 394 |
| Plastics | 85 |
| Asbestos | 12 |
| **Total** | **14,482** |

**5.47** It is anticipated that the concrete materials recovered from the demolition process will be crushed, graded and stockpiled on site, and then ultimately reused on site. In the event of contaminated material being identified, the contaminated material will be segregated and removed from site to a suitable landfill.

**5.48** We currently estimate that all of the crushed concrete (5,791 tonnes) will be used on site in the construction of the piling platforms.

## ESTIMATED CONSTRUCTION QUANTITIES

**5.49** **Table 5.3** presents estimated of key construction materials associated with the construction of the Proposed Development.

**Table 5.3 Estimates Of Key Construction Quantities**

| Materials Delivered | Quantities |
|---|---|
| Concrete in Piles | 17,259m$^3$ |
| Concrete to foundations and substructures | 5,800m$^3$ |
| Concrete in Superstructures | 74,100m$^3$ |
| Substructure Rebar | 6,300T |
| Superstructure rebar | 8,800T |
| Structural Steel | 1,020T |
| Façade Cladding and Glazing | 88,500m$^2$ |
| Roof finishes | 9,545m$^2$ |
| Blockwork Walls | 126,100m$^2$ |
| Internal Walls | 201,990m$^2$ |
| Ceilings | 11,590m$^2$ |
| Wall Finishes | 264,500m$^2$ |
| Floor Finishes | 62,000m$^2$ |
| Hard and Soft Landscaping | 5,300m$^2$ |

## CONSTRUCTION WASTE

### *Excavated Material*

**5.50** Arisings from excavations of basements, foundations and groundworks are estimated to be in the order of 21,300m$^3$. All arisings will be removed from site and re-used as fill on suitable projects (subject to satisfactory testing of condition).

### *Waste*

**5.51** Construction waste volumes have been estimated using Building Research Establishment (BRE) Waste Benchmarking data, which outlines likely construction waste arisings in tonnes for new build construction projects, based on real-life data. The BRE Benchmark data identified the average volume of construction waste per 100m$^2$ of floor area (GEA) for residential projects is 18.1 m$^3$/100m$^2$ or 16.8 tonnes/m$^2$

**5.52** Based on this information, the Proposed Development is likely to generate approximately 31,500m$^3$ construction waste, which equates to a total of approximately 29300 tonnes over the whole development. Construction waste will be separated into recyclable waste streams before removal from site for disposal.

## SITE ACCESS AND EGRESS

### *Access and Egress*

**5.53** The main site access gate locations will vary as the phases develop as shown in **Figure 5.4** to **Figure 5.13** Construction traffic access will mostly be from the A12 and B125 (Abbott Road).

### *Main Access Routes*

**5.54** From the south, vehicles will access the Site via the A2 Blackwall Tunnel, joining the B125 from the A13 Newham Way.

**5.55** From the east, vehicles will approach on the A13 entering the Sites via the B125 Abbott Road.

**5.56** From the north, vehicles will approach on the A12, entering sites directly or via the B125.

**5.57** Works to construct the new junction of the B125 and A12 will be phased as previously described to limit the impact of construction traffic as far as possible. **Figure 5.14** below identifies this construction vehicle routing.

**5.58** As the demolition and construction programme progresses, construction haul roads within the site boundary will be relocated around the site to serve efficiently the parts of the sites “under construction” and to minimise disturbance to existing surrounding sensitive receptors.

**5.59** Secure access points with wheel cleaning facilities will be established at each site when excavation and groundworks are taking place. Pedestrian access points for construction workers will generally be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided.

**5.60** To minimise the likelihood of congestion during the demolition and construction period, strict monitoring and control of vehicles entering and egressing the sites will be implemented. Construction deliveries will be carefully planned with delivery times agreed with each contractor using a booking system. Delivery schedules will be produced in order to look at the profiles of up and coming deliveries, and to regulate deliveries and eliminate bottle necks.

**5.61** Specific time slots will be allocated to the sub-contractors and suppliers for the use of cranes and hoists, to ensure that the main plant will be utilised efficiently, and that deliveries are not queued.

### *Road Vehicle Numbers*

**5.62** The anticipated number of demolition and construction vehicles serving the site has been reviewed over the duration of the demolition and construction programme. **Figure 5.15** identifies the anticipated average number of vehicles per month over the duration of the demolition and construction programme. **Figure 5.15** shows that the anticipated average monthly number of vehicles is expected to peak during months 44 and 45 of the construction period. This peak equates to 64 HGVs per day, or 98 vehicle movements. This corresponds with when most construction activity will be occurring on site.

**Figure 5.14 Construction Vehicle Routing (Preferred)**

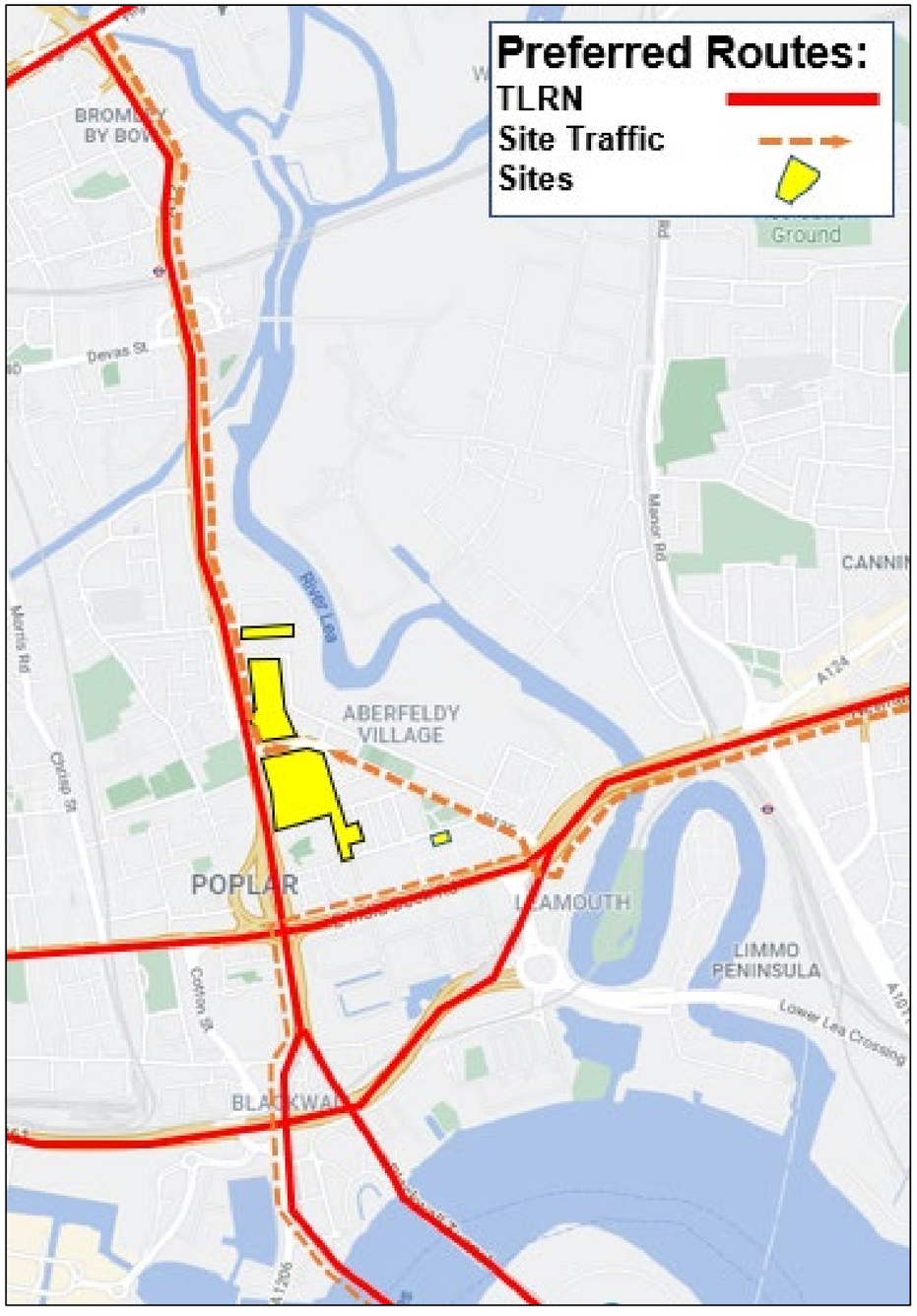
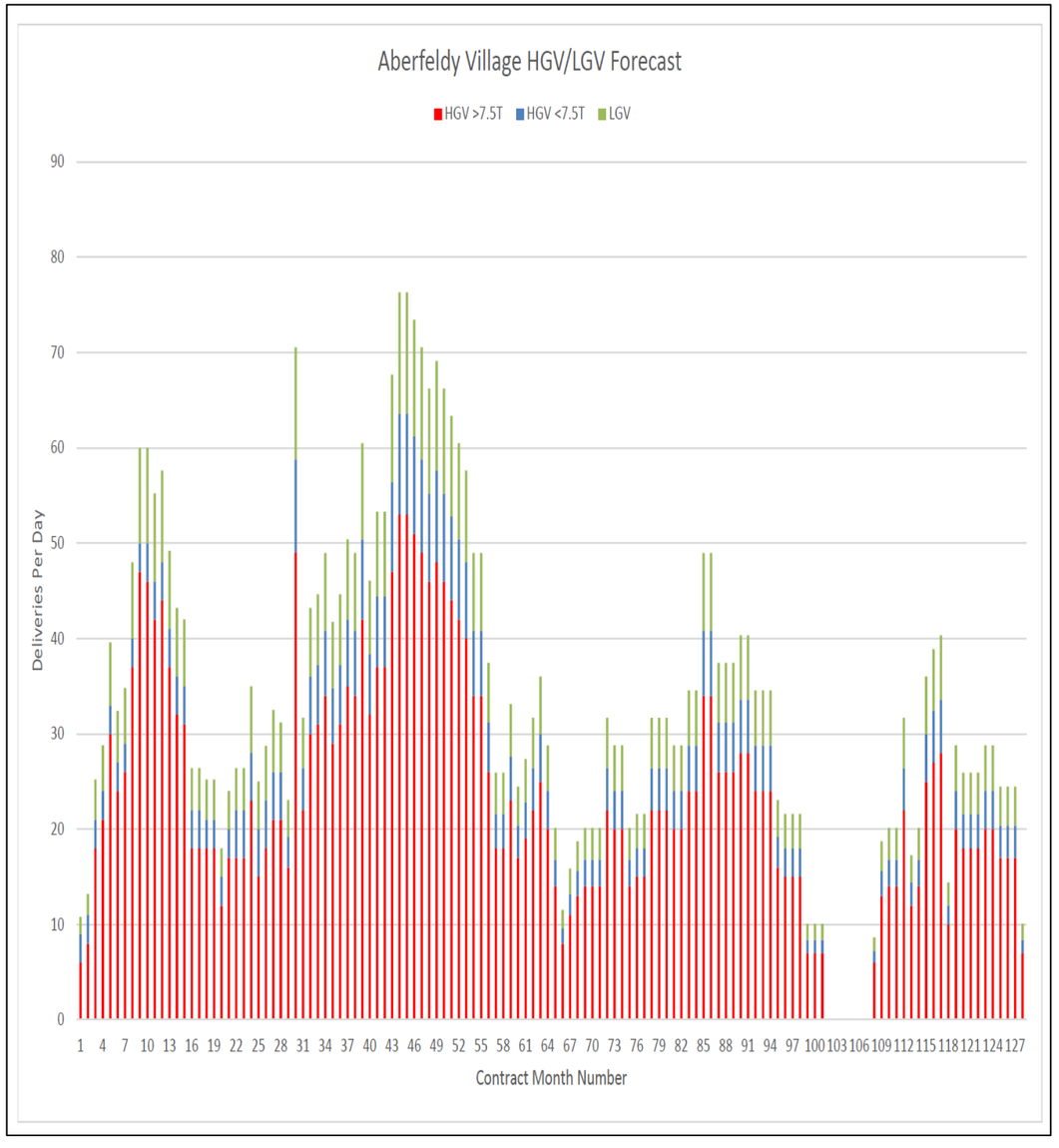



**Figure 5.15 Construction Vehicle Forecast (HGV and LGV) – Average Vehicles Per Day**



## PLANT AND EQUIPMENT

**5.63** Consideration has been given to the types of plant that are likely to be used during the enabling, demolition and construction works. The plant and equipment associated with the enabling and demolition works, and construction process is set out in **Table 5.4**

**Table 5.4 Plant and Equipment Associated with the Work**

| Plant | Demolition Works | Excavation | Substructure | Superstructure | Fit Out | Landscaping |
|---|---|---|---|---|---|---|
| Bulldozers | | ✓ | ✓ | | | ✓ |
| Dumpers/ Spoil Trucks | ✓ | ✓ | ✓ | ✓ | | |
| Crawler & Mobile Cranes | ✓ | ✓ | ✓ | ✓ | | |
| Tower Cranes | | | ✓ | ✓ | ✓ | |
| Platform Hoists | ✓ | | ✓ | ✓ | ✓ | |
| Cutters, drills and small tools | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Crushers | ✓ | ✓ | ✓ | | | |
| 360º excavators | ✓ | ✓ | ✓ | | | ✓ |
| Floodlights | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Forklift truck | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Generators | ✓ | ✓ | ✓ | ✓ | | |
| Compressors | ✓ | ✓ | ✓ | ✓ | | |
| Hydraulic benders and cutters | | ✓ | ✓ | ✓ | ✓ | |
| HGVs/lorries/vans | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Piling rigs | | | ✓ | | | |
| Scaffolding and mobile hydraulic access platforms | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Ready-mix concrete lorry | | | ✓ | ✓ | ✓ | ✓ |
| Concrete pump | | | ✓ | ✓ | | |
| Mortar batching plant | | | | ✓ | ✓ | |
| Water Pump | ✓ | ✓ | ✓ | ✓ | | ✓ |
| Temporary Supports | ✓ | ✓ | ✓ | ✓ | | |
| Power Tools | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Hand Tools | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

## HOURS OF WORKS

**5.64** The anticipated core working hours for construction will be in accordance with the CoCP as follows:

- 08:00 – 18:00 hours on weekdays;
- 08:00 – 13:00 hours on Saturdays; and
- No working on Sundays, Bank or Public Holidays, unless otherwise agreed with the LBTH.

**5.65** In order to maintain the above core working hours, the Principal Contractor may require at certain times a period of up to one hour before and after core working hours to start and close down activities (this will not include works that are likely to exceed any pre agreed maximum construction works noise levels). Specialist construction operations and deliveries may also be required to be carried outside these core hours in agreement with the LBTH and other relevant parties.

### *Community Liaison*

**5.66** In advance of the works commencing on site, a public briefing / information session for the local community on the works that will be undertaken will be held at a local venue. These drop-in briefing / information sessions will be held periodically (particularly in advance of key milestones in the construction programme) over the duration of the 128-month construction period and will provide an opportunity not only for the contractor and the Applicant to disseminate information but also for local residents, businesses and stakeholders to ask questions of the contractor and the Applicant and raise any particular concerns. The public briefings / information sessions will be publicised via a variety of channels and be open on specified days so those with differing commitments can attend.

**5.67** In advance of and during the construction works, the contractor / Applicant will maintain a number of other methods to communicate with the local community to keep them informed of progress on the scheme and enable concerns to be voiced and listened to. These methods will also be used as appropriate to inform local residents and neighbours of any emergency work required on site. These methods will likely include newsletters, drop in sessions, updates via a dedicated website and email address, a dedicated hotline and text alerts for targeted communications (including in the event of emergency works).

### *Complaints Procedure*

**5.68** A staffed hotline will be available 24/7. This will provide local residents with the ability to communicate directly with the appropriate personnel allowing escalation procedures to be instigated, ensuring all enquiries are handled promptly.

**5.69** The hotline will allow any complaints to be logged and fully investigated, and responded to quickly, advising what action has been taken. If necessary, complaints will be reported to the relevant department of the LBTH.

**5.70** The hotline will be operational 24/7, so will be available during normal operational hours and outside of normal working hours. The requirements for the hotline will be set out within the CEMP.

## MITIGATION AND MONITORING CONTROLS

**5.71** **ES Volume 1, Chapter 17: Mitigation & Monitoring Schedule** presents the environmental management and mitigation measures that the Applicant is committed to implementing throughout the demolition and construction works to, either eliminate, or reduce the significance of any likely environmental effects.

**5.72** The Outline CEMP aims to provide an overarching and strategic framework for the management of environmental effects and the implementation of measures prior to, and during, the construction phase of the Proposed Development. It is based on the London Borough of Tower Hamlets (LBTH) Code of Construction Practice and established good management principles. It includes the following information:

- Information pertaining to data management, roles and responsibilities, structure, mitigation and monitoring, auditing, and non-compliance and corrective actions;
- Information pertaining to staff training, health and safety, community liaison;
- Information relating to the Site and the Proposed Development;
- Outline of the construction works, timing and duration;
- Environmental management measures, for the following elements:
- Transport;
- Noise and Vibration;
- Air Quality;
- Waste;
- Ground Conditions;
- Ecology;
- Surface Water Management; and
- Schedule of Environmental Legislation.

# Chapter 6: Socio-Economics

| **Socio Economics** | | | |
|---|---|---|---|
| **AUTHOR** | Hatch Associates Ltd | | |
| **SUPPORTING APPENDIX** | **ES Volume 3: Appendix: Socio Economics:**<br>Annex 1: Socio-Economics Planning Policy Context.<br>Annex 2: Education and Healthcare Facilities within Local Impact Area | | |
| **KEY CONSIDERATIONS** | The socio-economic matters that have been considered in this ES Chapter include:<br>• Population and the labour market;<br>• The economy (jobs and gross value added);<br>• Contribution to the London Borough of Tower Hamlet's Housing Target;<br>• Impact on demand for education services;<br>• Impact on demand for healthcare services;<br>• Open spaces and children's play space;<br>• Community centres; and<br>• Impact on deprivation and local crime. | | |
| **CONSULTATION** | An EIA Scoping Report was prepared and submitted to the LBTH in August 2021 requesting a formal Scoping Opinion. The EIA Scoping Report is presented in **ES Volume 3, Appendix EIA Methodology – Annex 1**. London Borough of Tower Hamlets' (LBTH's) EIA Scoping Opinion **ES Volume 3, Appendix EIA Methodology – Annex 2** has requested some adjustments to the scope and approach of the Socio-economics Assessment. This Assessment addresses the points raised in the Opinion (see **ES Volume 3, Appendix EIA Methodology – Annex 3)** which re included below and are of relevance to socio-economics. | | |
| | **LBTH Scoping Opinion** | **Where this is Addressed** | |
| | The Scoping Report does not identify whether the effects on dentists, nurseries, leisure and other community facilities will be considered within the ES. The ES should consider the potential effects on these or provide justification as to why not assessed. The Applicant is reminded it is not acceptable to scope out aspect or matters on the basis of difficulty undertaking the assessments. | Effects on dentists, nurseries, leisure and community facilities will be considered in the ES chapter. Where available, capacity will be assessed using local, regional or national benchmarks. If no published thresholds for capacity exist, a best-practice assessment will be used to determine assessment conclusions. | |
| | Table 3 of the Scoping Report provides the matrix to determine effects for the socio-economic assessment. The matrix includes the classification that impacts of medium magnitude on assets of medium sensitivity, will result in a moderate effect. LBTH considers that this classification is proportionate. However, given this is in line with the overall methodology for the ES as set out in Table 2 (page 21) of the Scoping Report, the Applicant should consider the need for repeating matrix in the ES. | Noted. The Matrix has been repeated. | |
| | This assessment will need to include consideration of LBTH's affordable housing target i.e. a minimum of 35% (noting that sites on public land require a minimum of 50% to benefit from the fast track route, in accordance with the London Plan), and required housing mix i.e. 70% rented and 30% intermediate tenure split. Should the Proposed Development not meet LBTH's affordable housing target, this should be assessed as being an adverse effect as the Proposed Development has failed to meet the communities' minimum need. If the affordable housing provision changes after the planning application has been submitted, reassessment may be required as part of the ES. The assessment should ensure that the new site users have access to sufficient levels of social infrastructure, such as health, and recreation etc. | The level of affordable housing will be considered in line with LBTH's targets. The Proposed Development will provide 35% affordable units ( including reprovision of social units ; by habitable room). | |
| | The ES should clearly identify the receptors and study area in relation to socio-economics, surrounding and within the Application Site, and their sensitivity to potential construction and operation works. This should include a map and appropriate descriptors. | The ES Chapter will include a section on receptors and study area with descriptors and justification. | |
| | The ES should clearly set out how all figures have been calculated (e.g. employment generation) and justified as appropriate, with reference to other relevant documents/aspect chapters where appropriate and ensure this represents the worst-case scenario. This is particularly relevant for the assessment of the non-residential uses proposed, and it must be ensured the worst case has been assessed. | Worst-case scenario will base used to assess all receptors within the Socio-economics ES Chapter, including assessment of employment generation | |
| | The data sources are to be fully referenced with relevant comments regarding the reliability of such data and any other limitations. Given the proximity of London Borough of Newham to the Application it is considered that local effects will affect areas within London Borough of Newham, and therefore the baseline and subsequent assessments are to consider London Borough of Newham in addition to LBTH. | Data sources are fully referenced throughout the Chapter.<br>Whilst it is recognised that the London Borough of Newham is geographically proximate to the site boundary, it is considered the inclusion of London Borough of Newham within the affected impact areas is for the most part, not appropriate. The boundary of the two Boroughs closest to the site, aligns with the River Lea which is considered to be a significant physical barrier with only two places for potential crossover of residents (one of which connects directly to a waste management service and is considered unlikely to be used by the wider population). Moreover, currently the vast majority of land uses across the river within the London Borough of Newham include industrial, commercial and logistics uses which are highly unlikely to have permanent resident population. Whilst there may be some commercial activity which could occur between the two places , it is considered unlikely that the delivery of the Proposed Development will have any significant or permanent impacts on the population within the area that falls within the London Borough of Newham. As such, it is considered the inclusion of London Borough of Newham within the assessed impact areas of the Chapter is not appropriate. However, for receptors such as primary health care, where a radius is used, parts of this may fall within LB Newham – in which case this will be taken in to account | |
| | LBTH consider that consultation should be undertaken to ensure data utilised in the assessment is up to date, for example patient data for doctor's surgeries, and school place data. The socio-economic assessment should ensure the most up to date data informs the assessment and clearly state any assumptions and limitations. The ES should summarise any consultation activity that has been undertaken with appropriate organisations. | Consultation with relevant organisations, including Tower Hamlets Clinical Commissioning Group and LBTH's Education department has been undertaken to ensure data is up-to-date and consistent with latest trends.<br>. | |
| | LBTH has an above average unemployment level within Greater London. LBTH will seek to ensure that jobs are provided for local people, both in the construction phase of the Proposed Development and by the end-users, where appropriate. | Noted. | |
| | When calculating employment figures the Homes and Community Agency's (HCA) Employment Densities Guide should be used. Where there are a range of 'area per Full Time Equivalents (FTE)', information should be provided on why a specific figure has been used. It should be noted that the HCA guide references both GIA and NIA, and therefore the EIA should ensure that the correct figures are used for the correct land uses. Specific consideration should be given to the loss of current employment within the Application Site and the potential disruption of businesses adjacent to and in proximity of the Application Site during demolition and construction. | HCA's Employment Density Guide (2015) will be applied to estimate employment levels for the Proposed Development. Consideration will be given to any loss of existing employment on-site and if there is any potential displacement of business during construction & demolition phases. | |
| | It is noted that Paragraph 240 of the Scoping Report states that the child yield anticipated to arise from the Proposed Development will be calculated based on the GLA Population Yield Calculator. LBTH requires that LBTH's Child Yield Calculator is used inform the socio-economic assessments. | The LBTH Child Yield Calculator will be used to determine level of children to be generated by Proposed Development | |
| | The future baseline and cumulative effects will be an important assessment in relation to the socio-economic aspect chapter, and the assessment should ensure that the new site users have access to sufficient levels of social infrastructure, such as health, education, open space and play space on a phase-by-phase basis. Assessments of demand for community facilities should be supported quantitative information | Assessments of demand for community facilities will be included in the chapter including likely population increase from cumulative schemes where possible. | |

| | | |
|---|---|---|
| | including likely population increase from cumulative schemes where possible. | |

## ASSESSMENT METHODOLOGY

### *Defining the Baseline*

#### *Current Baseline Conditions*

**6.1** Data used to establish the current baseline conditions are drawn from a range of sources which are referenced at relevant sections throughout this ES Chapter. These include:

- Office for National Statistics (ONS) Mid-Year Population Estimates[1];
- The Census of Population[2];
- Annual Population Survey[3];
- Claimant Count[4];
- Business Register and Employment Survey[5];
- Department for Education[6] (DfE) for school locations and capacity;
- Tower Hamlets Childcare Sufficiency Assessment 2021-2022[7];
- London Borough of Tower Hamlets School Place Planning Strategy 2020-2021[8];
- National Health Service (NHS) Choices[9] and NHS London Borough of Tower Hamlet's Clinical Commissioning Group (LBTH CCG);
- London Borough of Tower Hamlets Parks and Open Spaces[10];
- Index of Multiple Deprivation 2019; and
- Crime Data Dashboard[11].

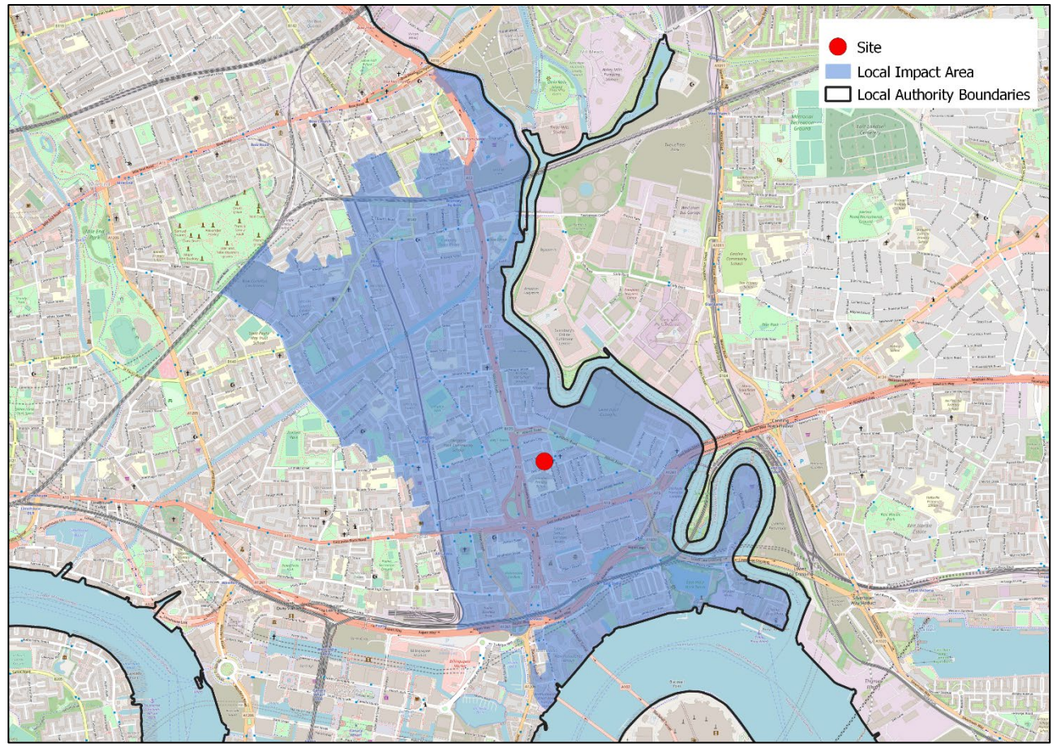
**6.2** The baseline data sources that have been used for this assessment have provided sufficient level of detail to determine the baseline conditions against which the scheme is assessed without the need for further consultation.

#### *Spatial Scope and Study Areas*

**6.3** The effects of the Proposed Development on the economy (i.e. jobs and gross value added (GVA)), housing targets and contribution to employment floorspace targets are considered across a range of statistical geographies which include:

- Local Impact Area (LIA) – The Proposed Development falls within the Poplar Riverside Housing Zone as identified by the GLA[12] and LBTH[13] Given the scale of the Zone, it has been considered to be appropriate Local Impact Area geography. Given that the assessment is based on statistical geographies, best-fit Lower Layer Super Output Area (LSOA[14]) boundaries aligning with the LIA are used (**Figure 6.1**);
- Borough – The London Borough of Tower Hamlets (LBTH) is identified as the administrative area in which the Proposed Development is located; and
- Regional – London is considered when the wider (i.e. multiplier) effects of the Proposed Development are assessed. In addition, London is included within the baseline assessment to provide additional context to the LIA and Borough baseline analysis.

**Figure 6.1 Definition of the Local Impact Area (LIA) and Best-fit Statistical Geography Based on LSOAs**




Source: Contains Ordnance Survey data © Crown copyright and database rights, 2021.

**6.4** Community infrastructure facilities (such as primary healthcare facilities, and schools) are assessed in relation to bespoke catchments and/ or administrative spatial scales as set out within relevant local and regional policies. These include:

- Primary Healthcare Facilities – The Proposed Development's impact on GP surgeries and dentists located within one-mile of the Proposed Development, based on advice from the London Healthy Urban Development Unit[15] (HUDU);
- Early-Years Facilities – Located within the ward of Lansbury in which the Proposed Development is located, based on evidence available in the Childcare Sufficiency Assessment.[16]

[1] *Office for National Statistics (2020), Mid-year population estimates, 2019.*
[2] *Office for National Statistics (2011), Census of Population, 2011.*
[3] *Office for National Statistics (2020), Annual Population Survey, January 2020 to December 2020.*
[4] *Office for National Statistics (2021), Claimant Count by se and age, Age 16+, May 2013 to May 2021.*
[5] *Office for National Statistics (2020), Business Register and Employment Survey, 2019*
[6] *Department for Education, available at: https://get-information-schools.service.gov.uk/Establishments/Search?SelectedTab=Establishments&SearchType=EstablishmentAll&SearchType=EstablishmentAll&OpenOnly=true&TextSearchModel.AutoSuggestValue=&f=true&b=1&b=4*
[7] *London Borough of Tower Hamlets (2020), Childcare Sufficiency Assessment (CSA), Academic Year 2021-2022*
[8] *London Borough of Tower Hamlets (2020), Planning for School Places Annual Update 2020/2021*
[9] *NHS Digital (March 2021), 'General Practice Workforce 30 September 2019'. Available at: https://app.powerbi.com/view?r=eyJrIjoiNmY4NGNiMWQtMGVkZi00MzU2LThiZGMtMTFlZjY2NGE0NTZmIiwidCI6IjUwZjYwNzFmLWJiZmUtNDAxYS04ODAzLTY3Mzc0OGU2MjllMiIsImMiOjh9*
[10] *London Borough of Tower Hamlets (2017) Parks and Open Spaces: An open space strategy for London Borough of Tower Hamlets 2017-2027*
[11] *Metropolitan Police Service, available at: https://www.met.police.uk/sd/stats-and-data/met/crime-data-dashboard/*
[12] *Greater London Authority (2016) Housing Zones: https://www.london.gov.uk/what-we-do/housing-and-land/increasing-housing-supply/housing-zones*
[13] *London Borough of Tower Hamlets (2021) Local Plan 2031: Managing Growth and Sharing Benefits*
[14] *Tower Hamlets LSOA: 008D, 008E, 012B,012C,018A,018B,018C,018D,020A,020C,020D,028B,028E,028F,028G,028H*
[15] *London HUDU (October 2019), Rapid Health Impact Assessment Tool, Fourth Edition.*
[16] *London Borough of Tower Hamlets (2021) Childcare Sufficiency Assessment Snapshot 1 academic year 2021-2022 https://democracy.towerhamlets.gov.uk/mgConvert2PDF.aspx?ID=180215*

- Primary schools – Located within two-miles of the Proposed Development and Poplar Primary Planning Area as defined in LBTH School Catchment Area's Map[17];
- Secondary schools – Located within LBTH as per LBTH School Place Planning Strategy 2020-2021 ;
- Community and Leisure centres – located within the LIA;
- Open Spaces – based on the guidance set out in the London Plan[18] (as shown below) and open space benchmark of 1.2 ha per 1,000 residents as set out in LBTH Parks and Open Spaces Strategy
  - <400m for pocket parks, local parks and small open spaces;
  - <1.2km for district parks;
  - <3.2km for Metropolitan parks; and
  - Up to 8km for regional parks.
- Children's play spaces – based on the guidance set out in the London Plan, and the Play and Informal Recreation Supplementary Planning Guide[19] (SPG):
  - <100m walking distance (or 60m buffer) for local areas for play (LAPs) to be used by under five-year olds;
  - <400m walking distance (or 240m buffer) for local equipped areas for play (LEAPs) to be used by children aged five to 11; and
  - <1km walking distance (or 600m buffer) for neighbourhood equipped areas for play (NEAPs) to be used by children aged 12-years and over.
- Deprivation, crime and social cohesion – within the LIA and LBTH[20].

### *Evolution of the Baseline*

**6.5** The likely evolution of the baseline condition is based on professional judgement and includes a qualitative assessment of the baseline conditions in the future should the Proposed Development not come forward, but other developments around it (included within the Cumulative Effects Assessment) are delivered.

**6.6** Whilst it is reasonable to assume that the baseline situation will evolve in the future, the assessment assumes that the existing uses will remain on-Site. Where information is available, a qualitative approach is taken to describe the expected changes within the baseline conditions of the relevant geographies.

## *Impact Assessment Methodology*

### *Demolition and Construction*

**6.7** The following matters are considered:

- Temporary loss of residential accommodation;
- Temporary loss of employment accommodation; and
- Temporary employment supported as a result of demolition and construction activity.

### *Temporary loss of residential accommodation*

**6.8** An assessment of the temporary loss of residential accommodation has been based on the existing schedule of residential units on the Site and informed by the decanting strategy and the phasing of new housing provision of the Proposed Development.

### *Temporary Construction Employment*

**6.9** To estimate the impact of temporary employment supported as a result of demolition and construction activity, HCA[21] labour co-efficients (i.e. number of jobs supported per £1 million demolition and construction spend) are applied to forecast costs associated with the demolition and construction works. The number of workers (or person years of employment) is then divided by the expected duration of the demolition and construction works (in number of years) as set out in **ES Volume 1, Chapter 5: Demolition and Construction**, to provide the average annual number of construction workers per annum.

**6.10** It is acknowledged that whilst some construction workers may live locally, and their expenditure on household goods and services would also support employment in local businesses, it is also likely that construction workers could be drawn from within the wider region, depending on the roles available and contractors selected. On this basis, an estimate of the induced effects supported by the construction activity cannot be accurately quantified, and therefore is not assessed.

### *Approach to Assessing the Hybrid Application*

**6.11** The assessment has considered both the detailed Application (Phase A) and the Application as a whole (Completed Development) as follows:

### *Detailed Proposals (Phase A)*

**6.12** The following socio-economic considerations are assessed once construction work on the detailed Proposals are completed, and the Detailed Proposals are fully operational:

- Population change; and
- Demand for social and community infrastructure (including residents in and/ or seeking educational facilities, residents using and/ or seeking healthcare facilities, and residents using open spaces, community and leisure centres).

### *Completed Development*

**6.13** The following socio-economic considerations are assessed once construction work on the Proposed Development is completed (both the Detailed Proposals and the Outline Proposals), and fully operational.

- Impact on local housing supply;
- Population change enabled as a result of the Proposed Development, and labour market impacts;
- Changes to the local economy (in terms of jobs, GVA supported and increased household expenditure);
- Demand for social and community infrastructure (including residents in and/ or seeking educational facilities, residents using and/ or seeking healthcare facilities, and residents using open spaces, children's play space and community and leisure centres);
- Deprivation; and
- Impact on crime and social cohesion.

### *Local Housing Supply*

**6.14** The overall impact of the Proposed Development on LBTH's housing supply is based on the net additional housing provision when compared with the existing number of units on Site. The assessment also takes into account the proposed housing mix as set out in **ES Volume 1, Chapter 4: The Proposed Development**.

**6.15** The assessment of the provision of new homes within the Proposed Development (taking into account the number, type and tenure proposed) is considered against local housing targets, and housing requirements as identified by LBTH and the Greater London Authority (GLA) (in the case of regional and Borough-level targets as set out within the London Plan).

### *Population and Labour Market Characteristics*

**6.16** The assessment of population and labour market characteristics is based on an estimate of the "worst-case scenario". For the Detailed Proposals it has been assumed that all residents will be net additional as existing residents will be re-housed off-site but within the LIA. For the Outline Proposals, the proportion of existing residents who are likely to return on-site[22] has been estimated and then subtracted from the gross population

[17] *https://www.towerhamlets.gov.uk/Documents/Education-and-skills/Admissions-and-exclusions/4.1_Catchment_areas_maps_and_copy.pdf*
[18] *Mayor of London (2021), The London Plan.*
[19] *Mayor of London (2012), Play and Informal Recreation.*
[20] *There is currently no guidance as to catchment area for assessing deprivation and crime. Therefore, a best practice approach has been applied*
[21] *Homes & Communities Agency (2015), Calculating Cost per Job, 3rd Edition.*
[22] *Within the outline element of the scheme only as residents currently housed within Phase A boundary are to be re-housed within Phase 3 of the extant 2012 OPP*

yield of the Outline Proposals. The existing residents who are likely to return is based on the percentage of residents who have taken up social units within the 2012 Outline Planning Permission (OPP) extant permission. This is considered a worst-case scenario because the take-up within the 2012 OPP extant permission was relatively low and residents will now be able to see a built example of the type of development that is coming forward. The Completed Development population yield therefore comprises the gross population yield from the Detailed Proposals and the net population yield from the Outline Proposals.

**6.17** The GLA's Population Yield Calculator[23] has been used to estimate the overall population yield for both the Proposed Development and the existing units and the likely proportion of core working age residents. In terms of calculating the potential nursery, primary and secondary school age children, the LBTH Child Yield and Playspace Calculator has been used, in accordance with the LBTH EIA Scoping Opinion.

*Employment*

**6.18** The assessment of on-Site employment once the Proposed Development is completed and occupied is based on the proposed illustrative schedule of commercial floorspace and the associated land uses (refer to **ES Volume 1, Chapter 4: The Proposed Development**).

**6.19** Employment densities benchmarks from the HCA[24] are used to estimate the overall (gross) number of full-time equivalent (FTE) jobs that will be supported by each type of floorspace. A series of additionality adjustments (listed below) are then applied to the direct job number estimates, in order to calculate the net additional jobs that can be supported on-site (and more widely across the London economy). These adjustments are based on best practice from the HCA[25] in addition to professional experience, and include:

- Displacement – Refers to the proportion of outputs (such as jobs) accounted for by reduced outputs elsewhere within the impact areas assessed. Displacement assumptions are made in line with guidelines by the HCA and may vary depending on land use types. These assumptions are set out within the Potential Effects section below.
- Leakage – Refers to the proportion of outputs (jobs) that are lost to outside of the impact area(s) as a result of the Proposed Development. In the case of the Proposed Development, leakage is assumed to be 0% as the estimated direct jobs are generated by the on-site elements of the Proposed Development and would therefore be contained within the LIA and LBTH.
- Deadweight – Refers to the jobs that are currently supported on-Site, and which will be lost (and therefore replaced) as a result of the Proposed Development coming forward. Based on available information provided by the Applicant the Site currently supports around 46-63 jobs. Given the nature of employment within the sector, it is not anticipated that these jobs will be lost, but rather that the majority will relocate to another location within the Local Impact Area. As such, deadweight is assumed to be 0% at the London level. That being said, for the purposes of the EIA, the worst-case scenario is adopted when assessing additionality at the LIA and LBTH level, which assumes that all 46-63 jobs will be lost once on-Site construction commences.

**6.20** In addition to the additionality adjustments listed above, allowances for indirect and induced multipliers are also applied to measure the off-Site jobs supported by the direct (i.e. on-Site) jobs created as a result of the Proposed Development.

- Indirect impacts (also referred to as supply chain) – These are generated as a result of spend by the on-Site activities on the purchase of goods and/ or services for their day-to-day operations; and
- Induced impacts – Associated with local expenditure as a result of those who derive incomes from the direct (i.e. on-site) and/ or supply chain (i.e. off-site) impacts generated by the Proposed Development.

**6.21** A composite multiplier of 1.5 is used to identify the indirect and induced impacts supported by the Proposed Development at the regional (i.e. London) level. This is based on the guidance set out within the HCA's Additionality Guide[26].

**6.22** The formula that is used to derive net additional employment from the gross (on-Site) employment identified using employment densities benchmarks is set out below:

Gross employment – [leakage + displacement + deadweight] x multipliers = net additional employment

*Local Economy*

**6.23** The direct effects of household expenditure are estimated based on regional data for household spend on convenience and comparison goods taken from the ONS Family Spending in the UK and applied to the number of dwellings within the Proposed Development.

**6.24** Additional economic impact will also be generated as a result of the direct, indirect and induced jobs supported by the Proposed Development. This is calculated using the employment supported by new floorspace within the Proposed Development and GVA per job benchmarks for relevant on-Site sector from the ONS's Annual Business Survey.

**6.25** Please note that the impacts generated as a result of the increase in household expenditure and economic output (i.e. GVA) cannot be aggregated together as this would constitute double-counting.

*Demand for Social and Community Infrastructure*

*Education*

**6.26** The estimated additional child yield of the Proposed Development is based on applying the proposed number and mix of housing units to the LBTH Child Yield and Playspace Calculator[27] which generates an estimate of the number of children aged up to 18-years of age (broken down into children in early-years, primary and secondary school provision). The assessment takes into account that not all of the child yield from the completed development will be net additional given that a proportion of existing residents in the Outline Proposals will be re-housed on Site. However, it is not possible to quantify this with any degree of accuracy using the LBTH Child Yield Calculator. Therefore, a gross assessment of child yield is presented and the assessment of magnitude of change is then adjusted qualitatively (if necessary) to take into consideration the likelihood of a proportion of children already attending schools in the local impact area. The capacity of existing schools is assessed based on data and information from the Department for Education's (DfE) school capacity tables, together with a review of LBTH School Place Planning Strategy[28] . The Proposed Development's effects on the receptor are assessed at various levels:

- Early-years provision is assessed at the Lansbury ward (i.e. within LBTH) level, which is the ward where the Proposed Development is located;
- Primary school provision is assessed for a LIA which is defined as a two-mile catchment from the Proposed Development and LBTH's Poplar Primary Planning Area; and
- Secondary school provision is assessed at the Borough level.

**6.27** The assessment of the Proposed Development on demand for education facilities is based on the increased gross additional demand, compared with the current supply.

*Healthcare Facilities*

**6.28** The effect on capacity of healthcare facilities (primarily GP surgeries) surrounding the Site is based on an assumed net increase within the local population, as set out in the section Population and Labour Market Effects above. The additional residents are added to the existing population, and the average patient list size per FTE GP is calculated. This is then compared against the existing average patient list size within a one-mile catchment of the Site, and the London HUDU benchmark of 1,800 patients per FTE GP in order to make a judgement on the effect the Proposed Development will have on local capacity.

**6.29** Dental practices: The capacity of dental practices cannot be assessed in the same manner as GPs as people can choose to attend a dental practice at their own discretion and are not limited to catchments. A best practice approach to assessing dental provision in the area has therefore been applied, using the 1 dentist per 2,000 patients ratio.[29]

*Open Spaces and Play Space Provision*

**6.30** An assessment on the demand for open spaces provision is made based on the estimated net additional population yield (see *Population and Labour Market Characteristics*) and gross child yield against on-site design provision (e.g. the amount of open space, and children's play space), against policy requirements.

[23] *Greater London Authority (October 2019), GLA Population Yield Calculator v3.2.*
[24] *Homes & Communities Agency (November 2015), Employment Density Guide, 3rd Edition.*
[25] *Homes & Communities Agency (January 2014), Additionality Guide, Fourth Edition.*
[26] *Homes & Communities Agency (January 2014), Additionality Guide, Fourth Edition.*

[27] *Based on 'worst-case' scenario of provision in line with the maximum parameters of up to 1,628 units*
[28] *London Borough of Tower Hamlets (2020), Planning for School Places Annual Update 2020/2021*
*29 National Audit Office, (2020); Dentistry in England*

**6.31** For any demands for open space from the newly introduced population not met on-Site, the baseline establishes where there is any spare capacity in the infrastructure across the relevant impact areas. It is assumed that this spare capacity would be taken up by residents of the Proposed Development. However, if there are any outstanding demands that are not met by existing social infrastructure, mitigation measures are suggested.

*Community Facilities*

**6.32** The assessment of the Proposed Development on demand for community and leisure facilities is based on the increased demand arising from the net additional population, compared with the current supply of provision. In the absence of standard benchmarks for provision per population, qualitative judgement is used to assess the quantity and variety of existing provision.

*Deprivation, Crime and Social Cohesion*

**6.33** An assessment is made based on the latest (i.e. 2019) Index of Multiple Deprivation produced by the Ministry for Housing, Communities and Local Government (MHCLG). This considers overall deprivation, crime as well as social cohesion.

**6.34** A summary of Receptors and Impact Areas are provided in **Table 6.1.**

**Table 6.1 Summary of Receptors and Impact Areas**

| Receptor | Impact Area(s) | Justification |
|---|---|---|
| **Demolition and Construction** | | |
| Temporary loss of residential on-site | LIA<br>Borough | Residential units likely to be re-provided across LIA and/or Borough |
| Temporary loss of employment on-site | LIA<br>Borough | Employment units likely to be re-provided across LIA and/or Borough |
| Temporary employment (within the demolition/construction industry) | Regional (London) | Construction labour is likely to be drawn from a wide geography across greater London. |
| **Operation** | | |
| Housing targets | LIA<br>Borough (LBTH) | Both LIA and Borough have housing targets against which progress can be measured. |
| Population and labour market | LIA<br>Borough (LBTH) | Assessment aligns with contribution to housing target. |
| On-Site employment | LIA<br>Borough (LBTH) | Creation of on-Site employment is key output for both WAAP and the Local Plan. |
| Off-Site (i.e. supply chain and induced) employment | Regional (London) | Off-Site jobs, be it supply chain and/ or induced jobs are to be created widely at the London-level. |
| Local economy | Borough (LBTH) | It is difficult to quantify the proportion of increased household expenditure captured within the local impact area, and the impact to the local economy is therefore assessed at the Borough (i.e. LBTH) level. |
| Early-years provision | LIA (Lansbury) | Based on Childcare Sufficiency Assessment |
| Primary school capacity | LIA (two-miles and within school place planning area) | DfE guidance on appropriate walking distance to school and based on LEA school place planning areas.. |
| Secondary school capacity | Borough (LBTH) | Based on LEA School Place Planning Area. |
| GP capacity and Dentist capacity | LIA (one mile) | HUDU guidance indicates that impact on GP capacity should be assessed within one-mile catchment from any Proposed Development. |
| Open space provision | Borough (LBTH) | LBTH's Parks and Open Spaces Strategy identified need at the Borough (i.e. LBTH) level. Furthermore, the London Plan sets out various catchments for different types of open space areas. |
| Play space provision | LIA (400m and 1km) | Guidance set out in the Fields in Trust (FIT) standard[30] and the London Plan catchments for various types of play space. |
| Community Facilities | LIA | LBTH Policy D.H3 of the Local Plan (2020) requires a minimum communal amenity space (excluding circulation areas, access routes and waste or bike storage) of 50m$^2$ for the first 10 units plus a further 1m$^2$ for every additional unit thereafter |
| Deprivation | Borough (LBTH) | The impact of the scheme on local deprivation may affect the borough's overall IMD ranking |
| Crime and social cohesion | Borough (LBTH) | The impact of the scheme on crime and social cohesion may affect the borough's overall crime rate |

*Assumptions and Limitations*

**6.35** The assessment of effects is carried out against the socio-economic baseline conditions as defined by the data sources referenced above. As with any dataset these may be subject to change.

**6.36** The assessment of effects assumes that the Proposed Development would be constructed in accordance with the planning permission granted.

## *Methodology for Defining Effects*

*Receptors and Receptor Sensitivity*

**6.37** The sensitivity of each receptor is evaluated as being high, medium, low or negligible based on a review of the baseline position of each receptor and its performance against other benchmark areas (in this case LBTH and London). The importance of the receptor in local and regional policy terms is also considered in defining its sensitivity **(Table 6.2)**.

**Table 6.2 Definition of Sensitivity of Receptor**

| Sensitivity | Definition |
|---|---|
| **High** | Evidence of direct and significant socio-economic concern relating to the receptor. May be given a high priority in local, regional and/ or national economic and regeneration policy. |
| **Medium** | Some evidence of socio-economic concern linked to receptor, which may be indirect. Change relating to receptor has medium priority in local, regional and/ or national economic and regeneration policy. |
| **Low** | There is little evidence of socio-economic concern relating to receptor. Receptor is given a low priority in local, regional and/ or national economic and regeneration policy. |

[30] https://www.fieldsintrust.org/knowledge-base/guidance-for-outdoor-sport-and-play

| | |
|---|---|
| **Negligible** | Very low importance with little or no priority even at the local scale. |

*Magnitude of Impact*

**6.38** The magnitude of impact experienced by each receptor is determined by considering the change from (current) baseline conditions, both before and (if required) after mitigation. The criteria used for the assessment of the magnitude of socio-economic effects (both beneficial and adverse) are outlined in **Table 6.3** below.

| Sensitivity | Definition |
|---|---|
| **High** | Loss of resources and/ or integrity of resource; severe damage to key characteristics, features or elements. |
| | Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality. |
| **Medium** | Loss of resource, but not adversely affecting its integrity; partial loss of and/ or damage to key characteristics, features or elements. |
| | Benefit to and/ or addition of key characteristics, features or elements; improvement of attribute quality. |
| **Low** | Some measurable change in attributes, quality or vulnerability; minor loss of and/ or alteration to one (or more) key characteristics, features or elements. |
| | Minor benefit to and/ or addition of one (or more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring. |
| **Negligible** | Very minor change (either positive or detrimental) to one (or more) characteristics, features or elements. |

**Table 6.3 Definition of Magnitude of Impact**

*Nature of the Effect*

**6.39** The nature of the effect is defined as either:

- **Beneficial** – an advantageous effect on the impact area; or
- **Adverse** – detrimental effects on the impact area; or
- **Neutral** – neither beneficial or adverse.

*Scale of the Effect*

**6.40** The scale of the effect is based on the matrix set out in **Table 6.4** below.

**Table 6.4 Matrix Used to Determine the Scale of The Effect**

| Sensitivity of the Receptor | Magnitude of Impact | | | |
|---|---|---|---|---|
| | Negligible | Low | Medium | High |
| Negligible | Negligible | Negligible | Minor | Minor |
| Low | Negligible | Minor | Minor | Moderate |
| Medium | Minor | Minor | Moderate | Major |
| High | Minor | Moderate | Major | Major |

*Duration of the Effect*

**6.41** Effects that are generated as a result of the demolition and construction phase of the Proposed Development (i.e. those that last for this set period of time) are classed as **temporary** and **short-term**. Effects that result from the completion (i.e. operational phase) of the Proposed Development are classed as **permanent** and **long-term** effects.

*Categorising Likely Significant effects*

**6.42** Effects are defined as either 'significant' or 'not significant'. Based on the matrix presented in **Table 6.4** effects of **Moderate** and **Major** scale are considered significant, whilst those of minor or negligible scale are considered as not significant.

**6.43** Following identification of the significance of the likely effects, the requirement for any mitigation to either eliminate or reduce the likely significant adverse effects is considered. Where relevant, these are described within the *Mitigation, Monitoring and Residual Effects* section below, and summarised in Table 6.18.

**6.44** Where measures are accounted to either eliminate or reduce likely significant adverse effects, these are considered to form part of the Proposed Development. The assessment then highlights whether the residual effect remains significant, following the implementation of suitable mitigation measures.

## BASELINE CONDITIONS

**6.45** The baseline conditions are presented for the relevant geographies and where possible reported in the context of Regional (i.e. London) benchmarks.

**6.46** The Site is located to the to the north of East India Dock Road (A13), east of the Blackwall Tunnel Northern Approach Road (A12) and to the south west of Abbott Road. The Site includes:

- Existing homes on the Aberfeldy estate, including the properties and land around Balmore Close;
- The Nairn Street Estate to the north and the new Poplar Works development adjacent to the A12;
- Land at Lochnagar Street to the north of Bromley Hall School;
- Abbott Road and the existing green spaces of Braithwaite Park and Leven Road Open Space;
- Land along Blair Street, adjacent to Braithwaite Park which will complete the courtyard building within he built phase of Aberfeldy Village;
- Existing retail units along Aberfeldy Street;
- Aberfeldy Neighbourhood Centre; and
- The existing vehicular underpass, land parallel to the A12 and the pedestrian underpass at Dee Street.

### *Population*

**6.47** Local population data is set out in **Table 6.**5 below and indicates currently around 42,600 people are resident in the LIA, whilst LBTH is home to around 325,000 people.

**6.48** **Table 6.5** shows the age demographic at the LIA, Borough (LBTH) and Regional (London) level. The profile of the population is broadly similar across all geographies, although the LIA has a higher population of young residents (aged 0-15) compared with both LBTH and London. In contrast, the LIA has a below average proportion of people aged 65+ compared to LBTH and in particular London.

**Table 6.5 Age Demographics, 2019**

| % of Population | LIA | LBTH | London |
|---|---|---|---|
| Total Population | 42,600 | 325,000 | 8,962,000 |
| % of age 0-15 | 24% | 20% | 21% |
| % of age 16-64 | 71% | 73% | 67% |
| % of age 65+ | 5% | 6% | 12% |
| *Source: Office for National Statistics 'Mid-year population estimates, 2019* | | | |

**6.49** **Table 6.6** shows the population between 2011 and 2019 at the LIA, Borough (LBTH) and Regional (London) level. The latest available mid-year population estimates indicate that the population of the LIA has increased by about 51% since the 2011 Census, with the highest proportion of growth seen in those aged 0-15. The population growth is far above that of London and the Borough as a whole.

**Table 6.6 Mid-Year Population Estimates, 2011-2019**

| % of Population | LIA | LBTH | London |
|---|---|---|---|
| Population of All Ages (2019) | 42,600 | 325,000 | 8,962,000 |
| % increase from 2011 | 51% | 27% | 9% |
| Working Age Population 2019 (%) | 71% | 73% | 67% |
| Aged 0 to 15 (% increase) | 57% | 37% | 14% |
| Aged 16 to 64 (% increase) | 49% | 24% | 7% |
| Aged 65+ (% increase) | 44% | 34% | 19% |

*Source: Office for National Statistics (2019), 'Mid-Year Population Estimates'*

### *Labour Market*

**6.50** Labour market data from the Annual Population Survey (APS) is not available for small areas below local authority level. As such, **Table 6.7** shows the labour market profile for the working age population for 2011 from the Census of Population for the LIA, Borough (LBTH) and Regional (London) level. Data from 2011 indicates that the LIA performed slightly below average, in terms of labour market indicators, when compared with the Borough (LBTH) and London. The proportion of those employed in managerial or professional occupations was below the Borough and London averages. In terms of qualifications, the LIA had a smaller proportion of residents with the equivalent of degree-level (i.e. Level 4+) qualifications, and a slightly higher than average proportion of residents with no qualifications.

**6.51** The latest available APS data (i.e. 12-months to December 2020) suggests that LBTH has made a slight shift in terms of improving its labour market performance, with increased economic activity rates, however increased unemployment as well. Notably, there was a considerable shift in the occupation profile to a higher proportion of residents occupied in higher skilled jobs and a lower proportion of residents employed in elementary occupations.

**Table 6.7 Labour Market Profile for Working Age Population, 2011 and 2020**

| Labour Market Indicators | | LIA | LBTH | London |
|---|---|---|---|---|
| **Engaged in the Labour Market (*for residents aged 16-64*)** | Economically Active (2011) | 67.5% | 69.8% | 71.7% |
| | Economically Active (2020) | N/A | 78.9% | 80.1% |
| | *Unemployment (2011)* | 3.1% | 2.6% | 2.0% |
| | *Unemployment (2020)* | N/A | 3.5% | 6.0% |
| **Occupation (*% population aged 16-64 employed in…*)** | Management or Professional Services (2011) | 31.4% | 36.7% | 34.1% |
| | Management or Professional Services (2020) | N/A | 44.0% | 43.4% |
| | Process. Plant and Machine Operatives and/ or Elementary Occupations (2011) | 17.1% | 13.3% | 14.3% |
| | Process. Plant and Machine Operatives and/ or Elementary Occupations (2020) | N/A | 8.5% | 9.7% |
| **Qualifications (% aged 16-64)** | NVQ Level 4+ (2011) | 33.9% | 41.0% | 37.7% |
| | NVQ Level 4+ (2020) | N/A | 61.8% | 58.5% |
| | No quals (2011) | 23.5% | 20.0% | 17.6% |
| | No quals (2020) | N/A | 8.9% | 5.1% |

*Source: Office for National Statistics (2021), 'Annual Population Survey, January 2020 to December 2020'; and Office for National Statistics (2011), 'Census of Population, 2011'.*

**6.52** **Table 6.8** shows the claimant count at the LIA, Borough (LBTH) and Regional (London) level between 2013 and 2021. Although claimant count has decreased from 2013 to 2019, there has been a large spike from 2020 onwards due to COVID-19 where the number of people claiming has tripled in each of the LIA, LBTH and Regional (London) areas.

**Table 6.8 Claimant Count, 2013 to 2021**

| Year | LIA | LBTH | London |
|---|---|---|---|
| 2013 | 1,325 | 9,950 | 213,295 |
| 2014 | 880 | 6,955 | 156,175 |
| 2015 | 660 | 5,015 | 116,650 |
| 2016 | 625 | 4,875 | 111,200 |
| 2017 | 685 | 5,240 | 122,085 |
| 2018 | 930 | 6,600 | 128,485 |
| 2019 | 1,055 | 7,475 | 161,170 |
| 2020 | 2,560 | 18,950 | 454,655 |
| 2021 | 2,875 | 20,920 | 484,930 |
| % increase from 2013 to 2019 | -20% | -24% | -24% |
| % increase from 2013 to 2021 | 117% | 110% | 127% |

*Source: Office for National Statistics (2021), 'Claimant Count by sex and age, Age 16+, May 2013 to May 2021'*

### *Housing Supply*

**6.53** Headline information on key housing characteristics at the LIA, Borough (LBTH) and Regional (London) level is set out in **Table 6.9**. In 2011, the LIA had around 10,000 households, accounting for 11% of total households within LBTH (101,250). The data indicates that the LIA has a similar housing tenure structure to both LBTH and London as a whole, but with a lower proportion of owned homes and higher proportion of homes with shared ownership compared to the borough and national average.

**6.54** The proportion of home ownership in the LIA is 17%, compared with 24% and 48% in the Borough and London respectively. The private rented sector plays a prominent role in the LIA with 31% of households in this category compared with London's 25%.

**Table 6.9 Housing Tenure, 2011**

| Tenure | LIA | LBTH | London |
|---|---|---|---|
| Total households (No) | 10,757 | 101,257 | 3,266,200 |
| Owned (%) | 17% | 24% | 48% |
| Shared Ownership (%) | 4% | 2% | 1% |
| Social Rented (%) | 47% | 17% | 24% |
| Private Rented (%) | 31% | 33% | 25% |
| Living Rent Free (%) | 1% | 1% | 1% |

*Source: Office for National Statistics (2011). 'Census of Population, 2011'.*

**6.55** The dwelling types at the LIA, Borough (LBTH) and Regional (London) level are set out in **Table 6.10** below. The dwelling type structure is relatively similar across all three geographies, with the proportions of detached and semi-detached dwellings being relatively low and the large majority of dwellings being flats/maisonettes.

**Table 6.10 Dwelling Type, 2011**

| Dwelling Type | LIA | LBTH | London |
|---|---|---|---|
| Total dwellings (No) | 11,194 | 106,136 | 3,387,260 |
| Detached (%) | 21% | 1% | 6.2% |
| Semi-detached (%) | 2% | 2% | 18.6% |
| Terraced (%) | 7% | 10% | 22.9% |
| Flat/maisonette (%) | 90% | 86% | 52.2% |
| Caravan/Mobile home (%) | 0% | 0% | 0.1% |

*Source: Office for National Statistics (2011). 'Census of Population, 2011'.*

**6.56** The LBTH Local Plan (2031) sets out a minimum number of additional homes for the borough within the plan period (2016-2031) of 58,965 (3,931 dwellings per annum), with the majority of housing growth to be delivered in sub-areas including 5,748 within the Lower Lea Valley sub-area which encompasses the Site. The plan recognises that LBTH is expected to make a significant contribution to London's overall housing target. The Plan also sets out that it will need to deliver 21,000 new affordable homes over the same period (1,407 dwellings per annum) which equates to 45% of the overall supply requirement. Policy S.H1 states that development will be expected to contribute towards the creation of mixed and balanced communities with an overall target of 50% of all new homes to be affordable, including via requiring the provision of a minimum of 35% affordable housing on sites providing 10 or more new residential units. A mix of rented and intermediate affordable tenures (30:70) is required together with a mix of unit sizes.

**6.57** Policy D.H2 of the Local Plan elaborates on requirements for a mix of unit sizes including larger family homes in accordance with local housing need. This indicates that for market housing, the greatest requirement is for 2-bedroom units (50%), following 1-bed (30%) and 3 and 4-bed (20%).

**6.58** The Local Plan recognises that LBTH is expected to make a significant contribution to London's overall housing target (588,870 2019-2029). The London Plan sets a ten-year housing target for LBTH of 34,730 which is the highest housing target of any other local authority within London by some margin.

### *Employment and Local Economy*

**6.59** **Table 6.11** shows the type of employment at the LIA, Borough (LBTH) and Regional (London) level for 2019. The data shows that the LIA is home to around 9,970 jobs, accounting for about 3% of the Borough's total workplace-based employment.

**6.60** The largest sector within the LIA is the business administration and support services with 15% of total employment, which is above the LBTH and London averages. Other significant sectors within the LIA include information & communication (11%), manufacturing (9%), and education (9%).

**6.61** While the largest sector in LBTH is the financial and insurance (21%), professional, scientific and technical is also important, with 15% of total employment.

**6.62** Over the past five years (i.e. since 2015), the LIA has seen a decline in local employment, the number of jobs has decreased by 15%, compared to an increase of 9% across LBTH and increase of 6% in London (see **Table 6.12**). The main sectors which have contributed to a decrease in employment in the LIA are Finance & Insurance (85% decrease, -255 jobs, Construction (58% decrease, -550 jobs) and Wholesale (50% decrease, -165 jobs), There has however been an increase in employment in the following sectors, Arts and Entertainment (49% increase, + 120 jobs), Health (38% increase, +155 jobs) and Accommodation & Food Services (21% increase, +115 jobs). The construction sector in London currently supports around 205,000 jobs.

**Table 6.11 Employment (Workplace Based), 2019**

| Sector | LIA | LBTH | London |
|---|---|---|---|
| | Jobs | Jobs | |
| Total jobs | 9,970 | 307,615 | 5,369,000 |
| Mining, quarrying & utilities | 3.3% | 0.3% | 0.6% |
| Manufacturing | 9.2% | 1.0% | 2.3% |
| Construction | 4.0% | 2.0% | 3.8% |
| Motor trades | 0.6% | 0.2% | 1.0% |
| Wholesale | 1.7% | 2.0% | 3.1% |
| Retail | 5.7% | 3.9% | 7.5% |
| Transport & storage | 6.4% | 2.3% | 4.9% |
| Accommodation & food services | 6.7% | 5.5% | 8.1% |
| Information & communication | 11.0% | 9.4% | 8.3% |
| Financial & insurance | 0.5% | 21.5% | 7.3% |
| Property | 4.3% | 2.3% | 2.7% |
| Professional, scientific & technical | 6.8% | 15.3% | 13.4% |
| Business administration & support services | 6.8% | 12.4% | 10.8% |
| Public administration & defence | 15.0% | 4.6% | 4.3% |
| Education | 8.7% | 5.5% | 7.0% |
| Health | 5.7% | 9.4% | 9.9% |
| Arts, entertainment, recreation & other services | 3.7% | 2.6% | 5.1% |

*Source: Office for National Statistics (2020), 'Business Register and Employment Survey'*

**Table 6.12 Employment Change (2015-2019)**

| | | LIA | LBTH | London |
|---|---|---|---|---|
| **Total Jobs** | 2015 (000s jobs) | 11.6 | 281 | 5080.5 |
| | 2019 (000s jobs) | 9.9 | 307.6 | 5367.0 |
| **Change 2015-9** | No. (000s) | -1.7 | +26 | +287 |
| | % | -15% | +9% | +6% |

*Source: Office for National Statistics (2020), 'Business Register and Employment Survey'*

**6.63** Data from the ONS indicates that in 2019, LB contributed £34.5 billion to London's economy, or the equivalent of just under 8% of London's economy (estimated to be £450 billion).

### *Education*

#### *Early-Years Provision*

**6.64** The Tower Hamlets Childcare Sufficiency Assessment (2021)[31] indicates that there has been a decrease in the take up of Early Learning for two year olds places in Autumn 2020 compared to Autumn 2019 across the borough. Only two wards, Poplar and Island Gardens, show an increase in Early Learning 2 take up: 6% and 25% respectively. However, this increase describes only three additional children. In Lansbury, there has been an increase in Extended Entitlements for Working Parents (30 hours childcare) of 19% compared to Autumn 2019.

**6.65** Within the Lansbury Ward, where the Site is located, there has been an overall decrease in early years occupied places.[32] In terms of early learning for 2 year olds, there has been a drop of 12% in occupied places from Autumn 2019 to Autumn 2020. Similarly, there has been a drop of 51% in occupied places for 3 & 4-year-olds (from 697 occupied places in Autumn 2019 dropping to 341 occupied places in Autumn 2020.

**6.66** Whilst it can be assumed the vast majority of this is due to the Covid-10 lockdowns that were imposed in Autumn 2020, there has been little evidence to suggest that occupied places are increasing again with the continuation of some people working from home and seeking childcare places closer to home rather than work places. As a result, there are some concerns around the financial viability of early years provision.

**6.67** Within the Local Impact Area, there are three early years facilities, closest to the Site being the Little Me Day Nursery East India Docks (2.2km). The facilities offer care for 2 to 4 year olds and offer a variety of activities including languages, food and nutrition club and sports.

**6.68** Early years facility is to be provided within Phase 3B of the 2012 OPP which was planned to meet the needs of the occupants of Phases 4-6 of the OPP, now replaced by the Proposed Development.

#### *Primary School Capacity*

**6.69** LBTH's School Place Planning Strategy[33] states that population growth in Tower Hamlets remains amongst the fastest in the country. However, this growth is no longer translating into the anticipated levels of increased demand for school places. This is due to falling birth rates, changing resident demographics, and increased levels of migration out of the borough.

**6.70** The Council has been dealing with a significant surplus of places at primary schools in some areas of the borough. The pupil census in January 2020 showed that primary schools carried a reasonable surplus of 10% across all age groups. However, in the reception year this is at 14% (536) and well above the benchmark of 5-10% for urban areas. Although some surplus is necessary to allow for parental choice, too much surplus can affect the resources available for expenditure on improving outcomes for pupils.

**6.71** The situation with pupil place capacity is not uniform across the borough. There is a contrast between the surplus places at primary schools in the west and the increasing pressure to ensure there are enough school places in the east. Primary schools in the west are working to address the resource challenges of unfilled places, whilst the majority of schools in the east have maintained steady rolls or even seen increases in their pupil numbers. By 2026/27, the east of the borough is projected to require up to an additional 7FE or 211 places (this includes two out of the six identified catchment areas – Poplar and Isle of Dogs).

[31] *London Borough of Tower Hamlets (2021) Childcare Sufficiency Assessment Snapshot 1 academic year 2021-2022 https://democracy.towerhamlets.gov.uk/mgConvert2PDF.aspx?ID=180215*
[32] *https://democracy.towerhamlets.gov.uk/documents/s180216/Appendix%201%20Occupied%20places%202019%202020.pdf*
[33] *London Borough of Tower Hamlets (2020), Planning for School Places Annual Update 2020/2021*

**6.72** Pupil numbers in four of the six school primary catchment areas should remain constant throughout the planning period. The exception being Poplar and the Isle of Dogs, where increases are expected from planned housing development.

**6.73** The Proposed Development is located within Poplar Planning Area of LBTH's School Place Planning Strategy, which is home to 14 primary schools. There are currently 890 Reception places available in the Poplar catchment area. In January 2020, there were 38 (1FE) unfilled places; but with anticipated growth in the pupil population, this area is expected to have a shortfall of 63 (2FE) places by 2026, without intervention.

**6.74** As indicated in the Annual Update, the Council has planned the following interventions to address this potential shortfall:

- Increase to the Published Admission Numbers of one or more of the schools in the Poplar area by at least ½ FE to have additional capacity available in 2022
- Establish a new 3FE at Reuters Ltd (Blackwall Yard); and
- Ailsa Street Site Allocation for 2FE (60 places) delivered within the Local Plan period up to 2031.

**6.75** Figure 6.2 below provides an overview of all primary schools located within a two-mile radius of the Proposed Development that fall within the Poplar Catchment Area . In total, there are 14 primary schools with an overall pupil roll of 7,418 a capacity of 7,366.

**6.76** This represents an overall deficit of capacity of 1% which is below the DfE's recommendation of maintaining between 5%-10% capacity to allow for inter-school movements.

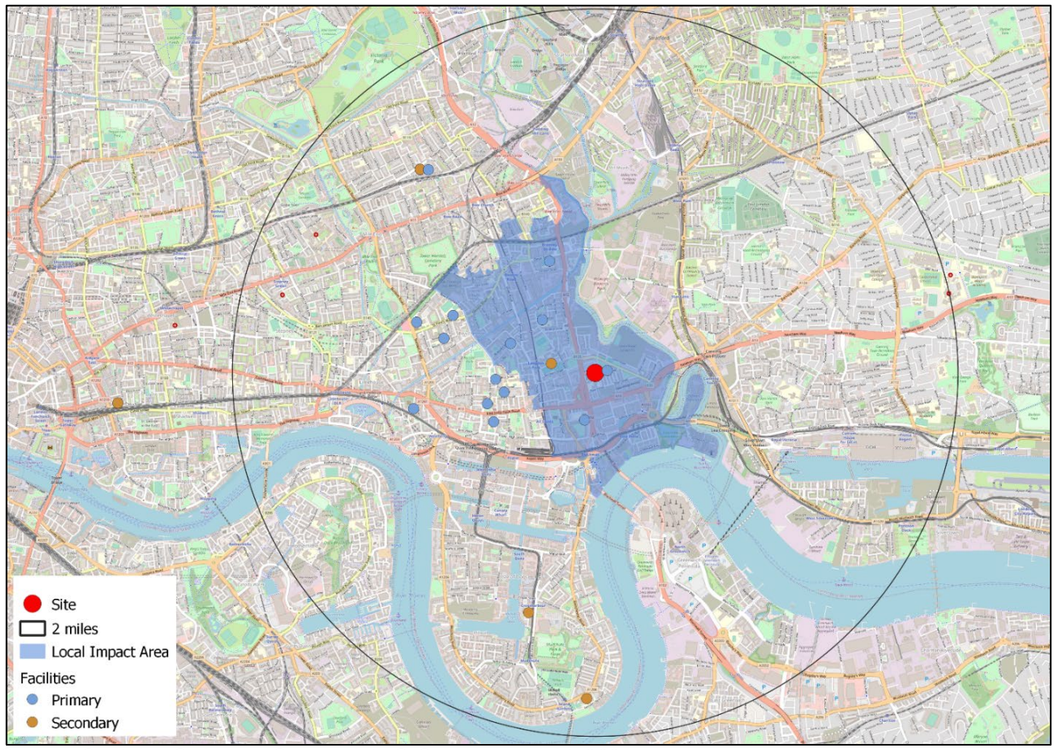
### *Secondary School Capacity*

**6.77** The LBTH Planning for School Places Annual Update 2020/21 estimates the pupil projections indicate that the demand for secondary school places is still increasing across the Borough.[34]Demand for secondary school places is still expected to rise steadily over the next few years and peak in 2027. The Update suggests that the establishment of at least one new secondary school at London Dock in Wapping will ensure there are enough places in the medium term and allow for any further school organisation changes. This is a decision which has been agreed in a previous iteration of the School Planning Update[35]. It will also enable the other development site at Westferry Printworks to be used to improve the facilities of an existing secondary school.

**6.78** Secondary school places in Tower Hamlets are planned for on a boroughwide basis, as it recognises that pupils will travel to schools across (and outside) the borough, according to their particular preferences. Tower Hamlets has been experiencing a gradual increase in secondary applications in line with the previous growth, with a slight dip in 2020. The current round of projections indicates that numbers will continue to increase until 2023 before remaining at a steady level through to 2027

**6.79** As **Figure 6.2** shows there are 9 secondary schools in LBTH (four of which within 2 miles of the Site) with a total pupil roll of 9,003, and overall capacity of 10,444 places within LBTH (see **ES Volume 3, Appendix: Socio-Economics - Annex 2**). This indicates that there is 14% spare capacity within LBTH which is above the DfE's lowest recommended margin of 5%.

**Figure 6.2 Schools in LIA**




*Source: Contains Ordnance Survey data © Crown copyright, 2021.*

## *Healthcare*

### *GP Provision*

**6.80** **Table 6.3** below shows the number of GP practices and GP FTEs located within one mile of the Site of the Proposed Development and compares this with the LBTH CCG average[36] (see **Figure 6.3** and **ES Volume 3, Appendix: Socio-Economics - Annex 2**). There are 8 GP practices within one-mile of the Site, with a total of 92,630 registered patients and 42.4 FTE GPs. This gives rise to an average of 2,185 patients per FTE GP, which is higher than the HUDU benchmark of 1,800 patients, and the average for the LBTH CCG (of 2,026 patients per FTE GP).

**6.81** In addition to the GP provision set out below, a health centre is to be provided within Phase 3B of the 2012 OPP which was planned to meet the needs of the occupants of Phases 4-6 of the 2012 OPP, now replaced by the Proposed Development. Moreover, the health centre has been designed to serve a much larger demand than just phases 4-6 of the 2012 OPP, increasing capacity from the current Practice at 9,000 patients to 17,000 patients in the new health centre in Phase 3B. GPs (and their patients) will move across from the Aberfeldy Practice facility from June 2022 and the new health centre is due to be fully operational from September 2022.

[34] *London Borough of Tower Hamlets (2020), Planning for School Places Annual Update 2020/2021*
[35]*https://democracy.towerhamlets.gov.uk/documents/s182539/6.8%20London%20Dock%20School%20Funding%20Agreement%20and%20Leases.pdf*

*36 NHS Digital (March 2021), 'General Practice Workforce 30 September 2019'. Available at: https://digital.nhs.uk/data-and-information/publications/statistical/general-and-personal-medical-services/final-30-september-2019*

**Table 6.13 GP Provision**

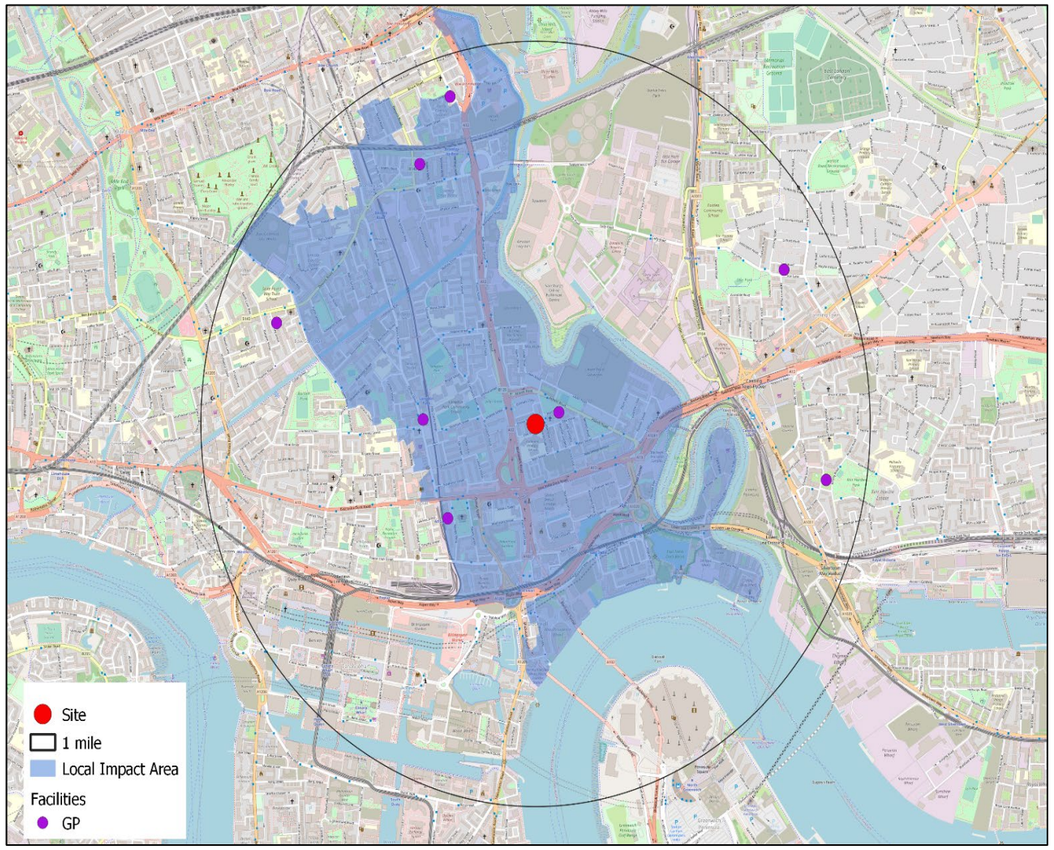
| GP Provision | Within 1 mile of Site | LBTH CCG Average |
|---|---|---|
| No of GP practices | 8 | 277 |
| No of GP FTEs | 42.4 | 1,127.6 |
| Registered patients | 92,630 | 2,284,553 |
| Patients per FTE GP | 2,185 | 2,026 |

*Source: Contains Ordnance Survey data © Crown copyright and database rights, 2021.*

### *Dentists*

**6.82** Within the LIA, there are six dental practices, with closest to Site being the All Saints Dental Care (640m). There are a total of 19 dentists working in the six dental practices. Currently, NHS Choices does not provide information on the number of patients registered with the dentist practices but based on the existing population of the LIA this equates to around 2,240 population per dentist which is above the best practice benchmark of 2,000.

**Figure 6.3 GP practices located within one-mile of the Proposed Development**




Source: Contains Ordnance Survey data © Crown copyright and database rights, 2021.

## *Open Space and Play Space*

### *Open Space*

**6.83** The LBTH Open Space, Sports and Recreation Strategy (2019) assesses the quantity, quality and future need for open and play space provision within the Borough, measuring provision on per 1,000 population basis against the Fields in Trust (FIT) standard.

**6.84** According to the strategy, LBTH has a local open space standard at 1.2 ha of open and play space per 1,000 population. In 2016/17, there was a total of 0.89ha per 1,000 residents in LBTH which is less than the local open space standard of 1.2ha per 1,000 residents but in line with the FIT benchmark of 0.8ha.

**6.85** The Strategy identifies that the Lansbury Ward in which the Site is situated is projected to face open space deficiency in 2031. The proposed intervention to resolve this potential shortfall is the provision of a Local Park along Leven Road gasholder site to provide best coverage for existing and new communities east of A12 and north of A13 which will be delivered through Local Plan Site Allocation.

**6.86** The Site is surrounded by and within walking distance of multiple green spaces including Millennium Green and East India Green. The closest large green areas are Langdon Park and Jolly's Green, within 12 and 6 minutes walking distance respectively. Despite being so close, they are not easily accessible due to the severance caused by the A12 and the poor character of the existing underpasses which cross the A12.

**6.87** Within the Site boundary, the two most significant areas of existing open space are Braithwaite Park and Leven Road Open Space totally almost 9,500m$^2$ between them. These community assets form a trio of sorts along Abbott Road with Millennium Green (approx. 3,700m$^2$). Improvement works are proposed for Millennium Green that will be secured by way of S.106 Obligations.

### *Play Space*

**6.88** There are 54 equipped play areas, 21 ball games areas and 2 wheeled play areas across parks and open spaces with open access[37]. Of the 54 equipped play areas 15 are targeted at children between the ages of 0 and 4 years. 16 are targeted at children and young people over the age of 5, and 23 cater for children and young people of all ages. In addition, all parks and open spaces provide grassed areas for play.

**6.89** Additionally, within LTBH, there are 97 areas that are designated as play areas within housing estates.

**6.90** The Site and Local Impact area fall within LAP 8[38], which has been identified as having the highest proportion of housing play spaces rated as good[39].

**6.91** Currently located between the divided east-west roads that form Ettrick Street is a small local dedicated play area, with play equipment and seating, providing approximately 460m$^2$ of open space. This is the only dedicated playspace within the Site boundary.

## *Community and Leisure Facilities*

**6.92** A number of facilities for local community use are available within close proximity to the Site. There are seven community centres / halls within the Local Impact Area equating to around 1 per 6,000 residents. This includes centres of religious nature such as the Poplar Mosque and Community Centre (640m), charity and youth-led such as the Teviot Centre (960m). Additionally, there are also two community centres within the Site boundary – the Aberfeldy Neighbourhood Centre (which will be re-provided as Phase 3 of the extant application) and the Aberfeldy Islamic and Cultural Centre and Mosque (which is being re-located within the existing GP Practice building at Ettrick Street). In addition, there is one leisure centre within the Local Impact Area – the Poplar Baths and Leisure Centre and Gym (960m).

**6.93** In terms of leisure facilities, the LBTH Infrastructure Delivery Plan (2017)[40] has identified the Borough is currently running a technical deficit in terms of delivery of both badminton courts and swimming pools leisure facilities. However, the Plan also identifies that the estimated requirements are aspirational and should not be treated as absolute. The Plan recognises that indoor leisure facilities are of a more strategic rather than neighbourhood nature and as such, provision elsewhere in the borough, may help meet demand in areas of high growth where pressure on land use is particularly high.

## *Deprivation*

**6.94** The Index of Multiple Deprivation (IMD) is the official measure of relative deprivation in England and is part of MHCLG's suite of outputs that form the Indices of Deprivation (IoD). The IoD is based on 39 separate indicators, organised across seven domains which are combined and weighed to calculate IMD. This is an overall measure of multiple deprivation experienced by people living in an area and is calculated for every LSOA (i.e. neighbourhood) in England. The most deprived LSOA nationally is ranked 1, whilst the least deprived is ranked 32,844. The seven domains of deprivation which are combined to create the IMD are listed below. For the purposes of this assessment only the overall IMD and crime domain have been considered.

- Income;
- Employment;
- Education;
- Health;
- Crime;
- Barriers to housing; and
- Living environment.

**6.95** Whilst the IMD is designed primarily to be a small area measure of deprivation, a range of summary measures are available at the local authority-level. The local authority summary statistics published by MHCLG are calculated by averaging all of the LSOA ranks within each local authority area after they have been weighted by population.

### *Overall Deprivation*

**6.96** The IMD 2019 ranks LBTH as the 39th most deprived local authority in England out of 326, placing it in the top 20% most deprived local authorities nationally. This is an improvement to the 2015 rank which places LBTH as 6$^{th}$ most deprived authority nationally **(Figure 6.4)**.

**6.97** When averaging the decile ranks for the LSOAs that comprise the local impact area 'barriers to housing' is the worst performing area, followed by 'crime' and 'living environment'. It should be noted that within some categories there is substantial variance across the LIA.

**6.98** Looking further into the domains of the 16 LSOA areas that comprise the LIA:

- 3 of the 16 LSOAs are within the top 10% most deprived in barriers to housing;
- 4 LSOAs are within the top 10% most deprived in terms of crime;
- 3 LSOAs are within the top 20% most deprived in terms of living environment; and
- 6 LSOA areas are within the top 10% most deprived in terms of income.

### *Crime and Social Cohesion*

**6.99** The IMD also reports crime and social cohesion deprivation, which is a measure of the risk of personal and material victimisation in each LSOA relative to the other neighbourhoods nationally. Nationally, LBTH is ranked as 34th most deprived local authority, whilst the LSOA where the Site sits (Tower Hamlets 020C) falls within the 20% most deprived neighbourhoods in the country.

**6.100** Another source of crime data is available through the Metropolitan Police Service's (MPS) Crime Data Dashboard which records type of crime and number of instances and provides an overview of the relative crime rate per 1,000 population. For the LIA, the MPS Crime Data Dashboard reports an overall crime rate of 9.48 crimes per 1,000 population compared with an average of 8.8 crimes per 1,000 population in LBTH over the same period[41].

**6.101** At the Lansbury neighbourhood level, between May 2020 and May 2021 there were 122.6 crimes per 1,000 population. Detailed analysis of the data shows that over this period there were 830 instances of violence against the person, 396 instances of vehicle offences and 309 instances of theft. **Figure 6.5** shows the IMD Crime Domain based on LOSA's for the LBTH.

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*37 Play Matters in Tower Hamlets A strategic approach to play in Tower Hamlets https://democracy.towerhamlets.gov.uk/mgConvert2PDF.aspx?ID=5795*
*38 https://democracy.towerhamlets.gov.uk/documents/s17928/LDF%20Core%20Strategy%20Appx%201%20Pt%2013.pdf*
*39 Ratings being: Very Poor, Poor, Fair, Good and Very Good*
*40 London Borough of Tower Hamlets (2017) Infrastructure Delivery Plan - https://www.towerhamlets.gov.uk/Documents/Planning-and-building-control/Strategic-Planning/Local-Plan/Submission_2018/Infrastructure_Delivery_Plan_2017.pdf*
*41 May 2021 Data*

**Figure 6.4 Overall deprivation (based on LSOAs) for LBTH 2019**


*Source: Ministry of Housing, Communities and Local Government, 2019; Contains Ordnance Survey data © Crown copyright and database rights, 2021.*

**Figure 6.5 IMD Crime Domain (Based on LSOAS) for LBTH, 2019**


*Source: Ministry of Housing, Communities and Local Government, 2019; Contains Ordnance Survey data © Crown copyright and database rights, 2021.*

## RECEPTORS AND RECEPTOR SENSITIVITY

### *Existing*

**6.102** **Table 6.14** below sets out the existing receptors which are assessed, and their respective level of sensitivity based on the baseline conditions, their importance within the local and regional policy contexts, taking account of the method described in **Table 6.2** above.

**6.103** The receptors are assessed at various levels (including the LIA, Borough (LBTH) and regional (London) spatial levels), in line with the approach outlined in Spatial Scope and Study Area above.

**Table 6.14 Sensitivity of the Existing Receptors**

| Receptor | Sensitivity | Impact Area(s) | Justification |
|---|---|---|---|
| **Demolition and Construction** | | | |
| Temporary Loss of existing residential | Low | LIA<br>Borough | Displacement of existing, on-Site residential as a result of demolition and construction activity. |
| Temporary Loss of existing employment | Low | LIA<br>Borough | Displacement of existing, on-Site employment as a result of demolition and construction activity. |
| Temporary employment as a result of demolition and construction | Medium | Regional (London) | A proportion of temporary construction employment supported as a result of demolition and construction activity will be filled by London residents, some of whom could be looking for employment opportunities. |
| **Completed and Operational** | | | |
| Contribution to Housing Targets | High | LIA<br>Borough (LBTH) | The provision of new dwellings is a strategic policy for both LBTH and the GLA. The London Plan has identified a target of 3,473 dwellings per annum for the Borough (a decrease of 458 dwellings per annum (i.e. a target of 3,931 dwellings per annum) to that required by the previous London Plan) |
| Population and Labour Market | Low | LIA<br>Borough (LBTH) | Since 2011, the population within the LIA has increased by over 50%, a faster rate than the overall population growth in LBTH (+27%) and substantially higher than the London average (+9%). In line with this, the LIA's core working age population (i.e. people aged 16-64 has increased by almost 50%, compared with 24% in LBTH and 7% in London. Whilst this has an impact on the overall labour market, the receptor is not identified as being of socio-economic concern. |
| On-Site Employment | Medium | LIA<br>Borough (LBTH) | Employment in the LIA represents around 3% of total employment in LBTH. Employment growth is identified as a priority by both LBTH and the Mayor of London. |
| Off-Site/ Wider Employment | Medium | Regional (London) | Regionally, the unemployment rate currently stands at 6.0%, having increased from 4.6% since the end of 2019 (i.e. pre-COVID-19 pandemic). The indirect and induced employment generate by the Proposed Development will go some way towards creating employment opportunities off-Site and help drive down unemployment, and support the economy's wider recovery. Employment growth is identified as a priority by both LBTH and the Mayor of London. |
| Local Economy (local expenditure, GVA and business rates) | Medium | Borough (LBTH)<br>Regional (London) | A recent study by the GLA, looking at macro-economic trends across London suggest that the economy is currently 7% smaller than it was before the COVID-19 pandemic started, and is not expected to return to pre-pandemic levels till at least 2023 (under a fast recovery scenario). A more gradual recovery would mean that the economy doesn't recover to pre-pandemic levels till at least 2026. Economic growth, alongside increased employment. Is identified as a priority by both LBTH and the Mayor of London. |
| Early Years Provision | Low | LIA (Lansbury ward) | The baseline indicates that there is early years provision across all wards in LBTH, with Lansbury Ward showing a recent decrease in occupied places suggesting there is capacity. |
| Primary School Capacity | Medium | LIA (two-mile radius from the Site) | There is currently 1% deficit in primary places within two-miles of the Proposed Development. However, LBTH's School Place Planning Strategy indicates that the Council |

| | | | |
|---|---|---|---|
| | | | has planned for necessary interventions to address rising pupil numbers in the Poplar School Planning Area. |
| Secondary School Capacity | Low | Borough (LBTH) | The baseline analysis indicates that there is spare capacity (over 1,400 places) within secondary schools in the Borough with 14% vacancy rate which is above the DfE recommendation. LBTH's School Place Planning Strategy notes that demand for secondary school places may increase as more children (across the borough) will move into the secondary phase of their education. |
| Healthcare | High | LIA (one-mile radius from the Site) | Average patient list size for GP surgeries within one-mile of the Proposed Development (of 2,185 patients per FTE GP) is higher than the HUDU's recommended benchmark (of 1,800 patients per FTE GP), and LBTH CCG's average (of 2,026 patients per FTE GP). |
| Open Space | Medium | Borough (LBTH) | Baseline analysis indicate that LBTH has 0.89 ha of open space per 1,000 population. This is over and above the 0.8 ha per 1,000 population FIT benchmark however it is below the local benchmark of 1.2ha per 1,000 population. The Strategy identifies that the Lansbury Ward is projected to face open space deficiency in 2031 which is Moderate significance. The proposed intervention to resolve this potential shortfall is the provision of a Local Park along Leven Road gasholder site to provide best coverage for existing and new communities east of A12 and north of A13 which will be delivered through Local Plan Site Allocation. |
| Play Space | Low | LIA | Baseline analysis indicates the area within which the LIA falls – LAP 8, has a good provision of play space, with the area being rates as having the highest proportion of housing play spaces rated as good. |
| Community and Leisure Facilities | Low | LIA | Baseline analysis indicated there are seven community centres and one leisure centre within the Local Impact Area which indicates a good level of provision. |
| Deprivation | High | Borough (LBTH) | According to the 2019 IMD, LBTH is within the 20% most deprived local authorities nationally. Between 2015 and 2019, the Borough's overall deprivation rating improved (from 6th to 39th most deprived local authority in England). |
| Crime and Social Cohesion | Medium | LIA | Evidence from the IMD shows that almost a third of the Borough's LSOAs are within the 20% most deprived in terms of crime. The overall crime rate in the LIA (of 9.48 crimes per 1,000 population) is higher than the LBTH (8.8 crimes per 1,000 population) for May 2021. |

### *POTENTIAL EFFECTS*

### *Demolition and Construction*

*Loss of Existing Residential Units*

**6.104** The demolition and construction of the Proposed Development would result in the removal of the existing buildings on Site.

**6.105** The Aberfeldy New Village LLP (the 'Applicant') has provided a decanting strategy to ensure the existing residents have an opportunity to either be relocated within the Proposed Development once complete, or to relocate to an alternative Site in close proximity. It is proposed that all existing social units will be re-provided within the Proposed Development whilst private leasehold property tenants will be offered an option of a new home/lease within the Proposed Development.

**6.106** The impact of the temporary loss of housing (Low sensitivity) as a result of the demolition is negligible. Even though there is a temporary loss of existing residential units during the demolition phase, the proposal provides appropriate phasing which will ensure suitable accommodation is re-provided. The Proposed Development provides an overall uplift in number of units, therefore there will be no permanent loss of accommodation. The significance of effect is therefore assessed as **Minor Adverse (Not Significant)** at the LIA and Borough (LBTH) levels.

*Loss of Existing Floorspace*

**6.107** The existing buildings within the Site support around 46-63 FTE jobs in the retail/restaurant industries. It is understood that once the current lease period expires/ runs out, the jobs supported on the Site will potentially relocate to elsewhere in LBTH and London. However, as part of the Detailed Proposals, creation of further meanwhile space provides an opportunity for businesses to return to the newly developed Aberfeldy High Street. On this basis, the impact resulting from the displacement of these jobs as a result of their removal through the demolition works is therefore assessed as negligible.

**6.108** With the sensitivity of the receptor assessed as low, the significance of the effect is therefore assessed as **Negligible (Not Significant)** at the LIA and Borough (LBTH) levels.

*Temporary Employment*

**6.109** Demolition and construction works associated with the Proposed Development will support a number of on-site and off-site employment opportunities within the construction sector.

**6.110** It is anticipated that demolition and construction works will generate demand for 7,156 person years of construction employment. An anticipated 10 years and 8 months demolition and construction programme (as outlined in **ES Volume 1, Chapter 5: Demolition and Construction**) means that an average of around 651 construction workers will be supported each year. This employment will be expected to include a broad range of job-types and occupations, both on-Site and off-Site (i.e. both direct and supply chain employment). A number of these jobs could be expected to be filled by LBTH residents who are currently unemployed. It has been assumed that the majority of temporary construction jobs supported will be accessed by people (i.e. both employed and unemployment) from across London.

**6.111** The nature of the jobs supported as a result of demolition and construction works is expected to vary. On-Site employment will be expected to include highly-skilled professions (such as site surveyors and structural engineers) alongside lower-skilled supply chain jobs (such as on-Site labourers). On the other hand, off-Site activity could be expected to support employment across a wide supply chain ranging from suppliers of building materials to architects.

**6.112** The construction sector in London currently supports around 205,000 jobs. The estimated annual construction supported by the Proposed Development during demolition and construction works will be expected to represent 0.3% of all regional employment within the construction sector each year. Given the small change over the current baseline, demolition and construction activity related to the Proposed Development is not expected to stimulate a noticeable change in baseline conditions at the regional level. On this basis, the magnitude of impact is therefore assessed as negligible.

**6.113** With the sensitivity of the receptor assessed as medium, the significance of the effect at the Regional (London) level is therefore assessed to be **Minor Beneficial (Not Significant)**.

## POTENTIAL EFFECTS – Detailed Proposals

### *Population*

**6.114** The Detailed Proposals (Phase A) seeks to deliver 277 residential units. Whilst there are existing residential units on the Site of Phase A, the decanting strategy suggests that residents of the existing social units will be offered housing off-site (within Phase 3 of extant planning application for Aberfeldy Village) but within the LIA. Whilst the private occupiers may choose to relocate on Site once completed, for the purposes of this assessment and under a 'worst case scenario', it is assumed that 100% of the private rented tenants will choose to relocate off-site but within the LIA. The population yield from the 277 new residential units is therefore estimated to be net additional.

**6.115** By applying the GLA Population Yield Calculator to the 277 new residential units of the Detailed Proposals it is estimated that the additional residential units could accommodate approximately 655 new residents. The increase in population will have implications for the demand for social infrastructure including those seeking education and healthcare provision which is assessed below.

### *Education*

*Early Years Provision*

**6.116** Using the LBTH Child Yield Calculator, it is estimated the Detailed Proposals are expected to yield an early years population (i.e. children aged up to 4) of around 64 children, generating an increase in demand for early years places within the LIA.

**6.117** The Child Sufficiency Assessment for Tower Hamlets does not provide a breakdown on capacity and vacancies. The assessment does however indicate that there has been a reduction in take up of places which means there is likely to be vacancies across the Borough and within the ward of Lansbury. On this basis it is

anticipated that additional demand generated as a result of the Detailed Proposals could be accommodated within the current supply at the LIA level, without negatively affecting service provision. On this basis, the magnitude of impact on the receptor is assessed as low.

**6.118** With the sensitivity of the receptor assessed as low, the likely effect of the Detailed Proposals on demand for early years provision within the LIA is therefore assessed as **Minor Adverse (Not Significant)**.

*Primary School Capacity*

**6.119** Based on applying the LBTH's Playspace and Child Yield Calculator to the proposed quantity and mix of uses for the Detailed Proposals, it is estimated that the detailed application will yield a primary school age population (i.e. children aged 5 to 11) of around 56 children.

**6.120** As indicated in the baseline, the Site is located within Poplar Planning Area of LBTH's School Place Planning Strategy, which is home to 14 primary schools. There is currently capacity for 890 Reception places in the Poplar catchment area. In January 2020, there were 38 (1FE) unfilled places; but with anticipated growth in the pupil population, this area is expected to have a shortfall of 63 (2FE) places by 2026, without intervention.

**6.121** The baseline section also shows that the 14 schools within the Poplar Planning Area face an existing deficit of 52 places whilst the DfE's recommended benchmark of maintaining between 5% to 10% spare capacity to allow for inter-school movements would therefore not be achieved.

**6.122** Of the additional 56 primary school aged children that can be accommodated within the Detailed Proposals, not all children are expected to be net additional to the area. Under the worst-case scenario it is assumed that all (i.e., 56) primary school aged children are net additional. Taking these children into consideration would see the pupil roll within 2 miles of the Site increase by 0.8%. Whilst this is a negligible increase, taking into account the existing deficit in places and the need for intervention, the magnitude of impact on the receptor is assessed as minor.

**6.123** With the sensitivity of the receptor assessed as medium, the scale of the effect of the Detailed Proposals on the demand for primary school places within the LIA is therefore assessed as **Minor Adverse (Not Significant)**.

*Secondary School Capacity*

**6.124** Based on the estimates generated by the LBTH's Playspace and Child Yield Calculator applied to the quantity and mix of proposed units for the Detailed Proposals, it is anticipated that the Detailed Proposals will yield a secondary school age (i.e. children aged 12 to 16) population of around 63 children.

**6.125** There are 9 secondary schools in LBTH with a total pupil roll of 9,003, and overall capacity of 10,444 places within LBTH. This indicates that there is 14% spare capacity within LBTH which is above the DfE's highest recommended margin of 10%.

**6.126** Under the worst-case scenario it is assumed that all children will be net additional to LBTH. The additional demand generated by the Detailed Proposals represents a 0.7% increase on the current pupil roll and is anticipated to be negligible, and can therefore be easily absorbed within the current availability.

**6.127** With the sensitivity of the receptor assessed as low, the scale of the effect on the demand for secondary school places within the Borough (i.e., LBTH) is therefore assessed as **Negligible (Not Significant)**.

### *Healthcare*

**6.128** The new residents living within the Detailed Proposals will likely increase demand for primary health care services. As the baseline notes, there are currently 8 GP surgeries[42] with 42.4 FTE GPs within a one-mile of the Site. Together these GP surgeries have 92,630 registered patients, which puts the average number of patients per GP at 2,185, which is higher than the London HUDU's benchmark of 1,800 patients per FTE GP. As outlined within the baseline section, this is already an issue experienced across the LBTH CCG area (with 2,026 registered patients per FTE GP).

**6.129** Once completed and fully occupied, the Detailed Proposals are expected to support a population of up to 655 new residents, and therefore (potentially) increase demand for primary healthcare services by the same figure. In reality, some of these residents will already live and/or access primary healthcare services within the LIA. Furthermore, some of the residents within the Detailed Proposals may choose to access primary healthcare services elsewhere outside the LIA. However, under the worst-case scenario, it is assumed that all residents, and therefore additional demand for health care services will be net additional.

**6.130** A new health centre is under construction within Phase 3B of the 2012 OPP (due to be fully operational from September 2022) which was planned to meet the needs of the occupants of Phases 4-6 of the OPP, now replaced by the Proposed Development. Moreover, the health centre has been designed to serve a much larger demand than just phases 4-6 of the 2012 OPP, increasing capacity from the current Practice at 9,000 patients to 17,000 patients in the new health centre in Phase 3B.

**6.131** It is therefore assumed that the 655 residents within the Detailed Proposals will increase the number of registered patients per FTE GP within the LIA by 0.7%, and therefore creating demand for an additional 0.4 FTE GP. On this basis, the magnitude of impact on the receptor is therefore assessed as negligible.

**6.132** With the sensitivity of the receptor assessed as high, the significance of the effect on demand for health care facilities is therefore assessed as **Negligible (Not Significant)** at the LIA level.

### *Open Space and Play Space*

*Open Space*

**6.133** The baseline assessment indicates that at the LBTH level, there is an average 0.89 ha of open and play space per 1,000 residents within the Borough. This is lower than local benchmark of 1.2ha per 1,000 but in line with the FIT benchmark of 0.8 ha per 1,000 residents. The additional 655 residents of the Detailed Proposals will increase demand for open and play space, requiring 0.5ha of open space. The Detailed Proposals are bringing forward over 1,933m$^2$ of new public open space or 0.19ha. Whilst the additional demand for open space will place further pressure on existing provision, this will not significantly reduce the level of provision per 1,000 residents within the Borough (<1%). The magnitude of impact on open space provision within the Borough (i.e. LBTH) is therefore assessed as negligible.

**6.134** With the sensitivity of the receptor assessed as medium, the significance of the effect on demand for open space at the Borough (i.e. LBTH) level is therefore assessed as **Minor Adverse (Not Significant)**.

*Play Space*

**6.135** Based on an estimated population of 183 gross children under the age of 18, and the requirement for 10m$^2$ of play space per person (as per the LBTH and GLA's guidance) it is estimated that the Detailed Proposals will result in an overall requirement of 1,842m$^2$ of play space.

**6.136** As outlined in **ES Volume 1, Chapter 4: The Proposed Development**, the Detailed Proposals will provide a total of 1,014sqm playspace, which is less than the requirements set out by the GLA. According to the baseline however, the Site and LIA fall within LAP 8[43], which has been identified as having the highest proportion of housing play spaces rated as good. In addition, the Detailed Proposals include the improvements to Leven Road Open Space, which will become a hub for sporting, fitness and play, and Braithwaite Park which will include a mix of play and sports activity. On this basis, the magnitude of impact of the Detailed Proposals on the demand for play space within the LIA is therefore assessed as Low.

**6.137** With the sensitivity of the receptor assessed as low, the significance of the effect on play space requirements at the LIA level is therefore assessed as **Minor Adverse (Not Significant)**. This will be mitigated through on-Site provision in later phases as part of the Outline Application.

### *Community and Leisure Facilities*

**6.138** The baseline identifies the current provision within the LIA amounts to 1 facility per 6,000 population. As such the additional population of 655 residents of the Detailed Proposals is expected to lead to an increase of 2% in population per community facility. As part of the detailed proposals, Aberfeldy Neighbourhood Centre is planned to be demolished, however it is planned it will be re-provided as part of the extant application. On this basis, the magnitude of impact at the LIA is therefore assessed as low.

**6.139** With the sensitivity receptor assessed as low, the significance of the effect on community facilities requirements at the LIA level is therefore assessed as **Minor Adverse (Not Significant)**.

[42] *As it stands, the GP Practice at 2a Ettrick Street (the 'Aberfeldy Practice') will be re-provided under phase 3B of the Extant Permission within a new, larger Health Centre, due to be fully operational in September 2022.*

[43] *https://democracy.towerhamlets.gov.uk/documents/s17928/LDF%20Core%20Strategy%20Appx%201%20Pt%2013.pdf*

## POTENTIAL EFFECTS – Completed Development

### *Completed Development*

**6.140** Once completed, the Proposed Development is anticipated to lead to the delivery of up to 1,628 residential units of varying sizes and tenures, and up to 6,109.3m$^2$ [44] of non-residential floorspace including workspace, retail, residents hub and space for the estate management.

**6.141** The effects which are expected to occur as a result of the Proposed Development are described below, and are all expected to be direct, permanent and long-term in nature.

### *Contribution to Housing Targets*

**6.142** The Proposed Development will provide up to 1,628 (gross) residential units varying from one to six-bedrooms, and will include up to 351 social rented units. The mix of units is in line with the requirements set within the LBTH Local Plan, and the London Plan, and therefore contribute to creating a diverse mix of housing within the LIA and LBTH. The overall impact of the Proposed Development on LBTH's housing supply is based on the net additional housing provision when compared with the existing number of units on Site.

**6.143** The baseline section indicates that within the LIA there are currently around 11,194 dwellings, which means that the Proposed Development will represent an overall increase of 12% on the current baseline[45]. The baseline analysis and policy review undertaken as part of the assessment indicate that LIA is expected to see considerable housing growth over the next few years, with an overall target 5,748 within the Lower Lea Valley sub-area which encompasses the Site. This means that the Proposed Development will contribute 23% of the anticipated housing growth within the LIA. Policy S.H1 states that development will be expected to contribute towards the creation of mixed and balanced communities with an overall target of 50% of all new homes to be affordable, including via requiring the provision of a minimum of 35% affordable housing on sites providing 10 or more new residential units. A mix of rented and intermediate affordable tenures (30:70) is required together with a mix of unit sizes. The Proposed Development will provide 35% affordable units (including reprovision of social units; by habitable room). On this basis, the magnitude of impact at the LIA level is assessed as high.

**6.144** With the sensitivity of the receptor assessed as high, the significance of the effect at the LIA level is therefore assessed as **Major Beneficial (Significant)**.

**6.145** At the Borough (LBTH) level, the London Plan sets an overall target of 3,473 dwellings per annum (or 34,730 dwellings over a ten-year period). The additional dwellings delivered as part of the Proposed Development represent 4% of the LBTH housing target over the next ten years as set out within the London Plan. On this basis, the magnitude of impact at the LBTH level is therefore assessed as low.

**6.146** With the sensitivity of the receptor assessed as high, the significance of the effect at the Borough (LBTH) level is therefore assessed as **Moderate Beneficial (Not Significant)**.

### *Population and Labour Market*

**6.147** Once completed and occupied, the Proposed Development will provide up to 1,628 gross residential units.

**6.148** The Completed Development population yield comprises the gross population yield from the Detailed Proposals and the net population yield from the Outline Proposals as detailed in the Population and Labour Market Methodology section. Based on the GLA's Population Yield Calculator, it is estimated that the Proposed Development will accommodate an additional 3,285 residents once fully occupied. Of these, it is estimated that around 2,685 residents (or 82%) will be of core working age (i.e. aged 16 to 64).

**6.149** As outlined in the baseline section above, the LIA's population is estimated to be around 42,600 people. The estimated increase is therefore anticipated to represent an increase of 8% over and above the existing baseline. On the other hand, the increase in core working age residents will represent an increase of 9.0% over the baseline. On this basis, the magnitude of impact at the LIA is therefore assessed as medium.

**6.150** With the sensitivity of the receptor assessed as low, the significance of the effect is therefore assessed as **Minor Beneficial (Not Significant)** at the LIA level.

**6.151** As outlined within the baseline, the Borough's (i.e. LBTH) current population stands at around 325,000 people, 237,250 (or 73%) of whom are of core working age. The increase in core working age population as a result of the Proposed Development will represent an increase of 1% per the current baseline. Based on this, the magnitude of impact at the Borough (i.e. LBTH) level is therefore assessed as negligible.

**6.152** With the sensitivity of the receptor assessed as low, the significance of the effect is therefore assessed as **Negligible (Not Significant)** at the Borough level.

### *On-Site Employment*

**6.153** Once completed, the Proposed Development will see the delivery of up to 6,109.3m$^2$ Gross Internal Area (GIA) of non-residential floorspace.

**6.154** Given the flexible uses proposed on the Site of the Proposed Development, the assessment has considered a range of potential employment uses as outlined in **Table 6.15**. The assessment draws on the HCA Employment Densities Guide to assign the floorspace density per FTE job as a worst-case scenario. Where the guidance provides a range of densities for one particular use class (such as 15 to 20m$^2$ per FTE for retail uses), the least beneficial (i.e. lowest yielding) value is used. This means that the following analysis presents the lowest-possible number of jobs created at the Proposed Development across the various uses proposed.

**6.155** Based on the above, it is estimated that the non-residential uses have potential to support between 307-340 (FTE) gross jobs.

**Table 6.15 Estimated (Low and High) Gross Employment Supported by the Proposed Development**

| Proposed Uses | Proposed Use Class | Floorspace (GIA m$^2$) | Area per FTE | Jobs Range |
|---|---|---|---|---|
| Workspace | B1a | 2,369.1 | 10m$^2$ /FTE | 201 |
| Retail | A1 | 2,661.2[46] | 15-20m$^2$/ FTE | 113-151 |
| Residential Hub[47] | C3 | 1,374 | - | 5 |
| Total | | 6,404.3 | | 319-357 |

**6.156** The Site currently supports around 46-63 FTE jobs primarily within the retail and restaurant industries. Under the worst-case scenario it is assumed that these jobs will be lost. In reality, these are likely to relocate to another location once construction on the Proposed Development commences. This means that in calculating the net additionality of the Proposed Development, the potential loss of on-Site employment (albeit displacement to another location) needs to be taken into consideration, and therefore applied as deadweight.

**6.157** **Table 6.16** below sets out the additionality adjustments applied to the estimated gross FTE on-site employment supported by the Proposed Development. It shows that once all additionality adjustments are taken into consideration (i.e. leakage, displacement and deadweight), the Proposed Development has potential to result in the loss of 46-63 FTE jobs or the creation of 177-234 net FTE jobs (i.e. depending on the on-site uses).

**Table 6.16 Additionality Adjustments to Estimate Net On-Site Employment**

| Additionality Measure | LIA / /LBTH level(s) | Justification |
|---|---|---|
| (1) Gross on-site jobs | 319-357 FTE jobs | - |
| (2) Leakage | 0% | New jobs created will be contained within the site and will note 'leak' to locations outside the Proposed Development |
| (3) Displacement | 25% | Overall displacement of jobs created is expected to be very low |
| (4) Deadweight | 46-63 FTE jobs | It is assumed that the current employment supported on-Site will be displaced to other locations within London, but (under the worst-case scenario) outside the Borough (LBTH) |
| Net additional FTEs (1) – [ (2) + (3) + (4) ] | 177-234FTE jobs | - |

**6.158** The increase of between 177-234 FTE jobs will represent an increase of between 1.8% and 2.3% over the current baseline. On this basis, the, the magnitude of impact on the receptor is therefore assessed as low.

*44 This figure does not include marketing suite (295m2 GIA)*
*45 Taking account of existing units on-site*
*46 Including marketing suite floorspace which will be converted into a retail unit at a later stage*
*47 Assumption that residential hub would include reception/concierge & gym/communal area and therefore will not support more than 5FTE employees on-site*

**6.159** With the sensitivity of the receptor assessed as low, the significance of the effect of the Proposed Development at the LIA is therefore assessed to be **Minor Beneficial (Not Significant)**.

**6.160** At the Borough (i.e. LBTH) level, the net additional change is also anticipated to be negligible. With the sensitivity of the receptor assessed as low, the effect of the Proposed Development is therefore assessed **Negligible (Not Significant)**.

*Off-site/ Wider Employment*

**6.161** A number of indirect and/ or supply chain impacts are likely to be generated off-site as a result of the increase in spending on goods and services associated with the on-site jobs supported by the Proposed Development. Furthermore, both direct as well as supply jobs supported will result in a series of wider/ induced benefits associated with the re-investing of employees' salaries within the Regional (i.e. London) economy.

**6.162** Given the uncertainties about the extent to which both supply chain and induced spend will occur at the LIA and/or Borough (i.e. LBTH) levels, the number of off-site benefits supported by the Proposed Development are only assessed at the Regional (i.e. London) level. That being said, it can be inferred that the benefits created will be experienced at all levels considered. Please note, this assessment does not consider the induced benefits associated with the increase in household expenditure resulting from the 1,628 new dwellings delivered as part of the Proposed Development. To avoid double-counting, this effect is considered separately in the following section.

**6.163** As outlined above, once operational the Proposed Development has potential to support between 319-357 gross jobs, or between 177-234 (FTE) jobs once additionality is taken into consideration. At the Regional (i.e. London) level, net additionality is anticipated to be higher as the current jobs supported on-Site are expected to be displaced within the wider regional economy. Using benchmarks from the HCA's Additionality Guide and applying this to the net additional jobs supported at the Regional (i.e. London) level, the Proposed Development is therefore expected to support between 90-117 FTE jobs off-Site across all industry sectors in London. This will bring total on-Site and off-Site net additional employment supported by the Proposed Development at the Regional (i.e. London) level to between 267- 443 FTE jobs.

**6.164** The baseline assessment has identified that there are currently around 5.37 million jobs in London. Given the size of the regional economy, the magnitude of impact resulting from the indirect as well as induced employment supported by the Proposed Development is therefore assessed as negligible.

**6.165** With the sensitivity of the receptor assessed as low, the likely effect on the receptor is therefore assessed as **Negligible (Not Significant)** at the Regional (i.e. London) level.

*Local Economy*

*Increased Local Expenditure*

**6.166** There are likely to be direct spending effects arising as a result of household expenditure by the new residents of the Proposed Development. Residents of the new households will spend their incomes on local goods and services in LBTH and the wider London area. The area where the Site is located is considered to fall within the 'Ethnicity Central: Ethnic Family Life' Area Classification. The ONS (2019) provides data on average weekly household expenditure by Output Area Classification, households within the 'Ethnicity Central: Ethnic Family Life' category spend £460.30 weekly on various items including food, clothing, household goods & services, health, transport, recreation and education.

**6.167** Based on the number of net proposed units and the ONS household expenditure data by Output Area Classification (2019), the Proposed Development will generate gross household expenditure of around £33m per annum on retail goods and services, a proportion of which will be spent locally in LBTH.

**6.168** The Retail Impact Assessment submitted with the application indicates that 26.6% of local consumer expenditure is retained within the borough. and therefore supports the vitality and viability of retail and amenity space both on-site and off-site. Given that the Proposed Development will represent 4% of the current dwelling baseline within the Borough (i.e. LBTH), the magnitude of impact is therefore assessed as low.

**6.169** With the sensitivity of the receptor assessed as low, the effect of additional household expenditure at the Borough (i.e. LBTH) level is therefore assessed as **Minor Beneficial (Not Significant)**.

*Gross Value Added*

**6.170** The on-Site employment has potential to support growth of the borough's (i.e. LBTH) economy. As outlined above, once completed the Proposed Development will result in the delivery of up to 6,400m$^2$ (GIA) of non-residential commercial floorspace resulting in between 319-357 (FTE) gross jobs (or between 177-234 net additional jobs).

**6.171** Using benchmarks of GVA per job for different employment sectors at the local authority level from the ONS's Annual Business Survey it is estimated that the on-Site jobs have potential to generate between £35 and £37 million in gross GVA each year. Once net additionality is taken into consideration (including the displacement of GVA generated by the current on-Site activities (estimated to be around £1.7 - £2.3 million per annum) to another location in London outside LBTH), it is estimated that the Borough's economy has potential for growth by up to £33.8 -£34.6 million per annum depending on the on-Site uses.

**6.172** The additional £33.8 -£34.6million per annum has potential to represent an increase of around 0.1% over and above the current baseline. On this basis, the magnitude of impact is therefore assessed as negligible.

**6.173** With the sensitivity of the receptor assessed as low, the likely effect of the Proposed Development of the economy at the Borough (i.e. LBTH) level is therefore assessed to be **Negligible (Not Significant)**.

**6.174** As outlined in the baseline section, the size of the Regional (i.e. London) economy is estimated to be around £468 billion. On this basis, the magnitude of impact of the net additional GVA supported by the on-Site activities associated with the Proposed Development is therefore assessed as negligible.

**6.175** With the sensitivity of the receptor assessed as low, the likely effect of the Proposed Development on the economy at the Regional (i.e. London) level is therefore assessed to be **Negligible (Not Significant)**.

*Education*

*Early Years Provision*

**6.176** Using the LBTH Child Yield Calculator, it has been estimated the Proposed Development is expected to yield a gross additional early years population (i.e. children aged up to 4) of around 248 children, generating an increase in demand for early years places within the LIA. In reality, not all of these children will attend an early-years setting and a proportion of the children are likely to already attend settings within the Local Impact Area, thereby resulting in an overall lower demand for early years places.

**6.177** Currently, there are 3,369 children aged 0 to 4 years old within the Local Impact Area. The addition of 248 children following delivery of the Proposed Development will lead to an increase of 7%. However, an early years facility is to be provided within Phase 3B of the 2012 OPP which was planned to meet the needs of the occupants of Phases 4-6 of the OPP, now replaced by the Proposed Development.

**6.178** The Child Sufficiency Assessment for Tower Hamlets does not provide a breakdown on capacity and vacancies. The assessment indicates that there has been a reduction in take up of places which could potentially mean there is some vacancy across the Borough. This means the additional demand generated as a result of the Proposed Development could be accommodated within the current supply at the LIA level, without negatively affecting service provision. On this basis, the magnitude of impact on the receptor is assessed as low.

**6.179** With the sensitivity of the receptor assessed as low the likely effect of the Proposed Development on demand for early years provision within the LIA is therefore assessed as **Minor Adverse (Not Significant)**.

*Primary School Capacity*

**6.180** Using the LBTH Child Yield Calculator, it has been estimated the Proposed Development is expected to yield a gross additional primary school age population (i.e. children aged 5-11) of around 201. However, a proportion of the children are likely to already attend settings within the Local Impact Area, thereby resulting in an overall lower demand for primary places.

**6.181** The baseline section shows that the 14 schools within the Poplar Planning Area face a deficit of 52 places, which is below the DfE's recommended benchmark of maintaining between 5% to 10% spare capacity to allow for inter-school movements.

**6.182** Of the additional 100 primary school aged children that could be accommodated within the Proposed Development, not all children are expected to be net additional to the area in terms of demand for school places. A small number are likely to already reside and therefore attend schools within the Proposed Development's LIA. That being said, under the worst-case scenario it is assumed that all (i.e. 201) primary school aged children are net additional. Taking these children into consideration would see deficit capacity in primary schools within the LIA go up to 253 places or 3% above current capacity. However, a number of interventions are proposed to increase capacity in the LIA. On this basis, the magnitude of impact on the receptor is therefore assessed as low.

**6.183** With the sensitivity of the receptor assessed as medium, the significance of the effect on the demand for primary school places within the LIA is therefore assessed as **Minor Adverse (Not Significant)**.

*Secondary School Capacity*

**6.184** Using the LBTH Child Yield Calculator, it has been estimated the Proposed Development is expected to yield a gross additional secondary school age population (i.e. children aged 12-18) of around 190 children. However, a proportion of the children are likely to already attend settings within the Local Impact Area, thereby resulting in an overall lower demand for secondary places.

**6.185** There are 9 secondary schools in LBTH with a total pupil roll of 9,003, and overall capacity of 10,444 places within LBTH. This indicates that there is 14% spare capacity within LBTH which is above the DfE's lowest recommended margin of 5%.

**6.186** Under the worst-case scenario it is assumed that all children will be net additional to LBTH. The additional demand generated by the Proposed Development will increase the current pupil roll by 2% and can be absorbed within existing capacity. The scale of impact on the receptor is therefore assessed as negligible.

**6.187** With the sensitivity of the receptor assessed as low, the scale of the effect on the demand for secondary school places within the Borough (i.e. LBTH) is therefore assessed as **Negligible (Not Significant)**.

*Demand for Health Care Facilities*

**6.188** The new residents living within the Proposed Development will likely increase demand for primary health care services. As the baseline notes, there are currently 8 GP surgeries with 42.4 FTE GPs within one-mile of the Proposed Development. Together these GP surgeries have 92,630 registered patients, which puts the average number of patients per GP at 2,185, which is higher than the London HUDU's benchmark of 1,800 patients per FTE GP. As outlined within the baseline section, this is already an issue experienced across LBTH CCG area (with 2,026 registered patients per FTE GP).

**6.189** Once completed and fully occupied, the population of the Proposed Development is expected to add up 3,2854net people to the LIA, and therefore (potentially) increase demand for primary healthcare services by the same figure. In reality, some of these residents will already live and/or access primary healthcare services within the Proposed Development's LIA. Furthermore, some of the residents within the Proposed Development may choose to access primary healthcare services elsewhere outside the LIA. However, under the worst-case scenario it is assumed that all residents, and therefore additional demand for health care services will be net additional.

**6.190** A health centre is to be provided within Phase 3B of the 2012 OPP which was planned to meet the needs of the occupants of Phases 4-6 of the OPP (due to be fully operational in September 2022), now replaced by the Proposed Development. Moreover, the health centre has been designed to serve a much larger demand than just phases 4-6 of the 2012 OPP, increasing capacity from the current Practice at 9,000 patients to 17,000 patients in the new health centre in Phase 3B.

**6.191** It is therefore assumed that the 3,285 residents within the Proposed Development will increase the number of registered patients within the LIA by 4%, and therefore creating demand for an additional 1.8 FTE GP. On this basis, the magnitude of impact on the receptor is therefore assessed as low.

**6.192** With the sensitivity of the receptor assessed as high, the significance of the effect on demand for health care facilities is therefore assessed as **Minor Adverse (Not Significant)** at the LIA level.

*Open Space*

**6.193** The baseline assessment indicates that at the LBTH level, there is an average 0.89 ha of open and play space per 1,000 residents within the Borough. This is lower than the local standard of 1.2ha per 1,000 population and in line with the FIT benchmark of 0.8 ha per 1,000 residents. The additional 3,285 residents will increase demand for open and play space requiring approximately 2.6 ha of open space. The Proposed Development will bring forward over 3,473m$^2$ or 0.34ha of new public open space. Whilst the additional demand for open space will place further pressure on existing provision, this will not significantly reduce the level of provision per 1,000 residents within the Borough (<1%).On this basis, the magnitude of impact on open space provision within the Borough (i.e. LBTH) is therefore assessed as negligible.

**6.194** With the sensitivity of the receptor assessed as medium, the significance of the effect on demand for open space at the Borough (i.e. LBTH) level is therefore assessed as **Minor Adverse (Not Significant)**.

*Play Space*

**6.195** Based on an estimated population of 648 gross children under the age of 18, and the requirement for 10m$^2$ of play space per person (as per the LBTH and GLA's guidance) it is estimated that the Proposed Development will result in an overall requirement of 6,480m$^2$ of play space.

**6.196** Play space provision for the under 5s and 5-11year olds will be provided on-site and the final provision is subject to alteration for each Phase of the Outline Proposals, determined by the final mix of the residential units (by size and tenure) applied for at each RMA stage. The play and open space plans for the illustrative scheme provided in the DAS demonstrates how the required play space for the child yield generated by the accommodation schedule as assessed in this chapter, can be met, demonstrating how it will be possible to meet the requirements of the LBTH within the Site. In addition to the improvement proposed to the play space provision with the Leven Road Open Space and Braithwaite Park, it's considered that play space demand can be met within the Site. On this basis, the magnitude of impact of the Proposed Development on the LIA is therefore assessed as Medium.

**6.197**

**6.198** With the sensitivity of the receptor assessed as medium, the significance of the effect on play space requirements at the LIA level is therefore assessed as **Moderate Beneficial (Significant)**.

*Community and Leisure Facilities*

**6.199** The baseline identifies the current provision within the LIA amounts to 1 community centre per 6,000 population. As such the additional population of 3,285 residents is expected to increase this ratio from 6,000:1 to 6,555:1, an uplift of 8%.

**6.200** The baseline section identifies there is 1 leisure centre within the Local Impact Area. It is therefore considered the net additional population of 3,285 residents is likely to increase demand for leisure facilities in the area. However, the Proposed Development is expected to provide over 4,400m$^2$ of communal space for residents within the Site boundary together with a residents hub. On this basis, the magnitude of impact at the LIA is therefore assessed as low.

**6.201** With the sensitivity receptor assessed as low, the significance of the effect on community centres requirements at the LIA level is therefore assessed as **Negligible (Not Significant)**.

*Deprivation*

*Overall Deprivation*

**6.202** The Proposed Development has potential to reduce deprivation by improving the Borough's relative performance against several IMD domains. This includes improvements to income deprivation through an increased labour market participation facilitated by the delivery of the proposed 1,628 dwellings, and access to housing through the delivery of 351 social rented units.

**6.203** Public realm improvements and the introduction of mixed uses will encourage use throughout the day and will lead to improvements to the living environment of the local area, reduce crime and improve social cohesion. However, given the relative size of the Proposed Development the scale of impact at the Borough levels is assessed as low.

**6.204** With the sensitivity of the receptor assessed as high, the significance of the effect is therefore assessed as **Moderate Beneficial (Significant)**.

*Crime and Social Cohesion*

**6.205** The Proposed Development is designed using best practice and guidance aimed at designing-out crime through several passive and active responses aimed at deterring and reducing fear of crime and social disorder. This includes elements such as:

- Natural surveillance – having more 'eyes on the streets' deterring criminal activity;
- Access control – creating physical barriers to entry which provide fewer opportunities for criminals; and
- Ongoing maintenance and management – based on the belief that low levels of visual deterioration may reduce opportunities for crime and increased 'pride of place'.

**6.206** The design of the Proposed Development will help its residents, and those living in the area interact with, and mix with people visiting Poplar, as well as people who work there, by avoiding the feeling of gated communities. Once completed, the Proposed Development will result in improved public realm, providing access through the Site that was not previously possible. Within the Site, there will be a range of uses, inviting workers, nearby residents, visitors and community groups all to share the same environment,

**6.207** It is anticipated that this will result in a reducing in crime and an overall improvement to social cohesion due to improved design. On this basis, the magnitude of impact on the receptor is therefore assessed as low.

**6.208** With the sensitivity of the receptor assessed as medium, the significance of effect is therefore assessed as **Minor Beneficial (Not Significant)** at the LIA level.

## MITIGATION, MONITORING AND RESIDUAL EFFECTS

### *Demolition and Construction Mitigation*

**6.209** No significant adverse effects are identified with regards to demolition and construction of the Proposed Development, although there will be some adverse (albeit not significant) effects resulting from the loss of the current uses on the Site of the Proposed Development. Information provided by the Applicant confirms that demolition and construction works will start at the end of the tenant's current lease and that the existing on-Site jobs are likely to relocate elsewhere in London., which means that none of the 46-63 FTE jobs currently hosted on-Site will be lost.

**6.210** Beneficial effects are expected to result from the employment supported during the demolition and construction activity (i.e. an average of around 651 FTE jobs per annum).

**6.211** Given that no significant effects are identified and/or beneficial effects will be generated, no additional mitigation measures are proposed during demolition and construction activity of the Proposed Development.

### *Completed Development Mitigation*

**6.212** The analysis presented above shows that once completed, the Proposed Development will lead to a Minor Adverse effect on the demand for health care services within the LIA, early years provision and primary school capacity requirements, and open space.

**6.213** The Proposed Development will generate a substantial Community Infrastructure Levy payment, which will be used to fund a wide range of infrastructure, including education and healthcare. Contributions could therefore help to mitigate the potential for minor adverse effects with respect to healthcare facilities, early years and primary education and open space provision. While there is no certainty that CIL funds will be applied to education, open space and health facilities serving the study area, it is the responsibility of the Local Authority to apply funds appropriately.

**6.214** Moreover, health facilities and early years provision are to be provided within Phase 3B of the 2012 OPP were planned to meet the needs of the occupants of Phases 4-6 of the OPP which are now replaced by the Proposed Development. Therefore, the basis of any future s106 agreements will need to be based on the uplift in additional residents as a result of the Proposed Development, over and above what would have been provided in Phases 4-6 of 2012 OPP. This will need to be the subject of more detailed calculations at Reserved Matters stage.

**6.215** Following mitigation, as set out above, it is expected that the residual effect on the receptors assessed will be Negligible. All other effects assessed as either negligible and/or beneficial in nature, and therefore do not require mitigation.

### *Residual Effects*

**6.216** All of the residual effects resulting from the Proposed Development, are presented in **Table 6.17** identifying whether the effect is significant or not.

**Table 6.17 Residual Effects**

| Receptor | Description of the Residual Effect | Scale and Nature | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | |
| Loss of existing, on-site residential | Displacement of existing, on-Site residential as a result of demolition and construction activity. | Minor Adverse | Not Significant | LIA | D | T | St |
| | | Minor Adverse | Not Significant | Borough | D | T | St |
| Loss of existing, on-Site employment | Displacement of existing, on-Site employment as a result of demolition and construction activity. | Negligible | Not Significant | LIA | D | T | St |
| | | Negligible | Not Significant | Borough | D | T | St |
| Temporary employment as a result of demolition and construction | Temporary employment opportunities at the Regional level as a result of demolition and construction activity. | Minor Beneficial | Not Significant | Regional | D | T | St |
| **Completed Development** | | | | | | | |
| Contribution to housing targets | The delivery of new homes to support housing need at the LIA and LBTH levels as set out within the London Plan | Major Beneficial | **Significant** | LIA | D | P | Lt |
| | | Moderate Beneficial | **Significant** | Borough | D | P | Lt |
| Population and labour market | Population, and labour market growth enabled as a result of the new homes delivered as part of the Proposed Development. | Minor Beneficial | Not Significant | LIA | D | P | Lt |
| | | Negligible | Not Significant | Borough | D | P | Lt |
| On-Site employment | On-Site employment supported by the non-residential uses delivered as part of the Proposed Development. | Minor Beneficial | Not Significant | LIA | D | P | Lt |
| | | Negligible | Not Significant | Borough | D | P | Lt |
| Off-Site/ wider employment | Off-Site (i.e. indirect and induced) employment supported across the Regional economy as a result of the (direct) employment supported by the Proposed Development. | Negligible | Not Significant | Regional | D | P | Lt |
| Local economy (local expenditure) | Increased expenditure on convenience and comparison goods and services by the families living within the new dwellings delivered as part of the Proposed Development. | Minor Beneficial | Not Significant | Borough | D | P | Lt |
| Local economy (GVA) | Local economic growth (quantified in terms of GVA) as a result of the non-residential activity on-Site. | Negligible | Not Significant | Borough | D | P | Lt |
| | | Negligible | Not Significant | Regional | D | P | Lt |
| Early years provision | Increased demand for early years provision generated by an increase in children aged up to 4-years | Negligible | Not Significant | LIA | D | P | Lt |
| Primary school capacity | Increased demand for primary school places generated by an increase in children of primary school age. | Negligible | Not Significant | LIA (two-mile radius) | D | P | Lt |
| Secondary school capacity | Increased demand for secondary school places by the increase in children of secondary school age. | Negligible | Not Significant | Borough | D | P | Lt |
| GP capacity | Increased demand for health care services generated by the residents within the homes delivered as part of the Proposed Development. | Negligible | Not Significant | LIA (one-mile radius) | D | P | Lt |
| Open space | Increased requirement for open spaces by the residents within the new homes delivered as part of the Proposed Development. | Negligible | Not Significant | Borough | D | P | Lt |
| Play space | Increased requirement for play space for children under the age of 18 living within the new homes in the Proposed Development. | Minor Beneficial | Not Significant | LIA | D | P | Lt |
| Community centres | Increased requirement for community centres | Minor Beneficial | Not Significant | LIA | D | P | Lt |
| Deprivation | Improvements to the public realm, increased labour market participation, and the delivery of new affordable units. | Moderate Beneficial | **Significant** | Borough | D | P | Lt |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Crime and social cohesion | Overall reduction in crime and improved feeling of social cohesion. | Minor Beneficial | Not Significant | Borough | D | P | Lt |

**Notes:**
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline Scenario*

**6.217** For the purposes of the following narrative, it is assumed that the existing uses on the Site of the Proposed Development will remain, in the absence of the Proposed Development. That being said, it is assumed that the existing conditions will continue to change in the absence of the Proposed Development. These would arise as the cumulative schemes considered as part of the assessment are delivered, generating additional temporary construction employment, in addition to other long-term/ permanent employment within the LIA, the Borough (LBTH) and regionally (through indirect/ supply chain and induced impacts).

**6.218** Beyond the specific impacts of the cumulative schemes on future baseline conditions, the Site of the Proposed Development is located within tan area in which there is continual change in employment and business activity, and which is anticipated to see continue growing (reach 34,700 by 2030) as outlined in the London Plan.

**6.219** Given the scale of activity described above, and the rate with which these change over time, it is not possible to provide quantitative estimates of the likely changes in baseline conditions. However, broad indicators of the scale and type of change expected are found in the Tower Hamlets Local Plan and the London Plan.

**6.220** Taking account of these policy drivers, the future baseline of the LIA would be expected to see an increase in both local employment as well as the number of people living there, in line with the assessment presented as part of the Cumulative Effects Assessment.

### *Cumulative Effects Assessment*

**6.221** This section assesses the potential effects of the Proposed Development in combination with the potential effects of other, cumulative schemes within the surrounding area, as listed in **ES Volume 3, Appendix: EIA Methodology – Annex 4**. All cumulative schemes described within this appendix have been included in the assessment.

**6.222** The cumulative assessment is undertaken based on the following assumptions:

- The assessment is based on information that is available in the public domain with regards to each cumulative scheme identified;
- Any mitigation measures required to minimize and/or avoid adverse effects arising from each Cumulative Scheme will be adopted in full as part of the implementation of each respective scheme; and
- It is recognised that a significant proportion of the cumulative schemes are built out and/or likely to be occupied by the time the Proposed Development is completed. However, given that construction is ongoing, and the respective impacts yet to be reflected within the data, these projects are assessed under the cumulative schemes (rather than the current baseline).

#### *Demolition and Construction*

**6.223** The effects of concurrent construction during demolition and construction, associated with the Proposed Development and all cumulative schemes are expected to be temporary and short-term in nature. It should be noted that by the time construction of the Proposed Development commences, construction on most of the cumulative schemes will be completed and/or nearing completion. More information about each of the Cumulative Schemes, including proposed construction timescales is available within **ES Volume 3, Appendix: EIA Methodology – Annex 4**.

#### *Temporary Construction Employment*

**6.224** The demolition and construction activity related to the cumulative schemes and Proposed Development has potential to generate increased demand for labour, as well as substantial levels of opportunity within the construction sector. A recent publication by RICS UK suggests that the construction and infrastructure sector has sprung back to life in the first quarter of 2021, following slower levels of activity throughout 2020 (due to the COVID-19 pandemic). Given the anticipated scale of construction activity across all cumulative schemes, in comparison with the overall level of construction activity across London, the magnitude of impact is therefore assessed as low.

**6.225** With the sensitivity of the receptor assessed as medium, the significance of effect on the receptor is therefore assessed as **Minor Beneficial (Not Significant)** at the Regional (i.e. London) level. The assessment of the Proposed Development has identified a similar effect at the Regional (i.e. London) level (i.e. of Minor Beneficial significance).

#### *Completed Development*

**6.226** Taken together, the cumulative schemes in combination with the Proposed Development will lead to an increase in the overall number of residents and employees within the LIA. The following assessment is based on the Proposed Development, in addition to all projects identified in **ES Volume 3, Appendix: EIA Methodology – Annex 4**, which together are anticipated to deliver:

- Over 222,700 m2 of flexible retail floorspace (E(a) to E(c) uses);
- Over 355,000 m2 of flexible workspace floorspace (E(g) uses);
- Over 32,500m2 of flexible community, education and leisure floorspace;
- 1,200 beds in hotel use;
- Over 50,00m2 of student accommodation; and
- A little over 17,200 new residential units.

**6.227** The effects expected to occur as a result of the cumulative schemes and the Proposed Development are set out in more detail below.

**6.228** Please note that the effects are expected to be direct, permanent and long-term in nature.

#### *Contribution to Housing Targets*

**6.229** Together the Proposed Development and cumulative schemes will result in the delivery of around 17,200 new residential units, which together represent an increase of over 154% over the current baseline within the LIA. On this basis, the magnitude of impact at the LIA is therefore assessed as high.

**6.230** With the sensitivity of the receptor assessed as high, the significance of the effect is assessed as **Major Beneficial (Significant)** at the LIA level. This is in line with the assessment of the Proposed Development (i.e. Major Beneficial).

**6.231** At the Borough (i.e. LBTH) level, the delivery of 17,200 new homes will represent an increase of 16% over the current baseline, or around 50% of the planned housing increase in LBTH over the next ten years (based on the target set out within the London Plan. On this basis, the magnitude of impact at the Borough (i.e. LBTH) level is also assessed as high.

**6.232** With the sensitivity of the receptor assessed as high, the significance of the effect at the Borough (i.e. LBTH) level is therefore assessed as **Major Beneficial (Significant)**. This is a further improvement on the beneficial effect of the Proposed Development (i.e. Moderate Beneficial).

#### *Population and Labour Market*

**6.233** In addition to delivering over 17,200 new dwellings, the Proposed Development and cumulative schemes will also include housing for students. Using information about each scheme's housing mix (where available) and/or

average household sizes[48], it is estimated that together the Proposed Development and cumulative schemes will accommodate around 40,500 additional residents.

**6.234** Based on this it is estimated that the LIA's population will increase by around 95% over the current baseline. Given the lack of detailed housing mix information about several of the cumulative schemes being considered, it is not possible to accurately estimate residents' age groups in all (i.e. 17,200) new homes in the LIA. That being said, it is anticipated that the majority of new homes (as well as the student accommodation) will be populated by residents of core working age, having an overall high magnitude of impact at the LIA.

**6.235** With the sensitivity of the receptor assessed as low, the significance of effect at the LIA level is therefore assessed as **Major Beneficial (Significant)**. This is a further improvement on the beneficial effect of the Proposed Development (i.e. Minor Beneficial).

**6.236** At the Borough (i.e. LBTH) level, a further 40,500 residents will represent an increase of around 12%. On this basis, the magnitude of impact at the Borough level is therefore assessed as medium.

**6.237** With the sensitivity of the receptor assessed as high, the significance of effect on the receptor at the Borough (i.e. LBTH) level is therefore assessed as **Moderate Beneficial (Significant)**. This is a slight improvement on the assessment of the Proposed Development, which identified a Negligible effect at the Borough level.

*On-Site Employment*

**6.238** The Proposed Development and cumulative schemes will bring forward a variety of uses including flexible retail, workspace and Sui Generis uses in addition to hotel uses (over 1,200 beds in total). Collectively, it is estimated that these uses have potential to support around 40,000 – 43,000 (gross) FTE jobs on-Site.

**6.239** The increase in net additional jobs is estimated to represent an increase of around 400% -430% over the current baseline within the LIA. On this basis, the magnitude of impact on the receptor is assessed as high.

**6.240** With the sensitivity of the receptor assessed as high, the scale of the effect at the LIA level is therefore assessed as **Major Beneficial (Significant)**. This is a further improvement on the beneficial effect of the Proposed Development (which identified a Minor Beneficial effect). At the Borough (i.e. LBTH) level, the addition of 40,000-43,000 gross additional jobs will represent an increase of around 13-14% over the current baseline, thereby resulting in a medium magnitude of impact.

**6.241** With the sensitivity of the receptor assessed as low, the scale of the effect on the receptor at the Borough (i.e. LBTH) level is therefore assessed as **Moderate Beneficial (Significant)**. This is better than the assessment of the Proposed Development (which identified a Minor Beneficial effect).

*Off-site/ Wider Employment*

**6.242** Based on an anticipated 40,000 -43,000 additional jobs within the LIA, it is estimated that around a further 20,000-21,500 jobs have potential to be support off-site (i.e. indirectly) as a result of supply chain and indirect expenditure generated by the on-Site activities supported by the Proposed Development and cumulative schemes considered. Together, the direct and indirect jobs supported add up to over 64,000 additional jobs.

**6.243** The baseline assessment indicates that there are currently around 5.3 million jobs in London. It is estimated that the increase of over 64,000 additional jobs across London will represent an increase of 1.2% over the current baseline. As a result, the magnitude of impact at the Regional (i.e. London) level is therefore assessed as low.

**6.244** With the sensitivity of the receptor assessed as low, the significance of the effect at the Regional (i.e. London) level is therefore assessed as **Minor Beneficial (Not Significant)**. This is in line with the assessment of the Proposed Development (i.e. Minor Beneficial).

*Local Economy – Increased Local Expenditure*

**6.245** As outlined above, the Proposed Development and cumulative schemes considered will, together, result in the creation of over 17,200 new units, whilst also providing accommodation for students. Using benchmarks on typical annual household expenditure on comparison and convenience goods and services, it is estimated that together the new households and students living will generated an annual household expenditure totalling around £411 million.

**6.246** A proportion of this expenditure will likely be captured by businesses located within the Borough (i.e. LBTH), thereby helping to support the vitality and viability of retail businesses. That being said, the new dwellings and student accommodation will represent only a small increase in the number of households in the Borough. On this basis, the magnitude of impact on the receptor at the Borough (i.e. LBTH) level is therefore assessed as medium.

**6.247** With the sensitivity of the receptor assessed as low, the scale of the effect at the Borough (i.e. LBTH) level is therefore assessed as Major Beneficial **(Significant)**. This is a further improvement on the beneficial effect of the Proposed Development (i.e. Moderate Beneficial).

*Local Economy – Increased GVA*

**6.248** The increase in on-Site employment delivered as part of the Proposed Development and cumulative schemes will also help to grow the local economy and London's recovery following the impact of the COVID-19 pandemic. As outlined above, the non-residential employment floorspace delivered as part of the Proposed Development and cumulative schemes considered has potential to add up to 40,000-43,000 gross FTE jobs. Using benchmarks of GVA per FTE from the Annual Business Survey, it is estimated that these jobs have potential to generate around £5b in gross GVA.

**6.249** The analysis presented within the baseline analysis puts the size of the Borough's (i.e. LBTH) economy at £34.5 billion. The additional GVA generated as a result of the Proposed Development and cumulative schemes is therefore estimated to represent an increase of 15% over the current baseline. On this basis, the magnitude of impact at the Borough (i.e. LBTH) level is therefore assessed as high.

**6.250** With the sensitivity of the receptor assessed as high, the scale of the effect at the Borough (i.e. LBTH) level is therefore assessed as **Major Beneficial (Significant)**. This is a further improvement on the beneficial effect of the Proposed Development which identified an effect of Minor Beneficial. Evidence from the ONS indicates that the size of the London economy is around £468 billion, which means that the net additional GVA generated by the Proposed Development and cumulative schemes considered will represent an overall negligible increase over the current baseline.

**6.251** With the sensitivity of the receptor assessed as low, the scale of the effect at the Regional (i.e. London) level is therefore assessed as **Moderate Beneficial (Significant)**. This is considered significant and is a further improvement on the beneficial effect of the Proposed Development (i.e. Minor Beneficial).

*Education – Early Years Provision*

**6.252** The increase in population is likely to increase demand (as well as pressure) on existing early-years providers within the LIA. Given the lack of detail about several of the cumulative schemes being considered, it is not possible to quantify the demand for additional early years provision generated by the Proposed Development and other cumulative schemes. That being said, it is assumed that any mitigation required to meet the needs of additional demand arising from the cumulative schemes will have been subject to negotiations to provide adequate on/ off-site provision and/ or financial contributions. On this basis, the magnitude of impact on the receptor at the LIA level is therefore assessed as negligible.

**6.253** With the sensitivity of the receptor assessed as medium, the significance of the effect at the LIA level is therefore assessed as **Minor Adverse (Not Significant)**. The assessment of the Proposed Development has identified an overall effect of Minor Adverse without mitigation, but Negligible following mitigation.

*Education – Primary Schools Capacity*

**6.254** Once built and occupied, the Proposed Development and cumulative schemes considered will also increase demand for additional primary school places. An assessment of primary school need in the Borough (i.e. LBTH) within the Tower Hamlets School Place Planning Strategy indicates that at the Borough-level there is existing deficit in terms of capacity.

**6.255** It is assumed that any mitigation required to meet the needs of the additional demand arising from the cumulative schemes will have been subject to negotiations to provide adequate on/ off-site provision and/ or financial contributions. On this basis, the magnitude of impact at the LIA level is therefore assessed as negligible. With the sensitivity of the receptor assessed as medium, the significance of the effect at the LIA level is therefore assessed as **Minor Adverse (Not Significant)**. This is in line with the assessment of the residual effect of the Proposed Development (i.e. Minor Adverse).

*Education – Secondary Schools Capacity*

**6.256** The Proposed Development and cumulative schemes will also generate demand for additional primary school places within the Borough (i.e. LBTH). An overview of current supply and demand for secondary school places

[48] *ONS (2020) 2018-Based household projections and average household size, average household size of 2.36 has been used for Tower Hamlets for base year 2028 based on 10 years 8 months (11 years) construction period of Proposed Development*

across the Borough indicates that demand for Year 7 places and above is expected to increase as primary school pupils move into the secondary phase.

**6.257** That being said, it is assumed that any mitigation required to meet the needs of additional demand for secondary school places will have been subject to negotiations to provide adequate on/ off-site provision and/ or financial contributions. On this basis, the magnitude of impact on the receptor at the Borough (i.e. LBTH) level is therefore assessed as negligible.

**6.258** With the sensitivity of the receptor assessed as medium, the scale of the effect is therefore assessed as **Minor Adverse (Not significant)** at the Borough (i.e. LBTH) level. This is worse than the assessment of the residual effect of the Proposed Development (i.e. Negligible).

*Demand for Health Care Facilities*

**6.259** The increase in population will place added pressure on existing health care facilities and the capacity of local GP surgeries. Without mitigation, through the provision of additional facilities and/ or the expansion of existing facilities could result in a long-term adverse effect.

**6.260** Based on the addition of 40,500 new residents to the local population it is estimates that 23 FTE GPs will be required. This figure is based on the assumption that none of the residents within either the Proposed Development and/ or the cumulative schemes considered are registered with local GPs. In reality, demand for additional GP provision could be lower than is identified above.

**6.261** It is assumed that any mitigation required to meet the needs of additional demand arising from the cumulative schemes will have been subject to negotiations to provide adequate on/ off-site provision and/ or financial contributions secured from each development. On this basis, the magnitude of impact on the receptor is therefore assessed as negligible.

**6.262** With the sensitivity of the receptor assessed as high, the significance of the effect is therefore assessed as **Minor Adverse (Not Significant)**. The assessment of the Proposed Development identified an overall effect of moderate adverse at the LIA without mitigation, but Negligible following mitigation.

*Open Space*

**6.263** The baseline analysis indicates that the Borough (i.e. LBTH) has an average 1.2 ha of open space per 1,000 population, which is significantly higher than the FIT benchmark of 0.8 ha per 1,000 population. An increase in population will place added pressure on existing open space provision, and lower the average open space per 1,000 to below the current benchmark of 1.2 ha per 1,000 population. That being said, a number of the schemes will deliver open space and public realm amenities and it is therefore considered that the increase in local population within the LIA is not expected to lower open space provision to below the minimum requirement of 0.8 ha per 1,000. Furthermore, it is assumed that any mitigation required to meet the needs of additional demand arising from all cumulative schemes will have been subject to negotiations to provide adequate provision and/ or financial contributions secure for each development individually. On this basis, the magnitude of impact is therefore assessed as low.

**6.264** With the sensitivity of the receptor assessed as medium, the scale of the effect is therefore assessed as **Minor Beneficial (Not Significant)** at the Borough (i.e. LBTH). The assessment of the Proposed Development identified an overall effect of Minor Beneficial.

*Play Space*

**6.265** The increase in local population will see demand for play space within the LIA increase. Based on the LBTH's Playspace and Child Yield Calculator, it is assumed that each person under the age of 18 will require up to 10m2 of play space. This typically needs to be provided within relatively close proximity to where demand will arise (as per the GLA's guidance) although this may be further afield for older children.

**6.266** It is assumed that any mitigation required to meet the needs of additional demand arising from the cumulative schemes will have been subject to negotiations to provide adequate on/ off-site provision and/ or financial contributions. On this basis, the magnitude of impact of the Proposed Development and the cumulative schemes is therefore assessed as negligible.

**6.267** With the sensitivity of the receptor assessed as medium, the scale of the effect on the receptor is assessed as **Minor Beneficial (Not Significant)** at the LIA level. The assessment of the Proposed Development identified an overall effect of Minor Beneficial.

*Community and Leisure Centres*

**6.268** The increase in local population will see demand for community centres within the LIA increase. The baseline assessment identified there is currently 1 community centre per 6,000 population within the LIA. The additional population of 40,500 new residents is going to significantly increase the demand (with over 600%). However, as part of relevant mitigation measures, the majority of cumulative schemes are contributing to the delivery of new community and leisure space across the LIA – over 36,900m$^2$ of community floorspace will be provided as part of the delivery of the cumulative schemes.

**6.269** With the sensitivity of the receptor assessed as medium, the scale of the effect on the receptor is assessed as **Minor Beneficial (Not Significant)** at the LIA level. The assessment of the Proposed Development identified an overall effect of Minor Beneficial.

*Overall Deprivation*

**6.270** The Proposed Development and cumulative schemes will continue to contribute towards improving the Borough's performance against several of the domains within the Index of Multiple Deprivation where it under-performs, as outlined within the baseline analysis. This includes improvements to income deprivation, access to housing and public realm improvements. This will encourage use of the area throughout the day and result in improvements to the local area's living environment, a reduction in crime and promote social cohesion. On this basis, the magnitude of impact is therefore assessed as medium at the Borough (i.e. LBTH) level.

**6.271** With the sensitivity of the receptor assessed as high, the significance of the effect is therefore assessed as **Moderate Major Beneficial (Significant)** at the Borough (i.e. LBTH) level. This is in line with better than the assessment of the Proposed Development (i.e. Moderate Beneficial).

*Crime and Social Cohesion*

**6.272** Improvements to the public realm and living environment enabled by the Proposed Development and cumulative schemes will promote a secure environment, encourage crime reduction and improve social cohesion. Given the scale of the Proposed Development and cumulative schemes, the magnitude of impact on the receptor at the Borough (i.e. LBTH) level is therefore assessed as medium. With the sensitivity of the receptor assessed as medium, the significance of the effect at the Borough (i.e. LBTH) level is therefore assessed as **Moderate Beneficial (Significant)**. This is a further improvement on the beneficial effect of the Proposed Development (i.e. Minor Beneficial).

## LIKELY SIGNIFICANT EFFECTS

**6.273** The assessment of the Proposed Development does not identify any significant effects during demolition and construction of the Proposed Development. Once completed, and following mitigation, the assessment of the Proposed Development has identified the following significant effects:

- A **Major Beneficial** effect on contribution to housing targets at the LIA level;
- A **Moderate Beneficial** effect on tackling (overall) multiple deprivation at the Borough (i.e. LBTH) level.

**6.274** The assessment of the Proposed Development and cumulative schemes has not identified any significant effects during their respective demolition and construction phases. Once completed, the following significant effects are identified:

- A **Major Beneficial** effect on contribution to housing targets at both the LIA and Borough (i.e. LBTH) levels;
- A **Major Beneficial** effect on population and the labour market at the LIA level and **Moderate Beneficial** at Borough (i.e. LBTH) level;
- A **Major Beneficial** effect on employment at the LIA and **Moderate Beneficial at** Borough (i.e. LBTH) levels;
- A **Major Beneficial** effect on the economy at the LIA and **Moderate Beneficial** at Borough (i.e. LBTH);
- A **Moderate to Major Beneficial** effect on tackling (overall) multiple deprivation at the Borough (i.e. LBTH) level; and
- A **Moderate Beneficial** effect on tackling crime and improving social cohesion at the Borough (i.e. LBTH) level.

# Chapter 7: Traffic and Transport

| Traffic and Transport | |
|---|---|
| **AUTHOR** | Velocity Transport Planning |
| **SUPPORTING APPENDIX** | Whilst this chapter is an independent study, it is based upon and should be read in conjunction with the findings of the Transport Assessment (TA) produced by Velocity Transport Planning. |
| **KEY CONSIDERATIONS** | This chapter of the Environmental Statement (ES) reports the likely significant effects of the Proposed Development on the surrounding transport networks. This chapter describes how the Proposed Development will affect existing and future patterns of travel. The effects are assessed during Demolition and Construction of the Proposed Development, and once the Proposed Development is completed and in full operation.<br>The assessment has been undertaken in accordance with discussions with Transport for London (TfL) and the London Borough of Tower Hamlets (LBTH) in respect of the TA. The assessment presented within this chapter should be considered in context of the TA, which provides a comprehensive assessment of the traffic and transport effects.<br>The assessment considers the potential for the Proposed Development to affect: Severance, Delay (bus and driver delay), Pedestrian and Cyclist Delay, Amenity, Fear and Intimidation, and Accidents and Safety in accordance with the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic (1993).<br>Where appropriate it also identifies proposed mitigation measures to prevent, minimise or control any negative effects arising from the Proposed Development during the Construction Phase and Operational Phase and the subsequent anticipated residual effects. |
| **CONSULTATION** | An EIA Scoping Report was prepared and submitted to the LBTH in August 2021, requesting a formal EIA Scoping Opinion on the scope of the EIA. A copy of the EIA Scoping Report is provided in **ES Volume 3, Appendix EIA Methodology: Annex 1**. The Scoping Opinion received from the LBTH is presented within **ES Volume 3, Appendix: EIA Methodology: Annex 2.** This chapter and associated transport related deliverables for this planning application adhere to the relevant sections of the Scoping Opinion.<br>The Proposed Development is the subject of a planning application referable to the Mayor of London and pre-application discussions were undertaken in September-October 2020 with relevant officers of LBTH and TfL to agree the scope of the TA and supporting documents. LBTH requested / or confirmed the following items to be addressed in the assessments:<br>• TA to be produced in line with TfL's TA guidance;<br>• Trip generation methodology based on combination of TRICS survey sites and mode splits adjusted in line with the characteristics of the Proposed Development and include an assessment of delivery and servicing trips;<br>• Manual assignment of public transport trips to each sub-mode (i.e. rail, London Underground, London Overground, Docklands Light Railways, bus, Elizabeth Line);<br>• Active Travel Zone assessment;<br>• A Car Parking Management Plan<br>• A Framework Travel Plan; and<br>• A Delivery and Servicing Plan. |

## ASSESSMENT METHODOLOGY

### *Background*

**7.1** The data and analysis discussed in this chapter utilises the TA which has been submitted alongside the planning application

**7.2** A summary of the proposed mitigation measures is included in this ES chapter. However, the detailed mitigation measures are presented in the **ES Volume 1, Chapter 17: Mitigation and Monitoring**.

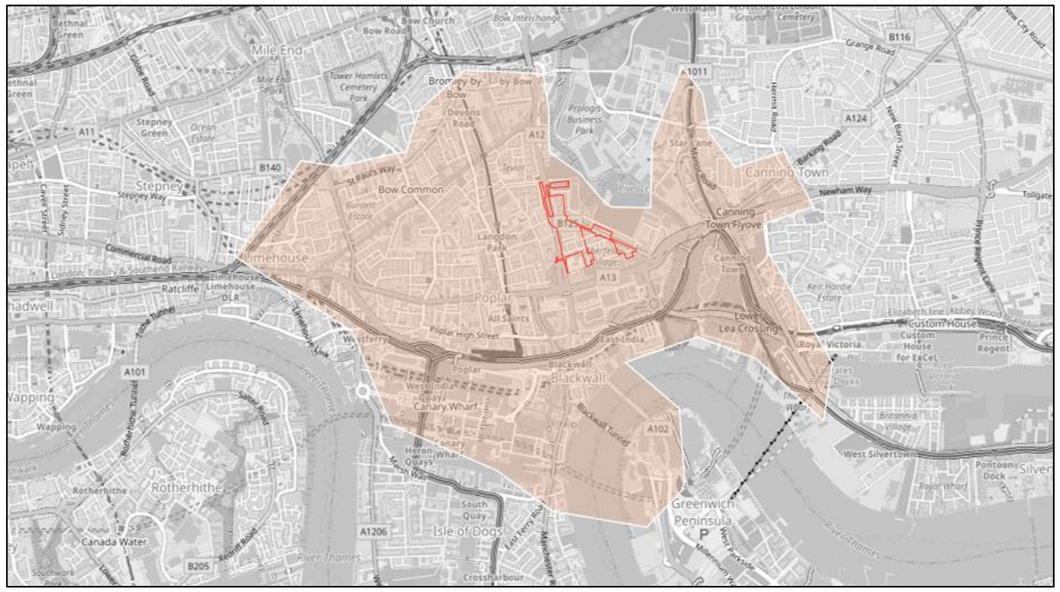
**7.3** This chapter has been prepared in full consideration of IEMA Guidelines[1], and current national, regional, and local policies, as outlined in the TA.

### *Defining the Baseline*

#### *Study Area*

**7.4** In accordance with the IEMA Guidelines, the 'study area' has been defined by identifying any link or location where it is considered that significant highways or transport related effects may occur as a result of the Proposed Development. To establish how the proposals would affect the highway links in the area, the area has been modelled using the TfL London Highway Assignment Model (LoHAM). The modelled study area is shown shaded in **Figure 7.1**.

**Figure 7.1 Traffic and Transport EIA Study Area**




**7.5** During the assessment period between March 2020 and June 2021, travel had been significantly limited by restrictions that were implemented as part of the Government's response to the COVID-19 pandemic. Therefore, transport movements were not representative of baseline conditions and consequently no vehicle traffic surveys have been undertaken to inform this assessment. Instead, the baseline conditions have been collected and extracted from alternative sources as set out below.

### *Existing Baseline Conditions*

**7.6** The baseline conditions have been characterised by means of desktop research, Geographic Information System analysis, site visits, and survey data undertaken for nearby sites. In particular:

- The transport networks have been assessed based on a scope that was discussed and agreed with LBTH and TfL during the pre-application stage;
- Traffic flow data for the local and strategic highway network has been largely based on TfL's LoHAM, as agreed at pre-application stage;
- The use of trip generation data extracted from the TA submitted for the 2012 Outline Planning Permission (2012 OPP) (Ref: PA/11/02716) was agreed with LBTH and TfL during pre-application consultation;
- An evaluation of the existing conditions for pedestrians and cyclists along the key journeys identified and agreed with LBTH and TfL during the pre-application stage is provided within the Active Travel Zone chapter of the TA;
- Pedestrian survey data for the Lochnagar Street, Abbott Road and Dee Street subways has been obtained using pedestrian and cycle count surveys undertaken in July 2021;
- A series of site visits undertaken in September 2020, October 2020, February 2021, and July 2021;

[1] IEMA, Guidelines for the Environmental Assessment of Road Traffic (1993)

- A Public Transport Accessibility Level (PTAL) assessment of the Site was undertaken using TfL's Web-based Connectivity Assessment Toolkit (WebCAT)[2] as well as a manual assessment;
- The level of public transport accessibility surrounding the Site has been analysed within Chapter 5 of the TA, particularly the London Underground, Docklands Light Railway (DLR), rail and bus networks including timetable information;
- Forecast travel mode share data has been obtained from the TRICS database and is contained within the TA;
- Accident data for the local road network over a three year period has been analysed within the Active Travel Zone chapter of the TA; and
- An evaluation of the capacity of public transport network for buses, London Underground, London Overground and DLR services has been undertaken using data provided from TfL's Rail Plan strategic model as well as publicly available public transport service frequency data.

### *Future Baseline*

**7.7** The year of opening for the completed Proposed Development is expected to be 2033. During scoping discussions with LBTH and TfL Spatial Planning, it was agreed that a Future Baseline scenario would be created using TfL's LoHAM, which has a future modelling year of 2031. As the A12 is modelled to be at capacity in this year and would therefore continue to operate at capacity in 2033, it was agreed that this strategic modelling output would constitute an acceptable 2033 proxy for the Future Baseline Scenario. This has also been used in the air quality (**ES Volume 1, Chapter 8: Air Quality**) and noise (**ES Volume 1, Chapter 10: Noise and Vibration**) assessments.

**7.8** Changes in use of transport infrastructure have been considered in the future baseline, including the following planned improvements:

- The Silvertown Tunnel is due to open in 2025 which will make a significant change to the strategic road network resulting in traffic flow changes on the A12 and A13;
- Opening of the Elizabeth Line in late 2022, providing additional services;
- 2023 DLR rolling stock upgrades adding more capacity to the DLR and higher frequency trains;
- Introduction of an extension of bus route 488 to include Abbott Road; and
- Provision of new pedestrian and cycle bridges over the River Lea.

**7.9** In addition to the introduction of the Silvertown Tunnel and other infrastructure changes, significant residential and commercial development is proposed within the Site's surrounding area (on the land between the A12, A13 and River Lea). Combined, the committed developments will provide over 4,200 new dwellings.

**7.10** To account for traffic growth associated with new development, traffic growth extracted from the TfL's LoHAM has been applied to the baseline network traffic in order to create a Future Baseline for 2033 where the Proposed Development would not come forward. This approach has been agreed with LBTH and TfL Spatial Planning.

### *Assessment Scenarios*

**7.11** The assessment scenarios are consistent with those in the TA, and as set out in the EIA Scoping Report which include:

- **Future Baseline Scenario:** Future Baseline plus cumulative schemes (2033) – This uses traffic flow baseline data obtained from strategic LoHAM modelling, adding Leven Road and Lochnagar Street to the network, plus any changes which are committed to take place to existing conditions by the future design year(s), without the Proposed Development but with all cumulative schemes;
- **Construction Phase Scenario:** Future Baseline plus Construction Traffic (2026) – this includes the Future Baseline Scenario data plus the construction traffic movements associated with the construction of the Proposed Development during the construction peak; and
- **Operational Scenario:** Future Baseline plus the Proposed Development and cumulative schemes (2033) – this includes the Future Baseline Scenario data plus the Proposed Development in the future design year.

**7.12** The cumulative traffic effects i.e. the traffic levels as a result of the proposed scheme in combination with other nearby developments (along with natural traffic growth) have been assessed in the TA as part of the highways and public transport impact assessments.

**7.13** A list of local cumulative schemes relevant to the assessment of cumulative capacity effects has been prepared and is included in the TA. These cumulative schemes were chosen as they are expected to use the same local highway network links and accesses to the strategic road network (A12 and A13) as the Proposed Development. The list of cumulative schemes in **Table 7.1** was agreed with LBTH and is included in the Scoping Opinion submitted to The Aberfeldy New Village LLP ('the Applicant') by LBTH.

**7.14** The cumulative effects have been considered within the strategic traffic modelling undertaken using TfL's LoHAM, which contain traffic flows resulting from cumulative development in the vicinity of the scheme as well as major infrastructure changes (e.g. Silvertown Tunnel). The flows also contain traffic generated by development outside the immediate area, as the LoHAM model considers strategic traffic movements.

**7.15** Traffic flows from cumulative developments (along with natural traffic growth) are included within the future baseline traffic data upon which the operational assessment has been based. Therefore, cumulative effects are considered inherently as part of the operational assessment.

**7.16** As LoHAM does not include specific construction flows, this ES contains a separate cumulative assessment for the peak Construction and Demolition scenario; using construction traffic flows generated by the cumulative development sites included in **Table 7.1** and the Proposed Development.

**Table 7.1 Summary of Cumulative Schemes**

| Site | Residential Dwellings | Non-Residential Development | Parking |
|---|---|---|---|
| Ailsa Wharf (Ref PA/16/02692) | 785 | • 2,954 **m²** commercial (A1/A3/B1/D2) | • 210 spaces<br>• 0.27 per dwelling |
| Islay Wharf (Ref PA/19/01760) | 133 | • 351 **m²** commercial (A1/A2/B1/D1/D2) | • 3 spaces<br>• 0.02 per dwelling |
| Former Poplar Tram Depot (Ref PA/19/02148) | 530 | • 2,644 **m²** workspace (B1)<br>• 508 **m²** flexible retail (A1-A4) | • 34 spaces<br>• 0.1 spaces per dwelling |
| Leven Road Gasworks (Ref PA/18/02803) | 2800 | • 2,700 **m²** (B1)<br>• 500 **m²** community (D1 & D2)<br>• 2,000 **m²** leisure (D1 & D2)<br>• 2,500 **m²** retail (A1-A4)<br>• Secondary school (D1) | • 550 spaces<br>• 0.20 spaces per dwelling |

### *Impact Assessment Methodology*

**7.17** The 'Guidelines for the Environmental Assessment of Road Traffic (GEART), IEMA, 1993' set out several potential environmental effects relating to highways and transport considerations which potentially require assessment.

**7.18** At the EIA scoping stage, the potential for likely effects was considered; and scoped in and scoped out items are summarised within **Table 7.2**

**Table 7.2 Summary of Scoped In / Scoped Out Assessments**

| Effect | Receptor | Demolition and Construction of the Proposed Development | Completed and Operational Development |
|---|---|---|---|
| Severance | Pedestrians, cyclists | Scoped In | Scoped In |
| Pedestrian and Cyclist Delay | Pedestrians, cyclists | Scoped In | Scoped In |

[2] *TfL (2010); Measuring Public Transport Accessibility Levels*

| | | | |
|---|---|---|---|
| Vehicle and Bus Delay | Car drivers and passengers, bus passengers | Scoped In | Scoped In |
| Rail Delay | Rail passengers | Scoped Out | Scoped Out |
| Rail and Bus capacity | Rail and bus passengers | Scoped In | Scoped In |
| Amenity, Fear and Intimidation | Pedestrians, cyclists | Scoped In | Scoped In |
| Accidents and Safety | All modes | Scoped In | Scoped In |
| Hazardous Loads | All modes | Scoped Out | Scoped Out |

**7.19** During scoping discussions and as part of their EIA Scoping Opinion, LBTH have requested that Rail Delay be included as part of the EIA in the Completed Development scenario. However, this was not deemed appropriate as there are no assessment criteria for rail delay in the IEMA guidance or Design Manual for Roads and Bridges (DMRB) guidance for EIA, and given that the Proposed Development will not make any changes to the rail network nor would the proposals have the ability to delay London Underground, DLR or mainline rail services, there is no way for the Proposed Development to affect rail delay.

**7.20** Furthermore the TA shows that the trips generated by the Completed Development onto London Underground, DLR and mainline rail services would not materially impact on the gate line capacity for the nearest station (Canning Town) nor would it materially impact on the capacity of the busiest rail lines (DLR and Jubilee Line services). Therefore, there is no realistic scenario where the Completed Development would have a significant effect on rail delay.

**7.21** The GEART document recommends the following rules-of-thumb are applied to determine the scale and extent of the assessment:

- Rule 1: Include highways links where traffic flows will increase by more than 30% (or the number of Heavy Goods Vehicles (HGVs) will increase by more than 30%); and,
- Rule 2: Include any other sensitive areas where traffic flows have increased by 10% or more.

**7.22** The thresholds provide a level for development flows to be assessed against to establish whether additional assessment is needed in order to determine the significance of the impact. It should be noted that development flows above the 10% and 30% levels do not automatically indicate the impacts are significant, and professional judgement should also be applied.

**7.23** Traffic flow changes that are less than the thresholds are generally accepted as being similar in magnitude to daily variation in traffic flows and therefore are considered to have no discernible environmental impact.

**7.24** **Table 7.3** sets out all highway links included in the LoHAM model output that recorded a change in Annual average daily traffic (AADT) traffic flow or AADT HGV flow greater than 10% in the Construction Phase or Operational Phase of the Proposed Development.

**Table 7.3 Summary of Traffic Flow Changes Greater Than 10% Within Study Area**

| Link | Future Baseline Scenario | | Construction Phase Scenario | | Completed Development Scenario | |
|---|---|---|---|---|---|---|
| | AADT Traffic Flow | AADT HGV Flow | AADT HGV Total Flow | AADT HGV % Change | AADT Traffic Flow Change | AADT Traffic % Change |
| Abbott Road (east of Underpass) | 7240 | 691 | 691 | 0% | -6749 | -93% |
| Abbott Road (east of Oban Street) | 8965 | 820 | 820 | 0% | -2484 | -28% |
| Abbott Road Underpass | 5539 | 490 | 490 | 0% | -5539 | -100% |
| Abbott Road Slip to A12 | 1469 | 136 | 136 | 0% | 481 | 33% |
| Leven Road | 3744 | 88 | 88 | 0% | 733 | 20% |
| Oban Street | 3333 | 17 | 17 | 0% | 1144 | 34% |
| Bromley Hall Road | 1254 | 30 | 158 | 421% | 874 | 70% |
| Lochnagar Street | 2581 | 190 | 318 | 67% | 468 | 18% |
| Zetland Street | 2304 | 155 | 155 | 0% | -385 | -17% |
| Devons Road | 9536 | 411 | 411 | 0% | -1745 | -18% |
| Devas Street (west of A12 Junction) | 4974 | 723 | 723 | 0% | 1896 | 38% |
| Burcham Street/St Leonard Road | 4638 | 165 | 165 | 0% | 900 | 19% |

**7.25** In line with GEART Rule 1, all highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%) have been included in the Traffic and Transport EIA.

**7.26** GEART Rule 2 states that any highway link where traffic flow has increased by 10% or more and is considered 'sensitive' should also be included. It is considered that any highway link that provides direct access to a school, London Underground or DLR station, nursery or healthcare facility would be considered 'sensitive' given the likely higher proportion of vulnerable road users (children, elderly, and people with a mobility impairment) at these locations.

**7.27** In the Construction Phase, based on peak construction activity in 2026, no highway links experience an increase in HGV AADT above 10% apart from Bromley Hall Road and Lochnagar Street. In the Completed Development (operational) phase the following highway links with a projected change in AADT flow of more than 10% but less than 30% have been included in this Traffic and Transport EIA:

- Burcham Street / St Leonard Road – due to the proximity of Langdon Park School;
- Devons Road – due to Devon's Road DLR Station; and
- Abbott Road – due to the Natural Remedy Clinic.

### *Demolition and Construction*

**7.28** The effects of Demolition and Construction traffic have been determined by assessing the effects of the estimated worst case (i.e. peak daily construction traffic), which is expected to be 2026, against the Future Baseline Scenario, taking into consideration vehicle routing.

**7.29** Traffic generation estimates for the Demolition and Construction of the Proposed Development has been provided by Blue Sky Building. An Outline Construction Logistics Plan (CLP) has been prepared and is included within the TA. Further details of the construction programme and phases, vehicle numbers and the proposed access route are discussed in detail in **ES Volume 1, Chapter 5: Demolition and Construction**.

### *Phasing*

**7.30** The Proposed Development is proposed to be constructed in phases, and is expected to take approximately 128 months (10 years 8 months). **ES Volume 1, Chapter 5: Demolition and Construction** provides an indicative construction timetable. A summary is set out in **Table 7.4** below.

**Table 7.4 Indicative Construction Programme**

| Construction Phase | Application | Construction Start | Construction End |
|---|---|---|---|
| A | Detailed | Q3 2022 | Q4 2024 |
| B | Outline | Q3 2024 | Q4 2027 |
| C | | Q2 2027 | Q2 2032 |
| D | | Q1 2032 | Q2 2033 |

**7.31** Based on an anticipated year of commencement of 2022, the peak construction scenario as set out in this ES is based on a 2026 Future Year, during the construction of Phase B of the Outline Proposals. At this stage of the programme, the Detailed Proposals (Phase A) would already be constructed and occupied.

**7.32** As the Proposed Development provides car parking spaces at a much lower ratio per unit than the existing Site, the operation of Phase A would not be expected to generate more vehicle trips than the Future Baseline scenario. Therefore, no specific assessment of the Phase A operational traffic has been undertaken in the Construction Phase scenario for traffic and transport.

*Completed Development*

**7.33** The Completed Development has been assessed based on the transport trips generated by the Proposed Development as well as the re-routing of existing vehicle trips as a result of changes to infrastructure proposed as part of the Proposed Development.

**7.34** The traffic and transport infrastructure proposals deemed most relevant to this assessment are:

- Pedestrianisation of the Abbott Road vehicular underpass as a new walking and cycling route;
- Proposed right-turn bus gate at a new A12 / Abbott Road junction;
- Public realm improvements throughout the Site; and
- Improvements to the existing Dee Street subway.

**7.35** The operational assessments have been undertaken for a proxy 2033 year when it is predicted the completed Proposed Development will initially open (i.e. Opening Year). Cumulative schemes and associated growth are included in scenario assessments, as set out earlier in this chapter.

**7.36** The trips generated by the Proposed Development have been calculated using a trip generation assessment for the entire development, including both Outline and Detailed Proposals. This was agreed with LBTH and TfL during pre-application discussions.

*Assumptions and Limitations*

**7.37** Throughout 2020 and the first half of 2021, travel was significantly limited by restrictions that were implemented as part of the Government's response to the COVID-19 pandemic as such, transport movements at the time of the assessment may not have been representative of baseline conditions; consequently, traffic flow data has been collected and extracted from alternative sources, as set out in **paragraph 7.6**.

**7.38** As the pedestrian survey data was collected in July 2021, after all COVID-19 restrictions were lifted and so reflects a realistic representation of average pedestrian flows of the surveyed facilities.

**7.39** Assessment of the impacts of construction of the Proposed Development is based on forecast construction vehicle trips and the indicative construction programme. The average number of construction vehicles during peak months has been used to assess construction impacts.

## *Methodology for Defining Effects*

**7.40** DMRB LA 104 'Environmental Assessment and Monitoring' sets out the basis of environmental impact assessment; the sensitivity of the receptor and the magnitude of impact. Together, these determine the significance of the environmental impact.

*Receptors and Receptor Sensitivity*

**7.41** The significance of the impact depends on the sensitivity of the receptor of that impact. For the purpose of this assessment the traffic and transport environmental sensitivity of receptors ranging from negligible to high can be categorised as set out below.

**Table 7.5 Environmental Sensitivity and Descriptions**

| Sensitivity | Typical Description |
|---|---|
| **High** | Road and transport users that are more exposed and as a result are affected significantly by changes in traffic levels, the road network, public realm or road safety. |
| **Medium** | Road and transport users that feel moderate effects as a result of changes in traffic levels, the road network, public realm or road safety. |
| **Low** | Road and transport users that are more protected and as a result are not significantly affected by most changes in traffic levels, the road network, public realm or road safety. |
| **Negligible** | Road and transport users that feel little to no effect as a result of changes in traffic levels, the road network, public realm or road safety. |

*Magnitude of Impact*

**7.42** The magnitude of impact is the level of change caused by the Proposed Development. An overview of the different magnitudes of impact is set out in **Table 7.6**

**Table 7.6 Magnitude of Impact**

| Impact | Source | Negligible | Low | Medium | High |
|---|---|---|---|---|---|
| **Severance** | IEMA 1993 GEART guidance | Change in total traffic or HGV flows of 10%-30% | Change in total traffic or HGV flows of 30% to 60% | Change in total traffic or HGV flows of 60% to 90% | Change in total traffic or HGV flows over 90% |
| **Pedestrian Delay** | Professional judgement | Changes which are unlikely to be perceptible (based on a judgement). | Changes which are likely to be perceptible but not to the extent that it would materially change conditions which would otherwise prevail. | Changes which are likely to be perceptible and which would materially change conditions which would otherwise prevail to the extent that it may affect travel behaviour to measurable degree. | Changes which are likely to be perceptible and which could change conditions which would otherwise prevail to the extent that it would significantly affect travel behaviour. |
| **Cyclist Delay** | | | | | |
| **Vehicle and bus delay** | | Change in delay of <60sec | Change in delay of 60sec -120sec | Change in delay of 120sec -180sec | Change in delay of 180+ sec |
| **Pedestrian amenity, fear and intimidation** | IEMA 1993 GEART guidance | Change causes link to experience average traffic 18h flow per hour of circa 600 and a daily HGV flow of circa 1,000 | Change causes link to experience average traffic 18h flow per hour of 600-1,200 or a daily HGV flow of 1,000-2,000 and an average speed of 10+ miles per hour (mph) where it did not in Future Baseline. | Change causes link to experience average traffic 18h flow per hour of 1,200-1,800 or a daily HGV flow of 2,000-3,000 and an average speed of 15+mph where it did not in Future Baseline. | Change causes link to experience average traffic 18h flow per hour of 1,800+ or a daily HGV flow of 3,000+ and an average speed of 20+mph where it did not in Future Baseline. |
| **Accidents and Safety** | Professional judgement | Magnitude of impact is based on professional judgement regarding the relative safety of users of the highway network. | | | |

*Defining the Effect*

*Effect Scale*

**7.43** The scale of the resulting effect is judged on the relationship between the magnitude of impact and the assessed sensitivity and / or importance of the receptor, **Table 7.7** .

**7.44** The DMRB LA104 identifies the significance of adverse or beneficial effects as either negligible, slight, moderate or large. The scale of effects matrix set out in **Table 7.8** has been extracted from DMRB LA104 for ease of reference.

**Table 7.7 DMRB LA104 Scale of Effects**

| Sensitivity of Receptor | Magnitude of change | | | |
|---|---|---|---|---|
| | Negligible | Minor | Moderate | Major |
| **Negligible** | Neutral | Neutral | Slight | Slight |
| **Low** | Neutral | Slight | Slight | Slight or Moderate |
| **Medium** | Slight | Slight | Moderate | Moderate or Large |
| **High** | Slight | Moderate | Large | Large |

**7.45** For the purposes of the EIA, the significance of adverse or beneficial effects have been defined as either negligible, minor, moderate or major corresponding to neutral, slight, moderate and large set out within the DMRB LA104.

**Table 7.8 Significance Criteria Matrix**

| Sensitivity | Magnitude of Impact | | | |
|---|---|---|---|---|
| | Negligible | Low | Medium | High |
| **Negligible** | Negligible | Negligible | Minor | Minor |
| **Low** | Negligible | Minor | Minor | Minor / Moderate |

| | | | | |
|---|---|---|---|---|
| **Medium** | Minor | Minor | Moderate | Moderate / Major |
| **High** | Minor | Minor / Moderate | Major | Major |

*Effect Nature*

**7.46** The nature of effects is described as either:

- **Beneficial** – effects that produce benefits in terms of transportation and access;
- **Adverse** – effects that produce a negative effect in terms of transportation and access; or
- **Neutral** – meaning that changes produce no benefits or disbenefits in terms of transport and access (such as no reduction / increase in traffic, travel time, patronage or no loss/provision of service or facility).

*Geographic Extent of Effect*

**7.47** The spatial extent of the effects is considered based on the following thresholds:

- **'Site' or 'Local'** – affecting receptors in the Site and immediate surroundings;
- **'District' or 'Borough'** – affecting receptors in the LBTH and surrounding boroughs;
- **'Regional'** – affecting receptors in the Greater London area; or
- **'National'** – affecting receptors in different parts of the country, or England as a whole.

**7.48** Direct effects result without any intervening factors, whilst indirect or 'secondary' effects are not directly caused by an action or trigger or result from something else.

*Effect Duration*

**7.49** The duration of effects has been reviewed based on the following criteria:

- **Temporary: Short term** – less than 12 months;
- **Temporary: Medium term** – 12 months - 5 years;
- **Temporary: Long term** – more than 5 years; and
- **Permanent**. – effects that are considered to be extremely long lasting.

***7.50*** For the completed and operational Proposed Development, the effects are permanent whereas for the Demolition and Construction period the effects are expected to be temporary short to medium-term.

*Categorising Likely Significant Effects*

**7.51** As set out in **paragraph 7.39**, effects that are identified as being moderate or major adverse / beneficial are classified as significant effects.

**7.52** For construction and operation, where these effects are classed as short term or medium term, the significance or scale of effects is reduced by one level (e.g. major effects are reclassed as moderate, etc.).

## BASELINE CONDITIONS

### *Existing Mode Share*

**7.53** The Site is currently occupied by 330 residential units, as well as retail units and public realm. As part of the 2012 OPP a mode split was established. This is set out in **Table 7.9**

**Table 7.9 Existing Mode Split (2012 OPP)**

| Mode | Share (%) |
|---|---|
| Walk | 13% |
| Cycle | 2% |
| Tube / DLR / Rail | 33% |
| Bus | 23% |
| Motorcycle | 0% |
| Taxi | 0% |
| Car Driver | 20% |
| Car Passenger | 9% |
| Walk | 13% |
| Total | **100%** |

**7.54** **Table 7.9** shows that currently around 70 per cent of people travelling to and from the Site use sustainable modes of transport.

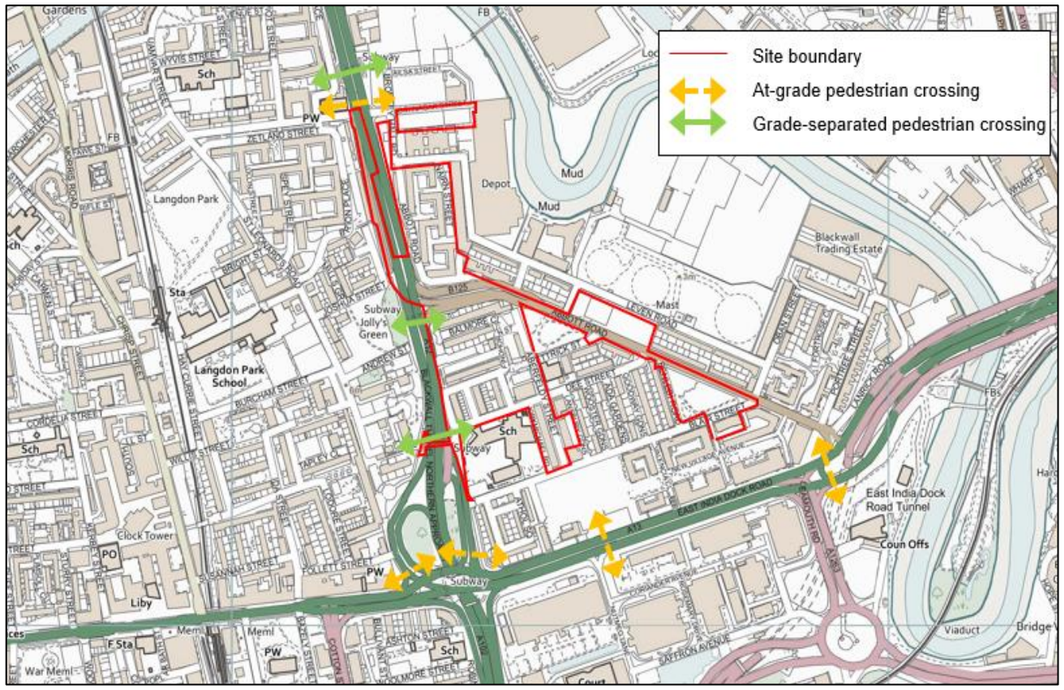
### *Walking*

**7.55** The existing Site includes footways provided along all streets, mostly of suitable width for people walking with a pram and wheelchair users. Dropped kerbs and tactile paving is provided along the main pedestrian desire lines and dedicated pedestrian crossing points are provided at Abbott Road to allow pedestrians to cross more easily and with priority.

**7.56** However, the Site is bounded to the west by the A12 and to the south by the A13 East India Dock Road. These strategic traffic arteries cause material severance, by requiring pedestrians to either wait at traffic signals at grade or use one of several subways, which are often dark, damp, unattractive spaces with limited passive surveillance.

**7.57** **Figure 7.2** shows that in response to the severance created by the strategic infrastructure that bounds the Site to the south and west, some existing pedestrian connections are provided. However, in most instances, these connections are currently not of high quality. Their indirectness add delays to pedestrian journeys and the subways can be perceived as unsafe.

**Figure 7.2 Existing Pedestrian Access Points**




**7.58** The Site also contains one crossing of the A12 used solely by motorised transport – the Abbott Road underpass. This underpass allows vehicles to turn right onto the northbound A12 from the Site. This underpass is shown in **Figure 7.3**

**Figure 7.3 Existing Underpass**


### *Cycling*

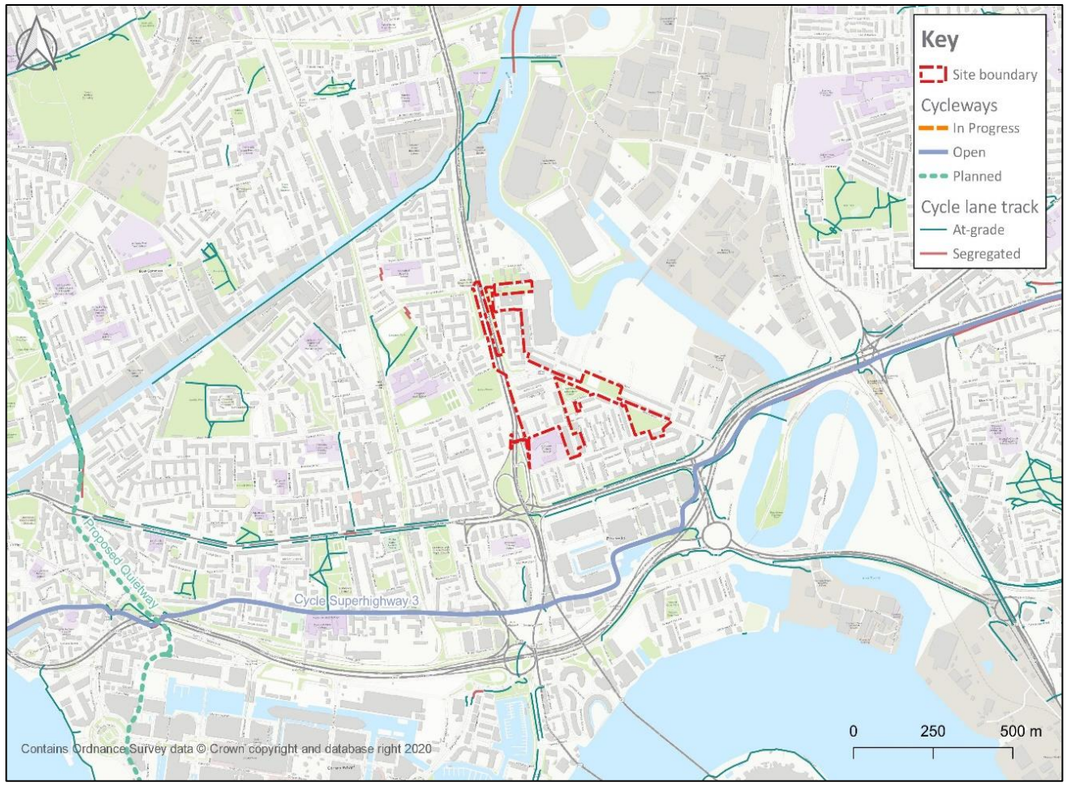
**7.59** As previously noted, the A12 and A13 are strategic routes that carry high levels of vehicular traffic and form barriers to cycling movements. As a result there are currently limited options to access the Site by cycling, including:

- A subway underneath the A12 directly north of Lochnagar Street;
- An at grade signalised crossing of the A12 at Lochnagar Street;
- A subway underneath the A12 adjacent to the Abbott Road underpass;
- A subway underneath the A12 which connects to Dee Street;
- A multiple-stage at-grade signalised crossing of the A13 / A102 junction using shared-use paths;
- A multiple-stage at-grade signalised crossing of the A13 East India Dock Road directly east of Nutmeg Lane; and
- A multiple-stage at-grade signalised crossing of the A13 at the A1 / A1020 / Abbott Road junction using shared-use paths.

**7.60** As previously noted, the existing subway crossings of the A12 are unattractive for people walking or cycling. The ramps are narrow and make sharp turns, which increases the potential for pedestrian-cycle conflict, the subways experience littering and users feel insecure due to the lack of surveillance.

**7.61** The existing cycle route network for the LBTH is shown in **Figure 7.3** . Cycle Superhighway 3 forms the main strategic cycle route in the vicinity of the Site and provides a connection into Central London.

**Figure 7.4 Local Cycle Routes**



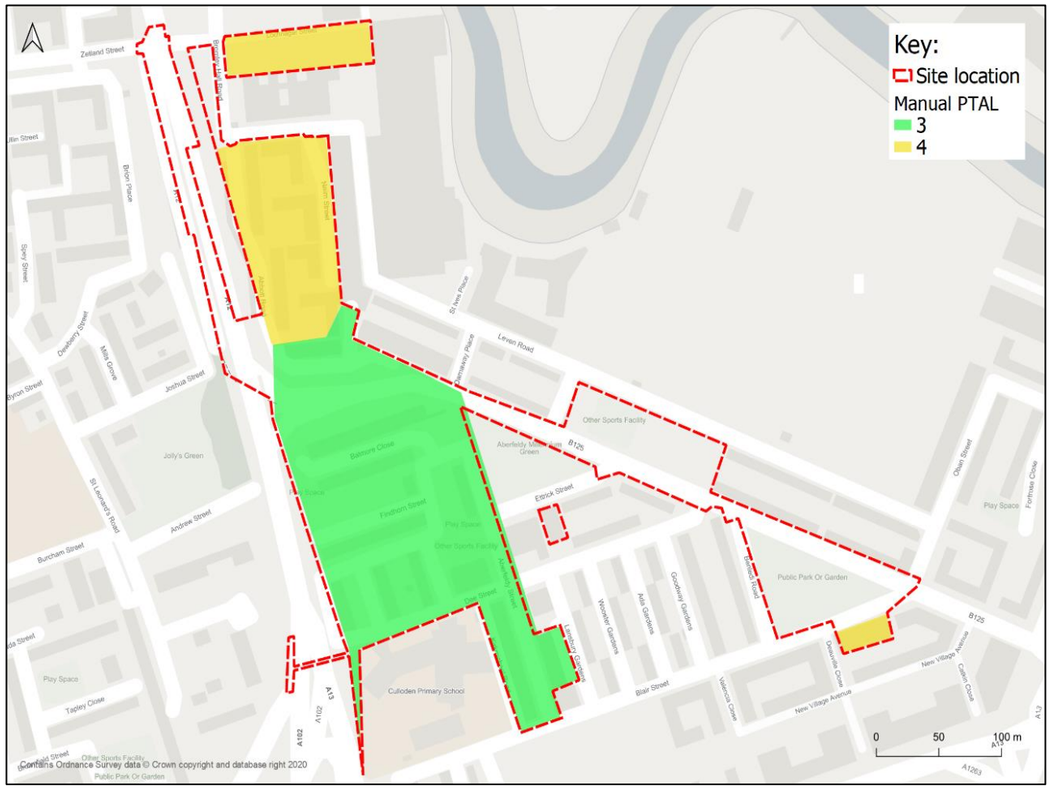

### *Public Transport*

#### *Public Transport Accessibility*

**7.62** A PTAL rating is used to demonstrate the Site's existing connectivity to the public transport network, accounting for access (i.e., walk) time and frequency of services. It considers rail and underground stations within a 12-minute walk (i.e., 960m) of the Site and bus stops within an eight-minute walk (640m) and is undertaken using the morning peak hour operating patterns of public transport services.

**7.63** A manual PTAL calculation was undertaken for three different locations within the Site (north / centre / south) in order to capture the accessibility of the Site by public transport. This is set out in **Figure 7.5** .

**Figure 7.5 PTAL – Manual Calculation**




*Local Bus Network*

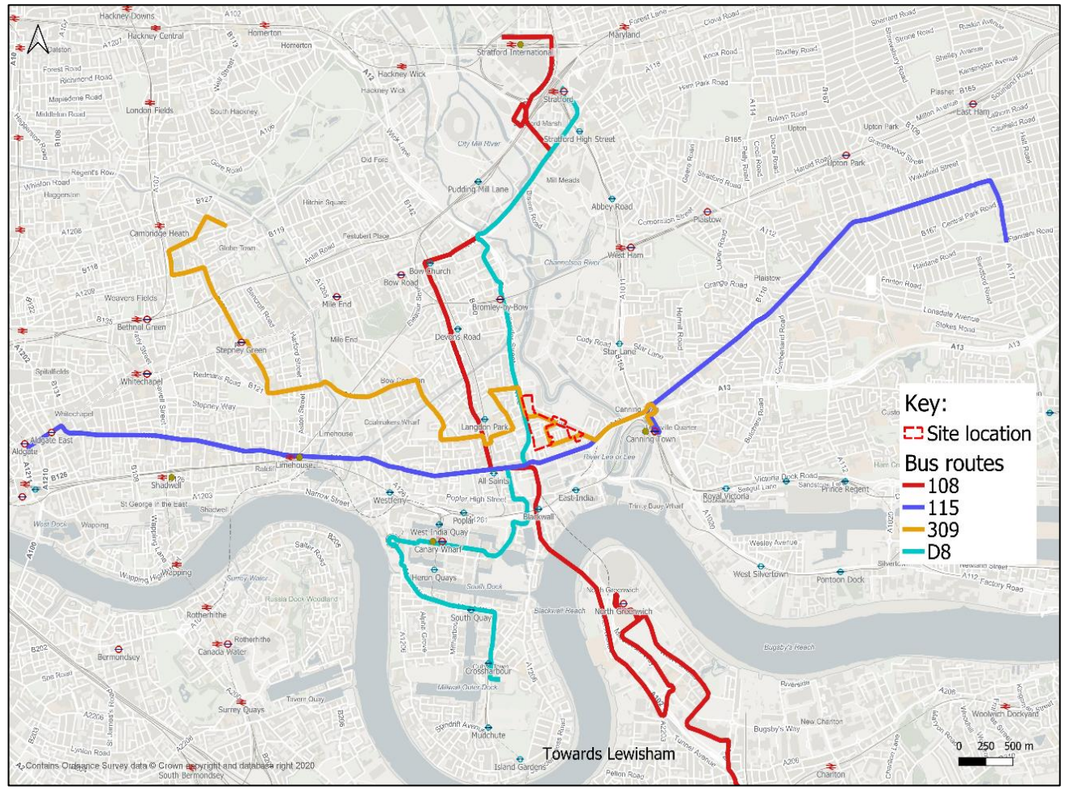
**7.64** The Site is in proximity to various bus services, which can be accessed from several bus stops (summarised in **Table 7.10** ). Bus route 309 serves the Aberfeldy Village Masterplan neighbourhood. The northbound route uses the Abbott Road / A12 vehicle underpass to turn right onto the A12.

**Table 7.10 Local Bus Routes and Frequencies**

| Service No | Bus Stop | Route | Frequency (services per hour) | |
|---|---|---|---|---|
| | | | AM Peak (08:00-09:00) | PM Peak (17:00-18:00) |
| 108 | Blackwall Tunnel/ East India Dock Road | Stratford International Station – Bow Church Station – Devons Road Station – Langdon Park Station – Chrisp Street Market – Blackwall Tunnel - Tower Bridge/ City Hall – Bermondsey Station – Greenwich Town Centre/ Lewisham Station | 6 | 6 |
| 115 | Brunswick Road (Stop E) | Aldgate Station - Aldgate East Station - Limehouse Station - Brunswick Road - Canning Town Bus Station - East Ham/ Central Park | 7 | 7 |
| 309 | Leven Road (Stop W) | Canning Town Bus Station – Leven Road – Stepney Green Station – Bethnal Green Station – Bonner Road | 5 | 5 |
| D8 | Abbott Road | Stratford Bus Station – Bromley By Bow Station – Abbott Road – Canary Wharf Station – Heron Quays – Isle of Dogs Asda | 4 | 4 |
| Total | | | **22** | **22** |

**7.65** There are 22 bus services available in the morning (AM) peak and afternoon (PM) network peak periods, respectively. **Figure 7.3** shows the local bus routes which operate within proximity of the Site.

**Figure 7.6 Local Bus Routes**




*Docklands Light Railway*

**7.66** The DLR connects the east with Central London. The nearest stations to the Site are Langdon Park to the northwest, All Saints to the southwest and Canning Town to the southeast. These stations are accessible within a 10-minute, nine-minute, and 10-minute walk, respectively.

**7.67** From these stations, several destinations that will be important to future residents of the Proposed Development can be reached, including Central London, Stratford, and Canary Wharf.

**7.68** **Table 7.11** provides details of the DLR service frequency at Langdon Park station and All Saints. **0** provides DLR service frequency at East India station, and **Table 7.13** provides DLR service frequency at Canning Town station.

**Table 7.11 DLR frequencies at Langdon Park Station and All Saints Station**

| Direction | Peak Hour Frequency (services per hour) | |
|---|---|---|
| | AM Peak (08:00-09:00) | PM Peak (17:00-18:00) |
| To Canary Wharf | 9 | 10 |
| To Stratford | 10 | 10 |
| Total | **19** | **20** |

**Table 7.12 DLR frequencies at East India**

| Direction | Peak Hour Frequency (services per hour) | |
|---|---|---|
| | AM Peak (08:00-09:00) | PM Peak (17:00-18:00) |
| To Woolwich Arsenal | 8 | 8 |
| To Beckton | 7 | 7 |
| Total | **15** | **15** |

**Table 7.13 DLR frequencies at Canning Town**

| Direction | Peak Hour Frequency (services per hour) | |
|---|---|---|
| | AM Peak (08:00-09:00) | PM Peak (17:00-18:00) |
| To Stratford International | 6 | 7 |
| To Woolwich Arsenal | 15 | 14 |
| To Tower Gateway | 7 | 7 |
| To Bank | 8 | 7 |
| To Beckton | 7 | 7 |
| Total | **43** | **42** |

**7.69** All stations provide multiple services to several different locations across London, providing interchange opportunities to connect further afield.

*London Underground*

**7.70** The nearest stations are Bromley-by-Bow and Canning Town, which provide access to the District and Hammersmith & City lines and the Jubilee Line, respectively. The service provision is summarised in **Table 7.14**

**Table 7.14 Local Bus Routes and Frequencies**

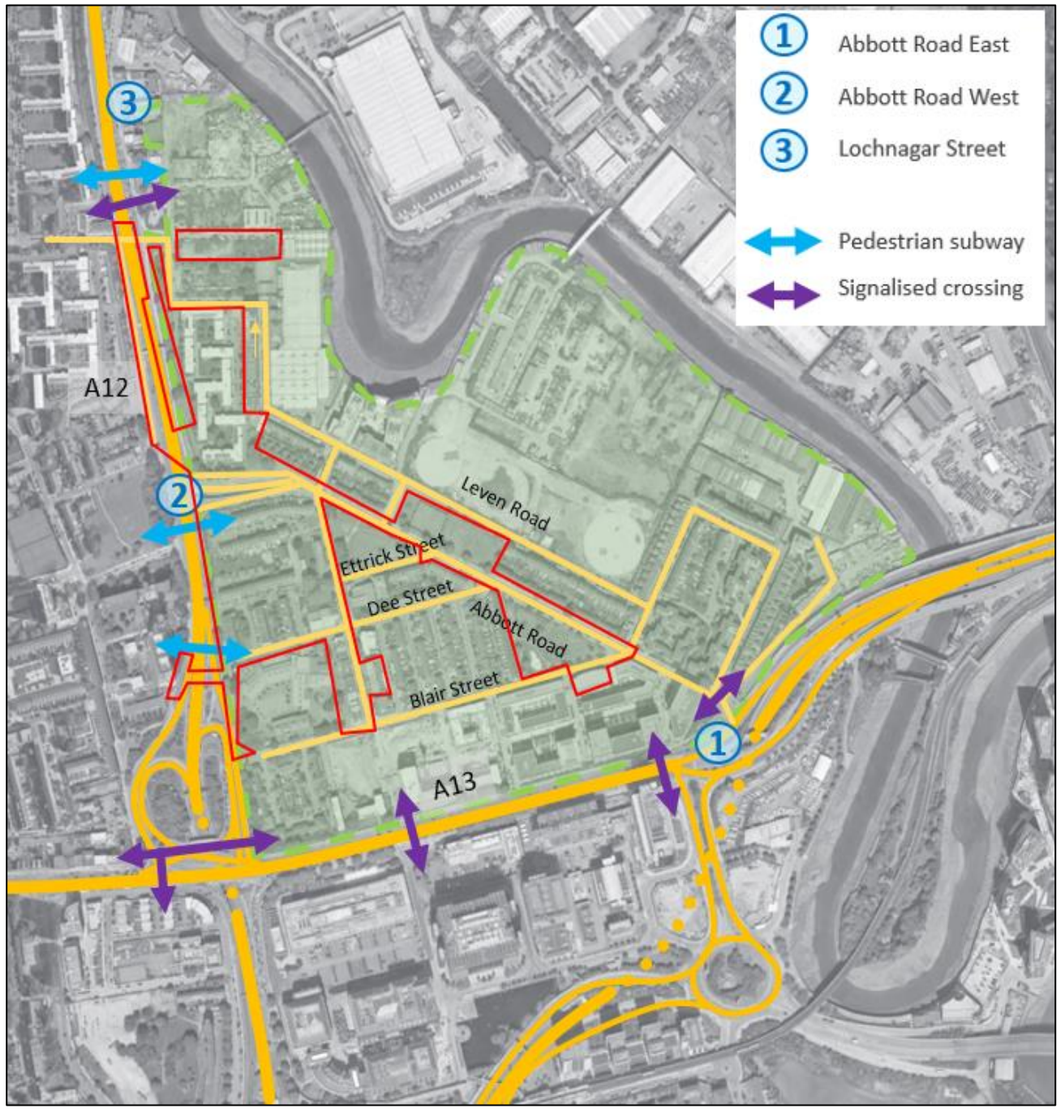
| Station | Line | Direction | Frequency (services per hour) | |
|---|---|---|---|---|
| | | | AM Peak (08:00-09:00) | PM Peak (17:00-18:00) |
| Bromley-by-Bow | District and Hammersmith and City | Westbound – Central London | 24 | 24 |
| | | Eastbound – towards Barking | 24 | 24 |
| Canning Town | Jubilee | Westbound – Central London | 24 | 24 |
| | | Eastbound – towards Stratford | 24 | 24 |
| Total | | | **96** | **96** |

## *Vehicle Access*

**7.71** The Site is located adjacent to the A12, which is part of the Transport for London Road Network and carries over 100,000 vehicles per day. At the southwest of the Site the A12 forms a grade separated junction with the A13 (East India Dock Road) which carries over 50,000 vehicles per day. With the River Lea to the northeast, the Site is located within a contained area (for ease this is referred to as the 'Aberfeldy Island') with three points of access, shown within **Figure 7.7** :

- Lochnagar Street, which forms a signalised junction with the A12 at the north of the Site.
- Abbott Road passes through the Site and connects the A12 and A13. At its western end Abbott Road forms a junction with the A12 via a grade separated right turn onto the northbound A12 in the form of a vehicle underpass and a left-in left-out for southbound A12 traffic.
- At its eastern end Abbott Road forms a signalised junction with the A13. The access operates as left-in, left-out with the right turn entry movement being restricted to bus only.

**Figure 7.7 Existing Street Network and Key Accesses**




**7.72** Descriptions of each of the roads within the Site most relevant to this ES are set out below.

*Abbott Road*

**7.73** Abbott Road is predominately a residential road which allows two-way movement in a northwest and southeast direction between the A13 to the south and the A12 in the north. The road has footways on both sides of the network and has pedestrian crossing facilities (Zebra crossings and informal pedestrian crossings).

**7.74** The road has on-street parking for residents permit holders (Zone B3). The permit allows parking on-street, Monday to Friday between 08:30 – 17:30. The road is subject to a 30mph speed limit and has double yellow line restrictions in areas.

**7.75** The road is a part of a bus route (service 309), which runs through the Abbott Road underpass. Traffic surveys undertaken in March 2014 and May 2015 indicate that the underpass is used by around 200 vehicles in the AM peak and around 110 vehicles in the PM peak. On average, only around 100 vehicles per hour use the

underpass outside of the peak hours. This means that in the AM peak, traffic from the underpass constitutes 4% of A12 traffic at this location. The traffic that uses the existing underpass to access the A12 is therefore considered to be negligible in the context of total traffic using the A12, and therefore from a strategic level, closure of the underpass would not be expected to result in a material effect on the operation of the strategic road network.

*Lochnagar Street*

**7.76** Lochnagar Street runs along the northern boundary of the Site and is a two-way single carriageway road that historically serviced an area that had an industrial character. Lochnagar Street provides the most northern access from the Site to the A12 via an at grade signalised junction.

*Bromley Hall Road*

**7.77** Bromley Hall Road is a two way, single carriageway road that runs in a generally north to south direction, parallel to the A12, between Ailsa Street and Leven Road, crossing Lochnagar Street.

**7.78** Footways are provided on both sides of the carriageway, however the public realm is of relatively low quality. A green space separates Bromley Hall Road from the A12, however this space is not inviting and during the October 2020 site visit, no pedestrians were seen using the green space.

**7.79** Single yellow line markings are present along the length of Bromley Hall Road between Lochnagar Street and Leven Road, preventing parking during the hours of control (Monday to Friday 08:30 -17:30).

*Aberfeldy Street*

**7.80** Aberfeldy Street is a two-way single carriageway road that runs generally north to south between Abbott Road and Blair Street. Of all roads within the Site, Aberfeldy Street is the most commercial in character; it provides a local high street with convenience stores, a pharmacy and a local community centre. Footways, which are generally of good width, are provided on either side of the carriageway. Several mature trees line Aberfeldy Street.

**7.81** Parking is provided along both sides of the Aberfeldy Street carriageway, including immediately outside of the high street shops. Aberfeldy Street also provides the highest concentration of cycle parking of any road within the Site, including a Cycle Hire docking station.

*Leven Road*

**7.82** Leven Road is predominately a residential road, which restricts southbound movement along the eastern part of the road. The road is subject to a 30mph speed limit and has on-street permit parking (B3) (indicated by the white demarcated bays). The road has no waiting restrictions, indicated by the single and double yellow lines, and forms part of a bus route. The road provides wide footways on both sides of the road.

## RECEPTORS AND RECEPTOR SENSITIVITY

**7.83** The receptors which are considered within the assessment are those people making journeys within the study area and include:

- Pedestrians – High Sensitivity;
- Cyclists – High Sensitivity;
- Bus passengers – Medium Sensitivity;
- Rail / Underground / DLR passengers – Medium Sensitivity; and
- Car drivers / passengers – Low Sensitivity.

**7.84** The Proposed Development will provide similar land uses to the existing Site uses; as such, no additional types of receptors will be introduced.

## POTENTIAL EFFECTS

### *Demolition and Construction*

**7.85** **ES Volume 1, Chapter 5: Demolition and Construction** includes an indicative construction programme. It is currently anticipated that peak construction will be in 2026.

**7.86** It is anticipated that the typical working hours for the construction works will be as set out below:

- 08:00 – 19:00 hours Monday to Friday; and
- 08:00 – 13:00 hours Saturday and Sunday.

**7.87** Construction vehicle impacts are dependent upon vehicle size and volume of trips. Generally, the larger the vehicle used, the fewer trips made. Therefore, provided that strict health and safety and environmental arrangements are in place it is best to use larger vehicles if possible, to limit the total number of vehicular movements.

**7.88** Peak Demolition and Construction vehicle numbers have been forecast, based on the proposed Demolition and Construction works and associated programme including construction phasing and are discussed in **ES Volume 1, Chapter 5: Demolition and Construction**.

**7.89** Peak construction in 2026 encompasses construction of Phase B of the Proposed Development. In this phase, the Detailed Proposals (Phase A) of the Proposed Development would be in occupation. However, as the Proposed Development will re-provide parking at a lower level than existing Site no increase in traffic is expected as a result of Phase A operation and therefore this has not been explicitly assessed as part of this scenario. For Phase B construction, construction vehicles will access and egress the Site via the A12 / Lochnagar Street junction.

*Severance*

**7.90** Based on the criteria set out in **Table 7.5** to **Table 7.8** and the changes to HGV flows during the Construction Phase (taking into account the operation of the Detailed Proposals) as set out in **Table 7.3** , the effects of severance are set out in **Table 7.15** .

**Table 7.15 Significance of Severance Effect – Construction Phase**

| Highway Link | Change in HGV AADT | Magnitude of Impact | Sensitivity of Receptor | | | |
|---|---|---|---|---|---|---|
| | | | Pedestrians | Cyclists | Bus Passengers | Cad Drivers/ Passengers |
| | | | High | High | Medium | Low |
| **Bromley Hall Road** | 421% | Medium Adverse | Major | Major | Negligible | Minor |
| **Lochnagar Street** | 67% | Low Adverse | Moderate | Moderate | Neutral | Negligible |

**7.91** In line with the IEMA and DMRB LA104 guidance, the magnitude of change in HGVs on Bromley Hall Road would be classed as major adverse and the change on Lochnagar Street as moderate adverse. However, given the very low existing HGV flows on Bromley Hall Road, it is considered that the percentage increase in flow at this location is less relevant than the actual increase. During construction Bromley Hall Road would experience an increase of 16 HGV movements an hour or one HGV movement every four minutes. While this is significant, the total traffic flow on Bromley Hall Road equates to approximately one vehicle per 30 seconds.

**7.92** In addition to this, the peak construction impact of the Proposed Development will be short term to medium term and local. It's therefore considered, based on professional judgement, that the effect on severance on Bromley Hall Road for people walking and cycling is **Moderate Adverse (Significant)** and the effect on Lochnagar Street for people walking and cycling is **Minor adverse (Not Significant)**.

**7.93** As no buses use Lochnagar Steet or Bromley Hall Road, the significance of the effect of severance on bus passengers here is considered **Negligible (Not Significant)**.

*Pedestrian and Cyclist Delay*

**7.94** As set out in the scoping report, pedestrian and cyclist delay has been assessed based on professional judgment.

**7.95** GEART states that pedestrian delay is mostly related to traffic volumes and that a 10 second delay in pedestrian's ability to cross a road (uncontrolled) equates to a two-way flow of around 1,400 vehicles per hour. As none of the highway links scoped into EIA for the Construction Phase comes close to experiencing a change in flow of 1,400 vehicles per hour, it is considered that any change in flow associated with the Proposed Development will result in no change in terms of pedestrian and cycle delay and therefore the significance of the effect would be **Negligible (Not Significant)**.

*Vehicle and Bus Delay*

**7.96** For vehicle and bus delay, roads scoped into this assessment in line with Rule 1 and Rule 2 of GEART have been assessed where they have junctions with the strategic highway network. For the Demolition and Construction phase the A12 / Lochnagar Street junction meets this threshold.

**7.97** The IEMA guidance states that vehicle delays are only likely to be significant when the traffic surrounding the Site is already at, or close to, capacity of the system. It's therefore considered that delay could only be significant during the AM and PM peak.

**7.98** As no buses use Lochnagar Street it is concluded the construction peak of the Proposed Development would result in no change to bus delay.

**7.99** At the Lochnagar Street junction, the number of additional HGV movements per day generated by the peak period of construction of the Proposed Development is 128 per weekday and equivalent. Assuming construction hours would be 08:00-18:00 on weekdays, 08:00-13:00 Saturday and Sunday, this constitutes an average HGV flow of 13 additional HGV movements per hour on Lochnagar Street.

**7.100** It is considered that 13 vehicles per hour on average would not have any noticeable impact on vehicle delay at this junction. Therefore, the resultant effect of the Demolition and Construction works on vehicle and bus delay is therefore **Negligible (Not Significant)**.

*Pedestrian Amenity, Fear and Intimidation*

**7.101** Pedestrian amenity and fear and intimidation are considered together for the purpose of this ES. The IEMA guidance sets out clear thresholds for fear and intimidation in terms of vehicles speed and flow. These are set out in **Table 7.5** as part of the methodology section of this chapter.

**7.102** A highway link is considered to meet a fear and intimidation threshold when at least two of the three thresholds are met. For the purpose of this assessment, it has been assumed that all highway links achieve an average speed of 10mph or more.

**7.103** The construction peak of the Proposed Development would not generate nearly enough general traffic or HGV traffic through Bromley Hall Road or Lochnagar Street to reach the thresholds for fear and intimidation set out in IEMA guidance. It is therefore concluded that the Demolition and Construction works would result in no change for fear and intimidation on either road.

**7.104** In terms of pedestrian amenity, IEMA guidance states that a significant change in amenity would constitute a halving or doubling of traffic (or HGV) flow as a result of the Proposed Development. Bromley Hall Road meets this threshold, but as overall traffic on this road would only increase by 13% compared to the 'Do Nothing' baseline scenario and the construction impacts are local and temporary. It is considered that the magnitude of change to pedestrian amenity is low, resulting in a **Minor Adverse (Not Significant)** effect on pedestrian amenity.

*Accidents and Safety*

**7.105** In terms of traffic safety for peak construction, the only locations on the network to experience any environmentally potentially significant change in traffic flow for the Demolition and Construction phase are the A12 / Lochnagar Street junction, Lochnagar Street and Bromley Hall Road.

**7.106** The increase in average hourly flow during peak construction on these roads is expected to be around 12-14 HGVs per hour or one vehicle every four to five minutes. While a noticeable increase, it is not expected that this level of temporary increase would result in any significant traffic safety issue.

**7.107** Pedestrian surveys at the A12 / Lochnagar Street junction shows that in the AM peak hour, only 18 pedestrians cross the A12 at this location using the at grade crossing, with even fewer people doing so in the inter- and PM peak hours. It is therefore considered that this location (including Lochnagar Street and the connecting Bromley Hall Road) does not experience very high levels of walking and cycling currently, minimising the potential for HGV-pedestrian or HGV-cycle conflict. Additionally, due to the restricted width at Lochnagar Street and Bromley Hall Road, vehicles would be travelling at slow speeds, further limiting traffic safety impacts.

**7.108** Overall, it is considered the peak construction phase would result in a **Negligible** (**Not Significant**) effect to the highway links scoped in as part of this EIA in terms of effects on accident and safety.

**7.109** The CLP will also include measures to manage road during the construction phase. These measures are expected to include restricting hours of delivery to the construction site to outside of the AM and PM peak hours, as well as using vehicles that comply with the Direct Vision Standard and HGV Safety Permit set by TfL.

### *Completed Development*

**7.110** The assessment of impacts during the operational phase of the Proposed Development has been undertaken for a proxy 2033 opening year of the completed Proposed Development.

**7.111** The TA submitted as part of the planning application for the Proposed Development sets out the transport-related development proposals in detail. This ES chapter sets out the environmental impact of those completed proposals.

**7.112** The proposals have been developed in line with the Healthy Streets Approach which has been adopted by the Mayor of London and LBTH. This approach prioritises active travel and sustainable travel modes over motorised transport in order to encourage active lifestyles, reduce air and noise pollution, and create a safe, attractive public realm where people will want to spend time.

**7.113** In addition to on-site public realm improvements, the development will provide a new Aberfeldy Active Travel Connector (AATC) using the existing Abbott Road underpass to provide people walking and cycling with a new high-quality way to cross the A12. Additionally, the Balfron Subway access will be upgraded to become DDA compliant and will feature added landscaping.

**7.114** Car and cycle parking for the Proposed Development will be in line with local plan and London Plan standards and will include charging facilities for Electric Vehicles (EVs), car club bays and Blue Badge parking.

**7.115** North of the repurposed underpass a new A12 / Abbott Road junction will be created to provide a new vehicular link between the A12 and the Site. This junction will feature a bus gate that will allow buses to continue to travel northbound from the Site onto the A12.

**7.116** Additional detail on the development proposals is included in the TA.

*Severance*

**7.117** The significance of severance in the Completed Development scenario is set out in **Table 7.16** .

**Table 7.16 Significance of Severance – Completed Development**

| Highway Link | Change in HGV AADT | Magnitude of Impact | Sensitivity of Receptor | | | |
|---|---|---|---|---|---|---|
| | | | Pedestrians | Cyclists | Bus Passengers | Car Drivers/ Passengers |
| | | | High | High | Medium | Low |
| Abbott Road (east of Underpass) | -93% | High Beneficial | Major | Major | Moderate | Minor |
| Abbott Road (east of Oban Street) | -28% | Low Beneficial | Moderate | Moderate | Minor | Minor / Negligible |
| Abbott Road Underpass | -100% | High Beneficial | Major | Major | Negligible | Negligible |
| Abbott Road Slip to A12 | 33% | Low Adverse | Minor | Minor | Minor | Minor / Negligible I |
| Oban Street | 34% | Low Adverse | Minor | Minor | Minor | Minor / Negligible |
| Bromley Hall Road | 70% | Medium Adverse | Moderate | Moderate | Negligible | Minor |
| Devons Road | -18% | Negligible Beneficial | Minor | Minor | Negligible | Negligible |
| Devas Street (west of A12 Junction) | 38% | Low Adverse | Minor | Minor | Minor | Minor / Negligible |
| Burcham Street/St Leonard Road | 19% | Negligible Adverse | Minor | Minor | Negligible | Negligible |

**7.118** The severance assessment shows the operation of the Proposed Development is expected to result in significant environmental effects on severance on the following highway links:

- Abbott Road (east of the underpass) – Long term, local **Major Beneficial (Significant)** effect on pedestrians and cyclists and **Moderate Beneficial (Significant)** to bus passengers.

- Abbott Road (east of Oban Street) – Long term, local **Moderate Beneficial (Significant)** effect on pedestrians and cyclists.
- Abbott Road underpass – Long term, district **Major Beneficial (Significant)** effect on pedestrians and yclists.
- Bromley Hall Road – Long term, local **Moderate Adverse (Significant)** effect on pedestrians and cyclists.

**7.119** The environmental effect on pedestrians and people cycling on Abbott Road is considered to be moderate beneficial due to the improved landscaping along this road as well as the added priority crossing facilities provided for pedestrians and people cycling in the form of tiger crossings.

**7.120** The potential moderate adverse severance effect on pedestrians and cyclists on Bromley Hall Road are addressed through embedded mitigation in the design of the Proposed Development. This includes significant public realm landscaping improvement along the road itself and improved footways, as well as the AATC. Therefore, this impact can be considered a long term, local **Minor Adverse** effect and **Not Significant**.

*Pedestrian and Cycle Delay*

**7.121** Effects on pedestrian and cyclist delay are assessed based on professional judgment.

**7.122** As previously stated, GEART guidance states that pedestrian delay at (uncontrolled) crossings equates to a two way flow of around 1,400 vehicles per hour. None of the highway links scoped into EIA comes close to experiencing a change in flow of 1,400 vehicles per hour and therefore, the change in flow associated with the Proposed Development will result in no change in terms of pedestrian and cycle delay.

**7.123** The Proposed Development includes a new pedestrian and cyclist crossing facility across the A12 by using the existing underpass. While there is an existing subway adjacent to the underpass, this existing subway is not very attractive and feels unsafe and some people may therefore prefer to use the Lochnagar Street at-grade crossing instead, adding to their journey time. Additionally, the enhanced pedestrian and cycle connection will be more direct, allowing people to walk and cycle directly in, compared to the existing subway which has indirect ramps and stairs.

**7.124** The AATC will have a beneficial effect in terms of pedestrian and cycle delay. However, as there is already a subway in approximately the same location, the effect is considered to be **Not Significant**.

*Vehicle and Bus Delay*

**7.125** For vehicle and bus delay, roads scoped into the assessment in line with Rule 1 and Rule 2 of GEART have been assessed where they have junctions with the strategic highway network. These include:

- Proposed A12 / Abbott Road junction;
- A12 / Devas Street junction;
- A12 / Lochnagar Street junction; and
- A13 / Abbott Road / Lanrick Road junction.

**7.126** Vehicle and bus delay has been assessed using strategic modelling outputs from LoHAM. In line with the criteria in **Table 7.6** , the change in delay at each junction has been assessed. As the Proposed A12 / Abbott Road / Bus Gate junction is a new junction and no change in delay is modelled. Therefore, this junction will be assessed based on professional judgement.

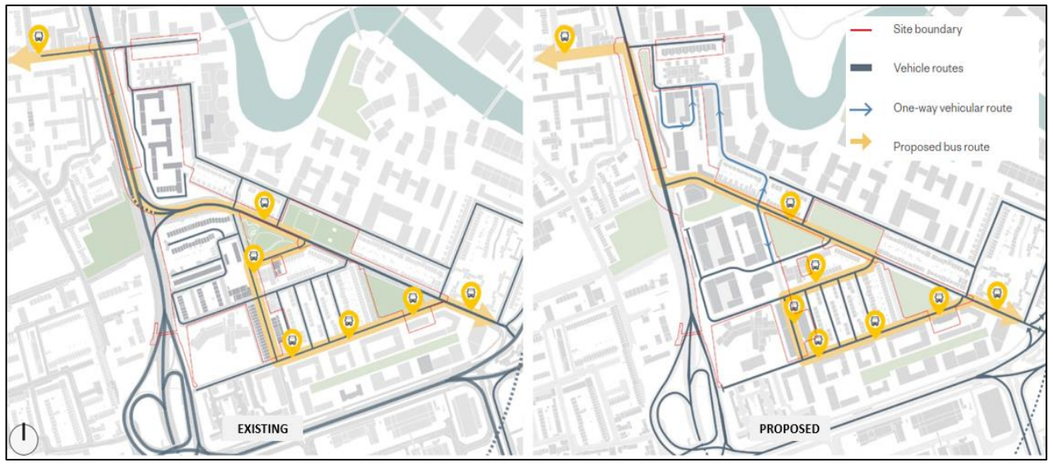
**Table 7.17 Vehicle and Bus Delay – Completed Development**

| Highway Link | AM Peak (delay in seconds) | | | | PM Peak (delay in seconds) | |
|---|---|---|---|---|---|---|
| | Future Baseline | Completed Development | Change in Delay | Future Baseline | Completed Development | Change in Delay |
| **Proposed A12 / Abbott Road / Bus Gate Junction** | | | | | | |
| A12 Southbound (N) | N/A | 4 | N/A | N/A | 66 | N/A |
| Abbott Road Bus Gate | N/A | 232 | N/A | N/A | 232 | N/A |
| A12 Northbound (S) | N/A | 2 | N/A | N/A | 2 | N/A |
| **A12/Lochnagar Street / Zetland Street** | | | | | | |
| A12 Southbound (N) | 15 | 15 | **0** | 252 | 244 | **-8** |
| Lochnagar Street | 143 | 282 | **139** | 85 | 193 | **108** |
| A12 Northbound (S) | 12 | 5 | **-7** | 14 | 8 | **-6** |
| Zetland Street | 121 | 157 | **36** | 140 | 208 | **68** |
| **A13 / Abbott Road** | | | | | | |
| A13 Eastbound (W) | 17 | 20 | **3** | 19 | 24 | **5** |
| Abbott Road | 56 | 57 | **1** | 86 | 109 | **23** |
| A13 Left turn into Abbott Road | 5 | 3 | **-2** | 8 | 4 | **-4** |
| **A12 / Devas Street** | | | | | | |
| A12 Southbound (N) | 1 | 1 | **0** | 1 | 1 | **0** |
| Devas Street | 0 | 0 | **0** | 0 | 0 | **0** |
| A12 Northbound (S) | 9 | 8 | **-1** | 9 | 7 | **-2** |

**7.127** **Table 7.17** shows that only the A12 / Lochnagar Street / Zetland Street junction meets the thresholds for changes in delay set out in **Table 7.6** , all other junctions are therefore considered to experience no change in terms of environmental effects.

**7.128** Due to the closure of the Abbott Road Underpass, as well as introduction of new streets in the masterplan and the pedestrianisation of sections of the local road network as part of the proposals, the existing bus stops within the Site will be moved; this is set out in **Figure 7.8** This proposal is not expected to add any delay to the bus routes that will run through the Site.

**Figure 7.8 Bus Re-Routing Proposal**




**7.129** Instead of the existing Abbott Road / A12 underpass, in the Future Completed Development Scenario, buses turning right onto the A12 would use the signalised bus gate provided as part of the proposed A12 / Abbott Road / Bus Gate junction, the Abbott Road Bus Gate shows a delay of 232 seconds in both peaks. However, this modelled delay is due to the fact that the LoHAM model does not incorporate the proposed signal linkage between the bus gate and the Lochnagar Street Junction. Therefore, buses would not be expected to wait more than 60 seconds at the bus gate, which would constitute a low adverse effect on bus passengers compared to the existing situation where buses use the Abbott Road underpass to cross the A12. Therefore, the overall significance of delay on bus passengers is considered to be **Negligible (Not Significant)**.

**7.130** As the proposed arrangement for other traffic at this junction is similar to the existing A12 / Abbott Road junction, no change is expected for car traffic compared to the existing situation and therefore the significance of the effect on car and bus passengers is classed as **Negligible – Minor Adverse** (**Not Significant**)**.**

**7.131** **Table 7.18** sets out the assessment of effects of the operational Proposed Development on vehicle and bus delay.

**Table 7.18 Significance of Vehicle and Bus Delay – Completed Development**

| Highway Link | Change in Delay (s) | Magnitude of Impact | Sensitivity of Receptor | |
|---|---|---|---|---|
| | | | Bus Passengers | Car Drivers / Passengers |
| | | | Medium | Low |
| **Proposed A12 / Abbott Road / Bus Gate Junction** | | | | |
| A12 Southbound (N) | N/A | No Change | No Change | No Change |
| Abbott Road Bus Gate | N/A | Minor | Negligible | N/A |
| A12 Northbound (S) | N/A | No Change | No Change | No Change |
| **A12 / Lochnagar Street / Zetland Street** | | | | |
| A12 Southbound (N) | -8 | Negligible | Minor | Negligible |
| Lochnagar Street | 139 | Medium | N/A | Minor |
| A12 Northbound (S) | -7 | Negligible | Minor | Negligible |
| Zetland Street | 68 | Minor | Minor | Minor |

*Amenity, Fear and Intimidation*

**7.132** Consistent with the Construction Phase assessment, IEMA guidance thresholds for fear and intimidation as shown in **Error! Reference source not found.**have been applied to all highway links scoped into EIA assessment for the Operational Phase of the Proposed Development. The full assessment is set out in **Table** 7.19 below.

**7.133** A highway link is considered to meet a fear and intimidation threshold when at least two of the three thresholds are met. For the purpose of this assessment, it has been assumed that all highway links achieve an average speed of 10mph or more.

**Table 7.19 Fear and Intimidation Assessment – Completed Development**

| Highway Link | Fear and Intimidation Threshold Met? | | |
|---|---|---|---|
| | 18H Average Hourly Flow | HGV AADT Flow | Average Speed |
| Abbott Road (east of Underpass) | No | No | Yes |
| Abbott Road (east of Oban Street) | No | No | Yes |
| Abbott Road Underpass | No | No | Yes |
| Abbott Road Slip to A12 | No | No | Yes |
| Oban Street | No | No | Yes |
| Bromley Hall Road | No | No | Yes |
| Devons Road | No | No | Yes |
| Devas Street (west of A12 Junction) | No | No | Yes |
| Burcham Street/St Leonard Road | No | No | Yes |

**7.134** None of the highway links assessed reach the threshold for a significant fear and intimidation effect. It is therefore concluded that the Proposed Development would result in no change for fear and intimidation.

**7.135** In terms of pedestrian amenity, the Proposed Development will provide significant benefits. Of the highway links scoped into the assessment, the following are expected to experience beneficial environmental effects as a result of the Proposed Development:

- Abbott Road (east of underpass) – Long term, local **Moderate Beneficial** (**Significant**) effect due to landscaping improvements along Abbott Road as well as traffic calming and permeability improvements in the form of raised tables, wider pavements and tiger crossings.
- Abbott Road underpass – Long term, district **Major Beneficial** (**Significant**) effect as this provides a new traffic free pedestrian and cycle connection from the Site to the west of the A12.
- Bromley Hall Road – Long term, local **Moderate Beneficial** (**Significant**) effect due to landscaping on the west side of the street.

*Accidents and Safety*

**7.136** In terms of traffic safety, the Proposed Development will provide benefits within the Site by ensuring that all designs are in line with Manual for Streets[3] guidance. Additionally, traffic calming in the form of raised tables and crossings that provide priority to pedestrians and people cycling, as well as lowering vehicle speed will provide additional safety to active travel users.

**7.137** Furthermore, by providing a new traffic free connection under the A12, the Proposed Development encourages the reduction of collisions at existing at-grade crossing points nearby where pedestrians and cyclists may be tempted to jump a red light due to long waiting times. Moreover, improvements to the existing Dee Street subway will improve the feeling of safety at this A12 crossing.

**7.138** Overall, it is considered the Proposed Development would have a **Moderate Beneficial** (**Significant**) effect on pedestrian and cyclist safety in the area.

## MITIGATION, MONITORING AND RESIDUAL EFFECTS

### *Demolition and Construction Mitigation*

**7.139** The assessment presented in this ES chapter has shown that the effects of the peak Demolition and Construction programmed works on the study area for vehicle and bus delay, pedestrian and cycle delay, amenity, fear and intimidation, and accidents and safety will be **Not Significant**.

**7.140** The assessment contained within this chapter has shown that the impact of the increased HGV movements at Lochnagar Street and Bromley Hall Road will result in the following significant effects:

- Temporary short to medium term Moderate adverse severance effect at Bromley Hall Road on pedestrians and cyclists; and
- Temporary short to medium term Minor adverse severance effect at Lochnagar Street on pedestrians and cyclists.

**7.141** Notwithstanding, the hybrid planning application is accompanied by an Outline CLP. The Applicant will work in partnership with the LBTH, and their supply chain, to reduce, and in some cases and where possible eliminate, statutory nuisance of fumes, noise and dust arising from vehicular movements, and this will be secured via the provision of a CLP. The implementation of a CLP will be important to avoid, minimise and mitigate any construction effects on the environment, existing communities and residents.

*Construction Logistics Plan*

**7.142** An Outline CLP has been submitted with this planning application as part of the TA. A detailed CLP will be secured by planning condition and will minimise adverse impacts resulting from the Demolition and Construction phases of the Proposed Development.

**7.143** The CLP will include information relating to operational hours, on-site mitigation measures such as wheel washing, monitoring and reviewing the construction programme, the hoarding position and how it affects pedestrian comfort levels and any other potential issues raised during the Demolition and Construction period.

**7.144** The Outline CLP will incorporate the following measures:

[3] *Department for Transport, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/341513/pdfmanforstreets.pdf, 2007*

- Safety and environmental standards and programmes;
- Adherence to designated routes;
- Delivery scheduling;
- Re-timing for out of peak deliveries;
- Re-use of material on site;
- Smart procurement;
- Collaboration with other sites in the area; and
- Implement a staff travel plan.

**7.145** Given the low pedestrian flows at the A12 / Lochnagar Street pedestrian crossing it's considered that overall pedestrian flow here is limited and by limiting deliveries to be outside of the peak hours and having banksmen on-site to help reduce conflict between pedestrians and cyclists and construction vehicles, the likely residual effect for Bromley Hall Road and Lochnagar Street would be 'Minor Adverse' and therefore **not significant**.

**7.146** In addition to a CLP, Construction Environmental Management Plans (CEMPs) will be submitted alongside of the application. A detailed CEMPs which would include details on monitoring of vehicle movements and cover each phase of construction will be secured via planning condition.

### *Completed Development Mitigation*

**7.147** The assessment presented in this ES chapter has shown that the effects of the completed development on the study area for **severance,** for pedestrians and cyclists and bus passengers **amenity, fear and intimation** for pedestrians and cyclists and **accidents and safety** for cyclists will be **Significant**. All other potential effects are considered **Not Significant**.

**7.148** No significant adverse highways and transport related effects have been identified in this assessment. As additional mitigation to maximise the environmental benefits and mitigate any adverse not significant effects, the following mitigation is proposed to be implemented for the completed development:

- A Travel Plan to encourage the uptake of sustainable travel for residents and employees of the Proposed Development; and
- A Delivery and Servicing Plan to encourage the uptake of sustainable delivery and servicing practices for the residential and commercial elements of the Proposed Development.

**7.149** With the implementation of these mitigation measures, all effects remain as assessed above.

### *Residual Effects*

**7.150** The residual effects resulting from the Demolition and Construction of the Proposed Development and the completed Proposed Development following mitigation measures are summarised in **Table 7.20** .

**Table 7.20 Residual Effects**

| Receptor & Sensitivity | Description of the Residual Effect | Scale and Nature | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | |
| Pedestrians (High) | Pedestrian Severance | Minor Adverse | Not Significant | L | D | T | Mt |
| | Pedestrian delay | Negligible | Not Significant | L | D | T | Mt |
| | Pedestrian amenity, fear and intimidation | Negligible | Not Significant | L | D | T | Mt |
| | Pedestrian accidents and safety | Negligible | Not Significant | L | D | T | Mt |
| Cyclists (High) | Cyclist Severance | Minor Adverse | Not Significant | L | D | T | Mt |
| | Cyclist delay | Negligible | Not Significant | L | D | T | Mt |
| | Cyclist amenity, fear and intimidation | Negligible | Not Significant | L | D | T | Mt |
| | Cyclists accidents and Safety | Negligible | Not Significant | L | D | T | Mt |
| Bus Passengers (Medium) | Bus severance | Negligible | Not Significant | L | D | T | Mt |
| | Bus delay | Negligible | Not Significant | L | D | T | Mt |
| Vehicle passengers (Low) | Vehicle severance | Minor Adverse | Not Significant | L | D | T | Mt |
| | Vehicle delay | Negligible | Not Significant | L | D | T | Mt |
| **Completed Development** | | | | | | | |
| Pedestrians (High) | Pedestrian Severance | Major Beneficial | **Significant** | L | D | P | Lt |
| | Pedestrian Delay | Minor Beneficial | Not Significant | L | D | P | Lt |
| | Pedestrian Amenity, Fear and Intimidation | Major Beneficial | **Significant** | L | D | P | Lt |
| | Pedestrian Accidents and Safety | Moderate Beneficial | **Significant** | L | D | P | Lt |
| Cyclists (High) | Cyclist Severance | Major Beneficial | **Significant** | L | D | P | Lt |
| | Cyclist Delay | Minor Beneficial | Not Significant | L | D | P | Lt |
| | Cyclist Amenity, Fear and Intimidation | Major Beneficial | **Significant** | L | D | P | Lt |
| | Cyclists Accidents and Safety | Moderate Beneficial | **Significant** | L | D | P | Lt |
| Bus passengers (Medium) | Bus Passenger Severance | Moderate Beneficial | **Significant** | L | D | P | Lt |
| | Bus Passenger Delay | Negligible - Minor Adverse | Not Significant | L | D | P | Lt |
| Vehicle passengers (Low) | Vehicle Severance | Minor Adverse - Minor Beneficial | Not Significant | L | D | P | Lt |
| | Vehicle Delay | Negligible - Minor Adverse | Not Significant | L | D | P | Lt |

**Notes:**
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline Scenario*

**7.151** When considering the likely evolution of the baseline conditions, other nearby cumulative schemes have been accounted for as a part of the Future Baseline (without Proposed Development) Scenario as set out in the Assessment Methodology section of this chapter.

**7.152** The local highway network and public transport infrastructure is expected to operate as per the future baseline scenario if the Proposed Development were not to come forward.

### *Cumulative Effects*

#### *Demolition and Construction*

**7.153** This section identifies the effects of the Proposed Development in combination with the effects of other cumulative schemes within the surrounding area (as set out in the Assessment Methodology).

**7.154** The purpose of this assessment is to identify the effects of the Proposed Development in conjunction with the effects of other surrounding development schemes on the receptors identified within the assessment above that could potentially be impacted by the Proposed Development.

**7.155** Demolition and Construction traffic is invariably an important component of traffic flow on the strategic road network. This includes both through traffic and traffic with local destinations and will vary to some degree depending on where development is focussed at any time. The nature of such traffic is constantly changing with some construction activities ending or reducing and others starting or become more intense. This is a matter which is best considered strategically at a policy level and is difficult to consider in any detail on a scheme-by-scheme basis.

**7.156** Once vehicles are present on the strategic highway network, they are served by routes designed for HGVs and carry a volume of traffic where the demolition/construction traffic associated with the Proposed Development will create a negligible increase.

**7.157** As highlighted earlier in this ES chapter, it is anticipated that construction traffic routing for the Proposed Development during peak construction will be via the strategic road network, before accessing the Site via Lochnagar Street. In the preparation of the detailed CLP, which will be secured via a planning condition, it will be necessary for the appointed construction contractor to liaise with other schemes locally, such as those which a planning application has been submitted for and yet to be determined, and liaise with local stakeholders where it is necessary to do so to mitigate any potential impacts of multiple construction events occurring simultaneously in proximity to the Site.

**7.158** The appointed construction contractor will monitor and review the CLP for the Proposed Development on an on-going basis to reflect the changing needs of the project and / or any changes to the local road network.

**7.159** While a number of developments are permitted or subject to planning permission in the surrounding area, it is considered that only – the Ailsa Wharf development, Islay Wharf development, Former Poplar Tram Depot development, and Leven Road Gasworks development sites will use the same local highway network as the construction vehicles generated by the Proposed Development. It is reasonable to assume that there could be an overlap with their construction period when the Proposed Development is under construction (**Table 7.21**):

**Table 7.21 Cumulative Scheme Construction Flows**

| Site | Residential Dwellings | Daily Construction HGV Flows (two-way) | Data Source |
|---|---|---|---|
| **Ailsa Wharf** | 785 | 71* | Ailsa Wharf Construction Environmental Management Plan |
| **Islay Wharf** | 133 | 119 | Poplar Tram Depot ES Cumulative Construction Assessment |
| **Poplar Tram Depot** | 530 | | |
| **Leven Road Gasworks** | 2,800 | 22 | Leven Road Gasworks ES Traffic & Transport Chapter |
| **Aberfeldy Village Masterplan** | 1,628 (max) | 128 | Development assessed in this ES. Blue Skye Building Pre-Construction Assessment. |
| **Cumulative** | 5876 | 341 | - |

*The per centage HGVs out of total construction vehicle flow was not included in the CEMP. Therefore a proportion of 89.6% was applied, as this was quoted within the Poplar Bus Deport Cumulative Assessment.

**7.160** The distribution of construction trips for the cumulative schemes (excl. the Proposed Development) has been extracted from the Poplar Tram Depot Cumulative Construction Assessment as this distribution was previously accepted by LBTH and TfL and the cumulative schemes are accessed using the same general local highway network links.

**7.161** To see what highway links are affected by the cumulative development in the area, construction traffic HGV AADT flows have been distributed on the local highway network (**Table 7.22**).

**Table 7.22 Construction HGV AADT Change – Cumulative Assessment**

| Highway Link | Committed Development Construction HGV AADT | Proposed Development Construction HGV AADT | Cumulative Construction HGV AADT Change | Change in HGV AADT (%) | Magnitude of Impact |
|---|---|---|---|---|---|
| Abbott Road Slip to A12 | 70 | 0 | 70 | 52% | Minor Adverse |
| Leven Road | 165 | 0 | 165 | 187% | Major Adverse |
| Bromley Hall Road | 176 | 128 | 330 | 1085% | Major Adverse |
| Lochnagar Street | 176 | 128 | 330 | 173% | Major Adverse |

**7.162** As shown above, the Abbott Road Slip to the A12, Leven Road, Bromley Hall Road, and Lochnagar Street are expected to experience a change in HGV AADT above the IEMA guidance threshold of 30%. However, as set out in the table above, the peak construction flows for the Proposed Development is not expected to materially add to the Abbott Road Slip to the A12 and Leven Road and therefore the Proposed Development will not add a significant impact on a cumulative basis.

**7.163** For Lochnagar Street and Bromley Hall Road, the change in HGV AADT is significant. However, as set out earlier in this ES, this is mostly due to the relatively low existing HGV flows on these links, as the hourly additional flow for these links is around 30 vehicle movement per hour (one vehicle every two minutes).

**7.164** The ES documentation for the cumulative developments set out a range of construction mitigation including CLPs and construction environmental management measures. In these documents, the residual environmental construction effects are described as no significant. As set out in this Chapter, the construction impacts of the Demolition and Construction phase of the Proposed Development will be mitigated through a CLP and construction management plans leaving no significant residual adverse effects.

**7.165** It is therefore considered that though the overall number of construction HGVs doubles in the Cumulative Assessment compared to scenario that assesses the proposals in isolation, the anticipated cumulative effects on the network are expected to be direct, temporary, medium-term, and **minor adverse** (**not significant**).

*Completed Development*

**7.166** During the pre-application scoping process, a number of cumulative schemes were identified. As noted in **paragraph 7.12** to **7.15,** cumulative effects are considered inherently as part of the operational assessment of the Proposed Development. Therefore no additional Cumulative Impact Assessment is required for the Completed Development scenario.

**7.167** The cumulative schemes are expected to increase pedestrian and cycle flows immediately within the study area. As the proposals include a new pedestrian-cycle link under the A12 which will help accommodate these flows, the cumulative effect on pedestrians and cyclists is expected to be beneficial.

## LIKELY SIGNIFICANT EFFECTS

**7.168** No significant residual adverse effects relating to traffic and transport have been identified as part of the assessment of the Demolition and Construction phase of the Proposed Development.

**7.169** The CLP will be monitored and reviewed by the Contractor at regular intervals during the construction phase. The number and frequency of construction vehicles travelling to and from the construction site will be strictly monitored and controlled where necessary.

**7.170** No residual adverse significant effects relating to traffic and transport have been identified as part of the assessment of the operational phase of the Proposed Development. However, the proposals are expected to generate some significant beneficial effects related to traffic and transport. These include:

- **Major Beneficial (Significant)** effects to pedestrian and cyclist severance;
- **Major Beneficial (Significant)** effects to pedestrian and cyclists amenity, fear and intimidation;
- **Moderate Beneficial (Significant)** effects to pedestrian and cyclist accidents and safety; and
- **Moderate Beneficial (Significant)** effect to bus passenger severance.

**7.171** The Delivery and Servicing Plan and Travel Plan will be regularly monitored to ensure that the identified mitigation measures are being correctly implemented which will limit any adverse effects and maximise the beneficial effects associated with the Proposed Development.

**7.172** No residual significant cumulative effects are anticipated.

# Chapter 8: Air Quality

| TOPIC | AIR QUALITY |
|---|---|
| **AUTHOR** | Entran Ltd |
| **SUPPORTING APPENDIX** | **ES Volume 2: Appendix: Air Quality**:<br>Annex 1: Glossary;<br>Annex 2: Traffic Data; and<br>Annex 3: Model Verification Study. |
| **KEY CONSIDERATIONS** | London Borough of Tower Hamlets (LBTH) has declared a borough wide Air Quality Management Area due to exceedances of the air quality objectives for nitrogen dioxide ($NO_2$) and particulate matter (as $PM_{10}$). The potential air quality effects associated with the Proposed Development are:<br>• Dust arising because of the demolition and construction works, with potential impacts on amenity and human health. A qualitative dust risk assessment has therefore been carried out;<br>• Construction vehicle and plant emissions from the demolition and construction works; and<br>• Impacts of road traffic emissions from traffic generated by the operational Proposed Development on existing and proposed receptors. |
| **CONSULTATION** | The EIA Scoping Opinion is presented in **ES Volume 2 Appendix: EIA Methodology – Annex 2** which raised several points regarding air quality, which have been addressed. The points raised are as follows:<br>• The assessment of vehicle emissions is to include assessment of $NO_2$, $PM_{10}$, and $PM_{2.5}$;<br>• The layout of the Proposed Development is to be considered to limit the potential exposure to unacceptable air quality;<br>• The ES is to ensure that realistic background air quality concentrations are used in the assessment, and a robust model verification exercise is undertaken;<br>• Meteorological data from London City Airport should also be used to inform the assessment, along with the most recent local monitoring data;<br>• The dispersion modelling must enable the future baseline with and without the Proposed Development to be understood, and in accordance with Paragraph 6.20 of the Institute of Air Quality Management (IAQM) guidance 'Planning for Air Quality' (2017), comparison should also be provided against the existing baseline. The ES should also include an assessment of the worst case (peak) demolition and construction effects, and an interim construction and operation effects of the Proposed Development. The scenarios must be clearly differentiated;<br>• The ES must ensure the spatial extent of the assessment of vehicle emissions is sufficient, to ensure the likely significant effects of the Proposed Development can be understood;<br>• The ES is to illustrate the location of air quality receptors, their use type (e.g. school, nursery, residential) and their sensitivity to poor air quality/changes in air quality. The ES should include a figure(s) showing the location of identified air quality receptors, as well as the background monitoring stations utilised in the assessment;<br>• The ES shall have regard to the Greater London Authority (GLA) Supplementary Planning Guidance (SPG) on Sustainable Design and Construction with regards to impacts on future users of the building and the impact of emissions from the building on both the Proposed Development itself and surrounding areas;<br>• The Applicant should also have regard to the London Plan with particular reference to Policy SI 1, the London Mayor's Environment Strategy with particular reference to Policy 4.3.3a, with regards to new developments being 'air quality positive', and the air quality recommendations in the Tower Hamlets Local Plan 2031: Managing Growth and Sharing the Benefits (2020) in particular policy ES2 - improving air quality;<br>• An air quality neutral assessment should be carried out following the methodology outlined in the GLA Sustainable Design and Construction Supplementary Planning Guidance (SPG). In addition, the Air Quality Neutral Planning Support Update (2014) should be used to inform the assessment as referenced in the Scoping Report;<br>• The demolition and construction assessment should include a worst-case assessment in which the effects of construction on new on-site receptors (e.g. residents) are considered;<br>• The ES should clearly set out the definition of 'temporary' effects as, whilst the Scoping Report refers to 'temporary generation of dust from construction works' and 'temporary changes in traffic related emissions during the construction works', the demolition and construction programme is anticipated to be ten years in duration; therefore, it is likely that that demolition and construction related effects are long term;<br>• The ES should also consider the potential effects arising from any required remediation of the Application Site, which can result in emissions to air and as a result, risk to human health and nuisance;<br>• The Air Quality (Dust) Risk-Assessment (AQDRA) is to provide a detailed risk-assessment for each construction sub-phase as outlined in the Control of Dust and Emissions During Construction SPG 2014, Mayor of London. The ES should identify adherence to the GLA Control of Dust and Emissions SPG as a mitigation measure to be secured within any given planning permission;<br>• The potential for cumulative construction traffic effects is to be sufficiently considered and assessed as required;<br>• LBTH expects that should the air quality assessment identify levels of air pollution above the National Air Quality Objective levels, mitigation is to be provided, noting that the use of filtered inlet air is not normally considered to be acceptable. Occupants of the proposed residential units are not to be exposed to air in excess of the UK air quality objectives, the effect on future on-site receptors is to be assessed as confirmed in Paragraph 134 of the Scoping Report;<br>• The Scoping Report confirms that open space is proposed as part of the Proposed Development. The position of such space, including any play space, should be considered in the ES in relation to air quality, to avoid adverse effects;<br>• The ES is to provide a transparent account of the modelling undertaken, all assumptions made and all input data used, including datasets used, methodologies (monitoring, modelling, and scenarios), meteorological data, background concentrations, traffic data (flow, speeds, etc.), dispersion model type; and<br>• Given the height of the Proposed Development, the Air Quality aspect chapter will need to assess the effects at various heights and identify at which levels mitigation is required. If mechanical ventilation is required, the ES should specify at what level/location air of a suitable quality can be utilised and ensure the ventilation strategy is consistent between the overheating strategy and noise assessments i.e. whether other assessments are relying on open or closed windows. |

# ASSESSMENT METHODOLOGY

## *Air Quality Standards (AQS)*

**8.1** The Air Quality Standards Regulations 2010[1] came into force on the 10th June 2010 and have adopted into UK law the limit values required by EU Directive 2008/50/EC. These regulations prescribe the 'relevant period' (referred to in Part I2V of the Environment Act 1995) that local authorities must consider in their review of the future quality of air within their area. The regulations also set out the air quality objectives to be achieved by the end of the 'relevant period'.

**8.2** Of the pollutants included in the AQS, $NO_2$, $PM_{10}$ and $PM_{2.5}$ will be particularly relevant to this project as these are the primary pollutants associated with road traffic.

**8.3** The air quality standards and objectives for the pollutants considered in this assessment are set out in **Table 8.1.**

**Table 8.1 Air Quality Standards and Objectives**

| Pollutant | Standard (µg/m3) | Averaging Period | No. of Permitted Exceedances |
|---|---|---|---|
| $NO_2$ | 200 | 1-Hour | 18 per annum (99.8th percentile) |
| | 40 | Annual | - |
| $PM_{10}$ | 200 | 24-Hour | 35 per annum (90.4th percentile) |
| | 50 | Annual | - |
| $PM_{2.5}$ | 25 | Annual | - |

## *Defining the Baseline*

### *Current Baseline Conditions*

**8.4** Existing sources of emissions within the study area have been identified through examination of the Council's Air Status reports[2]. Information on existing (2019) air quality has been obtained by collating the results of

[1] *The Air Quality Standards Regulations 2010 – Statutory Instrument 2010 No. 1001*

[2] *London Borough of Tower Hamlets (2020) Air Quality Annual Status Report for 2019, [Online], Available: The London Borough of Tower Hamlets Air Quality Annual Status Report for 2019*

monitoring carried out by LBTH[2]. This covers both the study area and nearby sites (closest sites to the Proposed Development); the latter being used to provide context for the assessment. Background concentrations have been defined using the national pollution maps published by Defra[3].

**8.5** At the time of undertaking this assessment, the most recent published measurement data available from LBTH was from 2019. Therefore, to allow for model verification, the 2019 measurement data has been used to represent the baseline year.

**8.6** Exceedances of the annual mean European Union (EU) limit value for $NO_2$ in the study area have been identified using the maps of roadside concentrations published by Defra[4]. These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to EU data quality standards, to report exceedances of the limit value to the EU. The national maps of roadside $PM_{10}$ and $PM_{2.5}$ concentrations[5], which are available for the years 2009 to 2017, show no exceedances of the limit values anywhere in the UK in 2017.

**8.7** Baseline traffic flows for roads in the vicinity of the Proposed Development have been provided by the transport consultants for the Project and are summarised in **ES Volume 3, Annex 2 – Traffic Data**. Current baseline concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ at the Proposed Development have been predicted using the ADMS-Roads dispersion model.

### *Evolution of the Baseline*

**8.8** Baseline air quality is likely to improve in future years as a result of improvements in vehicle emissions technology regardless of whether the Proposed Development comes forward or not. To provide a worst-case assessment of potential impacts, the existing baseline pollutant concentrations are assumed to be representative of future air quality at sensitive receptor locations.

**8.9** The future baseline known as the "Future Without Development" refers to the scenario which assumes all Committed Developments are built and all associated traffic movements are included within the traffic flows, in the absence of the Proposed Development being implemented. Effectively this describes the future environment in the absence of the Proposed Development.

**8.10** Future baseline traffic flows have been provided by the transport consultants for the expected year of completion (2031) and are summarised in **ES Volume 3, Annex 2 – Traffic Data**. These flows incorporate the projected traffic flows associated with cumulative schemes in the vicinity of the Site.

## *Impact Assessment Methodology*

### *Demolition and Construction*

**8.11** **ES Volume 1, Chapter 5: Demolition and Construction** outlines the proposed demolition and construction works. Consideration has been given to the potential for significant effects from the following impacts that will occur during the demolition and construction stage:

- Dust emissions; and
- Construction traffic and plant emissions.

### *Dust*

**8.12** The potential impact of dust generated during site enabling, earthworks and construction works at the Proposed Development has been undertaken in accordance with the Institute of Air Quality Management (IAQM) construction dust guidance[6], which is closely aligned with the GLA's Supplementary Planning Guidance (SPG) for the control of dust and emissions during construction and demolition[7].

**8.13** . Guidance provided by the IAQM includes the following criteria for assessing the effects of construction dust:

- A sensitive 'human receptor' within 350m of the Proposed Development Site boundary or within 50m of the route used by construction vehicles on public highways up to 500m from the Site entrance; and
- A sensitive 'ecological receptor' within 50m of the Proposed Development Site boundary or within 50m of the route used by construction vehicles on the public highway, up to 500m from the Site entrance. /or

**8.14** The IAQM/ SPG methodology allows the potential risk of dust soiling and human health effects to be determined, based primarily on the sensitivity of nearby receptors (human and ecological) and the anticipated magnitude of the dust emission due to:

- Demolition;
- Earthworks;
- Construction; and
- Track-out (re-suspended dust from vehicle movements).

**8.15** The risk of dust effects (low, medium or high) is determined by the scale (magnitude) and nature of the works and the proximity of sensitive human and ecological receptors.

**8.16** All construction sites are different and the potential for dust impacts are dependent on a number of local factors such as the prevailing wind direction, the proposed construction phasing, the likely duration of dust raising activities, local topography and existing air quality. The methodology set out in the IAQM guidance is therefore considered as a framework for assessing dust impacts and a certain level of professional judgement is required in determining the effects from each Site.

### *Construction Traffic and Plant Emissions*

**8.17** The Environmental Protection UK (EPUK) / IAQM planning guidance[8] states that for developments that are within or close to an AQMA, a detailed assessment of traffic-related impacts is required where:

- There is a change in the annual average daily traffic (AADT) flow of light goods vehicles (LGV) of more than 100 vehicles; and/or
- There is a change in the AADT flow of heavy goods vehicles (HGV) of more than 25 vehicles; and/or
- There is a change in the road re-alignment by more than 5m; and/or
- A new junction is introduced, which will significantly alter vehicle speeds.

**8.18** Construction traffic will contribute to existing traffic levels on the surrounding road network. The greatest potential for impacts on air quality will be in the areas immediately adjacent to the principal means of access for construction traffic.

**8.19** Data provided by the transport consultants[9] indicates that the Proposed Development will result in an increase in Heavy Duty Vehicles (HDVs), in excess of the threshold values for locations inside an AQMA along several roads in the vicinity. An assessment of impacts arising from construction vehicle emissions using the local roads has therefore been included in the assessment. Construction traffic data has been provided for the worst-case construction year, which is assessed to be 2026. The assessment for construction phase traffic impacts follows the methodology outlined for the operational traffic of the Completed Development (see below).

### *Phasing*

**8.20** The worst-case scenario is based on peak Heavy Goods Vehicle (HGV) construction flows as discussed in **ES Volume 1, Chapter 5: Demolition and Construction**. Peak HGV construction occurs at a point where Phase B is under construction and the Detailed Proposals (Phase A) are occupied and represents a worst case for construction traffic on Site. The assessment of Demolition and Construction within this chapter therefore applies to other phases of the Proposed Development and therefore the mitigation identified within this ES Chapter would apply to other phases of the Proposed Development.

**8.21** Consideration has therefore been given to phasing of the Proposed Development through modelling of an interim a traffic data scenario (2026). This is considered a worst-case scenario for construction traffic on-Site as it represents a period with peak HGV traffic occurs (i.e. Phase B is under construction and the Detailed Proposals (Phase A) are occupied)

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[3] *Defra (2019) Local Air Quality Management (LAQM) Support Website, [Online], Available: http://laqm.defra.gov.uk/.*
[4] *Defra (2019) 2019 $NO_2$ projections data (2018 reference year), [Online], Available: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018*
[5] *Defra (2019) UK Ambient Air Quality Interactive Map, [Online], Available: https://uk-air.defra.gov.uk/data/gis-mapping/*
[6] *Guidance on the assessment of dust from demolition and construction, IAQM, February 2014. Available: construction-dust-2014.pdf (iaqm.co.uk)*
[7] *The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance, The Mayor of London, July 2014*
[8] *EPUK/ IAQM (2017), Land-Use Planning & Development Control: Planning for Air Quality, January 2017(v1.2)*
[9] *Velocity (2021) Traffic data for EIA*

*Completed Development*

*Road Traffic Impacts*

**8.22** A summary of baseline and development traffic flows is presented in **ES Volume 3, Appendix Traffic and Transport, Annex 2 – Traffic Data**. The Proposed Development is expected to result in a minor increase in total trips due to servicing vehicles. The impact of the Proposed Development in transport terms comes from the infrastructure changes proposed (closure of the underpass and a signalised bus gate onto the A12), as described in full in **ES Volume 1, Chapter 4: The Proposed Development**. The infrastructure changes have been tested in a strategic transport model. The results show that, although the overall traffic volume would not change, drivers might choose a different route to get to their destination, resulting in changes to the traffic flows on certain links. An assessment of impacts arising from vehicle emissions using the local roads has therefore been included in the assessment. Consideration has also been given to the suitability of the Site for its proposed use.

*Roads Modelling Methodology*

**8.23** Air quality at the Proposed Development has been predicted using the ADMS Roads dispersion (Version 5.0.0, April 2020). This is a commercially available dispersion model and has been widely validated for this type of assessment and used extensively in the Air Quality Review and Assessment process.

**8.24** The model uses detailed information regarding traffic flows on the local road network and local meteorological conditions to predict pollution concentrations at specific locations selected by the user. Meteorological data from the London City Airport Meteorological Station for the year 2019 has been used for the assessment.

**8.25** The model has been used to predict road specific concentrations of oxides of nitrogen ($NO_x$) and Particulate Matter ($PM_{10}$ and $PM_{2.5}$) at selected receptors. The predicted concentrations of $NO_x$ have been converted to $NO_2$ using the $NO_x$ to $NO_2$ calculator available on the Defra air quality website[10].

**8.26** Traffic data for road links adjacent to the Site has been provided by the Transport Consultants[9].

**8.27** A summary of the traffic data used in the assessment can be found in **ES Volume 3, Appendix Traffic and Transport, Annex 3 – Traffic Data**. The data includes details of annual average daily traffic flows (AADT), vehicle speeds and percentage Heavy Duty Vehicles (HDV) for the assessment years considered. Low traffic speeds have been assigned to appropriate road links to account for congestion and queuing vehicles.

**8.28** The following scenarios have been included in the assessment:

- 2019 – baseline traffic (for verification purposes);
- 2026 – baseline traffic (hereafter referred to as 'without construction' scenario);
- 2026 – baseline and construction traffic (hereafter referred to as 'with construction' scenario). This is the interim 'Phasing' assessment year as discussed within **Paragraph 8.20**;
- 2031 – future base scenario plus cumulative developments (hereafter referred to as 'without Development' scenario); and
- 2031 – future base scenario plus cumulative developments plus the Development (hereafter referred to as 'with Development' scenario).

**8.29** The emission factors released by Defra in August 2020, provided in the emissions factor toolkit EFT2020_10.1 have been used to predict traffic related emissions for 2019 (for verification purposes), 2026 and 2030.

**8.30** To predict local air quality, traffic emissions predicted by the model must be added to local background concentrations. Background concentrations of $NO_2$, $PM_{10}$ and $PM_{2.5}$ have been taken from the 2018 Defra background maps (issued August 2020). The maps provide an estimate of background concentrations between 2018 and 2030. The data used for the modelling assessment are set out in **Table 8.12**.

**8.31** Background concentrations for 2019 have been used to predict concentrations in 2026 and 2031 assuming no change in future years. This is considered to represent a conservative prediction of future concentrations.

**8.32** To determine the performance of the model at a local level, a comparison of modelled results with the results of monitoring carried out within the study area was undertaken. This process aims to minimise modelling uncertainty and systematic error by correcting the modelled results by an adjustment factor to gain greater confidence in the final results. This process was undertaken using the methodology outlined in Chapter 7, Section 4 of LAQM.TG(16).

**8.33** A verification factor of 1.47 was determined which indicates that the model is under-predicting in this area. This factor was applied to the modelled road-$NO_x$ concentrations prior to conversion to annual mean $NO_2$ concentrations using the $NO_x$ to $NO_2$ calculator. Further details of the determination of the verification factor are provided in **ES Volume 3, Appendix Air Quality, Annex 3 – Model Verification Study.**

**8.34** The predicted concentrations have been compared with the current statutory standards and objectives set out in **Table 8.1** to determine whether mitigation is required on site to ensure that future occupants of the Proposed Development are not exposed to poor air quality.

*Site Suitability*

**8.35** Receptors within the Proposed Development have been included in the modelling of both the construction traffic (receptors within the Detailed proposals) and the completed development. The results have been compared against the air quality objectives to determine site suitability in relation to air quality.

*Energy Centre Impacts*

**8.36** Air and water source heat pumps are proposed for the majority of the Proposed Development, with the exception of Blocks F1, H1, H2 and H3 which will be connected to the existing energy centre within the 2012 Outline Planning Permission (2012 OPP) (to the south of the Site). The additional demand will be provided by air and water source heat pumps. As such, energy centre impacts have been scoped out of this assessment and will not be assessed further.

*Air Quality Neutral*

**8.37** According to the Greater London Authority (GLA) Sustainable Design and Construction SPG[11], developers are to design their projects so that they are "*at least 'air quality neutral' and not lead to any further deterioration of existing poor air quality*". The 2010 Mayor's Air Quality Strategy (MAQS)[12] also references developments achieving 'air quality neutral' *"through the adoption of best practice in the management and mitigation of emissions"*.

**8.38** Since the Proposed Development contains more than 10 flats, an Air Quality Neutral Assessment is required.

**8.39** The Proposed Development is expected to use Air Source Heat Pumps (ASHP's) and Water Source Heat Pump (WSHP) as part of an ambient loop system and will have no gas fired boilers or combined heat and power system, hence building emissions are not significant for the Air Quality Neutral assessment. Emissions benchmarks have not been calculated for this assessment as the emissions from the Proposed Development will be negligible.

*Air Quality Positive*

**8.40** Air Quality positive will follow the Air Quality Positive approach required by Policy SI1 (part C) of the London Plan[13,14]. At early design stages, consideration will need to be given to how the Proposed Development is designed and built to improve local air quality and reduce the influence area to which the general public is exposed to poor air quality.

**8.41** At the time of the design stage of the Proposed Development, the supporting guidance on Air Quality Positive was not published yet, however Entran have been involved in the design process, providing advice to the Project architects in relation to baseline conditions and recommended measures to be incorporated into the design (where possible).

*Assumptions and Limitations*

**8.42** For the operational phase assessment, it should be noted that there are a number of potential sources of error, particularly in terms of model inputs, due to the complexities of pollutant dispersion and atmospheric chemistry. However, conservative estimates of emission magnitudes and their significance should be produced as a number of worst-case assumptions have been incorporated into the model.

**8.43** Furthermore, it is noted that the model will only predict the potential effects at existing receptors close to the Site due to the availability of traffic data. However, changes in traffic volumes will decrease with distance from the Site as vehicles disperse into the road network and/or reach their destinations. As a result, the largest (and

[10] *http://uk-air.defra.gov.uk*
[11] *Sustainable Design and Construction. Supporting Planning Guidance. Greater London Authority (2014).*
[12] *GLA, (2010); Air Quality Strategy*
[13] *The London Plan (2021). Spatial Development Strategy for Greater London.*
[14] *Air Quality Positive. London Plan Guidance (GLA). March 2021.*

often most significant) impacts tend to be experienced by those receptors closest to the Site, with receptors further away experiencing smaller changes in pollutant concentration.

### *Methodology for Defining Effects*

#### *Receptors and Receptor Sensitivity*

*Demolition and Construction*

**8.44** Factors defining the sensitivity of a receptor for demolition and construction, in accordance with the IAQM guidance, are presented in **Table 8.2**.

**Table 8.2 Factors Defining the Sensitivity of a Receptor**

| Sensitivity | Human (Health) | Human (dust soiling) | Ecological |
|---|---|---|---|
| High | • Locations where members of the public are exposed over a time period relevant to the air quality objectives for $PM_{10}$ (a)<br>• Examples include residential dwellings, hospitals, schools and residential care homes. | • Regular exposure<br>• High level of amenity expected.<br>• Appearance, aesthetics or value of the property would be affected by dust soiling.<br>• Examples include residential dwellings, museums, medium and long-term car parks and car showrooms. | • Nationally or Internationally designated site with dust sensitive features (b)<br>• Locations with vascular species (c) |
| Medium | • Locations where workers are exposed over a time period relevant to the air quality objectives for $PM_{10}$ (a)<br>• Examples include office and shop workers (d) | • Short-term exposure<br>• Moderate level of amenity expected<br>• Possible diminished appearance or aesthetics of property due to dust soiling<br>• Examples include parks and places of work | • Nationally designated site with dust sensitive features (b)<br>• Nationally designated site with a particularly important plant species where dust sensitivity is unknown |
| Low | • Transient human exposure<br>• Examples include public footpaths, playing fields, parks and shopping streets | • Transient exposure<br>• Enjoyment of amenity not expected.<br>• Appearance and aesthetics of property unaffected<br>• Examples include playing fields, farmland (e), footpaths, short-term car parks and roads | • Locally designated site with dust sensitive features (b) |

(a) In the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day.

(b) Ecosystems that are particularly sensitive to dust deposition include lichens and acid heathland (for alkaline dust, such as concrete).

(c) Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.

(d) Does not include workers exposure to $PM_{10}$ as protection is covered by Health and Safety at Work legislation.

(e) Except commercially sensitive horticulture.

**8.45** The sensitivity of a receptor will also depend on a number of additional factors including any history of dust generating activities in the area, likely cumulative dust impacts from nearby construction sites, any pre-existing screening such as trees or buildings and the likely duration of the impacts. In addition, the influence of the prevailing wind direction and local topography may be of relevance when determining the sensitivity of a receptor.

*Area Sensitivity*

**8.46** The sensitivity of the area to dust soiling and health impacts is dependent on the number of receptors within each sensitivity class and their distance from the source. In addition, human health impacts are dependent on the existing $PM_{10}$ concentrations in the area. **Table 8.3** and **Table 8.4** summarise the criteria for determining the overall sensitivity of the area to dust soiling and health impacts respectively.

**Table 8.3 Sensitivity of the Area to Dust Soiling Effects on People and Property**

| Receptor Sensitivity | Number of Receptors | Distance from the source (a) | | | |
|---|---|---|---|---|---|
| | | <20m | <50m | <100m | <350m |
| High | >100 | High | High | Medium | Low |
| | 10-100 | High | Medium | Low | Low |
| | 1-10 | Medium | Low | Low | Low |
| Medium | >1 | Medium | Low | Low | Low |
| Low | >1 | Low | Low | Low | Low |

A) For trackout, the distance is measured from the side of roads used by construction traffic. Beyond 50m, the impact is negligible.

**Table 8.4 Sensitivity of the Area to Human Health Impacts**

| Receptor Sensitivity | Annual Mean $PM_{10}$ ($\mu g/m^3$) | Number of Receptors | Distance from the source (a) | | | | |
|---|---|---|---|---|---|---|---|
| | | | <20m | <50m | <100m | <200m | <350m |
| High | > 32 | > 100 | High | High | High | Medium | Low |
| | | 10 - 100 | High | High | Medium | Low | Low |
| | | 1 - 10 | High | Medium | Low | Low | Low |
| | 28 - 32 | > 100 | High | High | Medium | Low | Low |
| | | 10 - 100 | High | Medium | Low | Low | Low |
| | | 1 - 10 | High | Medium | Low | Low | Low |
| | 24 - 28 | > 100 | High | Medium | Low | Low | Low |
| | | 10 - 100 | High | Medium | Low | Low | Low |
| | | 1 - 10 | Medium | Low | Low | Low | Low |
| | < 24 | > 100 | Medium | Low | Low | Low | Low |
| | | 10 - 100 | Low | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low | Low |
| Medium | >32 $\mu g/m^3$ | > 10 | High | Medium | Low | Low | Low |
| | | 1 - 10 | Medium | Low | Low | Low | Low |
| | 28-32 $\mu g/m^3$ | > 10 | Medium | Low | Low | Low | Low |
| | | 1 - 10 | Low | Low | Low | Low | Low |
| | <28 $\mu g/m^3$ | - | Low | Low | Low | Low | Low |
| Low | - | >1 | Low | Low | Low | Low | Low |

| Receptor Sensitivity | Annual Mean $PM_{10}$ ($\mu g/m^3$) | Number of Receptors | Distance from the source (a) | | | | |
|---|---|---|---|---|---|---|---|
| | | | <20m | <50m | <100m | <200m | <350m |
| A) For trackout, the distance is measured from the side of roads used by construction traffic. Beyond 50m, the impact is negligible. | | | | | | | |

*Completed Development*

**8.47** The Air Quality Strategy (AQS) defines the locations where the applicable objective values for air pollutants apply as locations where members of the public are regularly present and might reasonably be expected to be exposed over the relevant averaging period of the objectives. Typically, these include residential properties, hospitals and schools for the longer averaging periods (i.e. annual mean) pollutant objectives.

**8.48** On this basis, for the purposes of this EIA, receptors of high sensitivity are considered in relation to changes in road traffic (and impact on local air quality) and include residential properties, schools, hospitals and care homes.

**8.49** Sensitive ecological receptors are those whose features have been described as being directly or indirectly responsive to air pollutants. High levels of $NO_2$ deposition may be toxic to vegetation, potentially leading to changes in ecosystems. The closest ecological site which is known to be sensitive to $NO_2$ deposition is the Epping Forest Special Area of Conservation (SAC), located approximately 6.4km from the Site. Changes to traffic data this distance from the Site will not be detectable and therefore this ecological site has not been considered within this assessment as it is considered too far from the Site and is unlikely to be affected by the Proposed Development[15].

## *Magnitude of Impact*

### *Demolition and Construction*

*Dust Emission Magnitude*

**8.50** The magnitude of the dust impacts for each source is classified as Small, Medium or Large depending on the scale of the proposed works. **Table 8.5** summarises the IAQM criteria that may be used to determine the magnitude of the dust emission. These criteria are used in used in combination with site specific information and professional judgement.

**Table 8.5 Dust Emission Magnitude Criteria**

| Source | Large | Medium | Small |
|---|---|---|---|
| Demolition | • Total building volume >50,000$m^3$<br>• Potentially dusty material (e.g. concrete)<br>• Onsite crushing and screening<br>• Demolition activities >20m above ground level. | • Total building volume 20,000 - 50,000$m^3$<br>• Potentially dusty material<br>• Demolition activities 10 - 20m above ground level. | • Total building volume <20,000$m^3$<br>• Construction material with low potential for dust release<br>• Demolition activities <10m above ground level<br>• Demolition during wetter months |
| Earthworks | • Total site area >10,000$m^2$<br>• Potentially dusty soil type (e.g. clay)<br>• >10 heavy earth moving vehicles active at any one time<br>• Formation of bunds >8m in height<br>• Total material moved >100,000 tonnes | • Total site area 2,500 - 10,000$m^2$<br>• Moderately dusty soil type (e.g. silt)<br>• 5 - 10 heavy earth moving vehicles active at any one time<br>• Formation of bunds 4 - 8m in height | • Total site area <2,500$m^2$<br>• Soil type with large grain size (e.g. sand)<br>• <5 heavy earth moving vehicles active at any one time<br>• Formation of bunds <4m in height<br>• Total material moved <20,000 tonnes<br>• Earthworks during wetter months |
| | | • Total material moved 20,000 - 100,000 tonnes | |
| Construction | • Total building volume >100,000$m^3$<br>• On site concrete batching<br>• Sandblasting | • Total building volume 25,000 - 100,000$m^3$<br>• Potentially dusty construction material (e.g. concrete)<br>• On site concrete batching | • Total building volume <25,000$m^3$<br>• Material with low potential for dust release (e.g. metal cladding or timber) |
| Trackout | • >50 HGV movements in any one day (a)<br>• Potentially dusty surface material (e.g. high clay content)<br>• Unpaved road length >100m | • 10 - 50 HGV movements in any one day (a)<br>• Moderately dusty surface material (e.g. silt)<br>• Unpaved road length 50 - 100m | • <10 HGV movements in any one day (a)<br>• Surface material with low potential for dust release<br>• Unpaved road length <50m |

*Risk of Dust Impacts*

**8.51** The risk of dust impacts prior to mitigation for each emission source is presented in **Tables 8.6, 8.7** and **8.8.**

**Table 8.6 Risk of Dust Impacts – Demolition**

| Sensitivity of Area | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| High | High Risk | Medium Risk | Medium Risk |
| Medium | High Risk | Medium Risk | Low Risk |
| Low | Medium Risk | Low Risk | Negligible |

**Table 8.7 Risk of Dust Impacts – Earthworks and Construction**

| Sensitivity of Area | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| High | High Risk | Medium Risk | Low Risk |
| Medium | Medium Risk | Medium Risk | Low Risk |
| Low | Low Risk | Low Risk | Negligible |

**Table 8.8 Risk of Dust Impacts – Trackout**

| Sensitivity of Area | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| High | High Risk | Medium Risk | Low Risk |

[15] *Air Emissions Risk Assessment for your Environmental Permit (Guidance). Environment Agency and DEFRA (2021). Available at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#screening-for-protected-conservation-areas*

| Sensitivity of Area | Dust Emission Magnitude | | |
|---|---|---|---|
| | Large | Medium | Small |
| Medium | Medium Risk | Low Risk | Negligible |
| Low | Low Risk | Low Risk | Negligible |

*Completed Development*

**8.52** The significance of the predicted impacts has been determined following the advice provided in the EPUK & IAQM planning guidance, in combination with professional judgement. The guidance recommends that the impact at individual receptors is described by expressing the magnitude of incremental change in pollution concentrations as a proportion of the relevant assessment level and examining this change in the context of the new total concentration and its relationship with the assessment criterion as summarised in **Table 8.9**.

**8.53** The term Air Quality Assessment Level or 'AQAL' has been used here, which covers all pollutants, i.e., those with and without formal standards. Typically, as is the case for this assessment, the AQAL will be the air quality objective value. Impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

**Table 8.9 Impact Descriptors for Individual Receptors**

| Long Term Average Concentration at Receptor in Assessment Year | % Change in concentration relative to AQAL (a) | | | |
|---|---|---|---|---|
| | 1 | 2-5 | 5-10 | >10 |
| 75% or less of AQAL | Negligible | Negligible | Minor adverse | Moderate adverse |
| 76-94% of AQAL | Negligible | Minor adverse | Moderate adverse | Moderate adverse |
| 95-102% of AQAL | Minor adverse | Moderate adverse | Moderate adverse | Major adverse |
| 103-109% of AQAL | Moderate adverse | Moderate adverse | Major adverse | Major adverse |
| 110% or more of AQAL | Moderate adverse | Major adverse | Major adverse | Major adverse |

(a) A change in concentration of less than 0.5% of the AQAL is considered insignificant, however changes between 0.5% and 1% are rounded up to 1%.

**8.54** The EPUK & IAQM guidance notes that the criteria in **Table 8.9** should be used to describe impacts at individual receptors and should be considered as a starting point to make a judgement on significance of effects, as other influences may need to be accounted for. The EPUK & IAQM guidance states that the assessment of overall significance should be based on professional judgement, taking into account several factors, including:

- The existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

**8.55** The EPUK & IAQM guidance also provides significance criteria for short term impacts which are defined for averaging periods of 1-hour or less. The EPUK & IAQM guidance states that for point sources short-term impacts of less than 10% of the AQAL are described as 'negligible' regardless of existing air quality. Where short-term process concentrations are 11-20% of the AQAL the severity of the impact is described as 'slight'. Impacts of 21-50 and over 51% are described as 'moderate' and 'substantial' respectively.

*Defining the Effect*

*Demolition and Construction*

**8.56** For each dust emission source (demolition, construction, earthworks and trackout), the worst-case area sensitivity is used in combination with the dust emission magnitude to determine the risk of dust impacts.

**8.57** The IAQM guidance provides a range of mitigation measures which are dependent on the level of dust risk attributed to the Proposed Development. Site specific mitigation measures are also included where appropriate.

**8.58** The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity following the application of appropriate mitigation measures. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effects will normally be negligible.

**8.59** Effects are defined based on the risk of impacts (see **Table 8.7 and 8.8**) as follows:

- High risk = Major adverse effect;
- Medium risk = Moderate adverse effect; and
- Low risk = Minor adverse effect.

*Completed Development*

**8.60** The effects of the completed development are defined based on the criteria set out in **Table 8.9**.

*Categorising Likely Significant Effects*

**8.61** In general, negligible, and minor effects are considered to be 'not significant', and moderate and major effects are considered to be 'significant'. Factors such as the source type, location of the receptor, location of the effect, and professional judgment may also contribute to the determination of significance and will be considered using professional judgement.

## BASELINE CONDITIONS

**8.62** LBTH declared a borough wide AQMA in 2000, due to exceedances of the air quality objectives for annual mean $NO_2$ and 24-hour mean $PM_{10}$. Consequently, the Site falls within the designated AQMA.

**8.63** LBTH operates four automatic monitors within the borough, the closest of which is located adjacent to the Site (Blackwall). Bias adjusted data obtained from the Blackwall automatic monitoring site is presented in **Table 8.10**.

**Table 8.10 Pollutant Concentrations Measured Automatically at Blackwall Roadside Automatic Monitor**

| Statistic | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Annual Mean $NO_2$ ($\mu g/m^3$) | 58 | 59 | 56 | 51 | 47 |
| Number of Predicted Exceedances of the 1 Hour Mean AQO for $NO_2$ of 200 $\mu g/m^3$ | 0 | 9 | 0 | 0 | 0 |
| Annual Mean $PM_{10}$ ($\mu g/m^3$) | 22 | 23 | 25 | 20 | 20 |
| Number of Predicted Exceedances of the 24 Hour Mean AQO for $PM_{10}$ of 50 $\mu g/m^3$ | - | - | - | 4 | - |
| Annual Mean $PM_{2.5}$ ($\mu g/m^3$) | 14 | 20 | 13 | 13 | 12.4 |

**8.64** Annual mean $NO_2$ concentrations were above the 40 $\mu g/m^3$ objective at the Blackwall automatic monitor. Exceedances of the hourly objective were recorded at Blackwall. However, the objective allows for 18 exceedances of the 200 $\mu g/m^3$ limit in any given year, therefore the objective was met in all five monitoring years.

**8.65** Annual mean $PM_{10}$ concentrations were well below the 40 $\mu g/m^3$ objective at Blackwall. Exceedances of the 24-hour objective have been recorded at Blackwall. However, the objective allows for 35 exceedances of the 50 $\mu g/m^3$ limit in any given year, therefore the objective was met in all five monitoring years.

**8.66** Annual mean $PM_{2.5}$ concentrations were below the 25 µg/m$^3$ objective at Blackwall in all five monitoring years.

**8.67** LBTH also operates a network of passive diffusion tubes to monitor ambient concentrations of $NO_2$ in the borough. Three of these diffusion tubes are located in the vicinity of the Proposed Development. Bias adjusted data from these monitoring sites is presented in **Table 8.11**.

**Table 8.11 Annual Mean $NO_2$ Concentration Measured by Diffusion Tube (µg/m$^3$)**

| Site | OS Grid Reference | Distance from Kerb (m) | Type | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| 83 – Zetland Street/A12 | 538280,185359 | 0.5 | Kerbside | 66 | 63 | 62 | 63 | 52 |
| 84 – Blair Street (End of Street) | 539572,184659 | 5 | Roadside | 52 | 48 | 52 | 44 | 39 |
| 85 – Portree Street | 541954,185430 | 0.5 | Kerbside | 48 | 48 | 48 | 45 | 38 |

**8.68** At roadside and kerbside locations in the vicinity of the Site, the AQS objective for annual mean $NO_2$ concentrations has generally been exceeded over the five-year period.

**8.69** Diffusion tubes cannot monitor short-term $NO_2$ concentrations, however, as previously discussed, research has concluded that exceedances of the 1-hour mean objective are generally unlikely to occur where annual mean concentrations do not exceed 60 µg/m$^3$. Concentrations above 60µg/m$^3$ have been recorded at Zetland Street/A12, therefore it is likely that the short-term objective is currently being breached at kerbside locations in the vicinity of the Site.

**8.70** Additional information on background concentrations in the vicinity of the Proposed Development have been obtained from the Defra background pollutant maps. The average pollutant concentrations from the grid squares representing the assessment area have been extracted from the maps which include the modelled receptors and road links included in the modelling assessment.

**8.71** The 2018 Defra background maps, which provide estimated background concentrations between 2018 and 2030, have been used to obtain the pollutant concentrations for 2019. The data is set out in **Table 8.12.**

**8.72** The data presented in **Table 8.12** shows background concentrations of all three pollutants to be below the relevant annual mean objective.

**Table 8.12 Annual Mean Measured and Mapped Background Pollutant Concentrations (µg/m$^3$)**

| Grid Square | Receptor | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| 538500,181500 | P1-P20, R1-R5, R8, R9, R21-R23, R26-R28, R30-R32 | 35.5 | 20.2 | 13.0 |
| 537500,181500 | R6, R11-R16 | 28.8 | 19.3 | 12.3 |
| 538500, 180500 | R7, R10 | 39.8 | 20.3 | 13.0 |
| 537500, 182500 | R17-R20 | 29.6 | 19.9 | 12.6 |
| 539500, 182500 | R24 | 26.9 | 19.4 | 12.8 |
| 539500, 181500 | R25, R29 | 36.5 | 20.3 | 13.1 |

## RECEPTORS AND RECEPTOR SENSITIVITY

### *Existing*

#### *Demolition and Construction*

**8.73** The assessment of dust impacts is dependent on the proximity of the most sensitive receptors to the Site boundary. A summary of the existing receptor and area sensitivity to health and dust soiling impacts is presented in **Table 8.13**. The sensitivity of the area to health impacts is dependent on the existing $PM_{10}$ concentration.

**8.74** There are no dust sensitive ecological sites within 50m of the Site; therefore, impacts on ecology have not been considered in the assessment.

**8.75** The overall sensitivity of the area to human health and dust soiling dust impacts is' Medium' and 'High', respectively.

**Table 8.13 Sensitivity of Existing Receptors and the Local Area to Health and Dust Soiling Impacts**

| Receptor | Distance from Site Boundary | Number of Receptors | Sensitivity to Health Impacts (a) | | Sensitivity to Dust Soiling Impacts (a) | |
|---|---|---|---|---|---|---|
| | | | Receptor | Area | Receptor | Area |
| Residential properties | <20m | 10 - 100 | High | Medium | High | High |
| Culloden Primary Academy | <20m | >100 | High | Medium | High | High |
| **Overall Sensitivity of the Area to Dust Impacts** | | | **Medium** | | **High** | |
| (a) Existing annual mean $PM_{10}$ concentration below 24 µg/m$^3$ | | | | | | |

#### *Traffic Impacts*

**8.76** LAQM.TG(16) describes in detail typical locations where consideration should be given to pollutants defined in the Air Quality Regulations. Generally, the guidance suggests that all locations where members of the public are regularly present' should be considered. At such locations, members of the public will be exposed to pollution over the time that they are present, and the most suitable averaging period of the pollutant needs to be used for assessment purposes.

**8.77** For instance, on a footpath, where exposure will be transient (for the duration of passage along that path) comparison with short-term standard (i.e. 15-minute mean or 1-hour mean) may be relevant. In a school, or adjacent to a private dwelling, however; where exposure may be for longer periods, comparison with long-term (such as 24-hour mean or annual mean) standards may be most appropriate. In general terms, concentrations associated with long-term standards are lower than short-term standards owing to the chronic health effects associated with exposure to low level pollution for longer periods of time.

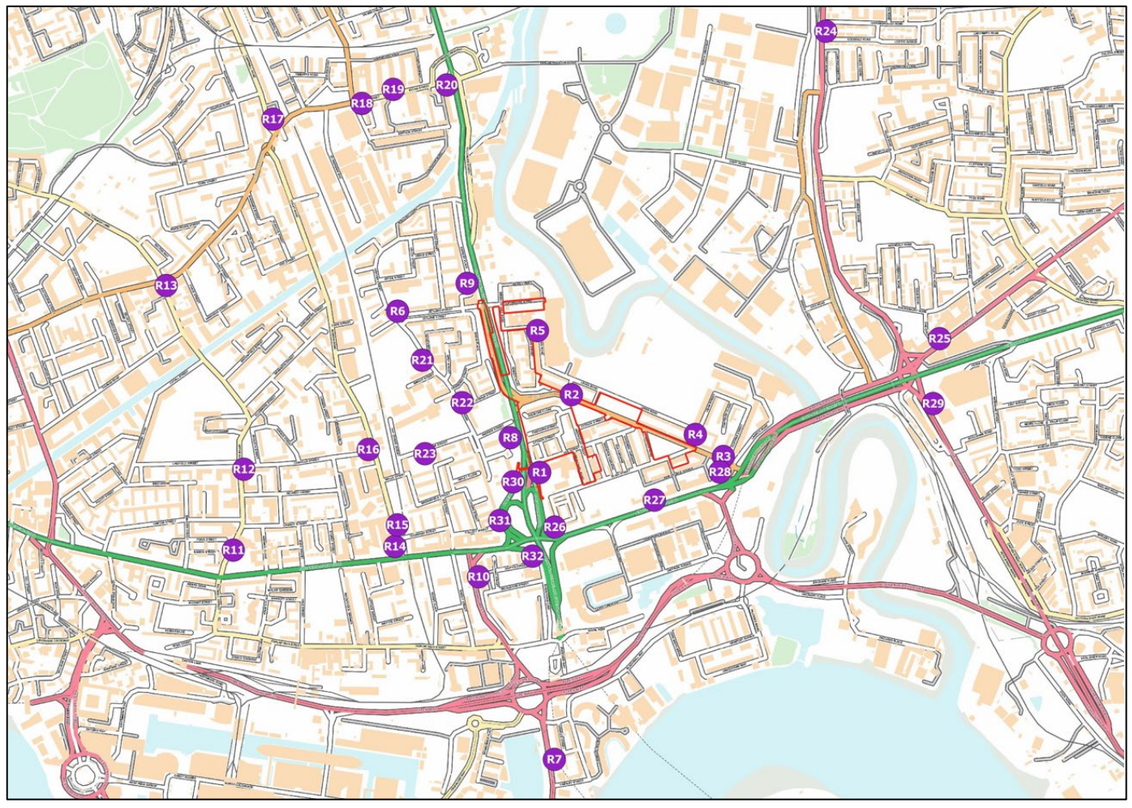
**8.78** To assess the impact of emissions arising from the Proposed Development concentrations have been predicted at 32 existing sensitive receptors within the vicinity of the Site which represent the location of nearby residential properties and Culloden Primary Academy. Receptors from cumulative schemes have not been included as there are sufficient existing receptors along roads affected by the Proposed Development to determine impact. Details of these sensitive receptors are presented in **Table 8.14** and the locations are illustrated in **Figure 8.1**. The sensitivity of these receptors is considered to be 'High'.

**Table 8.14 Location of Existing Sensitive Receptors**

| ID | Receptor | Type | Easting | Northing | Height (m) |
|---|---|---|---|---|---|
| R1 | Culloden Primary Academy | School | 538353.4 | 181256.0 | 1.5 |
| R2 | Abbott Road | Residential | 538445.4 | 181480.3 | 1.5 |
| R3 | Abbott Road | Residential | 538885.4 | 181301.9 | 1.5 |
| R4 | Oban Street | Residential | 538804.2 | 181365.4 | 1.5 |
| R5 | Leven Road | Residential | 538346.9 | 181665.1 | 4.5 |
| R6 | Zetland Street | Residential | 537941.7 | 181721.0 | 1.5 |
| R7 | Preston's Road | Residential | 538395.8 | 180428.3 | 1.5 |
| R8 | A12 | Residential | 538268.3 | 181356.2 | 1.5 |
| R9 | A12 | Residential | 538143.3 | 181801.3 | 1.5 |
| R10 | Cotton Street | Residential | 538176.4 | 180955.1 | 7.5 |
| R11 | Upper North Street | Residential | 537465.9 | 181031.9 | 1.5 |
| R12 | Upper North Street | Residential | 537496.3 | 181265.2 | 1.5 |
| R13 | Bow Common Lane | Residential | 537271.4 | 181795.1 | 4.5 |
| R14 | Chrisp Street | Residential | 537934.1 | 181042.6 | 4.5 |
| R15 | Chrisp Street | Residential | 537941.2 | 181104.7 | 4.5 |
| R16 | Cordelia Street | Residential | 537856.9 | 181322.1 | 4.5 |
| R17 | Campbell Road | Residential | 537580.6 | 182274.8 | 1.5 |

| ID | Receptor | Type | Easting | Northing | Height (m) |
|---|---|---|---|---|---|
| R18 | Devas Street | Residential | 537838.2 | 182320.2 | 1.5 |
| R19 | Devas Street | Residential | 537929.1 | 182360.8 | 1.5 |
| R20 | Devas Street | Residential | 538084.1 | 182373.4 | 4.5 |
| R21 | St Leonards Road | Residential | 538013.4 | 181579.7 | 1.5 |
| R22 | St Leonards Road | Residential | 538128.8 | 181457.1 | 1.5 |
| R23 | Burcham Street | Residential | 538021.2 | 181310.0 | 1.5 |
| R24 | Manor Road | Residential | 539182.1 | 182528.4 | 1.5 |
| R25 | Barking Road | Residential | 539511.4 | 181641.9 | 4.5 |
| R26 | Athol Square | Residential | 538396.6 | 181098.4 | 1.5 |
| R27 | East India Dock Road | Residential | 538685.6 | 181176.1 | 3.5 |
| R28 | East India Dock Road | Residential | 538875.2 | 181257.2 | 4.5 |
| R29 | A1011 | Residential | 539493.0 | 181454.6 | 7.5 |
| R30 | A102 | Residential | 538276.2 | 181228.8 | 1.5 |
| R31 | A102 | Residential | 538237.6 | 181117.2 | 4.5 |
| R32 | A102 | Residential | 538332.7 | 181014.6 | 4.5 |

**Figure 8.1 Existing Sensitive Receptors**




### *Introduced*

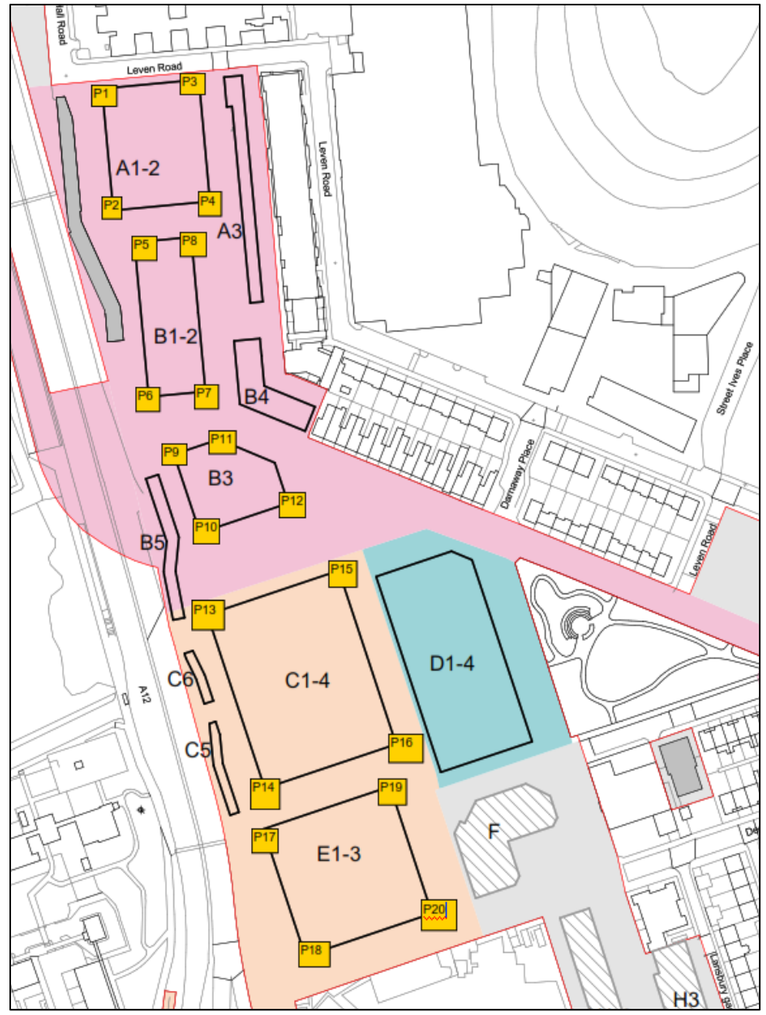
#### *Demolition and Construction*

**8.79** The construction of the Proposed Development will occur in phases, with previous phases becoming occupied prior to the completion of the following phase. This will introduce new receptors to dust-related impacts, however since there are existing high sensitivity receptors within 20m of the Site boundary, the sensitivity of the area to dust soiling impacts will remain as 'High' and the sensitivity of the area to human health impacts will remain as 'Medium' throughout the development of the Site. The sensitivity of the area will also remain the same with the introduction of new receptors within the cumulative schemes.

#### *Traffic Impacts*

**8.80** To assess the suitability of the Site for residential development, pollutant concentrations have been predicted at a number of locations on the façades of the new buildings as shown in **Figure 8.2**. These locations have been chosen based on where concentrations are expected to be highest across the Proposed Development Concentrations have been predicted up to third floor level.

**Figure 8.2 Sensitive Receptors (Proposed Development)**



## POTENTIAL EFFECTS

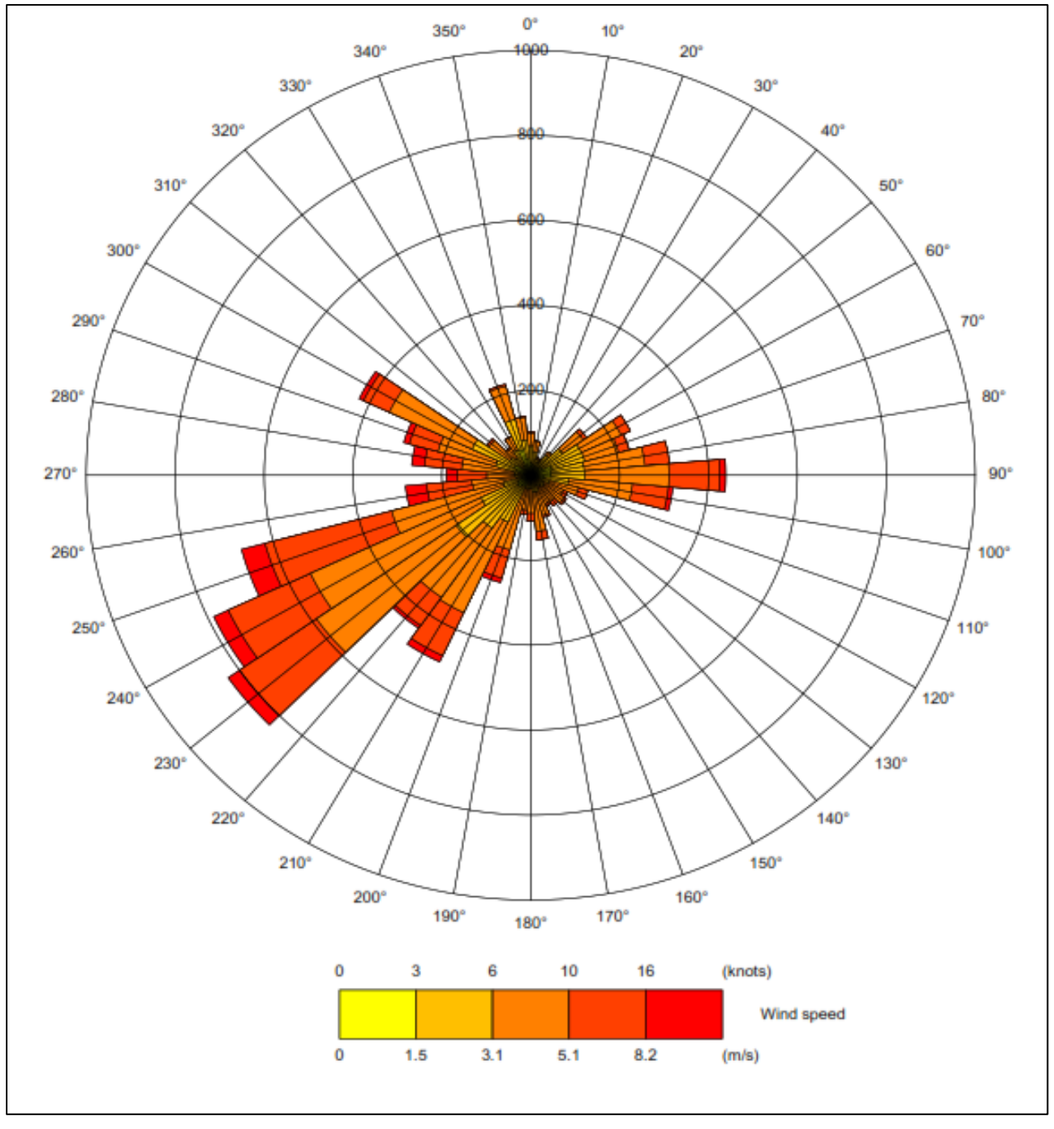
### *Demolition and Construction*

*Dust*

**8.81** The precise behaviour of the dust, its residence time in the atmosphere, and the distance it may travel before being deposited will depend upon a number of factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

**8.82** A wind rose from London City Airport is provided in **Figure 8.3**, which shows that the prevailing wind is from the south-west, therefore receptors to the northeast are the most likely to experience dust impacts from the Site.

**Figure 8.3 Wind Rose for London City Airport (2019)**




**8.83** The Site is currently occupied by several buildings, which will require demolition as part of the proposals. Based on the scale of the works, the dust emission magnitude from demolition is considered to be 'Large'.

**8.84** Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. This may also involve levelling of the Site and landscaping. Given the size of the Site, the magnitude of the dust emission for the earthworks phase is therefore considered to be 'Large'.

**8.85** Dust emissions during construction will depend on the scale of the works, method of construction, construction materials and duration of build. Based on the overall size of the Proposed Development and the construction materials, the dust emission magnitude is considered to be 'Large'.

**8.86** Factors influencing the degree of trackout and associated magnitude of effect include vehicle size, vehicle speed, vehicle numbers, geology and duration. The Site is expected to generate more than 50 daily HGV movements during the peak construction period. The magnitude of the dust emission due to trackout is considered to be 'Large'.

**8.87** A summary of the potential risk of dust impacts, prior to mitigation and based on the 'Medium' sensitivity of the area to human health impacts and 'High' sensitivity to dust soiling impacts, is presented in **Table 8.15**.

**Table 8.15 Dust Risk Impacts**

| Source | Emission Magnitude | Human Health Risk | Dust Soiling Risk | Overall Risk |
|---|---|---|---|---|
| Demolition | Large | Medium | High | High |
| Earthworks | Large | Medium | High | High |
| Construction | Large | Medium | High | High |
| Trackout | Large | Medium | High | High |

*Phasing*

*Existing Receptors*

**8.88** As set out in the methodology, an interim traffic data scenario (2026) has been modelled based on peak HGV flows as the Detailed Proposals (Phase A) will be occupied whilst construction activities continue on the Outline Proposals (and therefore represents a worst case).The results are set out in **Table 8.16** to **Table 8.18**.

**Table 8.16 Interim Year Predicted Annual Mean $NO_2$ Concentrations (µg/m³)**

| Receptor Number | 2026 Without Construction | 2026 With Construction | Change as a result of Development (as % of the AQAL) | Magnitude of Impact |
|---|---|---|---|---|
| R1 | 39.5 | 39.5 | 0.0 | Negligible |
| R2 | 37.5 | 37.5 | 0.0 | Negligible |
| R3 | 39.5 | 39.5 | 0.0 | Negligible |
| R4 | 37.8 | 37.8 | 0.0 | Negligible |
| R5 | 37.3 | 37.3 | 0.0 | Negligible |
| R6 | 29.8 | 29.8 | 0.0 | Negligible |
| R7 | 43.4 | 43.4 | 0.0 | Negligible |
| R8 | 38.7 | 38.7 | 0.0 | Negligible |
| R9 | 39.5 | 39.5 | 0.0 | Negligible |
| R10 | 42.1 | 42.1 | 0.0 | Negligible |
| R11 | 30.2 | 30.2 | 0.0 | Negligible |
| R12 | 30.1 | 30.1 | 0.0 | Negligible |
| R13 | 30.4 | 30.4 | 0.0 | Negligible |
| R14 | 30.4 | 30.4 | 0.0 | Negligible |
| R15 | 30.7 | 30.7 | 0.0 | Negligible |
| R16 | 30.1 | 30.1 | 0.0 | Negligible |
| R17 | 31.1 | 31.1 | 0.0 | Negligible |

| Receptor Number | 2026 Without Construction | 2026 With Construction | Change as a result of Development (as % of the AQAL) | Magnitude of Impact |
|---|---|---|---|---|
| R18 | 30.9 | 30.9 | 0.0 | Negligible |
| R19 | 30.8 | 30.8 | 0.0 | Negligible |
| R20 | 32.6 | 32.6 | 0.0 | Negligible |
| R21 | 36.6 | 36.6 | 0.0 | Negligible |
| R22 | 37.1 | 37.1 | 0.0 | Negligible |
| R23 | 36.8 | 36.8 | 0.0 | Negligible |
| R24 | 28.3 | 28.3 | 0.0 | Negligible |
| R25 | 39.5 | 39.5 | 0.0 | Negligible |
| R26 | 41.4 | 41.4 | 0.1 | Negligible |
| R27 | 39.9 | 39.9 | 0.0 | Negligible |
| R28 | 39.4 | 39.4 | 0.0 | Negligible |
| R29 | 38.8 | 38.8 | 0.0 | Negligible |
| R30 | 39.9 | 40.0 | 0.0 | Negligible |
| R31 | 38.7 | 38.7 | 0.0 | Negligible |
| R32 | 40.1 | 40.1 | 0.0 | Negligible |

**Table 8.17 Interim Year Predicted Annual Mean $PM_{10}$ Concentrations (µg/m$^3$)**

| Receptor Number | 2026 Without Construction | 2026 With Construction | Change as a result of Development (as % of the AQAL) | Magnitude of Impact |
|---|---|---|---|---|
| R1 | 22.6 | 22.6 | 0.0 | Negligible |
| R2 | 21.3 | 21.3 | 0.0 | Negligible |
| R3 | 22.0 | 22.0 | 0.0 | Negligible |
| R4 | 21.3 | 21.3 | 0.0 | Negligible |
| R5 | 21.1 | 21.1 | 0.0 | Negligible |
| R6 | 19.7 | 19.7 | 0.0 | Negligible |
| R7 | 21.8 | 21.8 | 0.0 | Negligible |
| R8 | 21.9 | 21.9 | 0.0 | Negligible |
| R9 | 22.3 | 22.3 | 0.0 | Negligible |
| R10 | 21.3 | 21.3 | 0.0 | Negligible |
| R11 | 19.8 | 19.8 | 0.0 | Negligible |
| R12 | 19.8 | 19.8 | 0.0 | Negligible |
| R13 | 19.9 | 19.9 | 0.0 | Negligible |
| R14 | 20.0 | 20.0 | 0.0 | Negligible |
| R15 | 20.1 | 20.1 | 0.0 | Negligible |
| R16 | 19.8 | 19.8 | 0.0 | Negligible |
| R17 | 20.5 | 20.5 | 0.0 | Negligible |
| R18 | 20.5 | 20.5 | 0.0 | Negligible |
| R19 | 20.5 | 20.5 | 0.0 | Negligible |
| R20 | 21.1 | 21.1 | 0.0 | Negligible |
| R21 | 20.7 | 20.7 | 0.0 | Negligible |
| R22 | 20.9 | 20.9 | 0.0 | Negligible |
| R23 | 20.8 | 20.8 | 0.0 | Negligible |
| R24 | 20.0 | 20.0 | 0.0 | Negligible |
| R25 | 21.8 | 21.8 | 0.0 | Negligible |
| R26 | 23.3 | 23.3 | 0.0 | Negligible |
| R27 | 22.5 | 22.5 | 0.0 | Negligible |
| R28 | 22.1 | 22.1 | 0.0 | Negligible |
| R29 | 21.4 | 21.4 | 0.0 | Negligible |
| R30 | 22.6 | 22.6 | 0.0 | Negligible |
| R31 | 21.8 | 21.8 | 0.0 | Negligible |
| R32 | 22.5 | 22.5 | 0.0 | Negligible |

**Table 8.18 Interim Year Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m$^3$)**

| Receptor Number | 2026 Without Construction | 2026 With Construction | Change as a result of Development (as % of the AQAL) | Magnitude of Impact |
|---|---|---|---|---|
| R1 | 14.3 | 14.3 | 0.0 | Negligible |
| R2 | 13.6 | 13.6 | 0.0 | Negligible |
| R3 | 14.0 | 14.0 | 0.0 | Negligible |
| R4 | 13.6 | 13.6 | 0.0 | Negligible |
| R5 | 13.5 | 13.5 | 0.0 | Negligible |
| R6 | 12.5 | 12.5 | 0.0 | Negligible |
| R7 | 13.9 | 13.9 | 0.0 | Negligible |
| R8 | 14.0 | 14.0 | 0.0 | Negligible |
| R9 | 14.2 | 14.2 | 0.0 | Negligible |
| R10 | 13.6 | 13.6 | 0.0 | Negligible |
| R11 | 12.6 | 12.6 | 0.0 | Negligible |
| R12 | 12.6 | 12.6 | 0.0 | Negligible |
| R13 | 12.6 | 12.6 | 0.0 | Negligible |
| R14 | 12.7 | 12.7 | 0.0 | Negligible |
| R15 | 12.7 | 12.7 | 0.0 | Negligible |
| R16 | 12.6 | 12.6 | 0.0 | Negligible |
| R17 | 13.0 | 13.0 | 0.0 | Negligible |
| R18 | 13.0 | 13.0 | 0.0 | Negligible |
| R19 | 12.9 | 12.9 | 0.0 | Negligible |
| R20 | 13.5 | 13.5 | 0.0 | Negligible |
| R21 | 13.3 | 13.3 | 0.0 | Negligible |
| R22 | 13.4 | 13.4 | 0.0 | Negligible |
| R23 | 13.3 | 13.3 | 0.0 | Negligible |
| R24 | 13.1 | 13.1 | 0.0 | Negligible |
| R25 | 14.0 | 14.0 | 0.0 | Negligible |
| R26 | 14.7 | 14.7 | 0.0 | Negligible |
| R27 | 14.3 | 14.3 | 0.0 | Negligible |
| R28 | 14.0 | 14.1 | 0.0 | Negligible |
| R29 | 13.8 | 13.8 | 0.0 | Negligible |

| Receptor Number | 2026 Without Construction | 2026 With Construction | Change as a result of Development (as % of the AQAL) | Magnitude of Impact |
|---|---|---|---|---|
| R30 | 14.3 | 14.3 | 0.0 | Negligible |
| R31 | 13.9 | 13.9 | 0.0 | Negligible |
| R32 | 14.3 | 14.3 | 0.0 | Negligible |

*Introduced Receptors*

**8.89** A summary of the predicted annual mean $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations at the Proposed Development for the interim year (2026) is presented in **Table 8.19**.

**Table 8.19 Interim Year Predicted Annual Mean Pollutant Concentrations (µg/m³)**

| Floor | Receptor Number | Annual Mean $NO_2$ Concentration | Annual Mean $PM_{10}$ Concentration | Annual Mean $PM_{2.5}$ Concentration |
|---|---|---|---|---|
| Ground | P1 – Commercial | 39.2 | 22.1 | 14.1 |
| | P2 – Residential | 39.3 | 22.3 | 14.2 |
| | P3 – Residential | 38.0 | 21.4 | 13.7 |
| | P4 – Residential | 37.8 | 21.4 | 13.7 |
| | P5 – Commercial | 39.0 | 22.1 | 14.0 |
| | P6 – Commercial | 40.2 | 22.7 | 14.4 |
| | P7 – Commercial | 39.0 | 22.0 | 14.0 |
| | P8 – Residential | 38.2 | 21.6 | 13.8 |
| | P9 – Residential | 39.9 | 22.6 | 14.3 |
| | P10 – Residential | 39.6 | 22.4 | 14.2 |
| | P11 – Residential | 38.9 | 22.0 | 14.0 |
| | P12 – Residential | 38.0 | 21.5 | 13.7 |
| | P13 – Commercial | 40.0 | 22.7 | 14.4 |
| | P14 – Commercial | 39.7 | 22.5 | 14.3 |
| | P15 – Residential | 37.7 | 21.3 | 13.6 |
| | P16 – Residential | 37.6 | 21.3 | 13.6 |
| | P17 – Commercial | 40.3 | 22.8 | 14.5 |
| | P18 – Commercial | 39.6 | 22.4 | 14.2 |
| | P19 – Residential | 37.8 | 21.4 | 13.7 |
| | P20 – Residential | 37.8 | 21.4 | 13.7 |
| First | P1 – Commercial | 38.8 | 21.9 | 13.9 |
| | P2 – Residential | 38.9 | 22.0 | 14.0 |
| | P3 – Residential | 37.8 | 21.3 | 13.6 |
| | P4 – Residential | 37.7 | 21.3 | 13.6 |
| | P5 – Commercial | 38.6 | 21.9 | 13.9 |
| | P6 – Commercial | 39.5 | 22.3 | 14.2 |
| | P7 – Commercial | 38.6 | 21.8 | 13.9 |
| | P8 – Residential | 38.0 | 21.5 | 13.7 |
| | P9 – Residential | 39.4 | 22.2 | 14.1 |
| | P10 – Residential | 39.1 | 22.1 | 14.1 |
| | P11 – Residential | 38.6 | 21.8 | 13.9 |
| | P12 – Residential | 37.8 | 21.4 | 13.7 |
| | P13 – Commercial | 39.3 | 22.3 | 14.2 |
| | P14 – Commercial | 39.2 | 22.2 | 14.1 |
| | P15 – Residential | 37.6 | 21.3 | 13.6 |
| | P16 – Residential | 37.6 | 21.3 | 13.6 |
| | P17 – Commercial | 39.6 | 22.4 | 14.2 |
| | P18 – Commercial | 39.2 | 22.2 | 14.1 |
| | P19 – Residential | 37.7 | 21.4 | 13.7 |
| | P20 – Residential | 37.7 | 21.3 | 13.6 |
| Second | P1 – Commercial | 38.1 | 21.5 | 13.8 |
| | P2 – Residential | 38.2 | 21.6 | 13.8 |
| | P3 – Residential | 37.5 | 21.2 | 13.6 |
| | P4 – Residential | 37.5 | 21.2 | 13.6 |
| | P5 – Commercial | 38.1 | 21.5 | 13.8 |
| | P6 – Commercial | 38.4 | 21.7 | 13.9 |
| | P7 – Commercial | 38.0 | 21.5 | 13.7 |
| | P8 – Residential | 37.7 | 21.3 | 13.6 |
| | P9 – Residential | 38.4 | 21.7 | 13.9 |
| | P10 – Residential | 38.3 | 21.7 | 13.8 |
| | P11 – Residential | 38.0 | 21.5 | 13.7 |
| | P12 – Residential | 37.6 | 21.3 | 13.6 |
| | P13 – Commercial | 38.4 | 21.8 | 13.9 |
| | P14 – Commercial | 38.4 | 21.8 | 13.9 |
| | P15 – Residential | 37.4 | 21.2 | 13.6 |
| | P16 – Residential | 37.4 | 21.2 | 13.6 |
| | P17 – Commercial | 38.6 | 21.9 | 13.9 |
| | P18 – Commercial | 38.6 | 21.8 | 13.9 |
| | P19 – Residential | 37.5 | 21.3 | 13.6 |
| | P20 – Residential | 37.6 | 21.3 | 13.6 |
| Third | P1 – Commercial | 37.5 | 21.2 | 13.6 |
| | P2 – Residential | 37.5 | 21.2 | 13.6 |
| | P3 – Residential | 37.2 | 21.0 | 13.5 |
| | P4 – Residential | 37.2 | 21.1 | 13.5 |
| | P5 – Commercial | 37.5 | 21.2 | 13.6 |
| | P6 – Commercial | 37.6 | 21.3 | 13.6 |
| | P7 – Commercial | 37.5 | 21.2 | 13.6 |
| | P8 – Residential | 37.3 | 21.1 | 13.5 |
| | P9 – Residential | 37.6 | 21.3 | 13.6 |
| | P10 – Residential | 37.6 | 21.3 | 13.6 |
| | P11 – Residential | 37.5 | 21.2 | 13.6 |
| | P12 – Residential | 37.3 | 21.1 | 13.5 |
| | P13 – Commercial | 37.6 | 21.3 | 13.6 |
| | P14 – Commercial | 37.7 | 21.4 | 13.7 |
| | P15 – Residential | 37.2 | 21.1 | 13.5 |

| Floor | Receptor Number | Annual Mean $NO_2$ Concentration | Annual Mean $PM_{10}$ Concentration | Annual Mean $PM_{2.5}$ Concentration |
|---|---|---|---|---|
| | P16 – Residential | 37.3 | 21.1 | 13.5 |
| | P17 – Commercial | 37.8 | 21.4 | 13.7 |
| | P18 – Commercial | 37.9 | 21.5 | 13.7 |
| | P19 – Residential | 37.3 | 21.2 | 13.5 |
| | P20 – Residential | 37.4 | 21.2 | 13.6 |

**8.90** The change in pollutant concentrations is less than 0.5% of the relevant objectives at all receptors in this scenario. In accordance with the IAQM/ EPUK screening criteria, the effect of the construction traffic in conjunction with the operation of the Detailed Proposals is **negligible** (not significant) at all receptors.

### *Completed Development*

*Road Traffic Impacts*

*Existing Receptors*

**8.91** A summary of the predicted annual mean $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations at existing receptors for the operational phase opening year (2031) is presented in **Tables 8.20 to Table 8.22**.

**Table 8.20 Opening Year Predicted Annual Mean $NO_2$ Concentrations (µg/m$^3$)**

| Receptor Number | 2031 Without Development | 2031 With Development | Change as a result of Development (as % of the AQAL) | Magnitude of Impact |
|---|---|---|---|---|
| R1 | 38.5 | 38.6 | 0.1 | Negligible |
| R2 | 37.0 | 36.9 | -0.2 | Negligible |
| R3 | 38.6 | 38.3 | -0.6 | Minor Beneficial |
| R4 | 37.3 | 37.2 | -0.2 | Negligible |
| R5 | 36.9 | 37.0 | 0.2 | Negligible |
| R6 | 29.5 | 29.6 | 0.0 | Negligible |
| R7 | 42.6 | 42.6 | 0.0 | Negligible |
| R8 | 37.9 | 37.9 | 0.1 | Negligible |
| R9 | 38.6 | 38.6 | 0.2 | Negligible |
| R10 | 41.6 | 41.5 | -0.1 | Negligible |
| R11 | 29.9 | 29.9 | 0.0 | Negligible |
| R12 | 29.8 | 29.8 | 0.0 | Negligible |
| R13 | 30.0 | 30.0 | -0.1 | Negligible |
| R14 | 30.0 | 30.1 | 0.1 | Negligible |
| R15 | 30.2 | 30.3 | 0.2 | Negligible |
| R16 | 29.8 | 29.8 | 0.0 | Negligible |
| R17 | 30.8 | 30.7 | -0.1 | Negligible |
| R18 | 30.6 | 30.7 | 0.3 | Negligible |
| R19 | 30.5 | 30.6 | 0.2 | Negligible |
| R20 | 31.9 | 32.0 | 0.3 | Negligible |
| R21 | 36.4 | 36.4 | 0.2 | Negligible |
| R22 | 36.7 | 36.8 | 0.2 | Negligible |
| R23 | 36.5 | 36.6 | 0.2 | Negligible |
| R24 | 28.0 | 28.0 | 0.0 | Negligible |
| R25 | 38.8 | 38.8 | 0.0 | Negligible |
| R26 | 40.0 | 40.1 | 0.1 | Negligible |
| R27 | 38.9 | 38.9 | 0.0 | Negligible |
| R28 | 38.5 | 38.5 | -0.1 | Negligible |
| R29 | 38.2 | 38.2 | 0.0 | Negligible |
| R30 | 38.9 | 38.9 | 0.1 | Negligible |
| R31 | 37.9 | 37.9 | 0.0 | Negligible |
| R32 | 39.0 | 39.0 | -0.1 | Negligible |

**Table 8.21 Opening Year Predicted Annual Mean $PM_{10}$ Concentrations (µg/m$^3$)**

| Receptor Number | 2031 Without Development | 2031 With Development | Change as a result of Development (as % of the AQAL) | Magnitude of Impact |
|---|---|---|---|---|
| R1 | 22.5 | 22.6 | 0.1 | Negligible |
| R2 | 21.2 | 21.0 | -0.6 | Negligible |
| R3 | 22.0 | 21.9 | -0.3 | Negligible |
| R4 | 21.2 | 21.2 | -0.1 | Negligible |
| R5 | 21.1 | 21.1 | 0.1 | Negligible |
| R6 | 19.7 | 19.7 | 0.0 | Negligible |
| R7 | 21.8 | 21.8 | 0.0 | Negligible |
| R8 | 21.9 | 21.9 | 0.1 | Negligible |
| R9 | 22.3 | 22.4 | 0.1 | Negligible |
| R10 | 21.3 | 21.3 | 0.0 | Negligible |
| R11 | 19.8 | 19.8 | 0.0 | Negligible |
| R12 | 19.8 | 19.8 | 0.0 | Negligible |
| R13 | 19.8 | 19.8 | 0.0 | Negligible |
| R14 | 20.0 | 20.0 | 0.0 | Negligible |
| R15 | 20.1 | 20.1 | 0.1 | Negligible |
| R16 | 19.8 | 19.8 | 0.0 | Negligible |
| R17 | 20.5 | 20.5 | -0.1 | Negligible |
| R18 | 20.5 | 20.5 | 0.1 | Negligible |
| R19 | 20.5 | 20.5 | 0.1 | Negligible |
| R20 | 21.1 | 21.2 | 0.2 | Negligible |
| R21 | 20.7 | 20.7 | 0.1 | Negligible |
| R22 | 20.9 | 21.0 | 0.1 | Negligible |
| R23 | 20.8 | 20.8 | 0.1 | Negligible |
| R24 | 20.0 | 20.0 | 0.0 | Negligible |
| R25 | 21.8 | 21.8 | 0.0 | Negligible |
| R26 | 23.2 | 23.3 | 0.1 | Negligible |
| R27 | 22.4 | 22.5 | 0.0 | Negligible |
| R28 | 22.0 | 22.0 | 0.0 | Negligible |
| R29 | 21.4 | 21.4 | 0.0 | Negligible |
| R30 | 22.5 | 22.6 | 0.1 | Negligible |
| R31 | 21.8 | 21.8 | 0.0 | Negligible |
| R32 | 22.5 | 22.5 | 0.0 | Negligible |

**Table 8.22 Opening Year Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m$^3$)**

| Receptor Number | 2031 Without Development | 2031 With Development | Change as a result of Development (as % of the AQAL) | Magnitude of Impact |
|---|---|---|---|---|
| R1 | 14.3 | 14.3 | 0.1 | Negligible |
| R2 | 13.6 | 13.5 | -0.5 | Negligible |
| R3 | 14.0 | 13.9 | -0.2 | Negligible |
| R4 | 13.6 | 13.6 | -0.1 | Negligible |
| R5 | 13.5 | 13.5 | 0.1 | Negligible |
| R6 | 12.5 | 12.5 | 0.0 | Negligible |
| R7 | 13.8 | 13.9 | 0.0 | Negligible |
| R8 | 13.9 | 14.0 | 0.1 | Negligible |
| R9 | 14.2 | 14.2 | 0.1 | Negligible |
| R10 | 13.6 | 13.6 | 0.0 | Negligible |
| R11 | 12.6 | 12.6 | 0.0 | Negligible |
| R12 | 12.6 | 12.6 | 0.0 | Negligible |
| R13 | 12.6 | 12.6 | 0.0 | Negligible |
| R14 | 12.7 | 12.7 | 0.0 | Negligible |
| R15 | 12.7 | 12.7 | 0.1 | Negligible |
| R16 | 12.6 | 12.6 | 0.0 | Negligible |
| R17 | 13.0 | 13.0 | -0.1 | Negligible |
| R18 | 12.9 | 13.0 | 0.1 | Negligible |
| R19 | 12.9 | 13.0 | 0.1 | Negligible |
| R20 | 13.5 | 13.5 | 0.1 | Negligible |
| R21 | 13.3 | 13.3 | 0.1 | Negligible |
| R22 | 13.4 | 13.4 | 0.1 | Negligible |
| R23 | 13.3 | 13.4 | 0.1 | Negligible |
| R24 | 13.1 | 13.1 | 0.0 | Negligible |
| R25 | 14.0 | 13.9 | 0.0 | Negligible |
| R26 | 14.7 | 14.7 | 0.1 | Negligible |
| R27 | 14.2 | 14.3 | 0.0 | Negligible |
| R28 | 14.0 | 14.0 | 0.0 | Negligible |
| R29 | 13.7 | 13.7 | 0.0 | Negligible |
| R30 | 14.3 | 14.3 | 0.1 | Negligible |
| R31 | 13.9 | 13.9 | 0.0 | Negligible |
| R32 | 14.3 | 14.3 | 0.0 | Negligible |

**8.92** The change in pollutant concentrations is less than 0.5% of the relevant objectives at all receptors in all scenarios. In accordance with the IAQM/ EPUK screening criteria, operational traffic associated with the Proposed Development is expected to have a negligible impact on local air quality.

*Introduced Receptors*

**8.93** A summary of the predicted annual mean $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations at the Proposed Development is presented in **Table 8.23**.

**Table 8.23 Opening Year Predicted Annual Mean Pollutant Concentrations (µg/m$^3$)**

| Floor | Receptor Number | Annual Mean $NO_2$ Concentration | Annual Mean $PM_{10}$ Concentration | Annual Mean $PM_{2.5}$ Concentration |
|---|---|---|---|---|
| Ground | P1 – Commercial | 38.4 | 22.1 | 14.1 |
| | P2 – Residential | 38.5 | 22.3 | 14.2 |
| | P3 – Residential | 37.5 | 21.5 | 13.7 |
| | P4 – Residential | 37.3 | 21.4 | 13.7 |
| | P5 – Commercial | 38.2 | 22.1 | 14.0 |
| | P6 – Commercial | 39.1 | 22.7 | 14.4 |
| | P7 – Commercial | 38.2 | 22.0 | 14.0 |
| | P8 – Residential | 37.6 | 21.6 | 13.8 |
| | P9 – Residential | 39.1 | 22.6 | 14.3 |
| | P10 – Residential | 38.6 | 22.4 | 14.2 |
| | P11 – Residential | 38.1 | 22.0 | 14.0 |
| | P12 – Residential | 37.4 | 21.5 | 13.7 |
| | P13 – Commercial | 39.0 | 22.7 | 14.4 |
| | P14 – Commercial | 38.8 | 22.5 | 14.3 |
| | P15 – Residential | 37.1 | 21.3 | 13.6 |
| | P16 – Residential | 37.1 | 21.3 | 13.6 |
| | P17 – Commercial | 39.2 | 22.8 | 14.5 |
| | P18 – Commercial | 38.7 | 22.4 | 14.2 |
| | P19 – Residential | 37.2 | 21.4 | 13.7 |
| | P20 – Residential | 37.2 | 21.4 | 13.7 |
| First | P1 – Commercial | 38.1 | 21.9 | 13.9 |
| | P2 – Residential | 38.1 | 22.0 | 14.0 |
| | P3 – Residential | 37.3 | 21.4 | 13.6 |
| | P4 – Residential | 37.2 | 21.4 | 13.7 |
| | P5 – Commercial | 37.9 | 21.9 | 13.9 |
| | P6 – Commercial | 38.5 | 22.3 | 14.2 |
| | P7 – Commercial | 37.9 | 21.8 | 13.9 |
| | P8 – Residential | 37.4 | 21.5 | 13.7 |
| | P9 – Residential | 38.5 | 22.2 | 14.1 |
| | P10 – Residential | 38.2 | 22.1 | 14.1 |
| | P11 – Residential | 37.8 | 21.8 | 13.9 |
| | P12 – Residential | 37.3 | 21.4 | 13.7 |
| | P13 – Commercial | 38.5 | 22.3 | 14.2 |
| | P14 – Commercial | 38.3 | 22.2 | 14.1 |
| | P15 – Residential | 37.1 | 21.3 | 13.6 |
| | P16 – Residential | 37.1 | 21.3 | 13.6 |
| | P17 – Commercial | 38.6 | 22.4 | 14.2 |
| | P18 – Commercial | 38.3 | 22.2 | 14.1 |
| | P19 – Residential | 37.2 | 21.3 | 13.6 |

| Floor | Receptor Number | Annual Mean $NO_2$ Concentration | Annual Mean $PM_{10}$ Concentration | Annual Mean $PM_{2.5}$ Concentration |
|---|---|---|---|---|
| | P20 – Residential | 37.2 | 21.3 | 13.6 |
| Second | P1 – Commercial | 37.6 | 21.6 | 13.8 |
| | P2 – Residential | 37.6 | 21.6 | 13.8 |
| | P3 – Residential | 37.0 | 21.2 | 13.6 |
| | P4 – Residential | 37.0 | 21.2 | 13.6 |
| | P5 – Commercial | 37.5 | 21.6 | 13.8 |
| | P6 – Commercial | 37.8 | 21.8 | 13.9 |
| | P7 – Commercial | 37.4 | 21.5 | 13.7 |
| | P8 – Residential | 37.2 | 21.3 | 13.6 |
| | P9 – Residential | 37.7 | 21.7 | 13.9 |
| | P10 – Residential | 37.6 | 21.7 | 13.8 |
| | P11 – Residential | 37.4 | 21.5 | 13.7 |
| | P12 – Residential | 37.1 | 21.3 | 13.6 |
| | P13 – Commercial | 37.7 | 21.8 | 13.9 |
| | P14 – Commercial | 37.7 | 21.8 | 13.9 |
| | P15 – Residential | 36.9 | 21.2 | 13.6 |
| | P16 – Residential | 37.0 | 21.2 | 13.6 |
| | P17 – Commercial | 37.9 | 21.9 | 13.9 |
| | P18 – Commercial | 37.8 | 21.8 | 13.9 |
| | P19 – Residential | 37.0 | 21.3 | 13.6 |
| | P20 – Residential | 37.1 | 21.3 | 13.6 |
| Third | P1 – Commercial | 37.1 | 21.2 | 13.6 |
| | P2 – Residential | 37.0 | 21.2 | 13.6 |
| | P3 – Residential | 36.8 | 21.0 | 13.5 |
| | P4 – Residential | 36.8 | 21.1 | 13.5 |
| | P5 – Commercial | 37.0 | 21.2 | 13.6 |
| | P6 – Commercial | 37.1 | 21.3 | 13.6 |
| | P7 – Commercial | 37.0 | 21.2 | 13.6 |
| | P8 – Residential | 36.9 | 21.2 | 13.5 |
| | P9 – Residential | 37.1 | 21.3 | 13.6 |
| | P10 – Residential | 37.1 | 21.3 | 13.6 |
| | P11 – Residential | 37.0 | 21.2 | 13.6 |
| | P12 – Residential | 36.9 | 21.1 | 13.5 |
| | P13 – Commercial | 37.1 | 21.3 | 13.6 |
| | P14 – Commercial | 37.2 | 21.4 | 13.7 |
| | P15 – Residential | 36.8 | 21.1 | 13.5 |
| | P16 – Residential | 36.8 | 21.1 | 13.5 |
| | P17 – Commercial | 37.2 | 21.4 | 13.7 |
| | P18 – Commercial | 37.3 | 21.5 | 13.7 |
| | P19 – Residential | 36.9 | 21.1 | 13.5 |
| | P20 – Residential | 36.9 | 21.2 | 13.5 |

**8.94** Annual mean $NO_2$ concentrations are predicted to be below or at the objective of 40 µg/m$^3$ at the proposed residential receptors. LAQM.TG(16) does not include a conversion between annual and hourly mean $NO_2$, however research has determined that where the annual mean $NO_2$ concentration is below 60µg/m$^3$, it is unlikely that the hourly mean $NO_2$ objective will be breached. As the predicted annual mean $NO_2$ concentrations are well below 60µg/m$^3$, it is considered extremely unlikely that the operation of the Proposed Development will lead to any breaches of the hourly mean AQS objective level at the proposed receptors. The impact with regards to new exposure is therefore considered to be negligible.

**8.95** Predicted annual mean $PM_{10}$ concentrations are well below (less than 75%) the objective of 40 µg/m$^3$ at the proposed residential receptors. The risk of an exceedance of the long-term air quality objective is therefore considered to be negligible. LAQM.TG(16) provides a relationship between predicted annual mean $PM_{10}$ concentrations and the likely number of exceedances of the short-term (24-hour mean) $PM_{10}$ objective of 50 µg/m$^3$. The objective allows 35 exceedances per year, which is equivalent to an annual mean of 32 µg/m$^3$. On this basis, the dispersion modelling indicates that compliance with the short-term $PM_{10}$ objective is also likely to be achieved at the Proposed Development.

**8.96** Predicted annual mean $PM_{2.5}$ concentrations are well below (less than 75%) the AQS objective level of 25 µg/m$^3$ at the proposed residential receptors. The risk of an exceedance is therefore considered to be negligible.

## MITIGATION, MONITORING AND RESIDUAL EFFECTS

### *Demolition and Construction Mitigation*

**8.97** London Best Practice Guidance[16] for dust control will be implemented, as appropriate, during the construction phase through the Dust Management Plan (DMP) to be secured by condition for the Proposed Development.

**8.98** The risk of dust soiling and human health impacts from the site has been assessed as 'High', prior to mitigation. In accordance with the IAQM guidance, Mayor of London's SPG and the LBTH Code of Construction Practice, it is therefore recommended that the 'highly recommended' measures detailed in **Table 8.24** are incorporated into the DMP.

**8.99** The significance of residual dust impacts on nearby receptors following the implementation of appropriate and best practice mitigation is considered to be negligible.

**Table 8.24 Highly Recommended Mitigation Measures**

| Description | Mitigation Measure |
|---|---|
| General | - Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.<br>- Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary.<br>- Display the head or regional office contact information.<br>- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the Site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real time PM10 continuous monitoring and/or visual inspections. |
| Site management | - Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.<br>- Make the complaints log available to the local authority when asked.<br>- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book. |

[16] *The control of dust and emissions from construction and demolition Best Practice Guidance, Greater London Authority and London Council's, November 2006.*

| Description | Mitigation Measure |
|---|---|
| | - Hold regular liaison meetings with other high risk construction sites within 500 m of the Site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes |
| Monitoring | - Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of Site boundary, with cleaning to be provided if necessary.<br>- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.<br>- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.<br>- Agree dust deposition, dust flux, or real-time $PM_{10}$ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site. |
| Preparing and maintaining the site | - Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.<br>- Erect solid screens or barriers around dusty activities or at the Site boundary that are at least as high as any stockpiles on site.<br>- Fully enclose the Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period<br>- Avoid site runoff of water or mud.<br>- Keep site fencing, barriers and scaffolding clean using wet methods.<br>- Remove materials from Site as soon as possible.<br>- Cover, seed or fence stockpiles to prevent wind whipping. |
| Operating vehicle/machinery and sustainable travel | - Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.<br>- Ensure all vehicles switch off engines when stationary - no idling vehicles.<br>- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.<br>- Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).<br>- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.<br>- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing). |
| Operations | - Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.<br>- Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.<br>- Use enclosed chutes and conveyors and covered skips.<br>- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.<br>- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. |
| Waste management | - Reuse and recycle waste to reduce dust from waste materials.<br>- Avoid bonfires and burning of waste materials. |
| Demolition | - Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).<br>- Ensure water suppression is used during demolition operations.<br>- Avoid explosive blasting, using appropriate manual or mechanical alternatives.<br>- Bag and remove any biological debris or damp down such material before demolition. |
| Earthworks | - Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces.<br>- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil. |
| | - Only remove secure covers in small areas during work and not all at once |
| Construction | - Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.<br>- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.<br>- Avoid scabbling (roughening of concrete surfaces) if possible.<br>- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. |
| Trackout | - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Site. This may require the sweeper being continuously in use.<br>- Avoid dry sweeping of large areas.<br>- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.<br>- Record all inspections of haul routes and any subsequent action in a site log book.<br>- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable).<br>- Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site. |

### *Completed Development Mitigation*

**8.100** The results of the assessment indicate that the impact of the operation of the Proposed Development on existing sensitive receptors and proposed receptors will be negligible. Nonetheless, the units will be mechanically ventilated to ensure that there is no new exposure to poor air quality.

### *Residual Effects*

**8.101** Following the implementation of the above mitigation measures, all effects of the Proposed Development on air quality are assessed to be negligible (not significant).

### *Summary*

**8.102** **Table 8.25** provides a summary of the identified mitigation and [enhancement] measures committed to, and **Table 8.26** provides a tabulated summary of the outcomes of the air quality impact assessment of the Proposed Development.

**Table 8.25 Summary of Proposed Mitigation and Enhancement Measures**

| Potential Effects Identified | Proposed Mitigation / Enhancement Measures |
|---|---|
| **Demolition and Construction** | |
| Dust soiling | Best Practice dust control |

**Table 8.26 Summary of Residual Effects**

| Receptor and Receptor Sensitivity | Description of the Residual Effect | Nature* and Scale** | +ve -ve | D I | P T | R IR | St Mt Lt |
|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | |
| High sensitivity residential dwellings within 20m of the Site | Dust Soiling | Negligible | -ve | D | T | n/a | Lt |
| High sensitivity residential | Change in $NO_2$, $PM_{10}$ and $PM_{2.5}$ concentrations from construction traffic emissions | Negligible | -ve | D | T | n/a | Lt |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| dwellings and School | | | | | | | |
| **Completed Development** | | | | | | | |
| High sensitivity residential dwellings and School | Change in pollutant concentrations as a result of emissions from road vehicles generated by the operation of the Development | Negligible | -ve | D | P | n/a | Lt |

**Notes:**
*Nature = Beneficial or Adverse;
**Scale = Negligible / Minor / Moderate / Major
D = Direct / I = Indirect;
P = Permanent / T = Temporary;
R = Reversible / IR= Irreversible;
St = Short Term / Mt = Medium Term / Lt = Long Term.
n/a = not applicable / not assessed

### *Air Quality Neutral Assessment*

**8.103** Space heating and hot water will be provided to the residential dwellings by air/water source heat pumps as well as the existing energy centre. Therefore there will be no building-related emissions directly associated with the Proposed Development.

**8.104** The daily operational traffic associated with the Site will be insignificant and therefore the Proposed Development is considered to be Air Quality Neutral with respect to transport-related emissions.

**8.105** Considering the above, the Proposed Development is considered to be Air Quality Neutral.

### *Air Quality Positive Statement*

**8.106** The Proposed Development is expected to be air quality neutral. In addition, the Proposed Development will not introduce a combustion-based CHP system. As such, the Proposed Development is considered to be Air Quality Positive.

## SITE SUITABILITY

**8.107** Modelling results show that pollutant concentrations at receptors within the Proposed Development are predicted to be below the respective air quality objective values for $NO_2$, $PM_{10}$ and $PM_{2.5}$ in both future years 2026 and 2031. Future residents will therefore not experience adverse impacts in terms of air quality and, the Site is therefore deemed suitable for its intended use.

## CLIMATE CHANGE

**8.108** There are no significant effects on air quality arising from the Proposed Development and therefore the impact on climate change is anticipated to be negligible. Predicted emissions from vehicle movements are predicted to be negligible. The heating for the Proposed Development will be provided by air and water source heat pumps, which are considered to minimise impacts on climate change.

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline Scenario*

**8.109** The 'evolved baseline' refers to the scenario which assumes all the Committed Developments are built, in the absence of the Proposed Development being implemented. Effectively, it is envisaged that this is the cumulative assessment scenario, which describes the future environment in the absence of the Proposed Development.

**8.110** This is assessed in this ES chapter through quantitative detailed dispersion modelling, the results of which are provided in **Tables 8.20** to **Table 8.22** under the column headed '2031 Without Development'. The results show that the air quality objective values would be achieved at all receptors in the future baseline scenario.

### *Cumulative Effects Assessment*

#### *Demolition and Construction*

**8.111** There are a number of proposed and committed developments within 350m of the Site boundary. Should the construction phases overlap with the Proposed Development's construction, there is the potential for increased risk of dust effects at sensitive locations in the vicinity of the Site. However, the cumulative air quality effects of the demolition and construction of these developments is predicted to be negligible, as each development is expected to have suitable dust management and mitigation measures conditioned as part of their planning consent, which would control emissions to an acceptable level through a Construction Environmental Management Plan, Construction Logistics Plan, or similar.

#### *Completed Development*

**8.112** The Proposed Development is not anticipated to significantly affect local air quality, therefore any cumulative impact with other schemes will also be negligible.

**8.113** The cumulative effects of the Proposed Development with other committed developments has been taken into account in the above assessment. The traffic data provided for the 'Without Development' scenario in 2031 includes the traffic from the consented and committed developments in the vicinity of the Site. The cumulative effect once the Proposed Development is complete and operational is therefore considered to be negligible (not significant).

## LIKELY SIGNIFICANT EFFECTS

**8.114** There are no significant effects arising from the Proposed Development.

# Chapter 9: Climate Change

| Climate Change | | |
|---|---|---|
| **AUTHOR** | Greengage Environmental | |
| **SUPPORTING APPENDIX** | **ES Volume 3: Appendix: Climate Change:**<br>**Annex 1 – Climate Change Technical Note**. | |
| **KEY CONSIDERATIONS** | This ES chapter covers:<br>• An assessment of the likely significant impacts of climate change on the resilience of the Proposed Development during construction and operation; and<br>• An assessment of the likely significant impacts of the Proposed Development on the environment with regard to climate change through the direct and indirect release of greenhouse gas (GHG) emissions during construction and operation; and<br>• A summary of the in-combination climate change resilience impacts of the Proposed Development. | |
| **CONSULTATION** | An EIA Scoping Report was prepared and submitted to the London Borough of Tower Hamlets (LBTH) in August 2021 to request an Environmental Impact Assessment (EIA) Scoping Opinion on the proposed scope of the EIA. The following comments were made by LBTH in their Scoping Opinion and are addressed in the ES chapter. | |
| | **LBTH Scoping Opinion** | **Where this is Addressed** |
| | **Paragraph 165** of the Scoping Report states that no detailed assessment is proposed to be provided for inter-project cumulative effects. LBTH agrees that a detailed assessment accounting for all proposed developments in the area that may have a cumulative effect with the Proposed Development is not required. Given that the level of significance of effect should be determined against local emissions targets and compared against UK wide budgets, LBTH expects cumulative schemes to be assessed qualitatively, based on a broad assumption that by their nature, the cumulative schemes are expected to be major developments of a similar scale to the Proposed Development. This will enable a Cumulative Effects Assessment based on a worst-case scenario. | A cumulative GHG assessment has been addressed qualitatively. See **paragraph 9.111-9.113** |
| | The Aberfeldy New Village LLP ('the Applicant') presents the UK Climate Change Projections 2018 (UKCP18)[1] future climate change projections relative to the 1981-2000 baseline period under the representative concentration pathways (RCP8.5) within **Table 4** of the Scoping Report. LBTH expects that the RCP8.5 emissions scenario of UKCP18 will be used in the assessment. In accordance with guidance, the consideration of climate change should use RCP8.5 emissions scenario, at a 50% certainty level. | The high RCP8.5 emission scenario with a 50% certainty level has been used for a set of key climate change parameters. |
| | All climate change resilience and adaption measures should be included within the **Environmental Statement (ES) Volume 1, Chapter 17: Mitigation and Monitoring Schedule**, and consideration should be given to producing a Climate Change Resilience and Adaptation Plan in accordance with Institute of Environmental Management and Assessment (IEMA) EIA Guide to Climate Change Resilience and Adaptation (2020) [2]. | Climate change resilience and adaption measures are included within **ES Volume 1, Chapter 17: Mitigation and Monitoring Schedule.** |
| | The Applicant should assess GHG emissions quantitatively; any use of professional judgement to assess significance should be fully justified. All references to carbon emissions should refer to carbon dioxide ($CO_2$) or carbon dioxide equivalent ($CO_{2e}$) and not carbon alone. | The assumptions and limitations on which this ES chapter are based are presented in **paragraphs 9.21 – 9.23**.<br>All references to carbon emissions refer to carbon dioxide ($CO_2$) or carbon dioxide equivalent ($CO_2e$) and not carbon alone. |
| | In accordance with IEMA EIA Guide to: Assessing GHG Emissions and Evaluating Their Significance (2017), all GHG emissions are to be considered as significant. The level of significance of effect should be determined against local emissions targets and compared against the UK wide budgets, based upon professional judgement. The Applicant is reminded that all likely significant effects must be stated in the Non-Technical Summary. | **Table 9.2** and Table 9.3 present the levels of significance for the GHG effect criteria and Receptor Sensitivity, Probability and Consequence Factors. The potential effects for each sector have been attributed a level of significance according to these tables. |
| | The GHG assessment is to cover all phases of the project lifespan, from demolition and enabling works through to end of life (including decommissioning as the end-of-life stage). Where professional judgement has been used, this should be made clear with any assumptions and reasoning explicitly stated. | The GHG assessment covers all phases of the project lifespan, from demolition and enabling works through to end of life.<br>The assumptions and limitations on which this ES chapter are based are presented in **paragraphs 9.21 – 9.23**. |
| | Any further guidance published before submission of planning application, in addition to the guidance referenced within the Scoping Report, should be considered within the assessment. | No further guidance has been published. |
| | Mitigation measures to meet adopted and any emerging policy and will need to be secured within any given planning consent. Particular attention should be made to ensuring emission reduction measures are integrated and delivered through the construction and operation phases (e.g. selection of construction methodologies, selection and use of construction equipment and vehicles, and selection and transport of materials that have low embodied GHG emissions). As a Greater London Authority (GLA) referable scheme subject to London Plan Policy SI 2 and Policy SI 7, the findings of the Proposed Development's Whole Life Cycle Carbon Assessment and Circular Economy Statement should be referred to in the assessment. | Attention has been paid to emission reduction measures which are integrated and delivered through the construction and operation phases.<br>The Whole Life Carbon Assessment and Circular Economy Statement has been referred to in this assessment. |
| | For the GHG emission assessment of the Proposed Development's operational phase, the EIA should set out how the Proposed Development will be net zero carbon on-site in 2050, as required by the Climate Change Act 2008 (as amended) and London Plan Policy SI 2. It should be noted that Policy D.ES7 within Tower Hamlets Local Plan 2031: Managing Growth and Sharing the Benefits (2020) requires residential development to achieve zero carbon. Reference in the ES should be made to whether the national, regional and local policy requirements in relation to energy and GHG are satisfied by the Proposed Development. | Energy efficient measures have been optimised for the Proposed Development and each step of the Energy Hierarchy followed to minimise carbon emissions. To achieve zero carbon, the remaining carbon emissions will be offset. |

## ASSESSMENT METHODOLOGY

**9.1** The EIA Directive 2014[3] sets out the rationale for incorporating climate change into the EIA process. It states:

"Climate change will continue to cause damage to the environment and compromise economic development. In this regard, it is appropriate to assess the impact of projects on climate (for example GHG emissions) and their vulnerability to climate change."

**9.2** The requirements of the EIA Regulations[4] require that ESs provide:

- "A description of the likely significant effects of the development on the environment resulting from, inter alia:
- (f) the impact of the project on climate (for example the nature and magnitude of GHG emissions) and the vulnerability of the project to climate change".

**9.3** The IEMA EIA Guide to: Climate Change Resilience & Adaptation' also states that in combination climate impacts of a development should be assessed which are the impacts of climate change on receptors identified in other technical areas.

**9.4** Therefore, this ES chapter covers:

[1] *Met Office, (2018); UK Climate Change Projections. (website: https://metoffice.gov.uk )*
[2] *IEMA (2020). EIA Guide to Climate Change Resilience and Adaption (website: https://www.iema.net)*
[3] *HMSO Town and Country Planning (Environmental Impact Assessment) Regulations 2014*
[4] *HMSO Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended 2018 and 2020)*

- An assessment of the likely significant impacts of climate change on the resilience of the Proposed Development during construction and operation and consideration of the adaptation measures that have been factored into the design of the Proposed Development;
- An assessment of the likely significant impacts of the Proposed Development on the environment with regard to climate change through the direct and indirect release of GHG emissions during construction and operation; and
- A summary of the in-combination climate change resilience impacts of the Proposed Development.

**9.5** The assessment has followed guidance within IEMA EIA Guide to: Climate Change Resilience & Adaptation and IEMA guidance on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'[5].

### *Defining the Baseline*

**9.6** Baseline data for the climate change impacts have been gathered using the United Kingdom's Climate Impact Programme to establish the climatic data surrounding current seasonal temperatures and precipitation. This stage of the assessment will be used to analyse the current climate and compare these findings, in relation to the Proposed Development, to the climate change projections identified in the UKCP18.

**9.7** The UKCP18 have built on the 2009 UK Climate Change Projections (UKCP09) to deliver a significant upgrade to the range of the UK climate projections that assist decision makers in assessing their risk to climate. The projections form part of the Met Office Hadley Centre Climate Programme, which is supported by the Department of Business, Energy and Industrial Strategy and the Department for Environment, Food and Rural Affairs. The UKCP18 provides the most up-to-date assessment of how the climate in the UK may change over the 21st century.

**9.8** The UKCP18 use a range of future emission scenarios to assess the different climate change scenarios. These emission scenarios include where global emissions of GHG rapidly peak and decline towards the climate targets in the Paris Agreement, to where fossil fuel use increases to even higher GHG emissions. The UKCP18 use representative concentration pathways (RCPs) that represent different levels of GHG concentrations in the future. For this assessment, the RCP8.5 emission scenario with a 50% certainty level has been used for a set of key climate change parameters. This scenario was selected in accordance with IEMA Guidance on assessing climate change resilience as the most conservative scenario to ensure all potential risks are addressed.

**9.9** In addition, the UK Climate Change Risk Assessment: Government Report (CCRA)6 outlines how well-established risk-based decision approaches to assess risks have been applied to climate change and what priority actions are needed and how to respond to these. The CCRA report sets out the main priorities for adaptation in the UK under five key themes identified in the CCRA Evidence Report:

- Agriculture and Forestry;
- Business;
- Health and Wellbeing;
- Buildings and Infrastructure; and
- Natural Environment.

**9.10** Baseline data for the GHG part of the assessment is from a number of assumptions, as outlined in **Table 9.1**.

**Table 9.1 GHG Baseline Sources**

| Impact | Baseline Assumptions |
|---|---|
| Construction | Baseline is zero as no existing construction is taking place |
| Operational energy use (regulated) | Assumed to be zero as a worst case scenario |
| Operational Transport | Assumed to be zero as a worst case scenario |

[5] *IEMA (2017); Assessing Greenhouse Gas Emissions and Evaluating their Significance. (website: https://www.iema.net)*

[6] *Department for Environment, Food and Rural Affairs, (2017); UK Climate Change Risk Assessment: Government Report. (website: https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017 )*

### *Impact Assessment Methodology*

#### *Demolition and Construction*

**9.11** For the climate change resilience assessment, Demolition and Construction impacts have been scoped out given the low magnitude of change predicted during the construction period.

**9.12** For the GHG assessment the A1-A5 construction stage embodied carbon emissions (from product, transport and construction operations stage) have been taken from the Whole Life-Cycle Carbon Assessment.

**9.13** IEMA recommend that all GHG emissions are significant and that their occurrence must be addressed by taking mitigation actions. The GHG emissions during both construction and operation have been considered in the context of the $CO_{2e}$ emissions for the LBTH as published within the London Energy and Greenhouse Gas Inventory (LEGGI) (2018)[7]. In the absence of an established universal methodology to determine the level of significance of different sources of GHG emissions, the criteria used in the **Table 9.2** have been used to determine the effect of emissions relative to the $CO_{2e}$ emissions from LBTH in 2018. As extracted from LEGGI calculations, the total emissions for LTBH amount to 1,137,000t $CO_2$ per annum.

**Table 9.2 GHG Effect Criteria**

| Significance | Criteria |
|---|---|
| Major Adverse / Beneficial | Major increase (adverse) or decrease (beneficial) (above 1%, 11,370t $CO_{2e}$) in annual LBTH emissions |
| Moderate Adverse / Beneficial | Moderate increase (adverse) or decrease (beneficial) (above 0.1%, 1,137t $CO_{2e}$) in annual LBTH emissions |
| Minor Adverse / Beneficial | Minor increase (adverse) or decrease (beneficial) in GHG emissions below (0.1%, 1,137t CO2e) in annual LBTH emissions |

#### *Completed Development – Climate Change Resilience*

**9.14** In terms of climate change risk to the Proposed Development, there are also no standard significance criteria. Therefore, specific project criteria have been used to determine the significance of effect in line with the IEMA Climate Change Resilience Guidance.

**9.15** Each impact identified has been assessed against three variables (as shown in Table 9.3) - Receptor sensitivity (Rs); Probability (P); and Consequence (C) of the risk.

**9.16** Using this methodology, each risk is assigned a score (Total Risk Score = Rs x P x C) between 1 (no or very low risk) and 27 (very high risk) for three separate time periods as set out in the UKCP18:

- 2030s;
- 2060s; and
- 2090s.

**9.17** Scoring risks against three different timescales provides an indication of when action may need to be taken to adapt and increase resilience so the asset in question is able to perform effectively for its intended useful design life. For some risks, action should be taken early to avoid significant disruption and economic impact. Other risks only need to be addressed either shortly before or as they occur. For example, the risk of severe and widespread flooding may need to be addressed early through planning and design activities (such as installing high drainage capacities and flood protection). In contrast, when considering the resilience of road surfaces to extreme weather events, adaptive management is a more suitable approach as this allows resilience to be built into a project when necessary during ongoing maintenance or replacement.

**9.18** The scores for Rs, P and C are established through the understanding of the specific risk and the level of resilience or exposure of the Proposed Development to climate change and through a review of relevant literature and climate change data. These significance criteria have been adapted from the IEMA Climate Change Resilience Guide. These are shown in **Table 9.3**.

- Total Risk Scores (Rs x P x C) are categorised as follows:

[7] *Greater London Authority (2018), London Energy and Greenhouse Gas Inventory (LEGGI). (website: https://data.london.gov.uk/dataset/leggi )*

- Total Risk Score of 18-27 – Very High Risk for the specified time period (Major Adverse Effect, Significant);
- Total Risk Score of 12-17 – High Risk for the specified time period (Moderate Adverse Effect, Significant);
- Total Risk Score of 8-11 – Medium risk for the specified time period (Minor Adverse Effect, Significant); and
- Total Risk Score of <8 – Low Risk for the specified time period (Negligible Effect).

**Table 9.3 Receptor Sensitivity, Probability and Consequence Factors**

| Significance | Criteria |
|---|---|
| Rs – the sensitivity of the receptor / receiving environment is the degree of response of a receiver to a change and a function of its capacity to accommodate and recover from a change if it is affected. This considers the susceptibility of the receptor and the vulnerability of the receptor to potential climate effects. | 1 = Low susceptibility and / or vulnerability.<br>2 = Moderate susceptibility and / or vulnerability.<br>3 = High susceptibility and / or high vulnerability. |
| P – likelihood of the impact occurring over the specified time period. | 1 = Unknown occurrence or relatively low probability of the impact occurring in project lifetime.<br>2 = Medium likelihood that the impact will occur in the lifetime of the project.<br>3 = There is a high likelihood that the impact will occur multiple times in the project lifetime. |
| C - This reflects the geographical extent of the effect or the number of receptors affected (e.g. scale), the complexity of the effect, degree of harm to those affected and the duration, and frequency of effect. | 1 = No or minimal consequence e.g. effect is small in scale relative to the project, results in no harm and has a short duration (e.g. 1 day).<br>2 = Moderate consequence, must meet one of the following thresholds:<br>• Results in some level of harm; or<br>• Medium scale effect that has some potential for cascading effects on other aspects of the Proposed Development.<br>• 3 = High consequence, must meet one of the following thresholds:<br>• Longer duration (e.g. 1 week) effect on any aspect of the project;<br>• Results in unacceptable harm; or<br>• Large scale effect that has cascading effects on the wider function of the Proposed Development. |

*Completed Development – GHG Assessment*

**9.19** For the Completed Development, the GHG emissions have been based on the:

- Energy strategy of the Proposed Development and Whole Life-Cycle Carbon Assessment (B6) under the decarbonisation scenario for operational energy emissions; and
- Qualitative consideration of operational transport emissions based on net daily trip generation data for the Proposed Development provided by the transport consultant.

**9.20** The significance of GHG emissions has been assessed based on **Table 9.2**.

*Assumptions and Limitations*

**9.21** This chapter assesses the potential effects in terms of the adaptability and ability to mitigate the impact of climate change on the Proposed Development both during construction and upon completion into the operational phase. Therefore, it does not follow the standard assessment and approach for this EIA, and it is not possible to provide an assessment of any residual effects following adaptation and mitigation as there are scientific unknowns within the climate system. However, whilst the detail of the residual effects following adaptation cannot be stated, the adaptation measures identified are considered best practice in order to minimise the residual impact of climate change on the Proposed Development.

**9.22** The UKCP18 projections of the future climate are based on the current understanding of the climate system; however, there may be scientific unknowns incorporated within the predictions that would affect the information provided. The data scenarios, therefore, should be interpreted as climate projections that will have some variance as models and observed impacts are recorded.

**9.23** The data used from the Whole Life-Cycle Carbon Assessment is based on the decarbonisation scenario based on National Grid's Future Energy Scenario 2020 'Steady Progression'. This is therefore considered a realistic worst-case scenario although the GHG emissions from the Proposed Development would be lower if decarbonisation occurs more quickly.

## BASELINE CONDITIONS

**9.24** For the purpose of this assessment, the baseline for the GHG assessment is assumed to be zero as a worst case scenario.

**9.25** The GHG assessment has also not identified any sensitive receptors as GHG emissions do not directly affect specific locations, but contribute to the global issue of climate change.

**9.26** In terms of the impact of climate change on the Proposed Development, baseline conditions are set through the modelled datasets and climate projections and it is necessary to use the timescales set out within these datasets. Therefore, this assessment does not make use of the baseline year of 2020 as used in other assessments within this EIA, but instead uses baseline conditions relevant to the climate datasets used.

**9.27** The UKCP18 highlights the key climate projections over the next 50+ years and summarises these as follows:

- Summers will become hotter and drier;
- Winters will become milder and wetter;
- Soils will become drier on average;
- Snowfall and the number of very cold days will decrease;
- Sea levels will rise; and
- Storms, heavy and extreme rainfall, and extreme winds will become more frequent.

**9.28** These changes are set to have substantial impacts on the construction and maintenance of buildings and also on the natural environment. For example, drier and hotter summers will lead to more incidences of heat damage to structures and equipment; more frequent heavy rainfall events will result in increased incidences of flooding in low-lying areas; and increased variability in soil moisture levels will lead to increased incidences of subsidence. These impacts will lead to disruption to businesses and increased operational, maintenance and emergency repair costs.

**9.29** In order to assess the climate change resilience impacts to the Proposed Development, future climate projections under UKCP18 for the 25 km Grid Cell (537500, 187500) within which the Site is located, are presented in **Table 9.4**for the 2030s, 2060s and 2090s[8]. The high emissions scenario RCP8.5 was used and projections for the 50$^{th}$ percentile under both scenarios are displayed. The wider range shows the range of projections for the 5$^{th}$ percentile to 95$^{th}$ percentile under each climate variable. These projections within **Table 9.4** indicate the changes in temperature and precipitation for the projected years (2030s, 2060s and 2090s).

[8] *UK Climate Projections User Interface, (2018); Plume of time series anomalies for probabilistic projections (25km) over UK, 1961-2100. (website: https://ukclimateprojections-ui.metoffice.gov.uk/ui/home )*

**Table 9.4 UKCP18 Future Climate Change Projections Relative to 1981-2000 Baseline Period under RCP8.5**

| Climate Variable | Change relative to 1981-2000 base period | | | | | |
|---|---|---|---|---|---|---|
| | 2030s | | 2060s | | 2090s | |
| | RCP8.5 (50th percentile) | Wider range | RCP8.5 (50th percentile) | Wider range | RCP8.5 (50th percentile) | Wider range |
| *Mean Air Temperature Anomaly at 1.5m (°C)* | | | | | | |
| Annual Average | +1.0 °C | 0.2 – +2.0 °C | +2.4 °C | 0.8 – +4.1 °C | +4.2 °C | 1.7 – +7.0 °C |
| Winter Average | +0.9 °C | -0.3 – +2.2 °C | +2.1 °C | 0.2 – +4.1 °C | +3.6 °C | 0.8 – +6.5 °C |
| Spring Average | +0.7 °C | -0.3 – +1.7 °C | +1.7 °C | 0.3 – +3.3 °C | +3.0 °C | 0.8 – +5.5 °C |
| Summer Average | +1.3 °C | 0.1 – +2.6 °C | +3.1 °C | 0.6 – +5.7 °C | +5.6 °C | 1.8 – +9.8 °C |
| Autumn Average | +1.1 °C | -0.4 – +2.6 °C | +2.4 °C | 0.5 – +4.6 °C | +4.4 °C | 1.4 – +7.7 °C |
| *Maximum Air Temperature Anomaly at 1.5m (°C)* | | | | | | |
| Annual Average | +1.1 °C | 0.2 – +2.2 °C | +2.6 °C | 0.7 – +4.5 °C | +4.5 °C | 1.5 – +7.7 °C |
| Winter Average | +1.0 °C | -0.3 – +2.2 °C | +2.0 °C | 0.3 – +3.9 °C | +3.4 °C | 0.8 – +6.2 °C |
| Spring Average | +0.9 °C | -0.4 – +2.2 °C | +2.0 °C | 0.2 – +3.8 °C | +3.6 °C | 0.6 – +6.6 °C |
| Summer Average | +1.4 °C | 0.0 – +3.1 °C | +3.5 °C | 0.4 – +6.8 °C | +6.3 °C | 1.3 – +11.7 °C |
| Autumn Average | +1.3 °C | -0.2 – +2.9 °C | +2.7 °C | 0.1 – +5.5 °C | +4.6 °C | 0.7 – +9.0 °C |
| *Minimum Air Temperature Anomaly at 1.5m (°C)* | | | | | | |
| Annual Average | +0.9 °C | -0.1 – +2.1 °C | +2.3 °C | 0.6 – +4.2 °C | +4.1 °C | 1.3 – +7.3 °C |
| Winter Average | +0.9 °C | -0.4 – +2.2 °C | +2.1 °C | 0.1 – +4.4 °C | +3.5 °C | 0.6 – +7.2 °C |
| Spring Average | +0.8 °C | -0.7 – +2.2 °C | +1.8 °C | 0.1 – +3.5 °C | +3.2 °C | 0.5 – +6.2 °C |
| Summer Average | +1.2 °C | 0.2 – +2.3 °C | +2.8 °C | 0.9 – +5.1 °C | +5.2 °C | 1.8 – +9.0 °C |
| Autumn Average | +1.0 °C | -0.5 – +2.6 °C | +2.4 °C | 0.2 – +5.0 °C | +4.4 °C | 0.9 – +8.4 °C |
| *Precipitation Rate Anomaly* | | | | | | |
| Annual Average | +1% | -6 – +9% | -3% | -13 – +8% | -2% | -12 – +8% |
| Winter Average | +7% | -8 – +24% | +13% | -11 – +40% | +23% | -6 – +57% |
| Spring Average | 0% | -10– +10% | -4% | -19 – +10% | -7% | -26 – +14% |
| Summer Average | -8% | -39 – +24% | -24% | -61 – +14% | -39% | -78 – +9% |
| Autumn Average | +4% | -7 – +16% | -1% | -16 – +15% | +7% | -6 – +21% |

**9.30** **Table 9.4** above shows that the following changes in climate variables are predicted under the RCP8.5GHG emissions scenario) for the 2030s, 2060s and 2090s:

- Increased average air temperatures across all seasons;
- Higher increases in summer air temperature (associated with an increased frequency of heatwaves);
- Increased variability in precipitation (associated with an increased frequency of heavy rainfall events and droughts);
- An average reduction in summer precipitation (associated with an increased frequency of summer droughts); and
- An average increase in winter precipitation (associated with an increased frequency heavy rainfall and winter storms).

**9.31** The magnitude and variability of these changes in climate variables increases over time with the biggest changes in the 2090s. The magnitude of these changes is likely to be lower if less global GHGs are emitted than in the RCP8.5 scenario.

**9.32** Considering the nature of the Proposed Development and the climate change variables identified using the UKCP18 data, a set of risks for the Proposed Development have been identified as below:

- Flooding to the public realm and ground floor properties;
- Overheating of homes and commercial units and associated health implications;
- Soft landscaping failure and associated loss of services; and
- Water shortages for public use and for landscaping.

### *Evolution of the Baseline*

**9.33** In the absence of the Proposed Development, the existing buildings and landscaping infrastructure on-site would still be subject to the same changes in climate change variables as described above.

## POTENTIAL EFFECTS

### *Demolition and Construction*

**9.34** The Whole Life-Cycle Carbon Assessment has identified that the Proposed Development is predicted to create 19,560 tonnes of $CO_{2e}$ for the Detailed Proposals (Phase A), and 69,917 tonnes of $CO_{2e}$ for the Outline Proposals (Phases B-D) through construction and upstream processes including A1-A3 Product Stage, A4 Transportation to site and A5 Site Operations.

**9.35** This is equivalent to approximately 9,780 tonnes of $CO_{2e}$ per annum for Detailed Proposals and 7,769 tonnes of $CO_{2e}$ per annum for Outline Proposals, during the respective 2 and 9-year construction periods. The total emissions of the Proposed Development are 0.9% and 0.6% respectively of current annual LBTH emissions (see **Table 9.2**).

**9.36** Therefore, this is considered to be a **Moderate Adverse (Significant)** impact.

### *Completed Development*

#### *Climate Change Resilience*

**9.37** To develop risks, the high emissions scenario data in **Table 9.4** was used to estimate the risk prior to any adaptation measures because this would present the worst-case scenario in terms of impact severity and therefore ensure that all risks were fully evaluated. Mitigation measures for the risks are identified in the mitigation section of this chapter.

**9.38** Each of these risks has been estimated using the scoring methodology set out in **Table 9.3** and evaluated using the Rs x P x C calculation to produce an associated level of risk.

**9.39** The results of the risk estimation and evaluation are displayed in **Table 9.5**.

**Table 9.5 Total Risk Score of the Proposed Development**

| Risk | Timescale | Receptor sensitivity (Rs) | Probability (P) | Consequence (C) | Total Risk Score (Rs x P x C) | Risk |
|---|---|---|---|---|---|---|
| Flooding to public realm and ground floor properties (based on FRA) | 2030s | 3 | 1 | 2 | 6 | Negligible |
| | 2060s | 3 | 2 | 2 | 12 | Moderate Adverse |
| | 2090s | 3 | 2 | 2 | 12 | Moderate Adverse |
| Overheating and associated health implications | 2030s | 3 | 2 | 2 | 12 | Moderate Adverse |
| | 2060s | 3 | 3 | 3 | 27 | Major Adverse |
| | 2090s | 3 | 3 | 3 | 27 | Major Adverse |
| Soft landscaping failure and associated loss of services | 2030s | 2 | 1 | 2 | 4 | Negligible |
| | 2060s | 3 | 2 | 2 | 12 | Moderate Adverse |
| | 2090s | 3 | 2 | 2 | 12 | Moderate Adverse |
| Water shortages for public use and landscaping | 2030s | 3 | 1 | 2 | 6 | Negligible |
| | 2060s | 3 | 2 | 2 | 12 | Moderate Adverse |
| | 2090s | 3 | 2 | 2 | 12 | Moderate Adverse |

**9.40** Using the calculated risk scores in **Table 9.5**, impacts associated with climate change on the built environment at the Proposed Development will result in significant effects on the following areas:

- Flooding – **Moderate Adverse (Significant)** risk for 2060s and 2090s. The Site is located in Flood Zone 3a, an area benefiting from the presence of flood defences. A Flood Risk Assessment (FRA) was undertaken by Parmarbrook. The report concludes that the risk of flooding from surface water and ground water is very low for most of the Site, and there is an unlikely risk from reservoir flooding. The implementation of Sustainable Urban Drainage Systems (SuDS) will help mitigate the risk of surface water flooding onsite.
- Overheating – **Moderate Adverse (Significant)** risk for 2030s, **Major Adverse (Significant)** risk for 2060s and 2090s. With increased ambient and peak summer temperatures, this will increase the likelihood and severity of the overheating risk and the subsequent need for additional cooling. This will also affect local people and could have negative effects on their health;
- Increased water shortages – **Moderate Adverse (Significant)** risk for 2060s and 2090s – the Proposed Development will be affected by the increased likelihood of water shortages as a result of reduced total rainfall and increased severe rainfall. This will result in more surface water runoff and fewer opportunities for natural infiltration; and
- Soft landscaping failure – **Moderate Adverse (Significant)** risk for 2060s and 2090s – increased extreme weather events, such as heatwaves, droughts and storms, will cause damage to the extensive landscaping features if they have not been designed to withstand a reduced water balance and higher ambient temperatures.

### *GHG Assessment*

*Operational Energy*

**9.41** The $CO_2$ emissions from the regulated energy consumption of the Proposed Development have been sourced from the energy strategy. This uses the energy hierarchy to describe emissions savings through passive design, low carbon infrastructure and renewable energy sources. **Table 9.6** and **Table 9.7** show the $CO_2$ regulated emissions from the Proposed Development from each stage of the energy hierarchy.

**Table 9.6 $CO_2$ Regulated Emissions from Detailed Proposals (Phase A)**

| Impact | CO2 (tonnes $CO_2$ / annum) |
|---|---|
| Baseline development | 390.6 |
| After energy demand reduction | 310.9 |
| After heat network | 260.5 |
| After renewable energy | 206.6 |
| % Improvement | 47.1 |

**Table 9.7 $CO_2$ Regulated Emissions from Outline Proposals (Phases B-D)**

| Impact | CO2 (tonnes $CO_2$ / annum) |
|---|---|
| Baseline development | 1,496.7 |
| After energy demand reduction | 1,268.8 |
| After heat network | 1,268.8 |
| After renewable energy | 590.4 |
| % Improvement | 60.5 |

**9.42** **Table 9.6** and **Table 9.7** respectively show that a 47% $CO_2$ saving over the Building Regulations baseline is achieved across the Detailed Proposals and 60.5% saving across the Outline Proposals, as a result of the different measures employed in the energy strategy. To achieve zero carbon, the rest of the emissions will be offset.

**9.43** The unregulated $CO_2$ emissions from the Proposed Development are predicted to be 161 tonnes $CO_2$ per annum for the Detailed Proposals and 256 tonnes $CO_2$ per annum for the Outline Proposals, resulting in a total of 496 tonnes $CO_2$ per annum and 799 tonnes $CO_2$ per annum respectively from regulated and unregulated energy.

**9.44** In terms of the significance of this impact, the GHG emissions have been compared to $CO_{2e}$ emissions calculated for the LBTH and reported within the LEGGI (2018). Based on the Energy Statement, the total operational energy $CO_2$ emissions are 0.11% of the LBTH current annual emissions. This is considered a **Moderate Adverse (Significant)** impact.

*Operational Transport*

**9.45** The operational transport GHG emissions from the Proposed Development are predicted to be **Negligible (Not Significant) to Minor Beneficial (Significant)** as the transport consultants, Velocity, have identified that the Proposed Development will have a net decrease in vehicle trips compared to the existing Site as a result of the proposed low residential parking ratio. Velocity have undertaken strategic modelling which assumed that there would be no change in traffic volume on the strategic network due to the Proposed Development and the only impact is the change to the network in the form of closing the underpass.

## MITIGATION, MONITORING AND RESIDUAL EFFECTS

**9.46** Whilst the design approach to mitigation is provided in this chapter, other chapters and accompanying reports should be read, in particular:

- Construction Environmental Management Plan (CEMP);
- Waste Management Strategy;
- Energy Strategy and Overheating Statement;
- Whole Life-Cycle Carbon Assessment;

- Sustainability Statement;
- Circular Economy Statement; and
- Flood Risk Assessment.

### Demolition and Construction Mitigation

**9.47** There are two potentially significant effects on climate change during the construction phase of the Proposed Development. These are as follows:

- GHG emissions from construction activities; and
- GHG emissions from construction materials.

#### *Greenhouse Gas Emissions from Construction Activities*

**9.48** Through the use of a CEMP, the following measures will be implemented during the construction phase to reduce GHG emissions from the construction works:

- All construction vehicles are required to switch off their engines when stationary, as well as equipment being switched off when not in use, to prevent exhaust emissions;
- Regular maintenance and servicing of vehicles, equipment and plant; and
- Through the implementation of a Travel Plan construction workers will be encouraged to use public transport through the Site induction and information on site noticeboards.

#### *Greenhouse Gas Emissions from Construction Materials*

**9.49** The Proposed Development will aim to 'design out' waste through the consideration of materials specification and construction techniques. A Site Waste Management Plan will be used to reduce waste being sent to landfill, increasing reuse and recycling. This will minimise waste generation and also reduce the total material use, thus reducing the embodied emissions within the materials.

**9.50** Material procurement will be undertaken with sustainable principles in mind including use of products with low embodied energy, high recycled content and the use of local materials wherever possible to reduce emissions associated with their transport.

**9.51** By using low-carbon building materials and reducing the overall use of materials, in line with GLA benchmarks[9], the overall embodied carbon of the scheme will be reduced. The Proposed Development will incorporate recycled content within all rebar steel as well as Ground Granulated Blast-furnace Slag within the cement to reduce the embodied carbon of the scheme.

**9.52** The strategic Circular Economy approach for the new build elements of the scheme is to design for longevity (the estimated life of the scheme will be in excess of 70 years), a high degree of standardisation (subject to some specific listed building requirements) and to ensure that material use is responsible and low impact.

**9.53** Following the mitigation measures described above, the residual GHG impact of the Proposed Development during construction is predicted to remain **Minor Adverse (Significant)**.

### Completed Development Mitigation

#### *Climate Change Resilience*

**9.54** Adaptation measures to address the significant risks must be developed. These measures have been assessed to understand their suitability for implementation and potential ability to reduce the level of risk severity and to increase the operational and economic resilience of the Proposed Development.

**9.55** Adaptation measures were incorporated into the design for the following significant risks:

- Flooding;
- Overheating in homes;
- Risk to soft landscaping features; and
- Water shortage.

[9] *Greater London Authority (2020); Whole Life-Cycle Carbon Assessment Guidance Pre-Consultation Draft.*

#### *Flooding*

**9.56** To mitigate risk from tidal / fluvial flooding, finished floor levels of the residential units will need to be raised above the peak flood levels in the 2100 climate change breach scenario, and a minimum of 0.15m above adjacent ground levels. For the Retail Development the Finished floor levels of the proposed units should be set a minimum of 0.15m above adjacent ground levels.

**9.57** In order to manage surface water flood risk onsite, the Proposed Development will include site-specific SuDS consisting of below ground cellular attenuation tanks and blue roofs where feasible, which will attenuate surface water runoff to rates of 1l/s, 1.25l/s and 1.5l/s before discharging to the nearby Thames Water sewer.

**9.58** Green roofs are proposed across the Proposed Development, which will assist in intercepting and retaining precipitation falling on them. The surface water drainage strategy has been designed to limit surface water runoff from the Site via a Hydro-brake system or similar, to a rate of maximum 1.5l/s, in accordance with the borough's requirements for all storm events up to a 1 in 100 year plus 40% climate change allowance.

#### *Overheating in Homes*

**9.59** Meinhardt has undertaken an Overheating Risk assessment for the Proposed Development.

**9.60** The building construction is a highly efficient envelope and utilises solar control glazing with a low G value to maximise daylight while minimising solar gain. The glazed areas have been optimised to give the desired balance between good daylighting and minimising solar gains. Highly efficient lighting is used to further minimise internal heat gains.

**9.61** Residential units will be designed with dual aspect where possible and have openable windows where possible to provide passive ventilation via cross ventilation and therefore minimise overheating risk.

**9.62** Through the use of natural ventilation and increased mechanical ventilation together with low g-value, the results of the dynamic modelling analysis for residential areas show that most rooms comply with the CIBSE criteria for the 2020s DSY1 weather scenario.

**9.63** As detailed further below, the roof gardens, green infrastructure and planting will provide an element of natural cooling.

#### *Risk to Soft Landscaping Features*

**9.64** An extensive landscaping strategy, illustrative for the Outline Proposals and detailed for the Detailed Proposals, has been designed for the Proposed Development including communal roof gardens, biodiverse roofs, green walls and ground planting including new trees. The plant species will be selected so that they are resilient to variations in climate.

**9.65** Irrigation equipment will be provided on all the roof gardens so that planting does not dry out during the summer months, and it will therefore be able to provide its full range of functions to maximum effect.

#### *Water shortage*

**9.66** As described above, water shortages have been partially mitigated by the attenuation tank and blue roofs provided to store water.

**9.67** The Proposed Development will specify low water use fittings and appliances such as dual flush WCs, aerating washbasin taps and flow regulated showers to limit water consumption to a maximum of 105l per person per day for the residential units.

**9.68** The use of rainwater and greywater harvesting technologies will be investigated, for internal use and external use (e.g. irrigation).

#### *GHG Assessment*

#### *Energy Efficiency*

**9.69** The energy strategy has set out a number of measures that will be implemented in the Proposed Development to improve the energy efficiency and subsequently reduce emissions and therefore the Proposed Development's effect on climate change.

- The building fabric u-values will be enhanced and air permeability kept as low as possible to reduce energy consumption from the building fabric;

- Most of Aberfeldy Village Masterplan will be connected to the existing energy center for hot water and space heating;
- Buildings I and J will have their own air source heat pump system to provide hot water and space conditioning; and
- Light-emitting diode (LED) lighting will be fitted throughout.

**9.70** Following the mitigation measures described above, the residual GHG impact of the Proposed Development from operational energy usage is predicted to remain **Moderate Adverse (Significant)**.

*Operational Transport*

**9.71** The operational Proposed Development has been designed to minimise GHG emissions from transport by encouraging the use of more sustainable forms of transport particularly given the highly accessible location of the Proposed Development. Key transport mitigation measures that will reduce GHG emissions include:

- Develop a network of permeable walking and cycling routes that connect with surrounding existing and planned neighborhoods;
- Change the nature of Abbott Road with traffic calming and an improved walking and cycling experience;
- Provide good access to public transport network;
- Design streets that safely provide access and space for servicing the proposed buildings;
- Provide cycle parking in line with the current standards in the London Plan, and in accordance with Transport for London's London Cycling Design Standards;
- Low residential parking ratio (0.20 spaces per dwelling);
- Provision of electrical vehicle charging points across the Site in accordance with London Plan requirements; and
- Implementation of the Travel Plan.

**9.72** Following the mitigation measures described above, the residual GHG impact of the Proposed Development from operational transport usage is predicted to remain **Negligible (Not Significant)** to **Minor Beneficial (Not Significant)**.

### *Residual Effects*

**9.73** All of the residual effects resulting from the Proposed Development, are presented in **Table 9.8**, identifying whether the effect is significant or not. As explained within the 'Assumptions and Limitations section', the usual ES significance ratings are not followed for climate change resilience impacts and as such, not all sections of the table are applicable.

**Table 9.8 Residual Effects**

| Receptor | Description of the Residual Effect | Scale and Nature | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | |
| Climate System | Construction emissions | Minor Adverse | **Significant** | N | D | T | Lt |
| **Completed Development** | | | | | | | |
| Future site users | Overheating | Minor Adverse for 2030s, 2060s and 2090s | **Significant** | L | D | P | Lt |
| Future site users | Flooding | Negligible for 2030s and 2060s, Minor Adverse for 2090s | **Significant** | L | D | P | Lt |
| Landscaping | Landscaping failure | Negligible for 2030s, Minor Adverse for 2060s and 2090s | **Significant** | L | D | P | Lt |
| Future site users | Water shortages | Negligible for 2030s 2060s, and 2090s | **Significant** | L | D | P | Lt |
| Climate System | Operational Energy emissions | Moderate Adverse | **Significant** | N | D | P | Lt |
| Climate System | Operational Transport emissions | Negligible to Minor Beneficial | **Significant** | N | D | P | Lt |

**Notes:**
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

## IN COMBINATION CLIMATE CHANGE EFFECTS

### *Socio-economics*

**9.74** In the context of the socio-economics assessment, climate change related factors will have little direct influence on the baseline conditions and on the effects of the Proposed Development. Furthermore, there is no robust evidence that could be used to quantify the direct impacts of a changing climate on socio-economic indicators (including the economy and employment). These impacts would occur over a long period and would affect the activity generated by the Proposed Development in ways which are dependent on both the nature of the climate change impact and the type of business and employment.

**9.75** Climate change will generate both economic opportunities and disbenefits. For instance, the management of climate change impacts is likely to see the development of new business activities relating to mitigation technologies and the process of adaptation. Conversely, business costs may rise as a result of impacts including shifts to low or zero carbon transport technologies, rising energy costs as a transition to alternative energy sources accelerates, and increases in the costs of materials linked to scarcity effects. The combination of opportunities and disbenefits related to climate change cannot be measured at this point in terms of business activity and employment, however these are expected to be present.

**9.76** The health of the local population and employees both within the Proposed Development and across the impact areas may be adversely affected by increased risk of overheating and other heat-related illnesses, drought, in addition to decreased water and food security. This would be partially offset against a reduced risk of cold weather-related illness in the winter, particularly amongst vulnerable groups such as the elderly. Increased rainfall over short periods may also lead to increased numbers of bacteria in surface water with detrimental effects on drinking water.

**Table 9.9 Summary of Receptor Sensitivity and Vulnerability for Assessment**

| Resource / Receptor | Sensitivity | Vulnerability |
|---|---|---|
| **Demolition and Construction Phase** | | |
| Loss of existing, on-site residential | Low | Low |
| Loss of existing, on-site employment | Low | Low |

| | | |
|---|---|---|
| Temporary employment as a result of Demolition and Construction | Medium | Low |
| **Operations Phase** | | |
| Contribution to housing targets | High | Low |
| Population and labour market | Low | Low |
| On-site employment | Medium | Low |
| Off-site/ wider employment | Medium | Low |
| Local economy (GVA) | Medium | Low |
| Early years provision | Low | Low |
| Primary school capacity | Medium | Low |
| Secondary school capacity | Low | Low |
| General Practitioner (GP) capacity | High | Low |
| Open space | Medium | Low |
| Play space | Low | Low |
| Community Centres | Medium | Low |
| Deprivation | High | Low |
| Crime and social cohesion | Medium | Low |

**9.77** As shown in **Table 9.9** above, the receptors accounted for within the assessment are of low vulnerability to the impacts of climate change, and therefore it is considered that there would be no material change to the effects and / or significance conclusions presented within this assessment as a result of the climate scenario considered. Furthermore, this means that there is no need for any additional mitigation measures to be implemented.

### *Traffic and Transport*

**9.78** In the context of the socio-economics assessment, climate change related factors including changes in ambient temperature, rainfall, wind and cloud cover will not have a direct effect on the following transport effects considered within this Environmental Statement:

- Severance;
- Pedestrian and cyclist delay;
- Vehicle and bus delay;
- Amenity; and
- Fear and intimidation.

**9.79** People travelling to and from the Proposed Development will be sensitive to the effects of climate change. **Table 9.10** shows the receptor sensitivities and vulnerabilities for the assessment of climate change.

**Table 9.10 Summary of Receptor Sensitivity and Vulnerability**

| Receptor | Sensitivity | Vulnerability to Climate change |
|---|---|---|
| **Vehicle passengers** | Low | Medium - the effects of climate change are likely to have some impact on receptors travelling to and from the Proposed Development by vehicle |
| **Bus passengers** | Medium | Medium - the effects of climate change are likely to have some impact on receptors travelling to and from the Proposed Development by bus |
| **Cyclists** | High | High – the effects of climate change are likely to have a high level of impact on receptors travelling to and from the Proposed Development by cycle |
| **Pedestrians** | High | High – the effects of climate change are likely to have a high level of impact on receptors travelling to and from the Proposed Development on foot. |

**9.80** The mitigation measures discussed in **ES Volume 1, Chapter 17: Mitigation and Monitoring** within will also mitigate against the effects of climate change in the future:

- The Delivery and Servicing Plan will act to reduce the number of vehicles travelling to and from the Proposed Development; and
- The Travel Plan will act to encourage travel to and from the Proposed Development by a sustainable mode of transport, including provisions for cargo cycle deliveries.

### *Air Quality*

**9.81** Increased ambient temperatures and alterations in precipitation patterns have the potential to alter the concentration fine particulate matter ($PM_{2.5}$) and particulate matter ($PM_{10}$) during construction and operation. Summer droughts may exacerbate pollutant concentrations. During construction, the magnitude of these climate effects will be not significant and best practice measures will be implemented to minimise dust through the implementation of the CEMP.

**9.82** During operation, Nitrogen Oxides ($NO_x$) concentrations are unlikely to be directly affected directly by increased ambient temperatures and future climate change. However, hot dry summers could exacerbate $PM_{2.5}$ and $PM_{10}$ concentrations although this will not alter the Positive operational impact of the Proposed Development. Therefore, no in-combination climate change effects are predicted.

### *Noise and Vibration*

**9.83** Taking into account the predicted future climate change variables of relevance to this assessment (namely temperature; precipitation; wind; and cloud cover), it is considered that the sensitivity of the receptors will not alter from that defined within this assessment as a result. The assessment would not be affected by the climatic variables, and therefore the conclusions of this assessment are also not considered to be altered by climate change.

### *Archaeology (Buried Heritage)*

**9.84** With regards to archaeology, the only climate variable of relevance would be the groundwater level. The level of the water table has the potential to preserve organic remains if those remains on the Site and any change to the water table, especially its reduction has the potential to negate the preservation of organic remains.

**9.85** Based on future climate projection data (**ES Volume 3, Appendix: Climate Change, Annex 1**), London in particular is due to experience drier summers with a reduction in rainfall. If there was an overall reduction in rainfall, there is the potential for the water table to reside at a level lower to its current position. As such any currently preserved organic remains may decay if the water table were reduced for prolonged periods of time.

### *Water Resources, Flood Risk and Drainage*

**9.86** The Drainage Strategy and FRA considers the government's latest climate change guidance. This is an inherent part of the design when considering drainage strategies, whereby a 40% climate change allowance has been made as part of the SuDS and surface water Attenuation Strategy. The FRA also considers climate change in line with the government's latest climate change guidance for Fluvial / Tidal and Sea level rises to ensure compliance under National Policy Programme Framework and in line with the Environment Agency guidance / requirements.

### *Wind Microclimate*

**9.87** The 'Climate Projects Report' published by UKCP18[10] presented the probable changes in wind speeds for the 2070-2099 period (timeframe considered most relevant for urban regeneration projects) in both the summer and winter seasons (see Climate Change Technical Note presented within **ES Volume 3, Climate Change – Annex 1**

**9.88** As set out in **ES Volume 3, Climate Change – Annex 1,** the current trends in the climate change are not likely to have any significant effects on the predicted wind microclimate conditions in and around the Proposed Development. It is therefore not necessary to provide a quantitative analysis of the increase in storm frequency and its implication on the effect on the wind microclimate for the Proposed Development.

[10] *Updated future climate projections data have been published by the Met Office (UKCP18) in November 2018. UKCP18 probabilistic data for wind is not available. For this reason, UKCP09 wind data has been used.*

### *Daylight, Sunlight Overshadowing and Solar Glare*

#### *Daylight*

**9.89** Following the guidance published by Building Research Establishment (BRE), daylight assessments are carried out under an assumed overcast sky.

**9.90** The methodologies used to quantify the levels of daylight are the Vertical Sky Component (VSC) or No-Sky Line (NSL). Of these, none are explicit measurements of light but rather the VSC is expressed as percentages of the total amount of light received at an unobstructed location. The NSL by contrast is a percentage of the room that can see the sky.

**9.91** Being percentages, the daylight assessments above do not depend on the absolute amount of daylight outside and, since they also assume an overcast sky, they are independent of the cloud coverage or the annual number of sunlight hours.

**9.92** By following the current BRE Guidelines methodology, therefore, the numeric daylight results are not affected by changes in climate.

**9.93** Climate change projections (**ES Volume 3, Appendix: Climate Change – Annex 1**) suggests that the average cloud coverage be slightly reduced, although no information is provided on how this would affect global and diffuse illuminance and irradiance levels. Whilst the relationship between cloud cover and daylight illuminance is not defined as part of the projections it is probably reasonable to assume as cloud coverage is reduced, the overall amount of usable daylight increases. However, this would not impact the conclusions within this report which are based on numeric daylight assessments.

**9.94** Therefore, the current BRE Guidelines criteria and the results of the associated daylight assessments are not influenced by, nor would they be altered by climate change.

#### *Sunlight*

**9.95** To quantify the amount of sunlight that a residential window can be expected to receive throughout the years, Annual Probable Sunlight Hours (APSH) are used. This is a set of 100 fixed locations in the sky representing possible sun positions throughout the year.

**9.96** The point locations were published by BRE Guidelines and are based on hourly sunlight availability. A change in climate that might result in more annual sunlight hours (currently 1481 in London) would not result in more than 100 APSH test points, since this is a fixed number.

**9.97** If in a future revision of the daylighting guide, BRE Guidelines were to keep the current methodology but update the set of 100 reference points to reflect a slightly sunnier climate, it can be expected that the locations of the points on the sky dome may shift, whilst their overall number remain the same.

**9.98** Therefore, an APSH assessment following the current methodology but relying on a (hypothetical) updated set of test points likely produce comparable but not necessarily identical results.

**9.99** The future climate in the UK is likely to be somewhat sunnier, however, unless the BRE Guidelines methodology is changed, this would not be reflected in an APSH assessment.

**9.100** Therefore, the current BRE Guidelines criteria and the results of the associated sunlight assessments are not influenced by, nor would they be altered by climate change.

#### *Overshadowing*

**9.101** Overshadowing assessments are undertaken through either a Transient Overshadowing or Sun Hours on Ground assessment. These can be undertaken on any day of the year although the equinox is most common.

**9.102** The assessment assumes a day with no cloud cover and so the maximum potential sunlight is assessed. From the climate projections, the future climate in the UK is likely to be somewhat sunnier but unless the methodology is changed, this would not be reflected in an overshadowing assessment.

**9.103** Therefore, the current BRE Guidelines criteria and the results of the associated overshadowing assessments are not influenced by, nor would they be altered by climate change.

#### *Solar Glare*

**9.104** As with overshadowing, the solar glare assessment assumes a year with no cloud cover and so the maximum potential sunlight is assessed. From the climate projections, the future climate in the UK is likely to be somewhat sunnier but unless the methodology is changed, this would not be reflected in a solar glare assessment

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline*

**9.105** The existing Site currently comprises a range of uses including a large area of residential dwellings up to four storeys in height, public realm with soft landscaping, parks, hard landscaping, as well as retail and commercial businesses (along Aberfeldy Street), Aberfeldy Cultural Centre and the Aberfeldy GP Practice.

**9.106** In the absence of the Proposed Development, and assuming existing services and drainage will not be replaced, it is expected that the Site would be prone to climate change risks in the future, as not built to the latest regulations and best practice thermal performance.

**9.107** The existing buildings are likely to be exposed to higher levels of overheating and higher levels of water usage per unit compared to the Proposed Development.

**9.108** Soft landscaping, not adapted to future climate, would also suffer from climate change. Whereas the Proposed Development landscaping strategy would include communal roof gardens, biodiverse roofs, green walls and ground planting including new trees. The plant species will be selected so that they are resilient to variations in climate.

**9.109** The existing site would be more at risk of flooding from surface water, whereas a SuDS strategy has been designed for the Proposed Development, taking into account a climate change factor, to mitigate this risk.

### *Cumulative Effects Assessment*

**9.110** With regards to GHG and as set out in the IEMA guidance "GHG emissions from all projects will contribute to climate change; the largest interrelated cumulative environmental effect". This statement relates to 'cumulative' on a global scale as all emissions of GHG's contribute to climate change. The definition of 'cumulative effects' in the context of GHG and climate change therefore goes far beyond the typical definition of cumulative effects for EIA, which tends to focus on other proposed projects in the vicinity of the Proposed Development.

**9.111** The EIA has identified 33 cumulative schemes in the assessment. It is difficult to quantify the GHG emissions from each of the 33 cumulative schemes and as discussed above cumulative contributions to climate change from GHGs will extend well beyond these 33 schemes. It is expected that mitigation will be provided, principally for operational energy and transport, which are policy compliant and work to minimise the on-site GHG emissions and reduce the lifetime GHG emissions of each cumulative scheme.

**9.112** The residual cumulative GHG emissions from the 33 schemes and Proposed Development will likely be small in the context of regional and national GHG emissions, but as part of the wider cumulative effects of GHG emissions from all local, regional, national and global sources are nonetheless judged to be significant in accordance with IEMA guidance.

## LIKELY SIGNIFICANT EFFECTS

**9.113** The likely significant effects of the Proposed Development are described in **Table 9.7.** The assessment of the Proposed Development identified one likely significant effect during Demolition and Construction**,** such as a **Minor Adverse (Significant)** effect resulting from construction emissions at the national level.

**9.114** Once completed, the following significant effects have been identified:

- **Minor Adverse (Significant)** effect resulting from future overheating during the 2030s, 2060s and 2090s at a local level;
- **Minor Adverse (Significant)** effect resulting from future flooding during the 2090s at the local level;
- **Minor Adverse (Significant)** effect resulting from future landscaping failure during 2060s and 2090s at a local level;
- **Negligible effect (Significant)** on future water shortages during the 2030s 2060s, and 2090s at a local level;
- **Moderate Adverse (Significant)** effect resulting from operational energy emissions at a national level; and
- **Negligible** to **Minor Beneficial** (Significant) resulting from future operational transport emissions at a national level.

# Chapter 10: Noise and Vibration

| Noise and Vibration | |
|---|---|
| **AUTHOR** | Entran Ltd |
| **SUPPORTING APPENDIX** | **ES Volume 3: Appendix: Noise and Vibration:**<br>Annex 1: Introduction to noise<br>Annex 2: Glossary of Terms<br>Annex 3: Legislation, Policy and Guidance<br>Annex 4: Unattended Survey Results – P1<br>Annex 5: Unattended Survey Results – P2<br>Annex 6: Unattended Survey Results – P3<br>Annex 7: Unattended Survey Results – P4<br>Annex 8: Statistical Analysis of Background Sound Levels – P1<br>Annex 9: Statistical Analysis of Background Sound Levels – P2<br>Annex 10: Statistical Analysis of Background Sound Levels – P3<br>Annex 11: Statistical Analysis of Background Sound Levels – P4<br>Annex 12: Daytime Noise Contour, 1.5m<br>Annex 13: Night-time Noise Contour, 1.5m<br>Annex 14: ANC Acoustics Ventilation and Overheating Risk Categories<br>Annex 15: Traffic Data |
| **KEY CONSIDERATIONS** | This ES Chapter addresses the likely environmental significant effects of the Proposed Development with respect to noise and vibration.<br>In summary, the ES Chapter addresses:<br>• The suitability of the Site for the type of development proposed based on the potential constraints from existing sources of noise on the internal noise environments at the Proposed Development and where necessary, the types of measures that might be adopted to overcome these constraints;<br>• The impact of noise and vibration on existing sensitive receptors during the demolition and construction phase;<br>• The target criteria for commercial plant and activities that may occur at the completed development; and<br>• The potential effect of road traffic noise from the Proposed Development on surrounding sensitive receptors following completion and habitation of the Proposed Development. |
| **CONSULTATION** | This ES Chapter has been undertaken with consideration to the London Borough of Tower Hamlets Scoping Opinion, received 8th September 2021, as presented in **ES Volume 2 Appendix: EIA Methodology – Annex 2**. |

## ASSESSMENT METHODOLOGY

### *Defining the Baseline*

**10.1** The baseline noise levels have been obtained by unattended noise surveys. The future noise levels are calculated by way of computer noise modelling, which is informed by the existing baseline conditions in conjunction with future traffic noise levels for the year 2031. The justification for the use of 2031 for the future year assessment for the traffic data is set out in **ES Volume 1, Chapter 7: Traffic and Transport**.

**10.2** On site observations indicate that vibration levels from existing sources are likely to be imperceptible. Therefore, a vibration survey is not required.

#### *Evolution of the Baseline*

**10.3** The projected completion year for the Proposed Development is 2033. It is therefore appropriate to consider how noise levels may change in the period prior to completion. The existing noise climate on the Site is dominated by road noise from the A12 to the west. With regards to operational road traffic noise, there is the potential for cumulative schemes in the area to change the flows on the local road network. The calculated future noise levels include flows for both the completed development and other committed development. Accordingly, the assessment of noise levels at proposed dwellings is undertaken against the future baseline including the natural and planned evolution of the surrounding area.

### *Impact Assessment Methodology*

#### *Demolition and Construction*

**10.4** The impact of noise and vibration during the demolition and construction of the Proposed Development requires prediction and assessment in accordance with the guidance presented in BS 5228 1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Noise'[1,2]. Consideration has also been given to pertinent guidance in the London Borough of Tower Hamlets (LBTH) Code of Construction Practice[3] (CoCP) document.

#### *Demolition and Construction Noise*

**10.5** The following elements are considered to have the potential to give rise to significant effects during the demolition and construction stage of the Proposed Development and have, therefore, been considered within this ES Chapter:

- Noise from on-site demolition and construction activities affecting nearby existing sensitive receptors and future sensitive receptors.; and
- Vibration from on-site demolition and construction activities affecting nearby existing sensitive receptors and future sensitive receptors.

**10.6** The worst-case scenario is based on peak Heavy Goods Vehicle (HGV) construction flows as discussed in **ES Volume 1, Chapter 5: Demolition and Construction**. Peak HGV construction occurs at a point where Phase B is under construction and the Detailed Proposals (Phase A) are occupied and represents a worst case for construction traffic on Site. The assessment of Demolition and Construction Nosie therefore applies to other phases of the Proposed Development and therefore the mitigation identified within this ES Chapter would apply to other phases of the Proposed Development.

**10.7** BS 5228 sets out a methodology for predicting, assessing and controlling noise levels arising from a wide variety of construction and related activities. As such, it can be used to predict noise levels arising from the operations at proposed construction sites. BS 5228 also sets out tables of sound power levels generated by a wide variety of construction plant to facilitate such predictions. These are then compared against the baseline noise levels which are determined using the noise measurements on the Site (see the Baseline section).

**10.8** The prediction procedure involves taking the source noise level of each item of plant and correcting it for (i) distance effects between source and receiver (ii) percentage operating time of the plant; (iii) barrier attenuation effects; (iv) ground absorption; and (v) facade corrections. The latter correction involves a 3dB noise increase due to the reflection effects for a receiving point location 1m in front of a building facade.

**10.9** The assessment has been undertaken on the basis of a 'worse-case' scenario to ensure likely impacts are sufficiently considered. Calculations representing a worst-case scenario over a one-hour period with plant operating at the closest point to the nearest noise sensitive receptors and in the absence of mitigation are presented. In practice, noise levels would tend to be lower owing to greater separation distances and screening effects.

#### *Demolition and Construction Vibration*

**10.10** To control the impact of vibration during the Site preparation and construction of the Proposed Development, limits relating to the perceptibility of vibration have been set based on the guidance contained within BS 5228, experience from previous sites and accepted vibration policy criteria across a range of enforcing authorities elsewhere in the UK. The limits are presented in terms of peak particle velocity (PPV) as it is the simplest indicator for both perceptibility and building damage.

#### *Construction Traffic Noise*

**10.11** Changes in road traffic flows on the surrounding road network during the 2026 interim scenario (see below) which includes peak construction HGV flows have been considered against the CRTN short term criteria for impacts at high sensitivity receptors.

[1] *The British Standards Institution (2014), BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Part 1: Noise*

[2] *The British Standards Institution (2014), BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Part 2: Vibration*

[3] *LBTH (published year unknown), Code of Construction Practice*

### *Phasing*

**10.12** As set out above in **paragraph 10.6**, the future residents of the Detailed Proposals (Phase A) are considered as receptors in relation to potential construction and vibration effects during the subsequent construction phases. This is considered a worst-case scenario for construction traffic on site as it represents a period with peak HGV traffic occurs (i.e. Phase B is under construction and the Detailed Proposals (Phase A) are occupied)

**10.13** Consideration has also been given to phasing of the Proposed Development through assessment of an interim traffic data scenario for the year 2026, which includes the peak construction flows.

### *Completed Development*

#### *Development Generated Road Traffic Noise and Site Suitability*

**10.14** The impact of changes in noise level resulting from changes in traffic flow and composition on existing roads as a result of the operational development requires assessment in accordance with the guidance presented in the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3 Part 7 – HD 213/11 Noise and Vibration, 2011[4]. Computer noise modelling has been used to calculate the road traffic noise in accordance with the methodology contained within the Calculation of Road Traffic Noise (CRTN). The future with development scenario for the year 2031 has been considered against the future without development scenario for the year 2031 in order to identify the impact of the introduction of the Proposed Development.

**10.15** The ambient noise at proposed residential dwellings within the Proposed Development is assessed against the guidance provided by BS 8233:2014 'Sound Insulation and Noise Reduction for Buildings'[5] for both the day and night-time periods. Night time maximum noise levels are considered against the guideline noise level for the onset of sleep disturbance provided by the WHO Guidelines for Community Noise. The ambient noise levels for the year 2031 have been calculated to ensure future noise levels are appropriately considered.

**10.16** Noise emission levels affecting the Proposed Development have been calculated using predictive computer noise modelling. The noise modelling software (Cadna-A) uses algorithms based on ISO 9613 'Attenuation of sound during outdoor propagation'[6] to predict noise levels generated at receiver locations by noise sources.

**10.17** The noise levels have been predicted across the Site. Noise levels have been calculated at individual residential buildings. The propagation of noise across the Site is presented as noise contours which have been calculated at 1.5 m above ground level.

**10.18** The primary noise sources affecting the Proposed Development are identified as road traffic on the A12 and on the surrounding road network.

**10.19** Following verification of the existing scenario, the proposed road traffic flows for the year 2031 have been modelled, including the likely increased traffic due to the Proposed Development.

**10.20** The future noise levels at the Proposed Development Site have been assessed by considering the results of the calculations against the guidance provided in BS 8233 and the WHO Guidelines.

#### *External Building Services Plant Noise*

**10.21** Information pertaining to operational plant is not yet available and future occupiers of proposed commercial uses are not yet known. Accordingly, limits will be identified in accordance with the requirements set out in Appendix G of the LBTH Local Plan 2031: Managing Growth and Sharing the Benefits (adopted in 2020)[7]. These limits will ensure that plant items can be appropriately selected to minimise the risk of adverse effects.

**10.22** In their EIA Scoping Opinion, the LBTH requested that overheating risk categories are identified in line with the Acoustics Ventilation and Overheating Residential Design Guide. Whilst these calculations do not form part of the impact assessment within this ES Chapter, they have been calculated for the reference of the energy consultant and to inform the overheating assessment.

### *Assumptions and Limitations*

**10.23** The adopted construction noise levels are representative of continuous activity and therefore are likely to provide a conservative assessment of the likely impacts. The calculated noise levels are therefore likely to be higher than those observed in practice. Construction noise levels have been calculated based on typical noise levels for construction activities. Construction activities have been assumed to take place within a 10-hour period out of any 16-hour day.

**10.24** The road noise levels were calculated with use of the traffic data provided within this ES **(refer to ES Volume 3, Appendix Noise and Vibration – Annex 15** and **ES Volume 1, Chapter 7: Traffic and Transport**) and the data obtained during the unattended survey. The noise model was verified using the obtained data to ensure similar results. The calculations used within this ES Chapter are considered representative of the ambient environment at the Site.

**10.25** The assessment of the change in noise levels across existing road links is based on the provided traffic flow data. The data includes future committed development within the surrounding area. Any changes to the calculated traffic flows may provide a material change to this assessment. Any decrease in flows related to the Proposed Development may change the calculated effect significance due to road traffic flows.

**10.26** The road network is understood to be at capacity and therefore provided traffic data for the interim year adopts the same baseline traffic flow as the 2031 scenario. Due to the low percentage increase in road traffic flows any variation in the baseline is unlikely to affect the assessment.

## *Methodology for Defining Effects*

### *Receptors and Receptor Sensitivity*

**10.27** The criteria set out in **Table 10.1** below have been applied to identify noise/vibration sensitive receptors either on or adjacent to the Site.

**Table 10.1 Noise aand Vibration Receptors**

| Sensitivity | Description | Receptor |
|---|---|---|
| **High** | Receptors that are especially susceptible to noise/vibration | Residential dwellings, Schools, Hospitals, Care Homes |
| **Moderate** | Receptors where a reasonable degree of noise disturbance is acceptable | Offices |
| **Low** | Receptors where noise is tolerable | Retail shops, restaurants |
| **Negligible** | Receptors where noise is not likely to be a factor | Sports Grounds, commercial and industrial environments |

### *Magnitude of Impact*

#### *Demolition and Construction Noise*

**10.28** Noise levels generated by construction activities have the potential to impact upon nearby noise-sensitive receptors. However, the magnitude of the potential impact will depend upon a number of variables, such as:

- The noise generated by plant or equipment used on site;
- The period of time that construction plant is operational;
- The distance between the noise source and the receptor; and
- The level of likely attenuation due to ground absorption and barrier effects.

**10.29** BS 5228 gives several examples of acceptable limits for construction or demolition noise. The most simplistic being based upon the exceedance of fixed noise limits and states in paragraph E.2:

"Noise from construction and demolition sites will not exceed the level at which conversation in the nearest building would be difficult with the windows shut.".

"Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the Site boundary will not exceed: 70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise or 75 decibels (dBA) in urban areas near main roads in heavy industrial areas. These limits are for daytime working outside living rooms and offices."

[4] Design Manual for Roads and Bridges Volume 11, Section 3 Part 7 – HD 213/11 Noise and Vibration, 2011, accessed via: DMRB VOLUME 11 SECTION 3 PART 7 - HD 213/11 - NOISE AND VIBRATION (sthelens.gov.uk)

[5] The British Standards Institution (2014), BS 8233:2014, Guidance on Sound Insultation and Noise Reduction for Buildings

[6] International Organisation of Standardisation, ISO 9613-2:11996, Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation

[7] *LBTH Local Plan 2031: Managing Growth and Sharing the Benefits (adopted in 2020)*

**10.30** The construction noise impact considers the noise magnitude and adverse effect levels as provided in the Noise Policy Statement for England (NPSE) (2010)[8] and the Planning Policy Guidance (PPG) provided by the Department for Communities & Local Government in its on-line planning guidance to assist with interpretation of the National Planning Policy Framework (NPPF) as shown in **Table 10.2**.

**Table 10.2 Construction Noise Magnitude**

| Day | Time (hours) | Averaging Period T | LOAEL[1] $Lp_{Aeq,T}$ (dB) | SOAEL[2] $Lp_{Aeq,T}$ (dB)[3] |
|---|---|---|---|---|
| Mondays to Fridays | 0700 - 0800 | 1 hour | 60 | 70 |
| | 0800 - 1800 | 10 hours | 65 | 75 |
| | 1800 - 1900 | 1 hour | 60 | 70 |
| | 1900 - 2200 | 1 hour | 55 | 65 |
| Saturdays | 0700 - 0800 | 1 hour | 60 | 70 |
| | 0800 - 1300 | 5 hours | 65 | 75 |
| | 1300 - 1400 | 1 hour | 60 | 70 |
| | 1400 - 2200 | 1 hour | 55 | 65 |
| Sundays & Public Holidays | 0700 - 2200 | 1 hour | 55 | 65 |
| Any night | 2200 - 0700 | 1 hour | 45 | 55 |

*1 Lowest Observed Adverse Effect Level - This is the level above which adverse effects on health and quality of life can be detected.*

*2 Significant Observed Adverse Effect Level - This is the level above which significant adverse effects on health and quality of life occur.*

*The measured levels should be monitored in order to ensure that the levels presented in the table are not exceeded for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any 6 consecutive months.*

**10.31** Threshold values for the onset construction impacts are required to allow quantitative assessment of construction noise levels. The adopted values used to define the magnitude of change for construction noise impacts are based on the values presented in **Table 10.3**.

**Table 10.3 Weekday Threshold Ranges, Db, For Construction Levels**

| Negligible | Low | Medium | High |
|---|---|---|---|
| < 65 | 65 – 70 | 70 - 75 | > 75 |

**10.32** It is worth noting that the purpose of the target construction noise criteria is to control the impact of construction noise insofar as is reasonably practicable, whilst recognising that it is unrealistic for developments of this nature to be constructed without causing some degree of disturbance in the locality. Hence, even if the criteria adopted for this assessment is achieved, noise from construction activities is likely to be readily noticeable. It is further noted that the local authority may restrict the hours of construction and construction related traffic on the Site.

*Demolition and Construction Vibration*

**10.33** Vibration may be impulsive, such as that due to hammer-driven piling; transient, such as that due to vehicle movements along a railway; or continuous, such as that due to vibratory driven piling. The primary cause of community concern generally relates to building damage from both construction and operational sources of vibration, although, the human body can perceive vibration at levels which are substantially lower than those required to cause building damage.

**10.34** Damage to buildings associated solely with ground-borne vibration is not common and although vibration may be noticeable, there is little evidence to suggest that they produce cosmetic damage such as a crack in plaster unless the magnitude of the vibration is excessively high. The most likely impact, where elevated levels of vibration do occur during the construction phase, is associated with perceptibility.

**10.35** BS 5228 indicates that the threshold of human perception to vibration is around 0.15mm/s, although it is generally accepted that for the majority of people vibration levels in excess of between 0.15 and 0.3 mm/s peak particle velocity (PPV) are just perceptible.

**10.36** Accordingly, 1 mm/s PPV has been selected as the target criteria to control the impact of construction vibration, with the criteria for assessing the magnitude of vibration impacts according to the margin by which this target criterion is achieved or exceeded presented in **Table 10.4** below. This target criterion is based on the guidance contained within BS 5228, experience from previous sites and accepted vibration policy criteria across a range of enforcing authorities elsewhere in the UK. The limits are presented in terms of peak particle velocity (PPV) as it is the simplest indicator for both perceptibility and building damage.

**Table 10.4 Ground- Vibration Effect Levels for Permanent Residential Buildings**

| Vibration | | |
|---|---|---|
| Lowest Observed Adverse Effect Level | PPV mm/s | 1 |
| Significant Observed Adverse Effect Level | PPV mm/s | 10 |

**10.37** Again, it is worth noting that the purpose of the target construction vibration criteria is to control the impact of construction vibration insofar as is reasonably practicable and is entirely based on the likelihood of the vibration being perceptible, rather than causing damage to property. Hence, although vibration levels in excess of 1 mm/s PPV would be considered a major adverse impact in respect of the likelihood of perceptibility, they would not be considered significant in terms of the potential for building damage, which would require levels of at least 15 mm/s PPV to result in minor cosmetic damage in light / unreinforced buildings.

**10.38** There are currently no British Standards that provide a methodology to predict levels of vibration from construction activities, other than that contained within BS 5228 which relates to percussive or vibratory piling only. Therefore, it is not possible to accurately predict levels of vibration during the Site preparation and construction phases of the Proposed Development.

**10.39** Notwithstanding the above, the empirical predictors for groundborne vibration arising from mechanized construction works provided within BS 5228 have been adapted to provide an indication of the distances where impacts may begin to occur. The adopted calculation is based on vibratory piling and is considered to constitute a cautious consideration when applied to all construction activity.

**10.40** The resultant thresholds for identification of vibration impacts at residential dwellings, and calculated distances for the likely onset of these values, are presented in **Table 10.5**.

**Table 10.5 Threshold Values for Ground-Vibration Impacts At Permanent Residential Buildings**

| Effect Significance | PPV Threshold | Indicative Distance, m |
|---|---|---|
| Negligible | < 1 | > 73.3 |
| Minor | 1 – 5 | 21.3 – 73.3 |
| Moderate | 5 – 10 | 12.5 – 21.3 |
| Major | > 10 | < 12.5 |

*Site Suitability*

**10.41** The aim of noise policy within the UK is to protect individuals from excessive noise levels both in the workplace and within their homes. It has been recognised that severe annoyance to individuals due to noise can lead to sleep disturbance and adverse health effects.

**10.42** The NPPF does not give a set of criteria for external noise assessment and therefore guidance within contemporary British Standards and other internationally published documents has been considered.

**10.43** For the purposes of this assessment, external noise levels for residential use have been applied to the residential accommodation and derived on the basis of internal noise criteria outlined in British Standard 8233 and World Health Organisation (WHO) guidance.

**10.44** BS 8233 makes recommendations for the control of noise in and around buildings. It suggests appropriate criteria for different situations, and is primarily intended to guide the design of new or refurbished buildings undergoing a change of use rather than to assess the effect of changes in the external noise climate. The guidance provides desirable indoor ambient noise levels for dwellings which are summarised in **Table 10.6** below.

[8] *Department for Environment, Food and Rural Affairs (2010), Noise Policy Statement for England*

**Table 10.6 Noise Criteria for Residential Use Buildings**

| Activity | Location | 0700 to 2300 | 2300 to 0700 |
|---|---|---|---|
| Resting | Living room | 35 dB $L_{Aeq,16\ hour}$ | - |
| Dining | Dining room/area | 40 dB $L_{Aeq,16\ hour}$ | - |
| Sleeping (daytime resting) | Bedroom | 35 dB $L_{Aeq,16\ hour}$ | 35 dB $L_{Aeq,8\ hour}$ |
| Note 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values. | | | |

**10.45** BS 8233:2014 states that for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources might be warranted. In such a situation, development will be designed to achieve the lowest practicable levels in these external amenity spaces, but will not be prohibited.

**10.46** The internal noise levels recommended in BS 8233 are almost identical to those presented in World Health Organisation (WHO) guidelines for community noise (internal to buildings). Internally, the WHO guidance is that in order to avoid sleep disturbance the period noise level ($L_{Aeq,T}$) will not exceed 30 dB and individual noise events will not exceed 45 dB $L_{Amax}$. Section 3.4 of the WHO Guidelines states that for good sleep, indoor noise levels will not exceed approximately 45 dB $L_{Amax}$ more than 10-15 times a night. On the basis of the WHO's 15 dB façade insulation for windows partly open; this equates to external $L_{Amax}$ of 60 dB that will not be exceeded more than 10-15 times per night.

*Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL) for Transportation Airborne Noise Affecting Indoor Residential Levels*

**10.47** Incident façade levels will not be considered in isolation of the sound reduction provided by the external building fabric. The guidance within Planning Policy Guidance states that "*consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations*."

**10.48** Based on the advice within BS 8233:2014 an indoor noise level of 35 dB $L_{Aeq,16hr}$ during the daytime and 30 dB $L_{Aeq,8hr}$ during the night-time may be considered as the LOAEL for transportation noise.

**10.49** Similarly, an indoor noise level 50 dB $L_{Aeq,16hr}$ and 45 dB $L_{Aeq,8hr}$ during the night-time may be considered as the SOAEL for transportation noise.

**10.50** The WHO Guidelines for Community Noise also identify 60 dB $L_{Amax,F}$ outside as the guideline value for sleep disturbance with windows open. For this reason, a sound level of 60 dB $L_{Amax,F}$ at the façade is considered the LOAEL.

**10.51** **Table 10.7** summarises LOAEL and SOAEL inside the different areas of permanent residential buildings.

**Table 10.7 Internal And External Noise Criteria for Habitable Spaces**

| Level | Proposed LOAEL and SOAEL levels for transportation noise affecting new residential premises | |
|---|---|---|
| | Daytime (07:00 hours to 23:00 hours) | Night-time (23:00 hours to 07:00 hours) |
| **Internal Noise Levels** | | |
| LOAEL | 35 $L_{Aeq,16h}$ (dB) | 30 $L_{Aeq,8h}$ (dB) |
| SOAEL | 50 $L_{Aeq,16h}$ (dB) | 45 $L_{Aeq,8h}$ (dB) |
| LOAEL | Not applicable | 45 dB $L_{Amax,F}$ if more than 15 events |
| | Not applicable | 50 dB $L_{Amax,F}$ if less than 15 events |
| SOAEL | Not applicable | 65 dB $L_{Amax,F}$ if more than 15 events |
| | Not applicable | 70 dB $L_{Amax,F}$ if less than 15 events |
| **External Amenity Areas (free field levels)** | | |
| LOAEL | 50 $L_{Aeq,16hr}$ (dB) | 40 $L_{Aeq,8hr}$ (dB) |
| SOAEL | 65 $L_{Aeq,16hr}$ (dB) | 55 $L_{Aeq,8hr}$ (dB) |

*Fixed Plant*

**10.52** British Standard BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound [9] is intended to be used for the assessment of whether sound of industrial and/or commercial nature is likely to give rise to complaints from people residing in nearby dwellings. The Standard states that such sound can include:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and,
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

**10.53** The procedure contained in BS 4142 for assessing the likelihood of complaints is to compare the measured or predicted sound level from the source in question, the 'specific sound level', at the assessment position, with the background sound level. Where sound contains acoustic features, such as tonality, impulsivity or other noticeable characteristics then a correction is added to the specific sound to obtain the 'rating level' that reflects the contextual setting of the Site.

**10.54** To assess the likelihood of complaints, the measured background sound level is subtracted from the rating level. BS 4142 states:

'Typically, the greater this difference, the greater the magnitude of the impact;

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

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

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

**10.56** BS 4142 also states that "where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it ought to be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation."

**10.57** In accordance with the LBTH Local Plan, Rating levels from fixed plant will be specified to target a rating level of -10 dB below the background sound level at any nearby residential receptor.

*Road Traffic Noise – Existing Receptors*

**10.58** The impact of any changes in road traffic noise levels has been considered against the principles and guidance presented within the Design Manual for Roads and Bridges (DMRB) Part 7 HD213/11 Noise and Vibration, 2011. DMRB presents an impact significance matrix for assessing the magnitude of changes in

[9] The British Standards Institution, 2014, BS:4142:2014 +A1:2019, Methods for Rating and Assessing Industrial and Commercial Sound

noise level in the long term and can be used as criteria for assessing the impact of changes in road traffic noise levels due to the introduction of the Proposed Development, as shown in **Table 10.8** and **10.9**.

**10.59** The DMRB states that:

'The impact of a Proposed Development at any location can be reported in terms of changes in absolute noise level. In the UK the standard index used for traffic noise is the LA10,18hr level, which is quoted in decibels'

**10.60** In order to determine whether changes in traffic noise levels are likely to occur as a result of the Proposed Development, noise levels have been predicted in accordance with the methodology contained within the Calculation of Road Traffic Noise (CRTN), based on traffic flow data for the local road network with and without the Proposed Development.

**Table 10.8 Semantic Descriptors for Traffic Noise In The Short Term (Construction)**

| Change in Noise Level $L_{A10,18\ hr}$ dB | Magnitude of Impact |
|---|---|
| 0 | No Change |
| 0.1 to 2.9 | Negligible |
| 3 to 4.9 | Minor |
| 5 to 9.9 | Moderate |
| 10+ | Major |

**Table 10.9 Semantic Descriptors for Traffic Noise Impacts (Completed Development)**

| Change in Noise Level $L_{A10,18\ hr}$ dB | Magnitude of Impact |
|---|---|
| 0 | No Change |
| 0.1 to 2.9 | Negligible |
| 3 to 4.9 | Minor |
| 5 to 9.9 | Moderate |
| 10+ | Major |

### *Defining the Effect*

#### *Geographic Extent and Duration*

**10.61** All effects in this ES Chapter are local effects (i.e. effects within the Site and/or neighbouring area) due to the dissipation of noise impacts over distance.

#### *Permanent and Temporary*

**10.62** Effects that are generated as a result of the demolition and construction works (i.e. those that last for this set period of time) are classed as 'temporary' and 'short term' or 'medium term'. Effects that result from the completed and operational phase of the Proposed Development are classed as 'permanent' or 'long-term' effects.

#### *Nature*

**10.63** Most noise and vibration effects are considered adverse or no change. An 'adverse effect' is considered anything that can cause a change in behaviour or attitude or changes the character of a place in a negative manner.

**10.64** An improvement from the Baseline environment would result in a beneficial effect.

#### *Scale of Effect*

**10.65** The significance matrix has been adopted to guide the quantitative identification of significant effects for both the demolition and construction, and completed development phases. The sensitivity of the receptor is used in conjunction with the calculated magnitude of impact to identify a likely significant effect. The matrix presented in **Table 10.10** does not allow for consideration of additional context and is therefore used as a guide. Professional judgement will be applied where deemed necessary due to additional factors.

**Table 10.10 Quantitative Derivation of Effect Significance**

| Sensitivity | Magnitude of Impact | | | |
|---|---|---|---|---|
| | Negligible | Low | Medium | High |
| High | Negligible | Minor | Moderate | Major |
| Medium | Negligible | Negligible | Minor | Moderate |
| Low | Negligible | Negligible | Negligible | Minor |
| Negligible | Negligible | Negligible | Negligible | Negligible |

#### *Categorising Likely Significant Effects*

**10.66** Effects that are identified as being 'moderate' or 'major' adverse / beneficial are classified as significant effects.

## BASELINE CONDITIONS

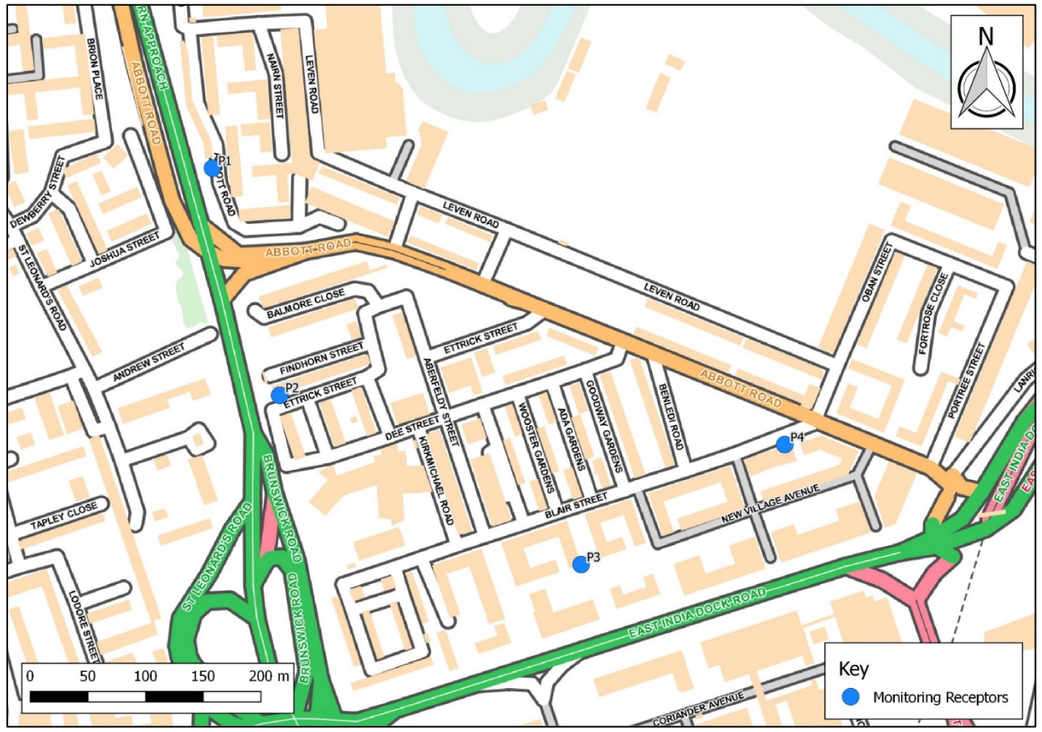
**10.67** The current baseline conditions across the Site have been determined by environmental noise measurements undertaken in September 2021.

**10.68** The primary purpose of the noise survey was to gather acoustic information on the baseline noise levels at the Site during daytime and night-time periods. The ambient noise data is used to inform the computer model of noise levels in 2031 and to identify any façade mitigation requirements for the Proposed Development. The measured background sound levels are used for consideration of fixed plant noise levels.

**10.69** The monitors were situated at locations across the Site in order to allow consideration of traffic from the A12 and to provide additional data for validation of the noise model. P1 was situated at Poplar Works, approximately 1.8m above local ground level and overlooking the A12. P2 was situated on a balcony at Kilbrennan House, overlooking the A12 and at approximately 7.5m above local ground level, P3 was situated on the roof of the Barrel Makers, approximately 1.8m above roof level. P4 was situated at Blairgowrie Court, approximately 6.5m above ground level.

**10.70** Data was obtained over a week at positions P1 to P3 and three days at P4. The microphones were fitted with protective windshields for the measurements. All measurement equipment used during the noise surveys conformed to relevant Type 1 specifications. Weather conditions during the survey period were stable and are not considered to have significantly affected the survey data. The noise measurement locations are shown in **Figure 10.1**.

**Figure 10.1 Unattended Survey Locations**




**10.71** A summary of the unattended noise measurements is presented in **Table 10.11**. The full set of graphical results is shown in **ES Volume 3, Appendix Noise and Vibration – Annex 5 to Annex 8**.

**Table 10.11 Summary Of Measured Noise Levels**

| Monitoring Location | Measured Sound Pressure Level, dB re. $2x10^{-5}$ Pa. | | | | | |
|---|---|---|---|---|---|---|
| | Day Time (07:00 - 23:00) | | | Night-time (23:00 - 07:00) | | |
| | $L_{Amax,F}$ | $L_{Aeq,T}$ | $L_{A90,T}$ | $L_{Amax,F}$ | $L_{Aeq,T}$ | $L_{A90,T}$ |
| P1 | 96.4 | 65.8 | 57.8 | 93.6 | 64.5 | 53.2 |
| P2 | 97.7 | 67.7 | 62.4 | 95.3 | 65.7 | 57.5 |
| P3 | 92.5 | 60.3 | 54.9 | 87.2 | 58.1 | 50.6 |
| P4 | 95.8 | 60.2 | 49.8 | 85.8 | 55.2 | 42.0 |

**10.72** Background sound levels have been obtained using statistical analysis of the unattended sound levels to identify the most frequently occurring $L_{A90,15min}$ values. The adopted background sound levels are presented in **Table 10.12**, statistical analysis of measurements at P1 to P4 is presented in **ES Volume 3, Appendix Noise and Vibration – Annex 9 to Annex 12**.

**Table 10.12 Adopted Background Sound Levels**

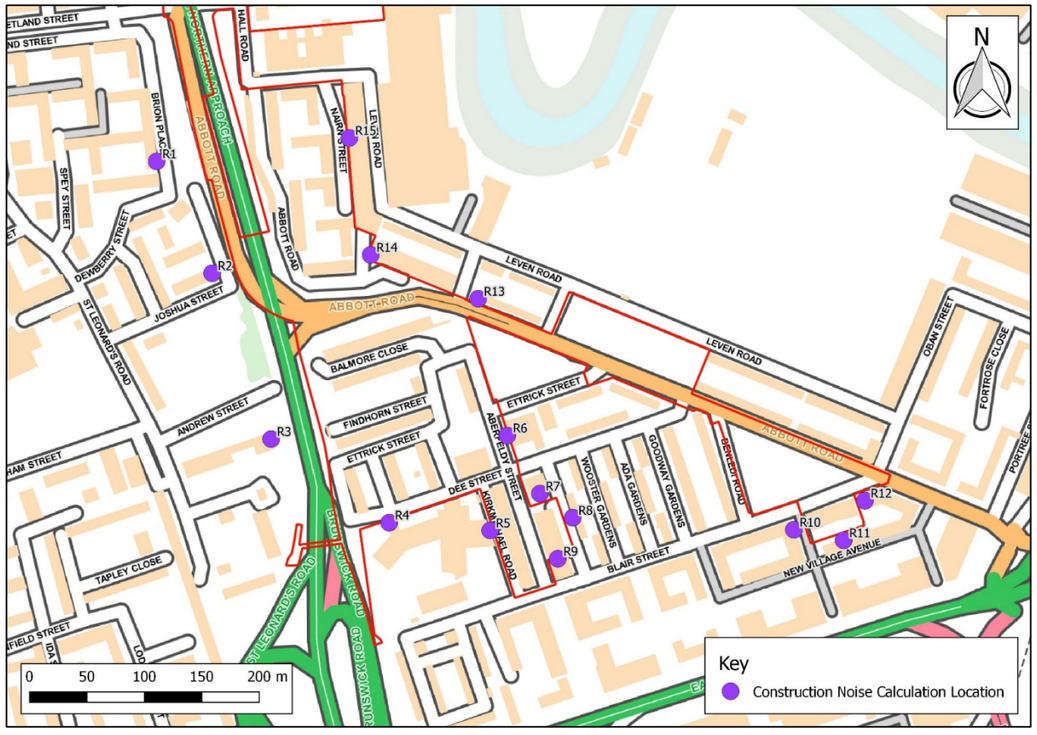
| Monitoring Position | Period | Background Sound Level, $L_{A90,T}$ (dB) | Noise Limit for Fixed Installations of Mechanical Plant, $L_{Ar,Tr}$ (dB) |
|---|---|---|---|
| P1 | Daytime | 58 | 48 |
| | Night-Time | 56 | 46 |
| P2 | Daytime | 62 | 52 |
| | Night-Time | 55 | 45 |
| P3 | Daytime | 55 | 45 |
| | Night-Time | 49 | 39 |
| P4 | Daytime | 52 | 42 |
| | Night-Time | 38 | 28 |

## RECEPTORS AND RECEPTOR SENSITIVITY

### *Existing*

**10.73** Receptors identified for the assessment of construction activities (see **Figure 10.2**) are residential and therefore of a high sensitivity. In addition, the disused Bromley Hall School is represented by receptor R1 and the vibration effects reported for R1 are also representative of those at the Bromley Hall School. Culloden Primary School is represented by R4 and R5, the noise and vibration effects at these receptors are representative of those at Culloden Primary School

**Figure 10.2 Construction Assessment Receptor Locations**




**10.74** The change in road traffic flows due to the Proposed Development is considered for the residential dwellings on the surrounding road links. The receptors on surrounding road links are taken to be residential and therefore high sensitivity.

### *Introduced*

**10.75** The 'During Operation' assessment is undertaken to identify the Site suitability and mitigation requirements for the proposed residential dwellings. The residential dwellings in the Proposed Development are high sensitivity.

## POTENTIAL EFFECTS

### *Demolition and Construction*

*Demolition and Construction Noise*

**10.76** The operation of equipment and works associated with the Site preparation, demolition and construction phase of the Proposed Development has the potential to result in noise effects at existing noise sensitive receptors in the vicinity (see **Figure 10.2**).

**10.77** The construction noise calculations have been undertaken for the noisiest construction phases to provide assessment levels at the nearest noise sensitive receptors. The highest noise levels are from plant usually associated with earthworks, piling, concreting, road pavement and general construction site activities. Typical facade noise levels have been adopted based on measurements of similar activities and are presented below. These are representative of continuous activity and are considered a worse-case consideration.

- Demolition Works 85 dB(A) at 10m
- Enabling works 84 dB(A) at 10m
- CFA Piling 85 dB(A) at 10m
- Sub Structure 80 dB(A) at 10m
- Road pavement 81 dB(A) at 10m
- Super Structure 85 dB(A) at 10m

**10.78** With regard to barrier attenuation effects, acoustic screening would be provided by permanent structures on the intervening land between the proposed construction areas and receptor locations, in addition to the natural screening that may be afforded by the topography of the area. Hoarding of at least 2.4m will be incorporated at the Site, in accordance with the LBTH CoCP. Notwithstanding this, to provide a robust assessment the construction noise predictions assume no attenuation between the Site and calculation receptor locations. Further consideration of construction noise, including phasing and incorporated mitigation, will be undertaken as part of the Construction Environmental Management Plan (CEMP).

**10.79** Construction noise levels have been predicted at the closest existing representative noise sensitive receptor locations. The calculations have been undertaken for both minimum and typical distances between the construction locations and the identified receptors. The construction noise levels are therefore calculated to provide both a worse case and indicative typical assessment.

**10.80** The interim scenario year 2026, has been selected as it represents peak HGV flows as the Detailed Proposals (Phase A) will be occupied whilst construction activities continue on the Outline Proposals (and therefore represents a worst case). Due to the separating distances between the completed aspects and ongoing construction, the highest calculated noise levels can be considered to be applicable to these dwellings. These noise levels can also be considered applicable for future phases that will be built out and constructed whilst the later phases are still under construction.

**10.81** The calculated levels assume the construction activities occur for 10 hours within any 16-hour daytime period.

**10.82** Indicative noise levels have been calculated using the closest separation distances between the Site and receptors, as well as a typical distance to a more central position in to identify the likely worse case temporary effects as well as the likely typical effect. These worse case and typical noise levels have been calculated at the closest façade of each construction assessment position during each phase and sub-phase of the works. The adopted distances are presented in **Table 10.13**.

**Table 10.13 Separation Distances Between Construction Activities and Receptors, M**

| Receptor | Façade Noise Level at Nearest Residential Receptor During Likely Phases of Construction, dB(A), $L_{Aeq,16hr}$ | | | | | |
|---|---|---|---|---|---|---|
| | Demolition | Enabling Works | Piling | Sub-structure | Roads | Super-structure |
| **Closest Activity** | | | | | | |
| R1 | 100 | 100 | 100 | 100 | 100 | 100 |
| R2 | 65 | 65 | 65 | 65 | 65 | 65 |
| R3 | 45 | 45 | 45 | 45 | 45 | 45 |
| R4 | 25 | 25 | 25 | 25 | 25 | 25 |
| R5 | 10 | 10 | 10 | 10 | 10 | 10 |
| R6 | 20 | 20 | 20 | 20 | 20 | 20 |
| R7 | 10 | 10 | 10 | 10 | 10 | 10 |
| R8 | 15 | 15 | 15 | 15 | 15 | 15 |
| R9 | Adjacent | Adjacent | Adjacent | Adjacent | Adjacent | Adjacent |
| R10 | 15 | 15 | 15 | 15 | 15 | 15 |
| R11 | 20 | 20 | 20 | 20 | 20 | 20 |
| R12 | 15 | 15 | 15 | 15 | 15 | 15 |
| R13 | 35 | 35 | 35 | 35 | 35 | 35 |
| R14 | 20 | 20 | 20 | 20 | 20 | 20 |
| R15 | 15 | 15 | 15 | 15 | 15 | 15 |
| **Typical Distance** | | | | | | |
| R1 | 120 | 120 | 120 | 120 | 120 | 120 |
| R2 | 120 | 120 | 120 | 120 | 120 | 120 |
| R3 | 100 | 100 | 100 | 100 | 100 | 100 |
| R4 | 115 | 115 | 115 | 115 | 115 | 115 |
| R5 | 135 | 135 | 135 | 135 | 135 | 135 |
| R6 | 100 | 100 | 100 | 100 | 100 | 100 |
| R7 | 145 | 145 | 145 | 145 | 145 | 145 |
| R8 | 170 | 170 | 170 | 170 | 170 | 170 |
| R9 | 195 | 195 | 195 | 195 | 195 | 195 |
| R10 | 355 | 355 | 355 | 355 | 355 | 355 |
| R11 | 385 | 385 | 385 | 385 | 385 | 385 |
| R12 | 390 | 390 | 390 | 390 | 390 | 390 |
| R13 | 100 | 100 | 100 | 100 | 100 | 100 |
| R14 | 120 | 120 | 120 | 120 | 120 | 120 |
| R15 | 150 | 150 | 150 | 150 | 150 | 150 |

**10.83** The calculated noise levels are shown in **Table 10.14**.

**Table 10.14 Calculated Façade Construction Noise Levels $L_{aeq,T}$ Db**

| Receptor | Façade Noise Level at Nearest Residential Receptor During Likely Phases of Construction, dB(A), $L_{Aeq,16hr}$ | | | | | |
|---|---|---|---|---|---|---|
| | Demolition | Enabling Works | Piling | Sub-structure | Roads | Super-structure |
| **Closest Activity** | | | | | | |
| R1 | <65 | <65 | <65 | <65 | <65 | <65 |
| R2 | 68 | 67 | 68 | <65 | <65 | 68 |
| R3 | 71 | 70 | 71 | 66 | 67 | 71 |
| R4 | >75 | 75 | >75 | 71 | 72 | >75 |
| R5 | >75 | >75 | >75 | >75 | >75 | >75 |
| R6 | >75 | >75 | >75 | 73 | 74 | >75 |
| R7 | >75 | >75 | >75 | >75 | >75 | >75 |
| R8 | >75 | >75 | >75 | >75 | >75 | >75 |
| R9 | >75 | >75 | >75 | >75 | >75 | >75 |
| R10 | >75 | >75 | >75 | >75 | >75 | >75 |
| R11 | >75 | >75 | >75 | 73 | 74 | >75 |
| R12 | >75 | >75 | >75 | >75 | >75 | >75 |
| R13 | 73 | 72 | 73 | 68 | 69 | 73 |
| R14 | >75 | >75 | >75 | 73 | 74 | >75 |
| R15 | >75 | >75 | >75 | >75 | >75 | >75 |
| **Typical Distance** | | | | | | |
| R1 | <65 | <65 | <65 | <65 | <65 | <65 |
| R2 | <65 | <65 | <65 | <65 | <65 | <65 |
| R3 | <65 | <65 | <65 | <65 | <65 | <65 |
| R4 | <65 | <65 | <65 | <65 | <65 | <65 |
| R5 | <65 | <65 | <65 | <65 | <65 | <65 |
| R6 | <65 | <65 | <65 | <65 | <65 | <65 |
| R7 | <65 | <65 | <65 | <65 | <65 | <65 |
| R8 | <65 | <65 | <65 | <65 | <65 | <65 |
| R9 | <65 | <65 | <65 | <65 | <65 | <65 |
| R10 | <65 | <65 | <65 | <65 | <65 | <65 |
| R11 | <65 | <65 | <65 | <65 | <65 | <65 |
| R12 | <65 | <65 | <65 | <65 | <65 | <65 |
| R13 | <65 | <65 | <65 | <65 | <65 | <65 |
| R14 | <65 | <65 | <65 | <65 | <65 | <65 |
| R15 | <65 | <65 | <65 | <65 | <65 | <65 |

**10.84** The resultant noise impacts are presented in **Table 10.15**.

**Table 10.15 Calculated Construction Noise Impacts**

| Receptor | Façade Noise Level at Nearest Residential Receptor During Likely Phases of Construction, dB(A), $L_{Aeq,16hr}$ | | | | | |
|---|---|---|---|---|---|---|
| | Demolition | Enabling Works | Piling | Sub-structure | Roads | Super-structure |
| **Closest Activity** | | | | | | |
| R1 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R2 | Low | Low | Low | Negligible | Negligible | Low |
| R3 | Medium | Medium | Medium | Low | Low | Medium |
| R4 | High | Medium | High | Medium | Medium | High |
| R5 | High | High | High | High | High | High |
| R6 | High | High | High | Medium | Medium | High |
| R7 | High | High | High | High | High | High |
| R8 | High | High | High | High | High | High |
| R9 | High | High | High | High | High | High |
| R10 | High | High | High | High | High | High |
| R11 | High | High | High | Medium | Medium | High |
| R12 | High | High | High | High | High | High |
| R13 | Medium | Medium | Medium | Low | Low | Medium |
| R14 | High | High | High | Medium | Medium | High |
| R15 | High | High | High | High | High | High |
| **Typical Distance** | | | | | | |
| R1 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R2 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R3 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R4 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R5 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R6 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R7 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R8 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R9 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R10 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R11 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R12 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R13 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R14 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R15 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |

**10.85** Construction activities are calculated to exceed SOAEL during close proximity works. However, it will be noted that construction activities do not occur simultaneously nor would activities be operated at the closest distance to the residential areas for long periods of time, as assumed for the purposes of a worse-case scenario assessment. During the majority of construction activities, the separating distances are substantially increased and calculated noise levels fall below LOAEL.

**10.86** The calculated effect significance, with consideration to the high sensitivity of the nearby receptors, is presented in **Table 10.16**.

**Table 10.16 Calculated Construction Noise Effects**

| Receptor | Façade Noise Level at Nearest Residential Receptor During Likely Phases of Construction, dB(A), $L_{Aeq,16hr}$ | | | | | |
|---|---|---|---|---|---|---|
| | Demolition | Enabling Works | Piling | Sub-structure | Roads | Super-structure |
| **Closest Activity** | | | | | | |
| R1 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R2 | Minor | Minor | Minor | Negligible | Negligible | Minor |
| R3 | Moderate | Moderate | Moderate | Minor | Minor | Moderate |
| R4 | Major | Moderate | Major | Moderate | Moderate | Major |
| R5 | Major | Major | Major | Major | Major | Major |
| R6 | Major | Major | Major | Moderate | Moderate | Major |
| R7 | Major | Major | Major | Major | Major | Major |
| R8 | Major | Major | Major | Major | Major | Major |
| R9 | Major | Major | Major | Major | Major | Major |
| R10 | Major | Major | Major | Major | Major | Major |
| R11 | Major | Major | Major | Moderate | Moderate | Major |
| R12 | Major | Major | Major | Major | Major | Major |
| R13 | Moderate | Moderate | Moderate | Minor | Minor | Moderate |
| R14 | Major | Major | Major | Moderate | Moderate | Major |
| R15 | Major | Major | Major | Major | Major | Major |
| **Typical Distance** | | | | | | |
| R1 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R2 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R3 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R4 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R5 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R6 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R7 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R8 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R9 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R10 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R11 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R12 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R13 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R14 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R15 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |

**10.87** The effect significance is classed as Major temporary to Minor. Mitigation measures which further minimise the likelihood of adverse impacts are discussed later in this ES Chapter.

### *Construction Vibration*

**10.88** Considering the separation distances, nearby residential properties are likely to be affected during close proximity works. The majority of works will be unlikely to affect the nearby residential properties, although Major effects will be likely during close proximity works. The likely impact from construction activities is therefore considered to be temporary major adverse (significant) to negligible (not significant).

**10.89** The likely worse case vibration effects at the identified separation distances have been calculated based on the methodology provided within BS 5228-2. The calculated effects are presented in **Table 10.17**.

**Table 10.17 Calculated Construction Vibration Effects**

| Receptor | Façade Noise Level at Nearest Residential Receptor During Likely Phases of Construction, dB(A), $L_{Aeq,16hr}$ | | | | | |
|---|---|---|---|---|---|---|
| | Demolition | Enabling Works | Piling | Sub-structure | Roads | Super-structure |
| **Closest Activity** | | | | | | |
| R1 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R2 | Minor | Minor | Minor | Minor | Minor | Minor |
| R3 | Minor | Minor | Minor | Minor | Minor | Minor |
| R4 | Minor | Minor | Minor | Minor | Minor | Minor |
| R5 | Major | Major | Major | Major | Major | Major |
| R6 | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| R7 | Major | Major | Major | Major | Major | Major |
| R8 | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| R9 | Major | Major | Major | Major | Major | Major |
| R10 | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| R11 | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| R12 | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| R13 | Minor | Minor | Minor | Minor | Minor | Minor |
| R14 | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| R15 | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| **Typical Distance** | | | | | | |
| R1 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R2 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R3 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R4 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R5 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R6 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R7 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R8 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R9 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R10 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R11 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R12 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R13 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R14 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| R15 | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |

### *Phasing*

**10.90** Changes in traffic flows due to construction activities have been considered based on the interim year traffic flow data, which includes peak construction HGV traffic. The 18-hour Annual Average Daily Total (AAWT) flows were provided for the local road network surrounding the Proposed Development for the year 2026 both with and without construction traffic.

**10.91** The predicted changes in noise level at the roadside on existing road links on the local network, identified with respect to the road traffic noise impact assessment criteria, are presented in **Table 10.18**.

**Table 10.18 Change In Noise Level On Local Road Network, Interim Year**

| Road Link | Change in Flow | Noise Change, dB |
|---|---|---|
| Abbott Road (East of Underpass) | 0 | 0.0 |
| Abbott Road (East of Oban Street) | 0 | 0.0 |
| Leven Road | 0 | 0.0 |
| Oban Street | 0 | 0.0 |
| Bromley Hall Road | 154 | 0.6 |
| Lochnagar Street | 154 | 0.3 |
| Zetland Street | 0 | 0.0 |
| Abbott Road Underpass (One-Way) | 0 | 0.0 |
| A1206 Preston's Road | 0 | 0.0 |
| A12 (Between Lochnagar Street and A13) | 100 | 0.0 |
| A12 (North of Lochnagar Street) | 54 | 0.0 |
| A12 On-slip from A13 (St. Leonards Road) | 54 | 0.0 |
| Trafalgar Way | 0 | 0.0 |
| Upper Bank Street | 0 | 0.0 |
| Poplar High Street | 0 | 0.0 |
| Saltwell Street | 0 | 0.0 |
| A1206 Cotton Street | 0 | 0.0 |
| A1261 Aspen Way (West of A12) | 0 | 0.0 |
| Blackwall Tunnell | 23 | 0.0 |
| Upper North Street (A13 to Cordelia Street) | 0 | 0.0 |
| Upper North Street (Cordelia Street to B140 St. Paul's Way) | 0 | 0.0 |
| B140-St. Paul's Way | 0 | 0.0 |
| Cordelia Street | 0 | 0.0 |
| Devons Road | 0 | 0.0 |
| Devas Street W of Purdy Street | 0 | 0.0 |
| Chrisp Street (South of Burcham Street) | 0 | 0.0 |
| Chrisp Street (North of Burcham Street) | 0 | 0.0 |
| Campbell Road | 0 | 0.0 |
| Devas Street (West of A12 junction) | 0 | 0.0 |
| Burcham Street/St Leonard Road | 0 | 0.0 |
| A13 (From A12/A13 interchange to Abbott Road) | 77 | 0.0 |
| A13 (West of A12/A13 interchange) | 0 | 0.0 |
| A1020 Leamouth Road | 23 | 0.0 |
| A13 (East of Leamouth Road) | 100 | 0.0 |
| A13 Newham Way (East of Abbott Road) | 100 | 0.0 |
| A1011 Silvertown Way (South of A13) | 12 | 0.0 |
| A12 Off-slip (St. Leonard Road from Blackwall Tunnel) | 0 | 0.0 |
| A102 On-slip (to Blackwall Tunnel) | 23 | 0.0 |
| A102 Off-slip (to A13 east and west) | 39 | 0.0 |
| A102 off-slip (to A13 west) | 0 | 0.0 |
| A102 on-slip (from A13 east) | 0 | 0.0 |

**10.92** **Table 10.18** identifies that existing noise-sensitive receptors adjacent to the road network would experience increases in noise level of no more than 1 dB and therefore changes in noise levels on the surrounding road network are likely to result in Negligible effects in the short term.

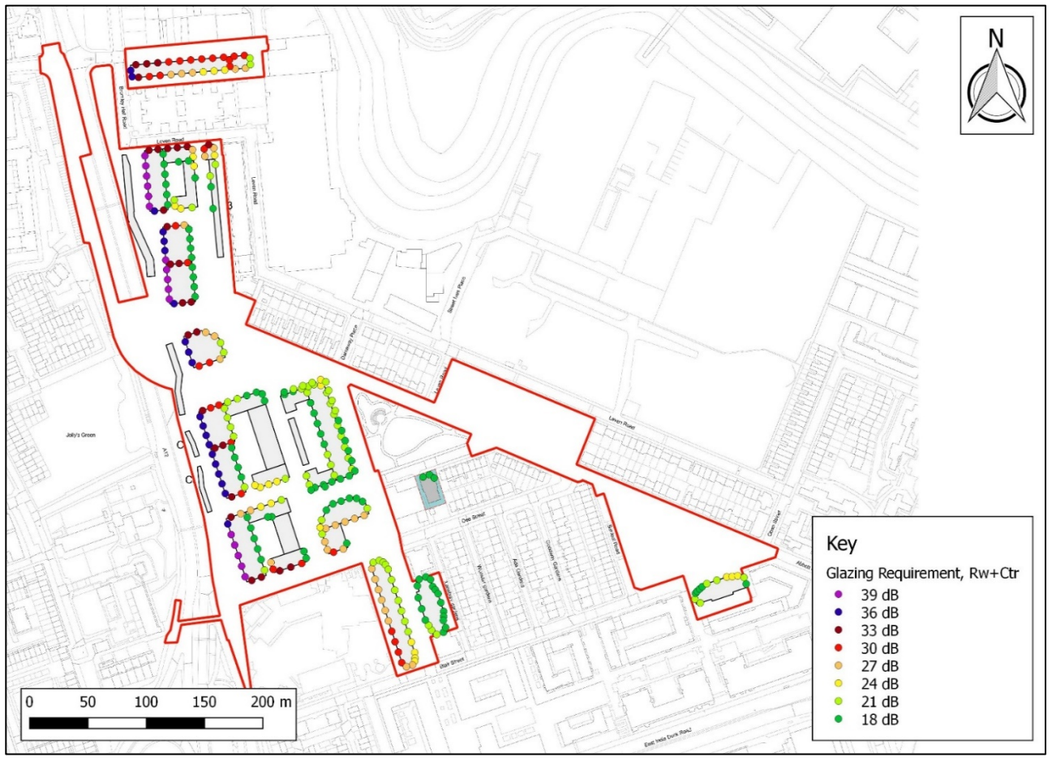
### *Completed Development*

#### *Ambient Noise levels*

**10.93** The future suitability of the Site for residential accommodation has been confirmed by considering the calculated noise contours and the guidance adopted for this ES Chapter.

**10.94** Calculated daytime and night-time noise contours are presented in **ES Volume 3, Appendix Noise and Vibration – Annex 14 and 15**, respectively. The calculated facade reductions required at façade locations across the Proposed Development are presented in **Figure 10.3**.

**Figure 10.3 Glazing And Ventilation Requirements**



**10.95** The required façade reductions are presented for all façades that are calculated to exceed the BS 8233 criterion noise levels within habitable rooms, with windows partially open, when adopting the typical reduction due to partially open windows as presented within BS 8233.

**10.96** Roof and façade constructions typically achieve an attenuation of at least 55 dB Rw, with the windows and trickle ventilators being the weakest part of any facade. Suitable glazing and ventilation options at these properties will be incorporated at these façades to allow windows to remain closed.

**10.97** Glazing and ventilation options will be specified to ensure the calculated reductions are achieved as a minimum.

**10.98** To ensure the $R_W$ values take account of possible low frequency noise, the sound reduction index of each element will include a correction for the Ctr urban traffic noise spectrum. The ventilation will achieve this value when open, to allow ventilation to the dwelling. Additionally, the glazing and ventilation installation must maintain the integrity of the façade with regard to noise insulation.

**10.99** BS 8233 recognises that external ambient noise levels are not achievable in urban areas adjoining the strategic noise network. An excess of the upper guideline noise level will not prohibit development provided the Proposed Development is designed to achieve the lowest practicable levels. Accordingly, an effect significance for external amenity noise levels has not been identified.

**10.100** The positioning of buildings and balcony areas have been considered within the design of the development and dwellings directly overlooking the A12 are proposed to comprise winter gardens in order to mitigate noise levels at the most affected facades.

**10.101** Where facades do not directly overlook the A12 the balconies benefit from partial or complete screening by the proposed building structures and therefore the noise levels will not be as high. Protruding balconies could incorporate measures such as imperforate parapets and absorptive linings in order to reduce noise levels further.

**10.102** The Proposed Development design incorporates 'courtyard' areas where noise levels will fall below the upper guideline noise levels. Additionally, the proposed tower blocks will screen the eastern side of the Proposed Development and form a 'quiet side' area with noise levels at ground floor level lower than those currently observed.

**10.103** Based on the above, the Proposed Development is considered to mitigate noise at amenity areas as far as practicable. The noise levels at these areas will not prohibit development.

**10.104** The WHO Guidelines states that indoor noise levels will not exceed approximately 45 dB $L_{Amax}$ more than 10-15 times a night to ensure there are no negative health effects related to sleep disturbance.

**10.105** Considering the façade sound reduction identified in the BS 8233 assessment, maximum night time noise levels with windows closed achieve the WHO criteria of 45 dB. Windows need to remain closed at facades overlooking the railway line. Maximum $L_{Amax,F}$ noise levels are considered to achieve the criteria set out in the WHO Guidelines, provided the glazing and ventilation options previously identified are employed.

**10.106** With incorporation of suitable glazing and ventilation choices the internal noise levels would fall below LOAEL and would therefore render the Site to be suitable for the proposed uses.

### *ANC Acoustics Ventilation and Overheating Risk*

**10.107** The overheating risk categories have been calculated at the facades of the proposed dwellings for the consideration of the energy consultant and incorporation into the overheating assessment.

**10.108** The risk categories have been identified based on the calculated noise levels across the Proposed Development and have been adopted across all floors in order to provide a cautious consideration of the risk.

**10.109** The calculated risk categories across the Proposed Development are presented in **ES Volume 3, Appendix Noise and Vibration – Annex 17.**

### *Proposed Fixed Plant & Commercial Activity*

**10.110** Any proposed plant and activities pertaining to business use will be specified by the future occupants prior to fit-out. Plant will be specified by the occupants to ensure compliance with the fixed limits identified in **Table 10.12**, in accordance with the LBTH Local Plan.

**10.111** The future occupiers are not currently known and detailed data is not yet available. The identified limits will inform the design of the proposed plant items/activities during the detailed design stage.

**10.112** The proposed plant will be specified and sufficiently mitigated as required, such that suitable conditions are maintained at the nearby residential dwellings. In accordance with BS 4142, the Rating level of any plant (inclusive of penalties accounting for acoustic features) will remain 10 dB below the background sound level during all periods of operation.

**10.113** BS 4142 provides assessment periods of:

- Daytime, 07:00 – 23:00; and
- Night-time, 23:00 – 07:00.

**10.114** The observed background sound levels and resultant fixed plant noise limits are presented in **Table 10.12**. Commercial plant and activity would be specified such that the calculated combined Rating level at the nearest residential receptors does not exceed these limits.

**10.115** Sufficiently mitigated plant items would result in a Negligible effect significance.

### *Increases in Road Traffic Noise – Existing Residential Receptors*

**10.116** The traffic flow data has been used as the basis for the road traffic noise assessment. The 18-hour Annual Average Daily Total (AAWT) flows were provided for the local road network surrounding the Proposed Development for the year 2031 both with and without development.

**10.117** Traffic noise predictions have been made using the CRTN prediction methodology. The methodology has been used to predict the magnitude of any change in noise level resulting from the Proposed Development at the roadside of the local network.

**10.118** The predicted changes in noise level on existing road links, identified with respect to the road traffic noise impact assessment criteria, are presented in **Table 10.19**.

**Table 10.19 Change in Noise Level on Local Road Network, 2031**

| Road Link | Change in Flow | Noise Change, dB |
|---|---|---|
| Abbott Road (East of Underpass) | -6,144 | -11.9 |
| Abbott Road (East of Oban Street) | -2,005 | -1.3 |
| Leven Road | 562 | 0.6 |
| Oban Street | 1,063 | 1.2 |
| Bromley Hall Road | 905 | 2.6 |
| Lochnagar Street | 553 | 0.9 |
| Zetland Street | -341 | -0.8 |
| Abbott Road Underpass (One-Way) | -4,800 | -46.6 |
| A1206 Preston's Road | 204 | 0.0 |
| A12 (Between Lochnagar Street and A13) | 1,558 | 0.1 |
| A12 (North of Lochnagar Street) | 1,658 | 0.1 |
| A12 On-slip from A13 (St. Leonards Road) | 43 | 0.0 |
| Trafalgar Way | -75 | -0.2 |
| Upper Bank Street | -19 | 0.0 |
| Poplar High Street | 26 | 0.0 |
| Saltwell Street | 25 | 0.0 |
| A1206 Cotton Street | -917 | -0.2 |
| A1261 Aspen Way (West of A12) | -377 | 0.0 |
| Blackwall Tunnell | 617 | 0.0 |
| Upper North Street (A13 to Cordelia Street) | 113 | 0.1 |
| Upper North Street ( Cordelia Street to B140 St. Paul's Way) | -21 | 0.0 |
| B140-St. Paul's Way | 212 | 0.1 |
| Cordelia Street | -81 | -0.2 |

| Road Link | Change in Flow | Noise Change, dB |
|---|---|---|
| Devons Road | -1,512 | -0.9 |
| Devas Street W of Purdy Street | 20 | 0.0 |
| Chrisp Street (South of Burcham Street) | 733 | 0.3 |
| Chrisp Street (North of Burcham Street) | 338 | 0.1 |
| Campbell Road | -459 | -0.2 |
| Devas Street (West of A12 junction) | 1,643 | 1.4 |
| Burcham Street/St Leonard Road | 780 | 0.8 |
| A13 (From A12/A13 interchange to Abbott Road) | 478 | 0.0 |
| A13 (West of A12/A13 interchange) | 163 | 0.0 |
| A1020 Leamouth Road | 1,279 | 0.3 |
| A13 (East of Leamouth Road) | 7 | 0.0 |
| A13 Newham Way (East of Abbott Road) | -295 | 0.0 |
| A1011 Silvertown Way (South of A13) | 127 | 0.0 |
| A12 Off-slip (St. Leonard Road from Blackwall Tunnel) | -617 | -0.3 |
| A102 On-slip (to Blackwall Tunnel) | -412 | -0.3 |
| A102 Off-slip (to A13 east and west) | 539 | 0.2 |
| A102 off-slip (to A13 west) | -824 | -0.4 |
| A102 on-slip (from A13 east) | 347 | 0.1 |

**10.119** **Table 10.19** identifies that existing noise-sensitive receptors adjacent to the road network would experience increases in noise level of no more than 3 dB and therefore changes in road traffic flows are likely to result in Negligible effects in the long term.

**10.120** There is a substantial decrease in traffic at two locations on Abbott Road, resulting in a **Major Beneficial** (**Significant**) effect at these locations.

## MITIGATION AND RESIDUAL EFFECTS

### *Demolition and Construction Mitigation*

**10.121** To control the impact of noise during all phases of the construction of the Proposed Development, contractors will ensure that construction works are carried out in accordance with best practicable means (BPM) as described in BS 5228 and comprising of the following:

- Where possible, 'silenced' plant and equipment will be used;
- Where vehicles are standing for a significant period of time, engines will be switched off;
- Acoustic enclosures will be fitted where possible to suppress noisy equipment;
- Plant will operate at low speeds, where possible, and incorporate automatic low speed idling;
- Where possible, electrically driven equipment will be selected in preference to internal combustion powered, hydraulic power in preference to pneumatic and wheeled in lieu of tracked plant;
- All plant will be properly maintained (greased, blown silencers replaced, saws kept sharpened. Teeth set and blades flat, worn bearings replaced etc);
- Consideration will be given to temporary screening or enclosures for static noisy plant to reduce noise emissions and plant will be certified to meet any relevant EC Directives;
- All contractors will be made familiar with the guidance in BS 5228 (Parts 1 & 2) which will form a pre-requisite of their appointment; and
- Early and good public relations with the adjacent tenants and occupants of buildings will also reduce the likelihood of complaints.

**10.122** By adopting the recommended best practicable means, construction noise levels can typically be reduced by 10 dB(A).

**10.123** Procedures will be implemented to control the potential impact of noise at any proposed residential units that are occupied prior to the completion of the construction activities at the Site. Essentially, where construction activities associated with any phase are identified to be within the critical distances, consideration will be given to the use of quieter techniques or targeted and specific noise mitigation measures (such as reduced duration of operation, enclosure of equipment etc.) to ensure continued compliance with the criterion limit.

**10.124** Construction related vibration impacts are likely in the short term. Should any activities take place within the critical distances identified in **Table 10.13** prior notification will be given to residents of affected properties. A programme of vibration monitoring will be implemented to manage any impacts. Best Practicable Means will be employed to reduce vibration at the source.

**10.125** Construction activities will be programmed to ensure that noise levels do not exceed 75 dB for periods of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any 6 consecutive months.

### *Completed Development Mitigation*

#### *Ambient Noise Levels*

**10.126** The calculated façade reductions required across the development are presented in **Figure 10.3**. Suitable glazing and ventilation options will be adopted in conjunction with typical façade in order to achieve the BS 8233 and WHO criteria.

**10.127** Mechanical ventilation is proposed across the Proposed Development. Any installed mechanical ventilation system will allow for sufficient airflow whilst maintaining the integrity of the façade with regard to noise insulation. The glazing and ventilation elements will be selected with consideration to the required façade reduction.

**10.128** To ensure the $R_W$ values take account of possible low frequency noise, the sound reduction index of each element will include a correction for the Ctr urban traffic noise spectrum. The ventilation will achieve this value when open/operational, to allow ventilation to the dwelling.

**10.129** For non-habitable rooms, such as kitchens, bathrooms, stairways, halls, landings etc, lower acoustic performance glazing configurations may be considered permissible.

**10.130** Winter gardens are incorporated at dwellings directly overlooking the A12. The remainder comprises protruding balconies and external amenity areas at ground level which are screened by the layout of the Proposed Development. Balconies would benefit from measures such as imperforate parapets and absorptive linings.

#### *Commercial Activities*

**10.131** The sound from commercial plant and activities will be specified such that sound levels remain below the limits specified in this ES Chapter.

**10.132** Mitigation options will be specified during the detailed design stage, as appropriate. Effects from commercial activities would be Negligible following specification and assessment of proposed commercial activity.

### *Residual Effects*

#### *Demolition and Construction*

**10.133** Construction noise levels are calculated to remain below the 75 dB $L_{Aeq,T}$ criterion noise level for the majority of the construction and would typically fall below LOAEL. Close proximity activities will exceed the criterion noise levels in the short term.

**10.134** Construction noise and vibration effects are likely to be **Major Adverse (Significant)** in the short term with the majority of activities being **Minor Adverse (not significant) (Figure 10.20)**.

#### *Operation*

**10.135** Noise levels at all proposed dwellings are calculated to fall below the BS 8233 criteria with the incorporation of suitable glazing and ventilation units. This provides a **Minor Adverse** effect significance due to the

sensitivity of the residential dwellings. The residual noise effect is considered to be **Negligible** with the adoption of suitable mitigation **(Figure 10.20)**.

**10.136** Long Term effects due to changes in road traffic flows are considered to be **Negligible**.

**10.137** All commercial plant will be specified by the future occupants such that rating levels at the nearest residential receptors fall below the specified background sound levels. Whilst the effect cannot be quantitively assessed, any proposed plant will be specified such that the resulting effect is **Negligible**.

**Table 10.20 Residual Effects**

| Receptor | Description of the Residual Effect | Scale and Nature | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | |
| Residential Receptors Immediately Adjacent to Activities | Demolition and Construction Noise and Vibration (short term) | Negligible to Major Adverse | Not Significant to **Significant** | L | D | T | St |
| Residential Receptors | Demolition and Construction Noise and Vibration (medium term) | Minor Adverse | Not Significant | L | D | T | Mt |
| Residential Receptors | Demolition and Construction traffic | Negligible | Not Significant | L | D | T | Mt |
| **Completed Development** | | | | | | | |
| Residential Receptors | Internal Ambient Noise Levels | Negligible | Not Significant | L | D | P | Lt |
| Nearby Residential Receptors | Building Services and Plant Noise | Negligible | Not Significant | L | D | P | Lt |
| Residential Receptors on Road Network | Changes in Road Traffic Flows | Negligible | Not Significant | L | D | P | Lt |
| Residential Dwellings on Abbot Road | Changes in Road Traffic Flows | Major Beneficial | Not Significant | L | D | P | Lt |

**Notes:**
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline Scenario*

**10.138** The opening of the Silvertown Tunnel may give rise to changes in vehicle movements over the current baseline scenario. Committed development may also increase road traffic flows on the road network. However, the road network in the surrounding area is understood to be near or at capacity and therefore the ambient environment is not likely to significantly increase over existing conditions.

### *Cumulative Effects Assessment*

**10.139** Nearby developments that may potentially give rise to cumulative effects are identified in **ES Volume 1, Chapter 2: EIA Methodology.** The noise and vibration assessment has considered the combined road traffic movements from these future committed developments as part of the predicted future baseline conditions. However, in order to provide consistency with the EIA Regulations[10], the potential cumulative effects are presented below.

[10] Town and Country Planning (Environmental Impact Assessment) Regulations, 2017, as amended 2018 and 2020

### *Demolition and Construction*

**10.140** The surrounding area is subject to a large amount of redevelopment and construction activity at nearby developments, namely Ailsa Wharf, the Leven Road Gasworks, Former Poplar Bus Depot, Islay Wharf, and Aberfeldy Estate has the potential to cause localised noise disturbance around each development site. However, the activities have commenced on-site at the majority of these developments and it is not known whether the construction activities from each development will be completed or will occur at the same time as those on the Proposed Development Site.

**10.141** The developments at Islay Wharf and the Former Poplar Bus Depot are understood to have not yet commenced and therefore there is an increased chance that demolition and construction activities happen concurrently to those on the Proposed Development.

**10.142** Such activities at these sites may give rise to cumulative effects in instances where construction activity at both sites takes place in close proximity to an identified receptor. The sensitivity of the nearby receptors is identified as high and impacts low to medium, resulting in minor to moderate adverse effects at local receptors during the majority of the demolition and construction phases. However, should activities occur concurrently the cumulative effects would be short term major adverse.

### *Completed Development*

**10.143** The assessment at proposed residential dwellings has considered the additional traffic movements from the Proposed Development and committed developments and determined that the significance of effects at internal habitable rooms will be Negligible with the incorporation of appropriate glazing and ventilation.

**10.144** Regarding fixed plant, the neighbouring developments will be subject to the same mitigation requirements as the proposed Development and plant items will be required to result in Negligible impacts. There are therefore no expected significant cumulative effects due to the fixed plant items.

**10.145** With consideration to the above, the potential cumulative effects from the Completed Development and identified nearby developments are unlikely to affect those identified within this ES Chapter.

## LIKELY SIGNIFICANT EFFECTS

**10.146** Demolition and construction activities may give rise to major adverse (significant) short-term effects on levels of noise and vibration at nearby sensitive receptors should instances arise where activity occurs in close proximity to sensitive receptors. The majority of demolition and construction activities would give rise to minor to moderate adverse effects depending on the intervening distances between activities.

**10.147** With appropriate mitigation choices there are no likely cumulative effects identified from the Completed Development.

# Chapter 11: Archaeology

| Archaeology (Buried Heritage) | |
|---|---|
| **AUTHOR** | Thames Valley Archaeology Services |
| **SUPPORTING APPENDIX** | **ES Volume 3, Appendix Archaeology:**<br>Annex 1: Archaeological Desk Based Assessment |
| **KEY CONSIDERATIONS** | This assessment examines the potential effects of the Proposed Development upon the Buried Heritage (Archaeology) of the Site. This Chapter deals with the buried archaeological resource only and does not consider any potential impact on the above-ground Built Heritage, which is considered in **ES Volume 2, Townscape, Visual Impact and Heritage Assessment**.<br>This ES chapter has considered the potential effects arising from demolition and construction on archaeology. Key considerations include:<br>• Possible archaeological deposits.<br>• There are no known heritage assets within the Site.<br>• The Site lies within the Lea Valley Archaeological Priority Area with potential for palaeoenvironmental evidence for past wetland and riverine environments and potential for new discoveries of well-preserved prehistoric sites. It was also an extensive area of historic industry in the medieval and post medieval periods.<br>• The Site-specific potential for archaeological remains to be present, however, remains largely undetermined. However, the carrying out of further fieldwork to determine any potential impacts and appropriate mitigation measures (if any) can be secured in the usual way through a planning condition. |
| **CONSULTATION** | An EIA Scoping Report was prepared and submitted to the London Borough of Tower Hamlets (LBTH) in August 2021 requesting a formal Scoping Opinion. LBTH's Scoping Opinion was issued on 8 September 2021. This assessment addresses the points raised in the Opinion which are of relevance to Archaeology (Built Heritage).<br>As part of the EIA Scoping Process, Historic England, as adviser to LBTH, was consulted and (by email dated 25/08/2012) has indicated that the ES should be informed by submissions as follows:<br>• An up to date archaeological desk-based assessment ("DBA");<br>• A geoarchaeological model of the Site and surroundings using existing data and prepared by a recognised geoarchaeological specialist;<br>• An assessment of the proposed development's impact using the DBA and the geoarchaeological model;<br>• Results of any further pre-submission fieldwork, as agreed with GLAAS, following the completion of the model and impact assessment; and<br>• A mitigation programme that includes appropriate public benefits. |

## ASSESSMENT METHODOLOGY

### *Defining the Baseline*

**11.1** The assessment of the archaeological baseline for the Site presented in **ES Volume 3, Appendix Archaeology – Annex 1** was carried out by the examination of pre-existing information from a number of sources recommended by the Chartered Institute for Archaeologists Standards covering desk-based studies1. These sources include historic and modern maps, the Greater London Historic Environment Record, geological maps and any relevant publications or reports: a full list of these appears in **ES Volume 3, Appendix Archaeology – Annex 1**. This is in accordance with NPPF (2021) paragraph 194 which states:

> '*In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation*.'

**11.2** The archaeological information relating to the adjacent areas (south of the Site) - Phases 1-3a and 3b of the Outline Planning Permission (2012 OPP) have also been considered to determine the Site's baseline. A detailed study was made of a radius of 750m[2] around the Site (as set out in the EIA Scoping Report), and the archaeology of the wider general area was also taken into account as general background.

**11.3** The Desk-Based Assessment for the Site was produced in December 2020 and revised in September 2021 in light of the evolution of the Proposed Development and changes in relevant policy.

**11.4** A site visit was conducted on 27 November 2020 and confirmed the absence of visible archaeological monuments within the Site or its surroundings.

**11.5** Guidance on the assessment of significance for archaeological and heritage assets is contained in two Historic England papers[3], and can also be assessed against by the criteria used by the Secretary of State in relation to the Scheduled Monuments and Archaeological Areas Act 1979. These include but are not limited to: Period; Rarity; Documentation; Group Value; Survival/Condition; Fragility/Vulnerability; Diversity; Potential.

### *Evolution of the Baseline*

**11.6** The evolved baseline represents a scenario which assumes all of the cumulative schemes are built in the surrounding environment and that the surrounding environment, including the Site, has naturally evolved in the absence of the Proposed Development being implemented.

**11.7** The baseline archaeological resource of the Site does not evolve (in the sense of growth) but can be eroded by development. It is not anticipated that there would be any significant erosion without the Proposed Development. Nearby development might (but should not) cause dewatering of waterlogged deposits (if present) with the Site. If significant archaeological remains are discovered and reported on nearby development sites this may add substantially to the context in which any remains within the Site can be understood, but cannot alter the nature of those remains in themselves. No other significant effects are anticipated.

### *Impact Assessment Methodology*

**11.8** The following guidance has been used in the preparation of this chapter and the accompanying Archaeological Desk Based Assessment (DBA):

- English Heritage (2008), Conservation principles, policies and guidance;
- Chartered Institute for Archaeologists (2014), Standard and guidance for commissioning work or providing consultancy advice on archaeology and historic environment;
- Historic England (2017), Land Contamination and Archaeology;
- Historic England (2019), Piling and Archaeology Guidelines and Good Practice document; and
- Historic England (2020), Deposit Modelling and Archaeology: Guidance for Mapping Buried Deposits.

### *Demolition and Construction*

**11.9** The assessment of the demolition and construction works considers the following potential impacts and associated likely effects:

- Site set-up works, including contractors compound set-up and associated temporary services levelling work and other preparatory groundworks including remediation for Unexploded Ordnance (UXO) and chemical contaminants;
- Construction, including foundation excavation or pile installation, service installation, road construction;
- Landscaping, including ground reduction or levelling and creation of attenuation tanks and ponds; and
- Compression of buried remains from vehicle movement, construction of spoil tips, bunds or raised landscape areas.

**11.10** As set out in **ES Volume 1, Chapter 12: Water Resources, Flood Risk and Drainage**, dewatering has not been considered, as, based on groundwater levels, it's not envisaged that this will be required as part of the Site's redevelopment.

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*[1] CIfA, 2020, Standard and guidance for historic environment desk-based assessment, Chartered Institute for Archaeologists, Reading*
*[2] Radius was selected as it was deemed more appropriate due to the Site's location within London as urban areas often have a very high density of HER records in the vicinity, this radius does not omitted any relevant HER information to the Site.*
*[3] HE, 2015a, Managing Significance in Decision-Taking in the Historic Environment*
*Historic Environment Good Practice Advice in Planning: 2 Historic England, London*

*HE, 2015b, Statements of Heritage Significance: Analysing Significance in Heritage Assets Historic England Advice Note 12, Historic England, London*

**11.11** Predicted effects of the demolition and construction works on the archaeological resource within the Site are likely to be destructive, associated with all ground disturbance below previously disturbed levels.

**11.12** It should be noted that although no new fieldwork has been undertaken specifically in respect of the current proposal, archaeological investigations were conducted for Phases 1, 2 and 3 of the 2012 OPP, on land immediately south of the Site.

**11.13** The assessment of impacts on archaeology have been based on the Proposed Development itself, and at the current stage of planning and design, details of foundation design or depth are not available for the Outline Proposals.

**11.14** Any significant adverse effects can be offset by a programme of archaeological investigation, recording and reporting secured as mitigation.

*Phasing*

**11.15** Potential impacts on archaeological remains are the same through each of the demolition and construction phases. Once construction is complete there are no further adverse impacts to consider, but potential positive impacts endure (discussed further below).

*Completed Development*

**11.16** Once Completed the Proposed Development entails no further predicted adverse impacts on the archaeological resource of the Site.

**11.17** Once Operational, any public benefits that might be achieved in terms of information gain and (if adopted) display would continue.

**11.18** Preservation in situ (if achieved) would mean that the archaeological resource of that part of the Site remains as a heritage asset and as a constraint on future development within the Site.

*Assumptions and Limitations*

**11.19** The sources consulted for this assessment record only previous discoveries: much of the country's archaeological resource remains undiscovered. While the GLHER is comprehensive with regard to what is already known, it cannot be regarded as 'complete' and cannot preclude or predict the discovery of further heritage assets whose existence is not currently known.

**11.20** It is axiomatic of all archaeological research that absence of evidence is not equivalent to evidence of absence. That is, the lack of previously recorded archaeological information on a site is usually the result of there having been no previous detailed investigation. Particularly in the case of subsurface remains in an urban environment, the absence of indicators on the surface, or, for example, on aerial photographs, is no guide to the absence of archaeological features. Equally, apparently positive indicators can be misleading or prone to misinterpretation. Generally, the best way to determine the presence or absence of archaeological remains, and certainly to characterise it reliably, is by means of a range of techniques combined to maximise the information gain, such as (where appropriate) geophysical survey, fieldwalking and some form of intrusive intervention. In an urban setting, only the latter is feasible. Usually this will initially take the form of an evaluation of a sample of the entire Site (whether targeted as a result of information from the other sources, or randomised, or a combination), to be followed, if required, by full excavation over the part(s) of the Site where remains are shown to be present and to be under threat. In the case of the Site, given its existing occupied residential status, it is not possible to undertake these investigations prior to the decanting of the existing residents.

**11.21** In summary, the absence of evidence for archaeological remains within the Site may be the result of a lack of intrusive investigation rather than a reliable indication of the absence of such remains.

## *Methodology for Defining Effects*

### *Receptors and Receptor Sensitivity*

**11.22** Archaeological deposits and features, and the information they contain, are fragile and highly sensitive receptors and once disturbed can never be replaced. The sensitivity value (or 'heritage significance' in NPPF terms) of the archaeological resource is categorised according to the heritage significance of the asset using the criteria outlined in **paragraph 11.5** and of the Design Manual for Roads and Bridges[4] (DMRB 2007) (as revised in LA 104 *Environmental Assessment and Monitoring*, and LA 106 *Cultural Heritage Assessment*, 2020) (**Table 11.1**).

**Table 11.1 Sensitivity of Receptors**

| Value (sensitivity) | Typical descriptor | | |
|---|---|---|---|
| | Historic Landscape | Archaeological assets | Historic buildings |
| Very High | World Heritage Site<br>Historic landscapes of international value<br>Exceptionally well-preserved historic landscapes | World Heritage Site<br>Other Assets of recognised international importance<br>Heritage assets that contribute to international research objectives | World Heritage Site<br>Other buildings of recognised international importance |
| High | Landscapes with outstanding interest (designed or not) | Scheduled Monuments<br>Undesignated heritage assets demonstrably of equivalent significance to a Scheduled Monument<br>Heritage assets that contribute to national research objectives | Grade I and Grade II* Listed Buildings<br>Conservation Areas containing very important buildings |
| Medium | Designated special historic landscapes | Heritage assets that contribute to regional research objectives | Grade II Listed Buildings<br>Conservation Areas<br>Unlisted buildings of exceptional interest |
| Low | Historic landscapes of local importance | Heritage assets of local interest<br>Heritage assets whose value is compromised by poor preservation | Locally listed buildings<br>Unlisted buildings or townscapes of limited historic interest or associations |
| Negligible | Landscapes with little or no historical interest | Assets with little or no archaeological interest | Buildings of little or no architectural or historic interest |

*Magnitude of Impact*

**11.23** **Magnitude of impact** is defined in relation to the significance of the heritage asset affected. Designations of **Very high, high, medium** and **low** could apply respectively to: World Heritage Sites (Very High); Designated Heritage Assets (High); Undesignated Heritage Assets of regional significance (Medium); Undesignated Heritage Assets of local significance (Low). An additional value category of 'Unknown' might be adopted when the significance the asset has not yet been established (such as an undiscovered archaeological site). The definitions of magnitudes used in DMRB (HA208/07) are summarised in **Table 11.2**.

**11.24** It is important to note that NPPF (para 199) makes it clear that, 'When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance'.

[4] *Highways Agency, 2007, Design Manual for Roads and Bridges vol. 11 section 3 part 2 Cultural Heritage HA208/07 (revised as LA 104 Environmental Assessment and Monitoring, and LA 106 Cultural Heritage Assessment, 2020)*

**Table 11.2 Defining Magnitude of Impact**

| Magnitude of impact | Typical change descriptor | | |
|---|---|---|---|
| | Historic Landscape | Archaeological assets | Historic buildings |
| Major | Change to most or all key historic elements; extreme visual or noise effects; fundamental change in use or access; total change of historic character (Adverse).<br>Major improvement in resource quality; extensive restoration or enhancement (Beneficial). | Change to most or all key archaeological materials, or major change to setting, causing loss of heritage significance (Adverse)<br>Major improvement to resource quality, restoration, or enhancement, including improvement to setting, resulting in added heritage significance (Beneficial). | Extensive change to key historic elements leading to loss of heritage significance.<br>Major change to setting (Adverse).<br>Major improvement to key elements, restoration, enhancement or improvement to setting adding heritage significance (Beneficial). |
| Moderate | Change to many key historic elements; visual change to many elements; noticeable change to noise levels or sound quality; considerable change to use or access; moderate change to historic character (Adverse).<br>Benefit to or enhancement of key features or attributes (Beneficial). | Change to many key archaeological materials, or change to setting, causing change of heritage significance (Adverse)<br>Moderate improvement to resource quality, restoration, or enhancement, including improvement to setting, resulting in added heritage significance (Beneficial). | Change to many key historic elements leading to some loss of heritage significance.<br>Change to setting (Adverse).<br>Improvement to key elements, restoration, enhancement or improvement to setting adding heritage significance (Beneficial). |
| Minor | Change to few key historic elements; slight visual change to few elements; slight change to noise levels or sound quality; slight change to use or access; slight change to historic character (Adverse).<br>Minor benefit to or enhancement of some key features or attributes (Beneficial). | Change to few archaeological materials, or slight change to setting, causing little loss of heritage significance (Adverse)<br>Slight improvement to resource quality, including slight improvement to setting, resulting in minor added heritage significance (Beneficial). | Some change to key historic elements leading to very minor loss of heritage significance.<br>Minor change to setting (Adverse).<br>Minor improvement to key elements, restoration, enhancement or improvement to setting adding some heritage significance (Beneficial). |
| Negligible | Very minor changes to historic elements; very slight visual change; very slight change to noise levels or sound quality; very slight change to use or access; very slight change to historic character (Adverse).<br>Very minor benefit to or enhancement of features or attributes (Beneficial). | Little or no change to archaeological resource, no or very minor loss of heritage significance (Adverse).<br>Very minor benefit to one or more characteristics (Beneficial). | Changes that have no measurable heritage impact (Adverse or Beneficial). |
| No change | No changes to any historic elements; no visual change; no change to noise levels or sound quality, use or access. | No change to archaeological resource. | No change to historic fabric or setting |

### *Defining the Effect*

**11.25** The National Planning Policy Framework (NPPF)[5] (followed by the Tower Hamlets Local Plan) distinguishes between Designated Heritage Assets and non-designated assets, whilst allowing scope for a further category of 'non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments', which is generally taken to mean those that are not yet known about.

**11.26** A 'heritage asset' is defined (NPPF 2021, 67) as:

> *'A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. It includes designated heritage assets and assets identified by the local planning authority (including local listing).'*

**11.27** 'Designated heritage asset' includes (NPPF 2021, 66) any:

> *'World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.'*

**11.28** **Adverse** effects are those which **cause a loss of heritage significance.** In determining the potential heritage impact of development proposals, 'significance' of an asset is defined (NPPF 2021, 71–2) as:

> *'The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting. For World Heritage Sites, the cultural value described within each site's Statement of Outstanding Universal Value forms part of its significance.'*

**11.29** Whilst 'setting' is defined (NPPF 2021, 71) as:

> *'The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.'*

**11.30** **Beneficial** effects are those which add to the asset's heritage significance. This might be achieved by, for example, revealing more of it than was previously known, bringing it to wider public attention, restoring it to use from a derelict state, or by improving the setting with which it Is experienced. It is not normally possible to enhance the intrinsic significance of any archaeological site or deposit, but its interest (information value) can be enhanced.

**11.31** **Neutral** effects arise when there is no change to the heritage significance of any asset or its setting: usually this will only be the case when no such assets are present; or when adverse effects are precisely balanced by beneficial effects.

**11.32** The **scale** of any such effect can be classed as **Negligible, Minor, Moderate** or **Major**, primarily in terms of the significance of the asset to be affected (as set out in **Table 11.2**) but also taking into account the extent of the change.

**11.33** Potential effects of the Proposed Development can only be assessed in very broad terms without knowledge of the actual survival of any archaeological resource of the Site (if any) but will in general be adverse. The examination of historic, archaeological and cartographic sources indicates that there is potential for subsurface archaeological and historical resource to be present in the area, and that such deposits may include those with high palaeoenvironmental potential. The impact on such deposits, if present, has two components:

**11.34** The impact is wholly or partially destructive for the areas of foundations and services, depending upon design;

**11.35** Deposits in undeveloped areas may be subject to inadvertent or indirect damage from topsoil stripping, passing traffic, restoration, or the loss of legibility (the latter meaning the ability to interpret what is found).

**11.36** Ground disturbing activities which are usually considered as directly affecting deeply buried archaeological deposits include (in decreasing order of destructiveness): excavations for basements and removal of existing basements (the latter is not applicable to the Site); terracing of sloping land; excavation of spoil for remediation works; pile probing; excavations for lift pits and crane bases; piling; driven piles which may introduce air to previously anaerobic deposits with organic preservation; ground consolidation; excavations for pile cap positions; trenches for strip foundations; ground beams and services; topsoil stripping for road formation and car parking; tree planting and landscaping.

**11.37** The Impacts from any of these activities are long-term and adverse, unless balanced by mitigation.

### *Effect Scale*

**11.38** The scale of the potential effect is determined by comparing the significance value (sensitivity) of the baseline heritage asset with the magnitude of impact arising from the Proposed Development, without mitigation. The potential effects can be adverse or beneficial. The matrix for assessing this scale of effect is presented in **Table 11.3**:

[5] *NPPF, 2021, National Planning Policy Framework (revised), Ministry of Housing, Communities and Local Government, London*

**Table 11.3 Effect Matrix**

| Value (sensitivity) of receptor | Magnitude of change | | | | |
|---|---|---|---|---|---|
| | Major | Moderate | Minor | Negligible | No change |
| Very High | Major | Major | Moderate or Major | Minor | Negligible |
| High | Major | Moderate or Major | Minor or Moderate | Minor | Negligible |
| Medium | Moderate or Major | Moderate | Minor | Negligible or Minor | Negligible |
| Low | Minor or Moderate | Minor | Negligible or Minor | Negligible | Negligible |
| Negligible | Negligible or Minor | Negligible or Minor | Negligible | Negligible | Negligible |

**11.39** **'Local'** effects are those affecting the Site and immediately neighbouring receptors only, while effects upon receptors within LBTH boundary beyond the vicinity of the Site and its neighbours are at a **'district'** level. Effects affecting London are at a **'regional'** level, whilst those which affect different parts of the country, or England, are considered being at a **'national'** level. International effects would only usually be assessed in relation to a World Heritage Site.

**11.40** 'Duration' of effects that last for the duration of the demolition and construction works are classed as 'temporary', which can be short-term in the case of short durations of the works or medium term when the works are expected to last several years (as here): but in the case of archaeological remains there can be no temporary effects. Effects that result from the completed and operational phases of the Proposed Development are classed as 'permanent' or 'long-term' effects. All effects on archaeological remains are expected to be long-term.

**11.41** All anticipated effects of the Proposed Development on archaeological remains would be direct (i.e. resulting without any intervening factors).

### *Categorising Likely Significant Effects*

**11.42** Effects that are identified as being moderate or major (whether adverse or beneficial) are classified as significant effects. The NPPF distinguishes between three levels of adverse effect on a heritage asset's heritage significance: 'total loss'; 'substantial harm'; or 'less than substantial harm'. In the case of designated heritage assets, all three are considered significant; in the case of undesignated (or as yet unknown) heritage assets, 'a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset' (NPPF 2021 para 203). Beneficial effects are only generally classified in line with the significance of the asset.

## BASELINE CONDITIONS

**11.43** A detailed description of the baseline conditions is presented in the Desk Based Assessment (DBA) (**ES Volume 3, Appendix Archaeology – Annex 1** and summarised here.

**11.44** Greater London Historic Environment Record (GLHER) entries within close proximity of the Site are summarised in **Table 11.4** and their locations are shown in **Figure 11.1**. None of the entries lie within the Site although locations 1, 41, 48 and 54 are within the wider previously consented development. Of those, only location 1 refers to archaeological remains, the others denote investigations which revealed no archaeological finds or sites. None of these entries can be classed as a potential receptor in relation to the Proposed Development, but they might suggest the broad range of the sort of receptors that could potentially be present.

**11.45** The Site lies within the Lea Valley Tier 3 Archaeological Priority Area, which has potential for prehistoric sites, while in later periods the area saw the establishment of numerous industries which required water for power or used the river as a method of transport. The wetland environment may also have high potential for palaeoenvironmental reconstruction and organic survival, though deeply buried.

**11.46** Archaeological investigations within what was then called the Aberfeldy Estate, to the south and south-east of the Site (Phases 1-3 of the 2012 OPP) revealed nothing of archaeological interest in the Phase 1 and 2 areas but did reveal some evidence for prehistoric occupation (**Table 11.4**: 1; **Figure 11.1**: 1) and data that can contribute to reconstructing the prehistoric environment within the Phase 3 area (between East India Dock Road and Blair Street) (**Table 11.4** and **Figure 11.1**: 41, 48, 54). This took the form of a single pit with some very degraded prehistoric pottery, sealed below what appeared to be a peat horizon, in turn below alluvial deposits. Parts of the Site may have lain within a former river channel. More significant prehistoric evidence in the form of an early Neolithic burial, came from 600m to the south at Yabsley Street.

**11.47** There is no record of any Iron Age or Saxon activity nearby and Roman evidence is very scant. Medieval occupation is well attested from documentary sources, but there has been little from this period recorded archaeologically.

**11.48** Archaeological investigations in the general area routinely reveal evidence from the post-medieval period, in this instance often relating to the control of water channels and drainage, but also for locally important industrial enterprises, including ship-building.

**11.49** Cartographic evidence shows details of the multiple phases of development and redevelopment within the Site from the late 19th century onwards. The cartographic review suggests that the area in general will have been substantially built up to raise it above the floodplain of the river. Geoarchaeological assessment and previous archaeological investigation have shown that this involved up to 2m of made ground, above deep alluvium, and indeed the Site may have emerged out of the river channel itself after deposition of a series of alluvial and peat layers.

**11.50** Thus although no archaeological features are known within the Site itself, there is prehistoric evidence from earlier phases of the 2012 OPP and so the Site is considered to hold potential specifically for the prehistoric period (both for human settlement and for palaeo-environmental reconstruction) and perhaps for post-medieval industry. The size of the area also increases the probability of archaeological remains being present simply by chance.

**Figure 11.1 GLHER Entries Within Close Proximity of The Site**

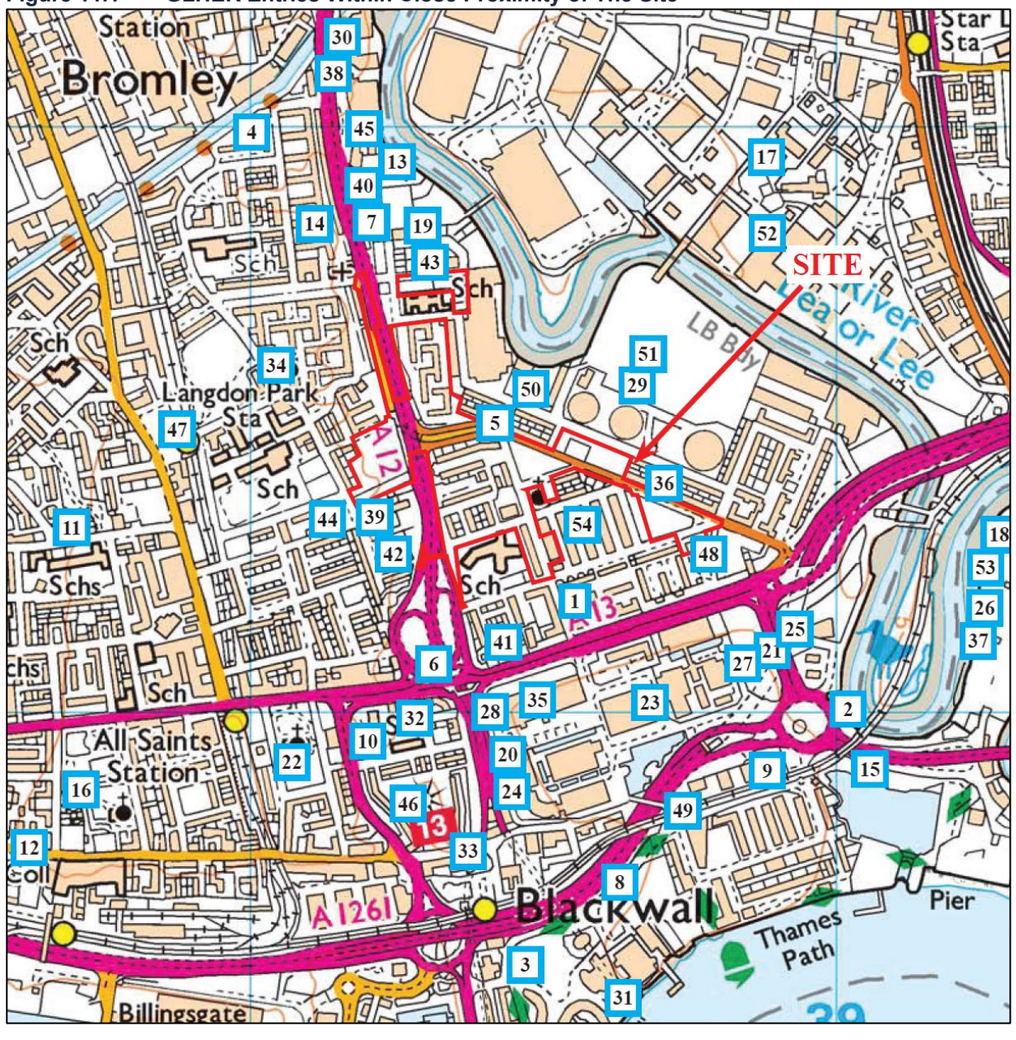


**Table 11.4 Summary of GLHER Entries Around the Site.**

| No | HER Ref | Grid Ref (TQ) | Period | Comment |
|---|---|---|---|---|
| 1 | ELO18795 | 3855 8119 | Prehistoric | In 2017 four trenches were excavated in the Aberfeldy Estate, revealing one pit containing flint and pottery. |
| 2 | MLO2541<br>MLO25630<br>FLO6267 | 39 81 | Bronze Age | A Late Bronze Age sword of Wilburton type was found at Bow Creek. Unstratified artefact near Leamouth Road consisting of a Bronze Age socketed axehead made of copper alloy. |
| 3 | DLO37840 | 3849 8057 | Neolithic<br>Bronze Age<br>Medieval<br>Post-medieval<br>Modern | Yabsley Street, Early Neolithic burial (radiocarbon dated to 4220-3979BC). Peat deposits showing evidence for arable farming during the Neolithic suggesting a settlement may have existed nearby. Sea levels rising caused intertidal activity in the form of timber trackways (Neolithic/Bronze Age). Archaeological Priority Area: Blackwall is named in the 14th century along with tidal mills until the 16th century. Important for ship building and the area preserves remains of Blackwall's significant industrial and commercial power from the middle ages until the 19th century. |
| 4 | DLO37857 | 3792 8280 | Prehistoric<br>Medieval<br>Post-medieval<br>Modern | Archaeological Priority Area: Lea Valley. The area has been extensively excavated showing deeply buried islands, gravel terraces, channels and wetlands exploited since early prehistory. |
| 5 | ELO2630<br>MLO744 | 3841 8148 | Prehistoric<br>Post-medieval | An evaluation in 2000 discovered a sequence of alluvial deposits associated with the River Lea floodplain and a palaeochannel. Peat deposits containing burnt flint and sealing a few cut features were possibly mid-late Bronze Age. Two post-medieval channels or ditches presumably for drainage. A gully and a shallow feature were cut into a possible buried land surface with burnt flint. |
| 6 | ELO3739<br>MLO6392<br>FLO15513<br>FLO15514 | 3833 8107<br>3830 8120 | Prehistoric<br>Post-medieval | Excavations in 1993 around Abbey Mills. At Culloden Street unstratified finds of fire cracked flint and a single pot sherd. At 13 St Leonards Road, three shafts were dug and a 19th century cellar was identified. At No. 12 Culloden Street, prehistoric potsherds and flint were found. |
| 7 | ELO10470<br>MLO101087<br>FLO15603 | 38190 81852 | Roman | Excavation on Gillender Street found a 1st century Roman ditch cutting alluvium, this included 18 sherds of Grey Ware pottery. |
| 8 | MLO3851<br>FLO1102 | 386 807 | Roman | A Roman miniature oenochoe (wine vessel) was found. |
| 9 | MLO3893 | 389 809 | Roman | Roman watchtower, one of a series. |
| 10 | ELO8767<br>MLO100465<br>MLO100466<br>FLO13235<br>MLO3931 | 38189 80961<br>381 809<br>382 810 | Medieval<br>Post-medieval<br>Victorian | In 2008 geotechnical pits were dug at St Matthias Centre, showing the foundation walls and basement of a potential house also walls where it is believed a Chapel was located along with a medieval pit below the foundations. Finds included Post-medieval pottery. The village of Poplar was so named by at least 1327 and expanded with the shipping industry. |
| 11 | MLO9170 | 377 813 | Medieval<br>Post-medieval | Road from Poplar High Street to Bromley. |
| 12 | MLO1125 | 3719 8082 | Medieval<br>Post-medieval | Limehouse Causeway, Narrow Street to Poplar High Street road. |
| 13 | DLO28414<br>ELO20319<br>ELO20318<br>ELO20232<br>ELO7890<br>MLO93430<br>ELO7890<br>MLO93430<br>MLO3738 | 3817 8190<br>38173 81908<br>3816 8192 | Medieval<br>Post-medieval<br>Victorian<br>Modern | Timbers associated with Bromley Hall have been dated from 1482-95 to the late 17th or early 18th century. Bromley Hall is Grade II* listed including the walls, house and tower house. A building survey concluded the existence of a medieval gatehouse (c. 1482-95), evidence and details about the previous towered house (3 stories) and its remodelling after 1700. Use after this period is documented up until damage in WW2 and reconstruction in 1951. A post-medieval gate lodge on Brunswick Road |
| 14 | MLO9164 | 3815 8185 | Medieval | St Leonard Street from Bromley to Blackwall along the west side of Lea. |
| | | | Post-medieval | |
| 15 | DLO37841 | 3906 8091 | Medieval<br>Post-medieval<br>Modern | Archaeological Priority Area. The Limmo occupies the west bank of the mouth of the River Lea and its confluence with the Thames which has great potential for the area's historic industry. |
| 16 | DLO37839 | 3771 8085 | Medieval<br>Post-medieval<br>Modern | Archaeological Priority Area. The historic settlement of Poplar with Medieval origins, includes buildings, burial grounds, settlements and flood defences associated with the seafaring industry. Survival of ironworks is fair. |
| 17 | ELO19643 | 3891 8196 | Post-medieval<br>Modern | Fieldwork in 2006 on the Olympic and Paralympic Park Undergrounding Shafts East-1 and West-1. In the west alluvial clays and a peat band was observed underlying dark modern debris layers. East showed alluvial gravels underlying modern demolition and levelling. |
| 18 | ELO18549 | 3930 8131 | Post-medieval | Thames Plate Glass Company excavation in 2007. found the full extent of the casting hall and adjacent kilns including details of construction and surviving foundations and walls. |
| 19 | MLO3029 | 3830 8180 | Post-medieval | A post-medieval fishpond underlying later gas tanks. |
| 20 | DLO28095<br>MLO93111<br>DLO28425<br>MLO93441 | 38421 80914<br>38616 80811<br>3880 26/877 | Post-medieval<br>Victorian | Early 19th century dock and boundary wall to the East India Docks including a gateway |
| 21 | DLO28468<br>MLO93484 | 38899 81122 | Post-medieval<br>Victorian | East India Dock Pumping Station mid 19th century |
| 22 | MLO104373<br>MLO93108<br>MLO104374<br>MLO93502<br>DLO28423<br>MLO93439 | 3807 8093<br>38076 80937 | Post-medieval<br>Victorian | All Saints' Church on East India Dock Road with 19th century railings, gate piers and churchyard, cemetery, Garden of Rest and Park along with the Newby Place All Saints' Rectory. |
| 23 | MLO7284 | 3870 8100 | Post-medieval<br>Victorian | Landfill site from the Eastern Dock. |
| 24 | DLO27730<br>MLO92759 | 38431 80854<br>3880 26/888 | Post-medieval<br>Victorian | Embankment wall, railings and steps on Naval Row associated with the East India Docks. |
| 25 | DLO28347<br>MLO93363 | 38908 81144 | Post-medieval<br>Victorian | Gate pier and wall called Blackwall Goods Yard II, was an original entrance to the East India Company's Cos Pepper group of Warehouses. |
| 26 | ELO18131 | 3926 8115 | Post-medieval<br>Victorian | The Thames Plate Glass Company 12 evaluation trenches dug in 2007, with further stripping of 5 trenches where remains were found. |
| 27 | ELO19609 | 3885 8110 | Post-medieval<br>Victorian | East India Dock: evaluation in 2006 discovered the dock wall and areas of built up ground. Modern concrete yard and with modern dumps. |
| 28 | DLO28093<br>MLO93109 | 38399 81000<br>3881 19/685 | Post-medieval<br>Victorian<br>Modern | A plaque on the modern dock wall |
| 29 | ELO20230 | 3870 8157 | Post-medieval<br>Modern | Gasholder Station on Leven Road surveyed in 2015 in advance of demolition. |
| 30 | ELO19817 | 3818 8213 | Post-medieval<br>Victorian<br>Modern | Fieldwork in 2019 on Barratt Industrial Estate with five trenches and four test pits finding masonry and brick structures |
| 31 | DLO33367<br>MLO7485 | 3871 8010 | Victorian<br>Modern | The Blackwall Tunnel built between 1892 and 1897. This included a north and south gatehouse, one of which survives today (south). A second tunnel was built in 1937. |
| 32 | ELO2693<br>MLO7151<br>084132/00/00 | 3828 8100 | Victorian | In 1997 trenches on the north side of Ashton Street found two 19th century walls. |

| No | HER Ref | Grid Ref (TQ) | Period | Comment |
|---|---|---|---|---|
| 33 | DLO27667<br>MLO92696 | 38394 80782 | Victorian | Blackwall Tunnel northern portal and parapet. |
| 34 | DLO27644<br>MLO92673<br>DLO28499<br>MLO93515 | 38066 81583<br>3881 19/701<br>38079 81534<br>3881 19/700 | Victorian<br>Modern | St Michael's Church, includes south tower and a short spire. A war memorial also listed. |
| 35 | DLO38147<br>MLO107687 | 3850 8102 | Victorian<br>Modern | East India Dock House former Financial Times Print Works Grade II* Listed. |
| 36 | ELO3868<br>MLO749 | 3872 8138 | Victorian<br>Modern | In 2000 a channel was recorded cutting natural gravel and sandy layers were succeeded by peaty deposits. Above these were 19th century dumped deposits. |
| 37 | ELO4234<br>MLO67565<br>ELO7575<br>MLO98915 | 3925 8105<br>39312 81089 | Victorian<br>Modern | Watching Brief at Orchard Place where alluvial deposits were overlain by backyards and walls dating to the Victorian period and later. Building recording on Orchard Place, before demolition of warehouses. |
| 38 | DLO27646<br>MLO92675 | 38165 82087 | Victorian<br>Modern | Early/Mid 19th century brick warehouse at Dowgate Wharf, P.B. Burgoyne and Company Limited Warehouse |
| 39 | DLO28234<br>MLO93250 | 38228 81343 | Modern | Concrete framed building called Carradale House. |
| 40 | DLO28070<br>MLO93086<br>ELO1031<br>ELO1034<br>MLO75402 | 38192 81869<br>3881 19/683<br>38212 81872 | Modern | Poplar Public Library and two Second World War civil defence structures at the rear of Poplar Library. Two excavations in 2001 to expose features and access the interiors. |
| 41 | ELO10939<br>MLO741<br>FLO19744 | 3847 8112 | Modern | Only remains found were 19th/20th century made ground/dumps and a sequence of alluvial layers including peat. |
| 42 | MLO93337 | 38266 81277 | Modern | Balfron Tower on St Leonard's Road is a concrete framed Grade II* listed building (flats). |
| 43 | MLO102830 | 38309 81697 | Modern | Former Bromley Hall School for the Physically Handicapped. |
| 44 | DLO37943<br>MLO107594 | 3813 8133 | Modern | Concrete framed building on Burcham Street, Glenkerry House on Brownfield Estate, Grade II*. |
| 45 | DLO35262<br>MLO93430 | 38186 81966 | Modern | Former Fire Station on Gillender Street. |
| 46 | MLO107824 | 3827 8083 | Modern | Tower block on Woolmore Street/Robin Hood Lane/Poplar High Street/Cotton Street, c. 1970s. |
| 47 | ELO7559 | 37888 81475 | Undated | Undertaken at Langdon Park DLR Station for new platform construction, no archaeology found. |
| 48 | ELO13384 | 38816 81271 | Undated | Aberfeldy Estate 3 trenches excavated in 2012, with no archaeological remains but deep alluvial deposits. |
| 49 | ELO10385 | 3876 8084 | Undated | In 2009 a geoarchaeological investigated was undertaken at the DLR East India Station totalling 2 boreholes. Only truncation noted. |
| 50 | ELO17461 | 38503 81554 | Undated | In 2015 a geoarchaeological survey was carried out made up of 18 boreholes showing inorganic alluvial deposits with 2 boreholes capturing peat. |
| 51 | ELO19826 | 3870 8157 | Undated | Around Leven Road 40 boreholes were put down in 2019. These were used to produce an up-to-date detailed geoarchaeological deposit model. Pleistocene deposits were discovered with overlying Holocene deposits, the later consisted of alluvial deposits with infrequent peats, the alluvial deposits were truncated in certain areas by made ground. |
| 52 | ELO2760 | 3890 8181 | Undated | A total of 26 test pits with no archaeology found. The area was contaminated and highly truncated. |
| 53 | ELO10128 | 394 813 | Undated | Canning Town Station evaluation in 1991. Included well preserved organic deposits and well stratified alluvium deposits. |
| 54 | ELO2642<br>MLO6432 | 3857 8130 | Undated | Watching brief at Ada Gardens in 1993 found alluvial deposits with peat layers. |

## RECEPTORS AND RECEPTOR SENSITIVITY

### *Existing*

**11.51** The Site is not within a World Heritage Site nor the Buffer Zone for one. There are no Scheduled Ancient Monuments, Historic Parks or Gardens, Historic Battlefields or Historic Hedgerows or Listed Buildings on the Site or in the immediate vicinity. The Site is not within a Conservation Area, with the nearest being the Balfron Tower Conservation Area, located approximately 15m west of the Site (on the opposite side of the A12). Consideration of the potential for effects of the Proposed Development on Designated Built Heritage Assets is provided within ES Volume 3. There are no known archaeological receptors of Very High or High Sensitivity to consider, however the Site lies within the Lea Valley Archaeological Priority Area (Tier 3 APA 3.2), in accordance with Historic England's guidance on Greater London Archaeological Priority Areas[6] this suggests a development of this size is at High risk of affecting archaeological remains.

**11.52** There are no known heritage assets within the Site but the archaeological investigations undertaken in the Phase 3 area of the 2012 OPP larger Site (including previously consented areas designated Phases 1, 2 and 3) did contain possible prehistoric features (ill-defined) and deposits with potential for palaeo-environmental investigation. These would be considered receptors of Low Sensitivity but any similar deposits might potentially rise to Medium Sensitivity if found to be more extensive.

**11.53** The potential for the Site to hold hitherto unrecognised heritage assets (buried archaeological remains), is currently unknown. The Site's location within an Archaeological Priority Area and the close proximity of prehistoric features suggest that in general terms this potential should be regarded as high and the large area of the Site would also lead to an assessment of a high potential overall. Any such remains that did exist could be expected to range from Low to High sensitivity. It would be very unexpected if there were any receptors of Very High sensitivity, though this possibility cannot be entirely excluded.

**11.54** Archaeological remains (primarily of only local significance) are recorded in the immediate environs and within the surrounding area (see **ES Volume 2, Townscape, Visual Impact and Heritage Assessment: Part 2 – Buried Heritage Assessment**) but these are not liable to be affected by the Proposed Development. Broadly speaking, known archaeological remains in the immediate vicinity of the Site are of Low significance but it cannot be assumed that this must necessarily apply within the Site as well, especially given its large extent, and at least one nearby site (early Neolithic burial at Yabsley Street) was of regional importance (Medium sensitivity).

**11.55** Although no archaeological remains have been found in the previous evaluation trenching to the south of the Site it cannot be confirmed there is low potential for below ground archaeology across the Site. The required piling is likely to cause the most impact on any archaeology below ground and as previously mentioned, this is a large site which is within a Tier 3 Archaeological Priority Area which means the Proposed Development presents High risk of affecting archaeological remains. This is due to the size of the Site, its location on River Terrace gravels between the River Thames and River Lea and the Very High to High Sensitivity level of potential archaeological receptors.

### *Introduced*

**11.56** No new receptors (archaeological deposits or remains) can be introduced to the Site as part of the Proposed Development, although pre-construction fieldwork might reveal the presence of hitherto undetected remains.

[6] *historicengland.org.uk/services-skills/our-planning-services/greater-london-archaeology-advisory-service/greater-london-archaeological-priority-areas/*

## POTENTIAL EFFECTS

### *Demolition and Construction*

**11.57** The potential ground disturbing activities of the demolition and construction works which are usually considered as possibly directly affecting deeply buried archaeological deposits include (in decreasing order of destructiveness): excavations for basements; terracing of sloping land; excavation of spoil for remediation works; pile probing; excavations for lift pits and crane bases; piling; driven piles which may introduce air to previously anaerobic deposits with organic preservation; ground consolidation; excavations for pile cap positions; trenches for strip foundations; ground beams and services; topsoil stripping for road formation and car parking; tree planting and landscaping.

**11.58** There are no potential effects on any known archaeological heritage assets, as there are none recorded within the Site. All potential effects apply only to previously unrecorded archaeological remains, which may or may not be present. All of the above would carry adverse effects on any archaeological deposits encountered. When consulting **Table 11.2** and **Table 11.3** the above works have the potential to result in a minor to major impact to the potential archaeological assets.

**11.59** The Proposed Development comprises one basement below Building Plot B3 within the Outline Proposals. Albeit limited, this basement construction would inevitably mean total destruction to the basement level.

**11.60** As set out in **ES Volume 1, Chapter 5: Demolition and Construction**, new piled foundations will be required to support the construction of the new buildings. At this stage, the design of the piles is subject to further site investigations, but for Phase A (the Detailed Proposals) it is currently expected that piles will be Continuous Flight Auger (CFA), 600mm diameter and up to 20m deep. Piling for Phases B to D (the Outline Proposals) remain subject to future design development. Specific guidance on the archaeological effects of piling is provided by Historic England[7].

**11.61** The level at which any archaeological remains would be preserved is above the Kempton Park natural gravels (see details below), the suggested piling depths go far below this level therefore all piling has the potential to affect any below ground archaeology. On that basis along with no dewatering activities occurring along with only one addition of a basement, the potential impact on any archaeological remains below ground is minor to major, if archaeological deposits are present. The site does lie in the Lea Valley Archaeological Priority Area (Tier 3 APA 3.2) which does have evidence of prehistoric human activity nearby, this suggests these Terrace gravels have a High potential of producing prehistoric remains. Any prehistoric remains in these deeper deposits that may exist could also be impacted at a minor to moderate level.

**11.62** A detailed geoarchaeological assessment and deposit model is being prepared and an updated Desk-Based Assessment can be provided. There has been a small number of boreholes and trial pits excavated within the redline area of the Site and a high concentration of boreholes, trial pits, window samples and three archaeological investigations completed just south of the redline area. In summary the results show that the Kempton Park gravel is reached consistently at an average of 2.5-3.5m depth. This can vary, in some areas the gravels are not reached until 5.5m. Above the gravel there is either a thick layer of alluvium which in areas includes some peat deposits and then most often made ground which ranged from 0.5m to 2m in depth, sometimes fully removing the alluvial unit before the gravels. To the south of the Site basements were demolished which have fully truncated the gravels and completely removed the alluvial unit between. It is not advisable to extrapolate too widely beyond this necessarily localised information, and it would be prudent to establish the depth of made ground over a larger portion the Site as a whole.

**11.63** Taking a worse-case approach and assuming that the archaeologically relevant level did survive higher than the formation depth of the Proposed Development, and archaeological remains were in fact present, the effects would be major adverse effect in the case of 'non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments' (i.e. national or international importance) and decreasing in magnitude as the significance of the archaeological remains diminishes, so the impact on that remains of purely local interest would be Minor Adverse. If no remains are found, then the impact is Negligible.

#### *Phasing*

**11.64** The adverse impacts considered in this assessment all arise during demolition and construction phases. Appropriate mitigation measures adopted for these phases will remove any potential impacts in the completed development phase. Any beneficial effects arising would endure long after the completion of the Proposed Development.

**Table 11.5 Summary of Effects**

| Topic Area | Description of impact | Impact | Nature | Scale |
|---|---|---|---|---|
| Designated archaeological assets | Damage or destruction or change to setting | None | None | None |
| Undesignated archaeological assets | Damage or destruction of archaeological deposits | None | None | None |
| Potential archaeological remains not yet discovered | Damage or destruction of archaeological deposits | Not yet established | Lt | Negligible to major adverse |
| Potential archaeological remains not yet discovered | Damage or change to setting | Not yet established | Lt | Negligible to major adverse |

**Key:**
St - Short term
Lt - Long term

## MITIGATION, MONITORING AND RESIDUAL EFFECTS

### *Demolition and Construction Mitigation*

**11.65** All potential demolition and construction effects in terms of their scale and nature will remain as discussed above under 'Potential Effects', with the exception of the following effects which have been identified to require mitigation:

- **Adverse** effect from demolition and construction on hitherto undiscovered archaeological remains: scale of effect dependent on extent and significance of remains; this can be predicted as likely to be **Minor to Moderate** but is not yet established and could (in a worst case scenario) be **Major** or (in the opposite case) **Negligible**.

**11.66** The precise nature of mitigation measures cannot be proposed without an understanding of the actual (as opposed to potential) archaeological resource on the Site, if any. A methodology for evaluation to achieve this understanding would be agreed in advance with Historic England's Greater London Archaeological Advisory Service (GLAAS), advising the Borough. Any fieldwork required would be carried out according to a written Scheme of Investigation, approved by GLAAS and compliant with the relevant 'Standards and Guidance' issued by the Chartered Institute for Archaeologists. Such fieldwork should also be monitored by GLAAS.

**11.67** Any such mitigation measures required after the provision of further information could be secured through an appropriately worded planning condition. Measures to be adopted would be agreed in advance with Historic England's Greater London Archaeological Advisory Service (GLAAS), advising the Borough. Any fieldwork required would be carried out according to a written Scheme of Investigation, approved by GLAAS and compliant with the relevant 'Standards and Guidance' issued by the Chartered Institute for Archaeologists. Such fieldwork should also be monitored by GLAAS. It would involve recording of the threatened archaeological resource to the highest professional standards and creation of a publicly accessible archive, and appropriate dissemination of significant results.

**11.68** After any such mitigation, it is considered that the mitigation itself provides a public benefit (in terms of archaeological information gain, which will be available in publicly accessible archives, and where appropriate public engagement) proportionate to the adverse effects of the loss of significance and thus realises a net neutral long-term residual effect.

### *Residual Effects*

**11.69** All of the residual effects resulting from the Proposed Development, are presented in **Table 11.6**, identifying whether the effect is significant or not.

[7] *HE, 2019, Piling and Archaeology: Guidance and Good Practice, Historic England, London*

**Table 11.6 Residual Effects**

| Receptor | Description of the Residual Effect | Scale and Nature | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | |
| As yet undetected archaeological assets | Damage or destruction of archaeological deposits | TBD | Not significant | TBD | D | P | Lt |

**Notes:**
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed
TBD = To be determined

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline Scenario*

**11.70** If the Proposed Development were not to be implemented, and assuming that all Cumulative Schemes that are built in the surrounding environment are in turn subject to archaeological mitigation measures appropriate to them, and that the surrounding environment, including the Site, has naturally evolved, no measurable change in the archaeological resource of the Site itself is likely.

### *Cumulative Effects Assessment*

**11.71** There are no anticipated direct or indirect adverse effects from the Proposed Development on the archaeological resource of any of the cumulative schemes identified in **ES Volume 1, Chapter 2: EIA Methodology**, nor should any of these schemes have any direct effect on the archaeological resource within the current Site, nor on the wider area, assuming appropriate mitigation is adopted for them. If significant archaeological remains are recorded during any of those schemes, this may have a moderate indirect beneficial effect on any archaeological resource that might be found within this Site, in the sense of allowing it to be interpreted and understood within a better overall context. However, it would have no effect on the archaeological resource itself. This applies during all phases and to all parts of the Proposed Development.

## LIKELY SIGNIFICANT EFFECTS

**11.72** Once any appropriate mitigation measures are adopted, there are no predicted significant effects from the Proposed Development within the Site.

## MITIGATION AND MONITORING

| Paragraph Reference | Mitigation and Monitoring Measure |
|---|---|
| 11.58 | Fieldwork to provide information on the presence/absence, extent, condition, character, quality and date of any archaeological deposits within the Site. To be carried out in accordance with the relevant Standards and Guidance issued by the Chartered Institute for Archaeologists and to a written scheme of investigation agreed in advance by the archaeological adviser to the local planning authority (Historic England's Greater London Archaeological Advisory Service); and to be monitored by GLAAS. |
| 11.59 | On the basis of the above, further fieldwork may be required to excavate and record any archaeological deposits within the Site, to create a publicly accessible archive, and to publish any significant results. To be carried out in accordance with the relevant Standards and Guidance issued by the Chartered Institute for Archaeologists and to a written scheme of investigation agreed in advance by GLAAS; and to be monitored by GLAAS. |

# Chapter 12: Water Resources, Drainage and Flood Risk

| Water Resources & Flood Risk | |
|---|---|
| **AUTHOR** | Meinhardt |
| **SUPPORTING APPENDIX** | **ES Chapter 12: Appendix: Water Resources, Flood Risk and Drainage**<br>**Annex 1**: Flood Risk Assessment;<br>**Annex 2:** Drainage Strategy;<br>**Annex 3:** Thames Water – Potable Water Supply Correspondence<br>**Annex 4:** SuDS Proforma |
| **KEY CONSIDERATIONS** | This ES chapter considers the impact the Proposed Development will have on Water Resources in terms of impact on portable, foul and surface water infrastructure and water quality impacts on the local drainage network. This ES chapter also considers flood risk associated with the Proposed Development and the Site being located within a Critical Drainage Area.<br>Key considerations include potential effects associated with demolition and construction works including:<br>• Localised changes in surface water flow regime during rainfall events;<br>• Deterioration of the quality of surface water run-off from the Site which may deteriorate the quality of downstream combined sewer system and groundwater through infiltration;<br>• Accidental leaks and spillages of hazardous material which could adversely affect the quality of groundwater through infiltration;<br>• Flood risk to construction workers and plant.<br>Key considerations associated within the Proposed Development once it is completed and occupied include:<br>• Increased potable water demand and foul water generation from Site;<br>• Change of surface water flow regime across the Site;<br>• Change to the quality of surface water run-off; and<br>• The Proposed Development's vulnerability to flood risk.<br>Both a Flood Risk Assessment and Drainage Strategy have been prepared in consultation with the Lead Local Flood Authority (LLFA) who in this case is London Borough of Tower Hamlets and the Environment Agency. Where relevant to the ES this chapter makes reference to each assessment. |
| **CONSULTATION** | A request for an EIA Scoping Opinion was submitted on 16th August 2021 (**ES Volume 3, Appendix EIA Methodology – Annex 1**. The EIA Scoping Opinion was received on 8th September (**ES Volume 3, Appendix EIA Methodology – Annex 2)**. The EIA Scoping Opinion requested Water Resources, Flood Risk and Drainage be scoped into the EIA and considered within an ES chapter. This addresses the comments in the scoping opinion including:<br>• The Flood Risk Assessment and Drainage Strategy form part of the assessment, and mitigation measures are clearly defined in this ES Chapter.<br>• LBTH's SuDS Proforma must be submitted as part of the application. This is included in **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 4**.<br>• The site discharge at greenfield runoff rates in compliance with the London Plan as well as considering the sites location in a Critical Drainage Area (CDA). This is further detailed in **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 2.**<br>• The ES chapter considers contaminated land assessments, as indicated when defining the baseline<br>• Water Supply and Wastewater capacity are addressed in the ES Chapter, following consultation with Thames Water. Details are provided in **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annexes 2 and 3**.<br>• Reference is made to the Integrated Water Management Plan (IWMP) in relation to the drainage strategy and water supply elements within this ES chapter.<br>• Latest climate change allowances are considered as part of the FRA, this has been considered and further detailed in **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 1**.<br>• Dewatering has not been considered, as detailed in **paragraph 12.14**, as its not envisaged based on groundwater levels that this will be required as part of the Sites redevelopment.<br>As part of the Flood Risk Assessment, consultation has taken place with the EA to obtain relevant flood risk information to inform mitigation measures, details which have been provided within **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 1.**<br>As part of the Drainage Strategy, consultation has taken place with LLFA to obtain relevant information on policy requirements. Surface and foul discharge rates have been agreed through consultation with Thames Water on as noted in the Drainage Strategy, which is included in **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 2.** |

## ASSESSMENT METHODOLOGY

### *Defining the Baseline*

**12.1** The baseline conditions have been defined by considering the following key elements:

- A Site visit (July 2021);
- A desk study to establish Site and surrounding geology, history and existing water regime (surface and groundwater);
- Phase 1 Preliminary Geo-Environmental and Geotechnical Risk Assessment;
- Site-specific Flood Risk Assessment (**ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 1**); and
- A Site-Specific Drainage Strategy – Surface water drainage and foul drainage (**ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 2**).
- Consultation with the relevant authorities (i.e. through pre-development enquiries with the Environment Agency (EA), London Borough of Tower Hamlets as the LLFA and Thames Water (TW).

**12.2** The baseline considered is the existing condition, which has been informed by the baseline assessments undertaken as part of the Flood Risk Assessment (**ES Volume 3, Water Resources, Flood Risk and Drainage – Annex 1**) and Drainage Strategy (**ES Volume 3, Water Resources, Flood Risk and Drainage – Annex 2**).

**12.3** The assessment approach adopts the conceptual 'source-pathway-receptor' model. The model identifies potential impacts resulting from the proposed activities on the environment and sensitive receptors within it. This process provides an easy-to-follow assessment route between impact sources and potentially sensitive receptors ensuring a transparent impact assessment. The parameters of this model are defined as follows:

- Source – the origin of a potential impact;
- Pathway – the means by which the effect of the activity could impact a receptor; and
- Receptor – the element of the receiving environment that is impacted.

**12.4** In general, the impact assessment section for this ES chapter uses this source-pathway-receptor principle when considering the potential impacts arising during the construction, operation.

*Evolution of the Baseline*

**12.5** The likely evolution of the baseline condition is based on professional judgement and includes a qualitative assessment of the baseline conditions in the future should the Proposed Development not come forward, but other developments around it (included within the Cumulative Effects Assessment) are delivered. Whilst it is reasonable to assume that the baseline situation will evolve in the future, this assessment assumes that the existing uses will remain on-Site. However, it is acknowledged that they would also be subject to climate change in the long-term. The future baseline assessment is discussed further in **paragraph 12.116**. The intensity of precipitation falling on the Site (and elsewhere) could increase due to climate change, which will have an impact on drainage systems in the future, as well as Sea Level rise which could impact on fluvial as well as tidal water levels, though this impact in part will be mitigated by London's flood defence systems (Thames barrier and defence walls)

**12.6** With climate change (UKCP18) projections, there is increasing evidence to show that the supply and demand of potable water is likely to worsen within London as a result of climate change, this is further re-iterated as part of the Future Flows and Groundwater Levels work undertaken by UK Centre for Ecology & Hydrology (CEH) in partnership with the EA[1] and others. However, as with most climate change predictions there is significant amounts of variance depending on future government guidance.

[1] UK Centre of Ecology and Hydrology - Future Flows and Groundwater Levels – SC090016 (October 2012)

### *Impact Assessment Methodology*

*Demolition and Construction*

**12.7** Following the determination of the baseline conditions and sensitive receptors, the methodology for identifying the potential water resources related effects, as a result of the demolition and construction of the Proposed Development, has been implemented based on the following stages:

- Preparation of a conceptual site model, identifying feasible pollution sources and pathways during the demolition and construction works;
- Determination of the magnitude of change of the potential impacts of the Proposed Development on the sensitive receptors;
- Evaluation of the significance of the effects, relative to the receptor sensitivity;
- Identification of suitable and appropriate mitigation measures (over and above standard best practice mitigation measures already considered) for the demolition and construction phase of the Proposed Development; and
- Assessment of the significance of any residual effects.

**12.8** Following this assessment, the following effects will be considered with regards to the following:

- Effects on flood risk on and off-Site as a consequence of the Proposed Development with reference to:
- Construction Workers;
- Residents / Users of surrounding area;
- New Residents given the phased nature of the Proposed Development;
- Effects on foul public drainage network with reference to water quantity (capacity);
- Effects on combined public drainage network with reference to water quality:
- Effects on Groundwater Quality; and
- Effects on potable water demand/water supply.

*Phasing*

**12.9** As outlined in **ES Volume 1, Chapter 5: Demolition and Construction**, the Proposed Development is split into four phases, with there being a period where some phases will be complete and occupied, whilst other phases are still under construction.

**12.10** A temporary drainage strategy will be put into place at the Construction Phase, as a secondary mitigation measure and will form part of the Construction Environmental Management Plan (CEMP). Therefore the phased nature of the works would not be expected to increase effects relating to flood risk or drainage. Likewise, the effects on water resources and on water quality will remain the same whether the Proposed Development is phased or not, as any measures required to mitigate any such effects (whether through embedded design measures for operational effects or Site management measures during construction) will be implemented irrespective of any phasing of works. Furthermore, the proposed drainage strategy has been developed based on the phasing of the Proposed Development to ensure there is no reliance for each phase in terms of ensuring the sites can be attenuated or drained.

**12.11** As such, it is not anticipated that there will be any significant effects relating to water resources, flood risk or drainage on residents of the occupied buildings as a result of the phased nature of the Proposed Development. As such, an assessment of effects associated with the phased nature of the Proposed Development have been scoped out of this ES Chapter.

*Completed Development*

**12.12** Following the determination of the baseline conditions and sensitive receptors, the methodology for identifying the potential water resources related effects, as a result of the Completed Development has been implemented based on the following stages:

- Preparation of a conceptual site model, identifying feasible pollution sources and pathways during the demolition and construction works;
- Determination of the magnitude of change of the potential impacts of the Proposed Development on the sensitive receptors;
- Evaluation of the significance of the effects, relative to the receptor sensitivity;
- Identification of suitable and appropriate mitigation measures (over and above standard best practice mitigation measures already considered) for the demolition and construction phase of the Proposed Development; and
- Assessment of the significance of any residual effects.

**12.13** Following this assessment, the following effects will be considered with regards to the following:

- Site Occupants (staff, residents and public);
- Residents and occupants of the surrounding area (staff and public);
- Effects on foul public drainage network with reference to water quantity (capacity);
- Effects on combined public drainage network with reference to water quality;
- Effects on Groundwater Quality; and
- Effects on potable water demand/water supply.

*Assumptions and Limitations*

**12.14** There are a number of limitations and assumptions that have been made in this assessment, as listed below:

- It is assumed that all of the principal existing land uses adjoining the Site will remain, other than those detailed within the cumulative assessment;
- All construction work will be undertaken during normal working times;
- The Drainage Strategy which manages surface water up to and including a 1 in 100 year return period rainfall event with an allowance for 40% climate change, is adopted prior to the completion and occupation of each phase of the Proposed Development;
- The mitigation measures outlined in the Flood Risk Assessment, as well as the Drainage Strategy approach is deemed to be inherent mitigation, and the conclusions/strategies outlined in each report will be in place before Site occupancy takes place, in line with current planning policy requirements;
- It has been assumed that the Thames Estuary 2100 (TE2100) plan, will continue to be in effect for the lifetime of the Proposed Development whereby a strategy remains in place to manage tidal flood risk in the Thames Estuary whilst considering climate change; and
- Given groundwater levels as defined from Site Investigation (SI)[2] works indicate groundwater levels vary from 3.3m bgl to 5.00m bgl. It is not expected that any dewatering is required and therefore the ES Chapter does not consider the assessment to have the potential for effects on ground water flows.

### *Methodology for Defining Effects*

*Receptors and Receptor Sensitivity*

**12.15** Sensitivity of the affected receptor has been assessed on a scale of High, Medium, Low. For the purpose of this assessment, receptors assessed to be of a 'negligible' sensitivity have not been assessed as the effects will be considered to be not significant.

**12.16** **Table 12.1** shows the general approach taken in assessing the sensitivity of water receptors as part of this assessment.

[2] 210421 R JER8921_Aberfeldy Village Master Plan Phase 1 Preliminary Risk Assessment V2 R0

**Table 12.1 Receptor Sensitivity Descriptors**

| Sensitivity | Descriptor | Example receptors |
|---|---|---|
| High | An attribute with High quality and rarity, regional or national scale and limited potential for substitution. | Aquifer providing potable water to a large population (groundwater).<br>Watercourse having a Water Framework Directive (WFD) classification shown in a River Basin Management Plan.<br>Major river providing a potable water resource to a large population.<br>Residents with sleeping accommodation at ground level.<br>Public sewer with available capacity subject to major improvement works. |
| Medium | An attribute with Medium quality and rarity, regional or national scale and limited potential for substitution. | Aquifer providing abstraction water for agricultural or industrial use (ground water).<br>Watercourse not having a WFD classification shown in a RBMP.<br>Residents with sleeping accommodation above ground level.<br>Minor river providing a water resource to a small population or industry.<br>Commercial users/ construction workers.<br>Public sewer with available capacity subject to upgrade works. |
| Low | An attribute with Low quality and rarity, regional or national scale and limited potential for substitution. | Watercourses not having a WFD classification shown in a (River Basin Management Plan (RBMP).<br>Minor river or drain of low quality.<br>Unproductive strata.<br>Public sewer with available capacity. |

*Magnitude of Change/Effect*

**12.17** Magnitude of change' is used to describe the deviation from baseline conditions for existing receptors. 'Magnitude of effect' is used to define the likely scale of the effect but on future receptors only.

**12.18** The TAG Unit A3[3] guidance provides classifications of magnitude of change in 'Large', 'Moderate', and 'Slight' quantities and the DMRB[4] guidance provides classification of magnitude of effect in 'Major', 'Moderate', 'Minor' and 'Negligible'. For the purposes of this assessment, the magnitude of change can be positive (beneficial) or negative (adverse) and is described on a scale of 'high', 'medium', 'low' and 'negligible'.

**12.19** **Table 12.2** indicates the criteria used to determine the magnitude of change as part of this assessment.

**Table 12.2 Classification of Magnitude of Change/Impact**

| Magnitude | Descriptor | Examples |
|---|---|---|
| High | Results in a major loss or gain of feature | Significant fluvial flooding affecting off-Site receptors caused by the Proposed Development is statistically possible or even likely (e.g. exceeding 1% annual probability) with potential high depth / velocity of water and risk to life and / or major financial effect.<br>Significant flooding which could potentially cause major effect at the Site (e.g. loss of life) is possible or even likely.<br>Major Pollution caused (e.g. by construction). Large increase or reduction of pollution discharged from the Site.<br>Increase of a significant amount of flow entering controlled systems (Sufficient enough to cause a change in WFD classification).<br>Major reduction in flooding extension / likelihood. |
| Medium | Results in a medium impact of integrity (beneficial or adverse) of feature or loss or gain of part of a feature. | Flooding of the Site which could cause financial impact and disruption (but no loss of life) is statistically possible or even likely.<br>A significant increase in the likelihood of flooding off-Site is possible as a consequence of the Proposed Development with potential financial effect but no loss of life.<br>Contribution of significant effluent towards receiving river, but insufficient to change WFD classification.<br>Increase of amount of flow entering controlled systems (Sufficient enough to cause an increase in flooding).<br>Some Pollution caused. Increase or reduction of pollution discharged from the Site. |
| Low | Results in a low impact of integrity of feature or minor loss of part of a feature. | Small increase / decrease in the likelihood of flooding.<br>Increase of amount of flow entering controlled systems, but would not cause flooding.<br>Measurable changes in feature, but of limited size and / or proportion. |
| Negligible | Results in a change but insufficient to affect attribute. | The Proposed Development is unlikely to affect the integrity of the water environment and the impact on flooding is not relevant. For example, the quantity is immeasurable or insignificant, when compared to the baseline condition.<br>No increase of amount of flow entering controlled systems i.e. no effect when compared to baseline condition.<br>No significant effect on the economic value of the feature. |

*Defining the Effect*

**12.20** The assessment of the likely significance of potential environmental effects arising from both the construction (including demolition) and operation of the Proposed Development requires consideration of the following:

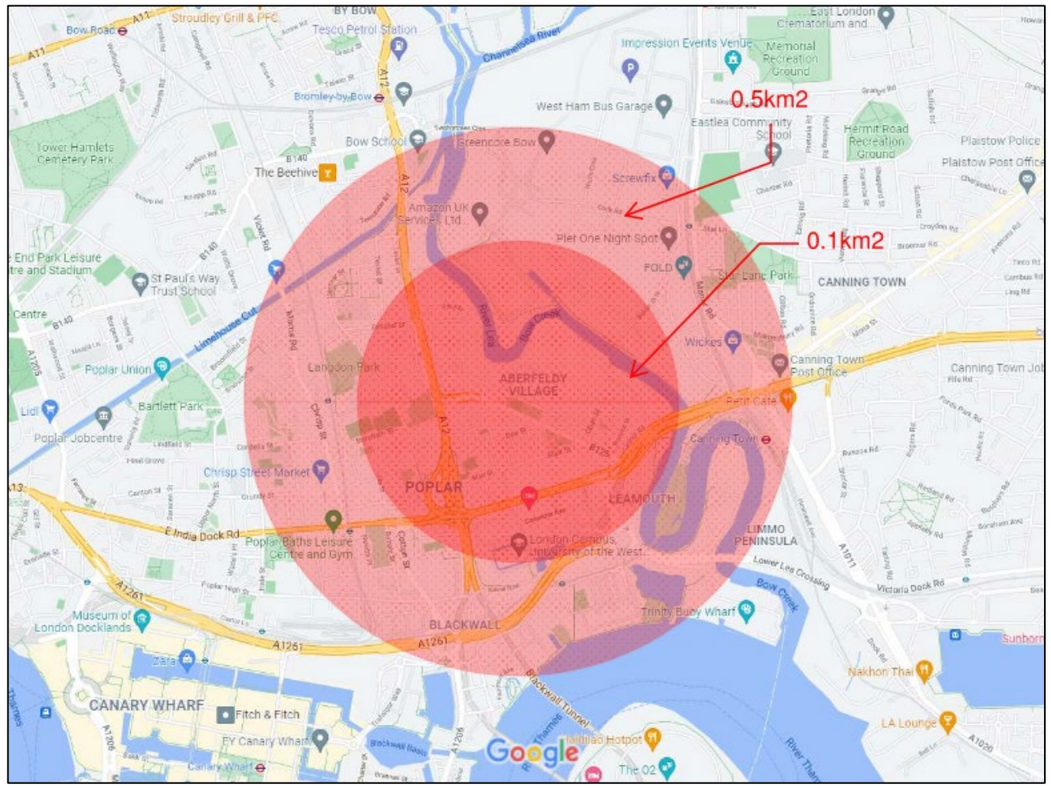
- Beneficial or adverse the effects:
  - Beneficial effects - those whereby by Proposed Development is likely to bring about an improvement to receptors in comparison to the baseline;
  - Adverse effects - those whereby the Proposed Development is likely to negatively affect receptors in comparison to the baseline; and
- Duration of the effect
  - Short – 1-5 years
  - Medium – 5-10 years
  - Long term effects – 10 years +.

**12.21** The study area will encompass direct surface water features up to approximately 0.1 km from the Site boundary (i.e. associated with overland migration of pollutants directly to surface features, pollutants conveyed in drainage systems). The study area will also encompass indirect surface water features typically up to 0.5 km, or further where appropriate, from the Site boundary i.e. for example the River Thames flood mapping extent. These features will be considered based on professional judgement of the assessor and current knowledge of the surface water features in the area that are in hydraulic connectivity (i.e. including surface water abstractions and downstream watercourses). Refer to **Figure 12.1** below.

[3] TAG Unit A3 EIA – Impacts on the Water Environment Chapter (2015)

[4] Design Manual for Roads and Bridges (DMRB): LA 113 Road drainage and the water environment (formerly HD 45/09) (2019)

**Figure 12.1 Study Area**




**12.22** Each effect has been assessed against the magnitude of change and the sensitivity of the receptor as shown in **Table 12.3**.

**Table 12.3 Matrix for Classifying Effects**

| Sensitivity of Receptor | Magnitude of Change/Impact | | | |
|---|---|---|---|---|
| | **High** | **Medium** | **Low** | **Negligible** |
| **High** | Major | Moderate to Major | Minor to Moderate | Minor |
| **Medium** | Moderate to Major | Moderate | Minor | Negligible |
| **Low** | Minor to Moderate | Minor | Negligible to Minor | Negligible |
| **Negligible** | Negligible | Negligible | Negligible | Negligible |

**12.23** The following terms have been used to define the significance of the effects identified and apply to both beneficial and adverse effects:

- **Major effect**: where the Proposed Development could be expected to have a substantial improvement or deterioration on receptors;
- **Moderate effect**: where the Proposed Development could be expected to have a noticeable improvement or deterioration on receptors;
- **Minor effect**: where the Proposed Development could be expected to result in a perceptible improvement or deterioration on receptors; and
- **Negligible:** where no discernible improvement or deterioration is expected as a result of Proposed Development on receptors, including instances where no change is confirmed.

**12.24** Effects that are classified as moderate or above are considered to be significant. Effects classified as minor or below are considered to be not significant.

**12.25** Following identification of the significance of the likely effects, the requirement for any mitigation to either eliminate or reduce likely significant adverse effects is considered. Where relevant these are described within the 'Mitigation, Monitoring and Residual Effects' section below and summarised within **ES Volume 1, Chapter 17: Mitigation and Monitoring Schedule.**

## BASELINE CONDITIONS

### *Topography*

**12.26** A topographical survey of the Site has been completed by Aworth Survey and indicates that the Site levels range between approximately 1.4 and 5.3 metres Above Ordnance Datum (m AOD), with the northern part of the Site adjacent to Lochnagar Street approximately 2 metres higher than the southern part of the Site. Parameter Plan 3663 - LB - ZZ - 00 - DR - A - 000004 - Parameter Plan - Existing Site Levels – R0 details the existing site levels across the Site.

### *Geology And Hydrogeology*

**12.27** British Geological Survey (BGS) mapping indicates that the superficial deposits at the Site comprise alluvium - clay, silt, sand and peat formed up to 2 million years ago in the Quaternary Period. The bedrock geology at the Site comprises clay, silt and sand of the London Clay formation - sedimentary bedrock formed approximately 48 to 56 million years ago in the Palaeogene Period. The National Geoscience Data Centre's Single Onshore Borehole Index holds five records of boreholes within the Site boundary. These indicate that made ground is present to a maximum depth of 2.5 m below ground level (bgl) underlain by silty sandy clay interlaid with gravel to a depth of 25.0 m bgl. According to the MAGIC[5] website the superficial deposits at the Site are classified as a Secondary (undifferentiated) aquifer whilst the underlying London Clay Formation bedrock is classified as an Unproductive aquifer. The Site is not shown to be located within a designated groundwater source protection zone.

**12.28** Groundwater levels, based on site investigations undertaken to date[6] indicate ground water levels range from 3.30m -5.00m below ground level (bgl).

### *Existing Sewers / Drainage*

**12.29** A topographical survey of the Site has been completed by Aworth Survey in December 2009 and a utility survey was carried out for the Site by Sumo Services Survey in August 2020. Refer to **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 2** for Surveys.

**12.30** Based on these surveys the existing private drainage network consists of surface water, foul water and combined water pipes and manholes. All of the existing private drainage has been shown to be draining to the closest Thames Water public sewer via multiple existing connections to the Thames Water surface and combined water sewers crossing through the Site.

**12.31** Asset records obtained in November 2020 from Thames Water have revealed public surface and combined water sewers crossing through the Site. These vary from 225mm to 2250mm.

### *Existing Water Supply*

**12.32** Based on the Thames Water Asset Records, the following Thames Water potable water pipes are located within the Site and in the vicinity of the Site. These vary from 4" to 16" water mains.

**12.33** Thames Water Management Plan (2020)[7], states that the Site is located in a "seriously water stressed area" but indicates a clear strategy to ensure water supply is maintained over the next 80 years. Thames Water propose using measures such as leakage management, water metering, water efficiency and developing new water supplies.

[5] https://magic.defra.gov.uk/
[6] 210421 R JER8921_Aberfeldy Village Master Plan Phase 1 Preliminary Risk Assessment V2 R0
[7] Thames Water – Water Resources Management Plan (WRMP) 2020-2100 (2020)

### *Existing Sources of Flood Risk*

*Surface Water Flood Risk*

**12.34** Pluvial flooding occurs when natural and engineered systems have insufficient capacity to deal with the volume of rainfall. Pluvial flooding can sometimes occur in urban areas during an extreme, high intensity, low duration summer rainfall event which overwhelms the local surface water drainage systems. This flood water would then be conveyed via overland flow routes dictated by the local topography.

**12.35** Map 006 of the Strategic Flood Risk Assessment (SFRA) as well as Figure 15 of the Councils Local Plan indicates that the Site is located within a Critical Drainage Area. The Flood Risk from Surface Water map shows the majority of the Site to be at very low risk of flooding from surface water, with the Site access roads identified as being at increased risk.

**12.36** Potential flood depths along the Site access roads for the low, medium and high risk events show depths to be approximately 300 mm, with the exception of the A12 underpass where flood depths are expected to exceed 900 mm.

**12.37** It should be noted that the modelling approach used to generate the Flood Risk from Surface Water map generally underestimates the capacity of urban drainage networks. It is typically assumed that drainage networks provide a surface water removal rate of 12 mm per hour, equivalent to 33 litres per second per hectare of impermeable area. As such, it is likely that the Flood Risk from Surface Water map overstates the risk of flooding at the Site from this source.

**12.38** Based on the available information, surface water flooding within the Site cannot be excluded and the probability of surface water flooding is considered as Low.

*Ground Water Flood Risk*

**12.39** The British Geological Survey Groundwater Flooding Hazard map indicates that the majority of the Site is at a very low risk of flooding from this source, with the western most side of the Site is shown to be at significant risk of groundwater flooding.

**12.40** However, based on site specific Site Investigation (SI) results the ground water levels of the Site varies between 3.30m to 5.00m bgl, therefore, the risk highlighted by the groundwater flooding Hazard is not fully representative based on actual site conditions. Therefore, based on the available information, ground water flooding within the Site cannot be excluded, however based on site specific groundwater observations the probability of ground water flooding is considered as Low.

*Flood Risk from Reservoirs, Canals and Other Artificial Sources*

**12.41** The Flood Risk from Reservoirs map indicates that the Site may be at risk of flooding from reservoirs (Walthamstow Reservoirs located approximately 9km north of the Site). However, all large reservoirs are regularly inspected by reservoir panel engineers with essential safety work carried out as required. As detailed on the gov.uk website, reservoir flooding is therefore extremely unlikely to occur. There are no canals or other artificial sources located within the vicinity of the Site that are expected to present a risk of flooding.

**12.42** Based on the available information, the risk from artificial sources is deemed Negligible.

*Fluvial/Tidal Flood Risk*

**12.43** The River Lea is located a minimum of approximately 160 m east of the Site and flows in a generally southerly direction to its confluence with the River Thames. The Environment Agency (EA) has confirmed that the flood defences along the River Lea prevent flooding in up to the 1 in 1,000 Annual Exceedance Probability (AEP) event and that the planning application should be informed by an assessment of flood risk from the River Thames **(Figure 12.2).**

**12.44** The River Thames is located approximately 550 m south of the Site and flows in an easterly direction towards the Thames Estuary **(Figure 12.2).**

**12.45** The extent of flooding presented by the Flood Map for Planning[8] does not take into account the presence of flood defences. However, the Site is located in an area benefitting from formal defences, including the Thames Barrier. The Thames Barrier and the raised defences along the banks of the River Thames and are designed to provide a 1 in 1,000 annual probability Standard of Protection (SoP) and therefore mitigate the risk of flooding from the River Thames in up to the present day 1 in 1,000 annual probability event.

**12.46** The crest level of the defences situated adjacent to the Site is currently 5.23 m AOD. It is expected that the crest level of the defences will be raised to 6.20 m AOD in accordance with the TE2100 Plan in order to maintain the current SoP up to the year 2100.

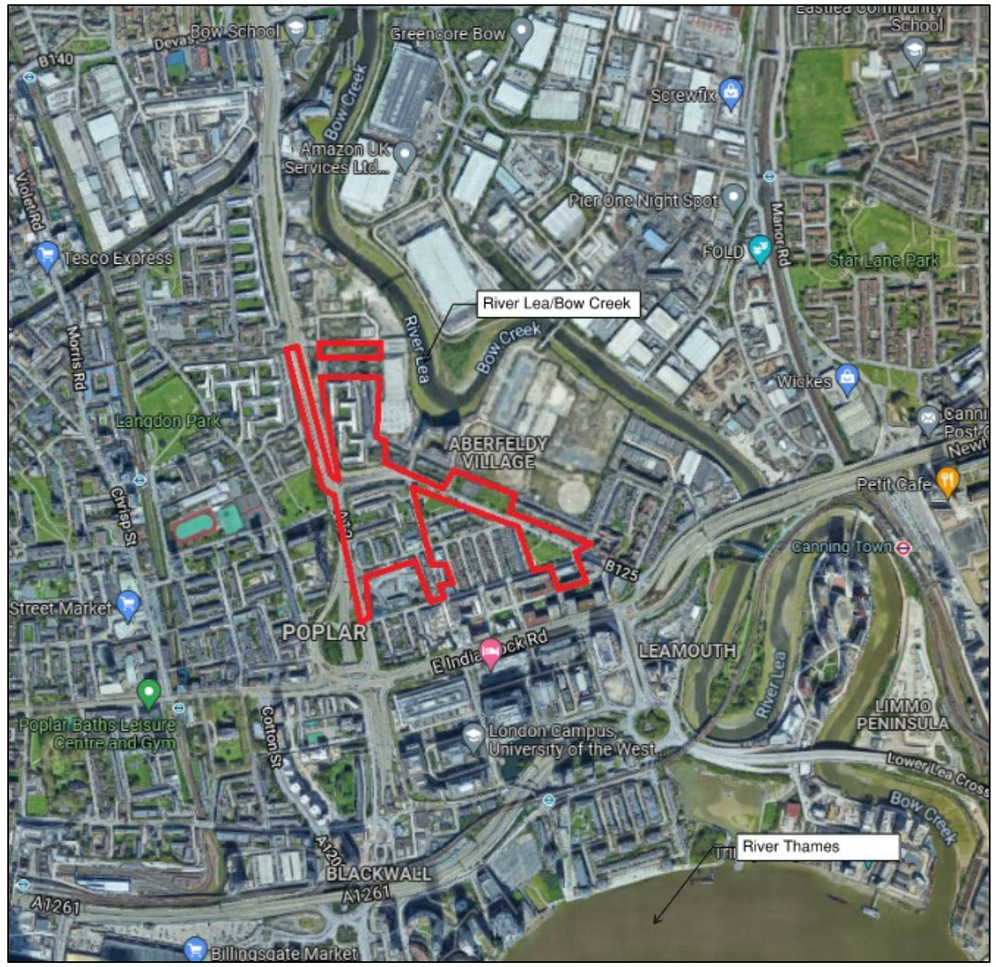
**12.47** Based upon the above, the Site is assessed to be at a low risk of flooding form the River Thames. However, a residual risk of flooding exists due to potential overtopping of the defences for events exceeding the SoP, due to a structural failure of the flood defence walls, or due to a failure of Thames Barrier to operate as intended.

**12.48** The EA has provided outputs from its 2017 Thames Tidal Upriver Breach Inundation Modelling Study (Refer to **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 1**). The extent of flooding resulting from a breach of the River Thames flood defences for the present day and 2100 climate change scenarios. The model results indicate that peak flood levels across the southern Site parcel for the present day and 2100 climate change scenarios are 2.79 m AOD and 3.68 m AOD respectively. Peak flood levels within the northern Site parcel are shown to range from 3.18 – 3.55 m AOD in the present day scenario and 3.65 – 5.10 m AOD in the 2100 climate change scenario.

**12.49** The flood hazard at the Site is generally shown to be significant (i.e. dangerous for most people), with areas of extreme hazard (i.e. dangerous for all) identified along the Site access roads in the 2100 climate change scenario.

**12.50** Based on the available information, the risk from Fluvial/Tidal is deemed Low as the inherent risk is associated with an extreme breach scenario.

**Figure 12.2 Site Location and Nearest Water Bodies**




[8] https://flood-map-for-planning.service.gov.uk/

## RECEPTORS AND RECEPTOR SENSITIVITY

**12.51** The following sensitive receptors have been assessed and included in **Table 12.4**.

**Table 12.4 Sensitive Receptors**

| Sensitive receptors | Sensitivity | Description (refer to 'Potential Effects section below for further details) |
|---|---|---|
| Demolition and Construction workers | High | Flooding may affect construction workers when on site during working hours in teams, and though they may have some form of H&S training, this would unlikely cover specific flood training/working near water qualifications. |
| Residents / Users of the surrounding area | High | Residents/users of the surrounding areas might have limited or no awareness of flood risk; sensitivity of residents is the highest due to their presence overnight (sleeping accommodation). |
| Site Residents/ Users | High | Residents during the construction stage and after might have limited or no awareness of flood risk. |
| Thames Water Drainage Network | Low (in relation to surface water quality) | The Site is served by a foul and combined sewerage network therefore the water quality of the drainage network is anticipated to have a low sensitivity. |
| Thames Water Drainage Network | Low (in relation to surface and foul water quantity) | The Site is served by a combined sewerage network. During consultation TW advised that there was sufficient capacity to accommodate the proposed foul water discharge rates from the Proposed Development. Please refer to correspondence within the **ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 2.**. TW advised that they would be able to accommodate the surface water discharged from the Proposed Development as well. |
| Thames Water Potable Water Network | Medium | The Site is located in an area that is a "seriously water stressed area" however based on the TW draft WRMP (2019) (Ref.14.41), TW have a strategy to ensure that there is sufficient water supply for their region over the next 80 years. A capacity check has been submitted to TW in which they state that though some existing capacity exists to cater for 99 units, there is not enough capacity to accommodate the entire site without on site/off site upgrade works. |
| Groundwater | Low | The Site is not located in a source protection zone or designated aquifer that provides potable supply and as such is anticipated to have a low sensitivity. |

### *Inherent Design Measures*

**12.52** A number of environmental design and management measures have been embedded into the design of the Proposed Development to reduce flood risk which have been informed by and detailed within the FRA and Drainage Strategy.

### *Flood Risk Assessment*

**12.53** A short summary of these design measures are listed below, with further details provided within the FRA:

- Finished floor levels of the residential units set a minimum of 0.15 m above adjacent ground levels, where possible;
- Finished floor levels of the residential units raised above the peak flood levels in the 2100 climate change breach scenario, or sleeping accommodation to be provided at first floor level;
- Finished floor levels of the proposed retail units set a minimum of 0.15 m above adjacent ground levels;
- The latest best practice flood resistant and resilient construction techniques to be incorporated into the design of the building where appropriate; and
- Flood Evacuation Plan to be developed in consultation with London Borough of Tower Hamlets (LBTH).

### *Drainage Strategy*

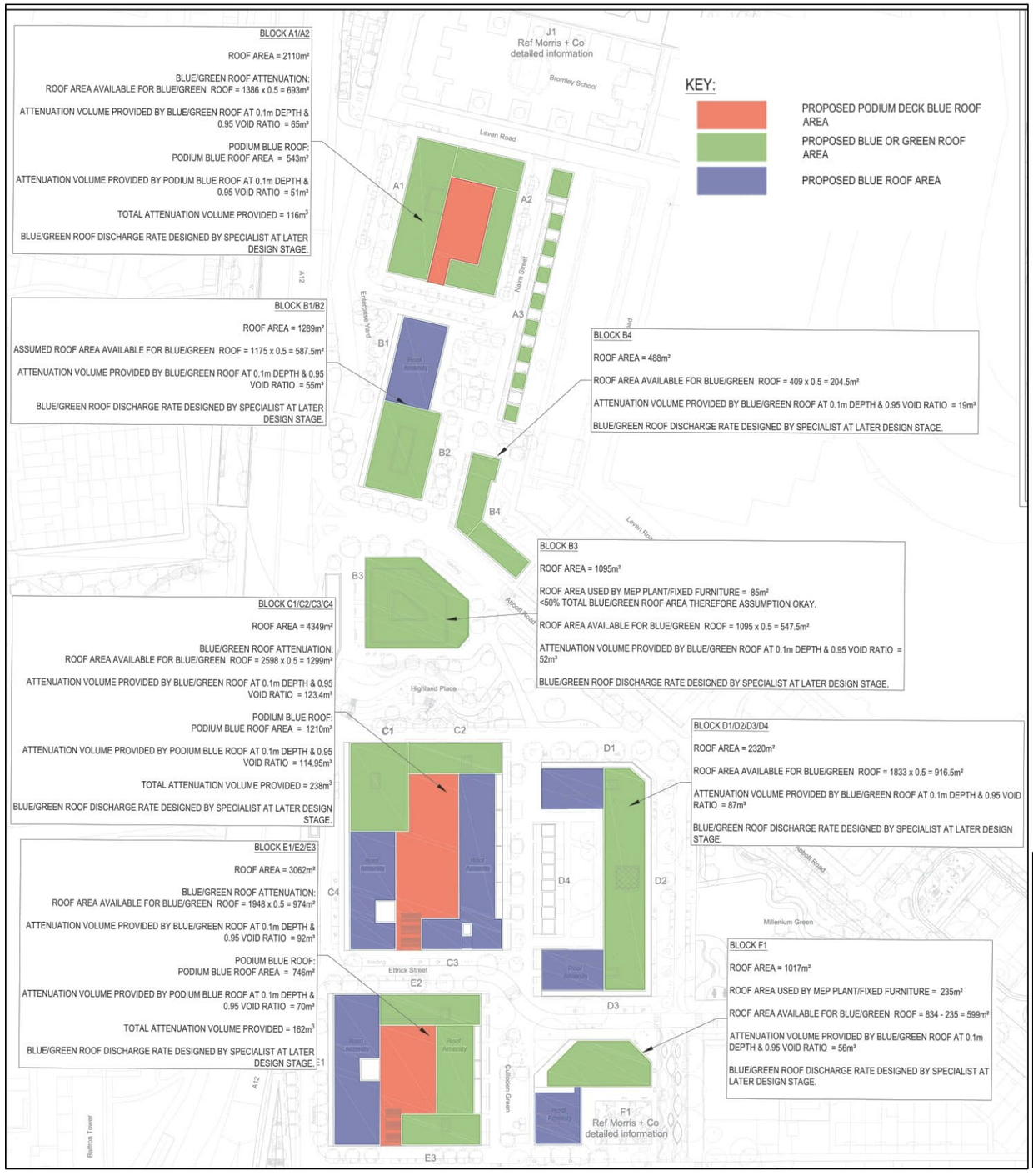
**12.54** A short summary of the principles of the Drainage Strategy has been indicated below:

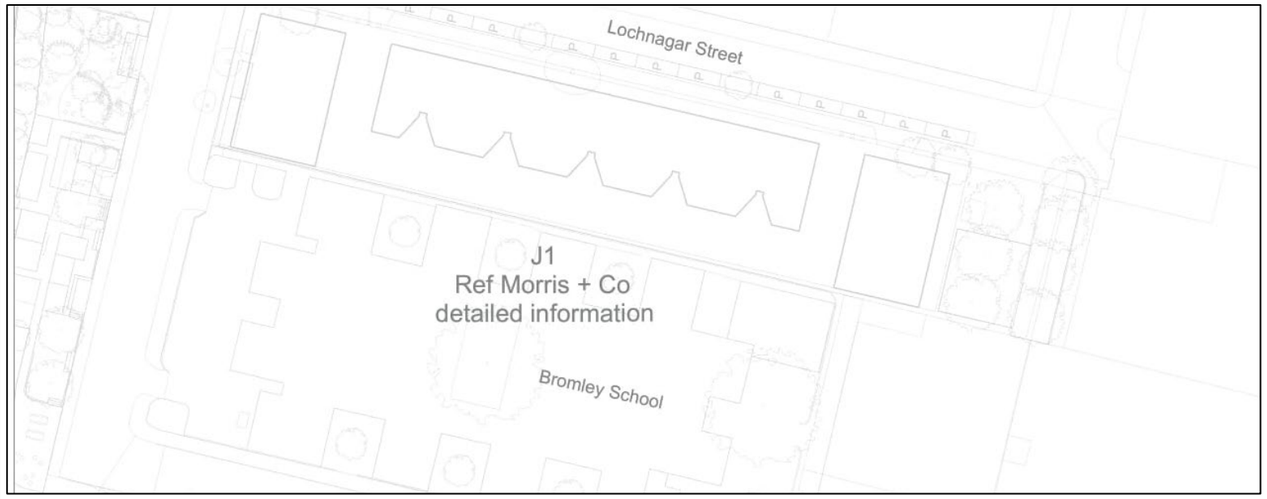
- The proposed surface water drainage strategy has been developed to utilise Sustainable Drainage Systems (SuDS) to attenuate surface water at source and reduce the risk of downstream flooding of the Thames Water sewer network in the local area. The Proposed Development utilises blue, green and podium deck/roof attenuation roof structures along with below ground cellular attenuation tanks designed for the 1:100 year plus 40% climate change storm event. Refer to **Figure 12.3** below.
- The Proposed Development QBAR greenfield runoff rate has been calculated to be 18.8l/s. QBAR is the mean annual flood flow from a rural catchment ($m^3/s$). It is proposed that the entire Site will discharge at this rate as agreed with the LBTH who are the LLFA. Each building and associated hardstanding being proposed to discharge at a proportion of this flow rate, this has been split between 12 separate connections across the Site receiving the total 18.8l/s. Each building's associated storm water drainage is conveyed by a traditional gravity run system to the nearest Thames Water Asset, with all connections discharging into the Thames Water combined water Sewer network.
- In line with the IWMP[9], the Proposed Development aims to utilise SuDS measures and restricts discharge rates to greenfield rate.

**12.55** A pre planning enquiry has been submitted to Thames Water stating the proposed foul and surface water discharge rates from the Proposed Development. Thames Water responded with their approval (24 March 2021) for both without the need for off-Site or on-Site sewer improvement works provided within **ES Volume 3, Water Resources, Flood Risk and Drainage – Annex 2**.

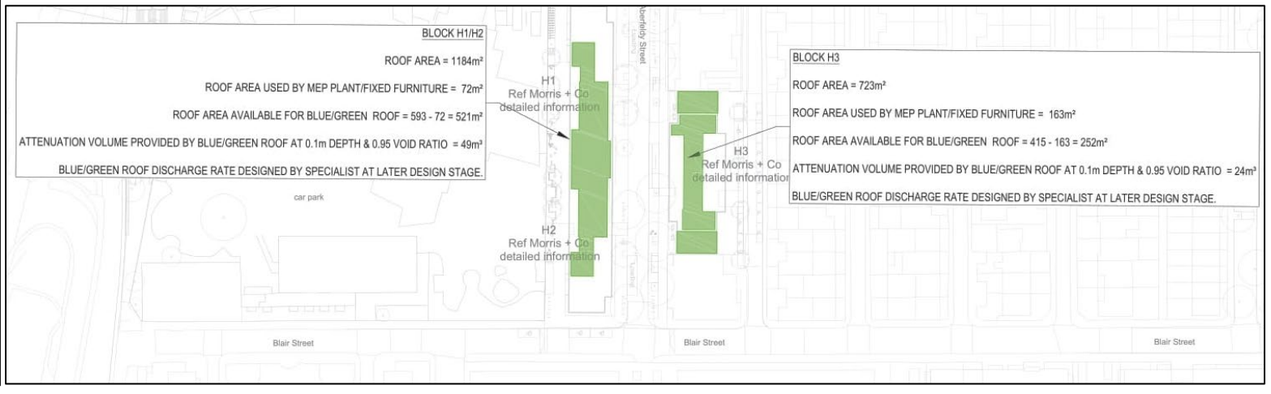
[9] Integrated Water Management Plan (IWMP) for the Isle of Dogs and South Poplar (October 2020)

**Figure 12.3 SuDS Strategy – Roof Plan (not to scale)**







## POTENTIAL EFFECTS

### *Demolition and Construction*

*Effect of Flood Risk on Construction Workers from Demolition and Construction Activities*

**12.56** The sensitivity of construction workers to the risk of flooding is High as a result of a level of competence attained by construction workers and presence only during working hours in teams.

**12.57** The Site has a low probability of tidal and fluvial flooding due to the high standard of protection available in the area from flood defences; fluvial/tidal flooding could happen only in the extreme event of a breach happening in proximity to the Site.

**12.58** The majority of the Site is currently impermeable and as a consequence of the proposed Construction Works there will be a reduction in impermeable areas given the removal of hardstanding areas; therefore, the volumetric surface water runoff will decrease.

**12.59** During demolition and construction works, rates of runoff are not expected to change significantly, however altering ground levels may cause surface water to naturally convey towards temporary low spots within the Site area, which may cause an alteration of the drainage regime and lead to surface water flooding. Overall, the magnitude of flood impact can therefore be considered to be Low.

**12.60** The magnitude of flood impact is assessed as Low and the sensitivity of Construction Workers as High. Therefore, there is considered to be a direct, temporary, medium-term **Minor to Moderate Adverse (Significant)** effect locally on Construction Workers without mitigation.

*Effect of Flood Risk on Local Residents of the Surrounding Area from Demolition and Construction Activities*

**12.61** The sensitivity of local residents of the surrounding area to flooding is considered high as the residents of the surrounding area live and sleep within their properties, and generally lack the awareness of the activities undertaken at nearby sites during construction works.

**12.62** As the existing Site is not located within an active floodplain, the construction activities associated with the Proposed Development will not have an effect on fluvial or tidal flooding off Site through reducing floodplain storage capacity. During demolition and construction works, rates of runoff are not expected to change significantly, however altering ground levels may cause surface water to naturally convey towards temporary low spots within the Site area, which may cause an alteration of the drainage regime and lead to surface water flooding. Overall, the magnitude of flood impact can therefore be considered to be Low.

**12.63** The magnitude of flood impact is assessed as Low and the sensitivity of local residents of the surrounding area as High. Therefore, there is considered to be direct, temporary, medium-term **Minor to Moderate Adverse (Significant)** effect on local residents.

*Effect of Flood Risk on New Site Occupants from Demolition and Construction Activities*

**12.64** The sensitivity of new site occupants of the surrounding area to flooding is considered high as the residents of the surrounding area live and sleep within their properties, and generally lack the awareness of the activities undertaken at nearby sites during construction works.

**12.65** As the existing Site is not located within an active floodplain, the construction activities associated with the Proposed Development will not have an effect on fluvial or tidal flooding off Site through reducing floodplain storage capacity. During demolition and construction works, rates of runoff are not expected to change significantly, however altering ground levels may cause surface water to naturally convey towards temporary low spots within the Site area, which may cause an alteration of the drainage regime and lead to surface water flooding. Overall, the magnitude of flood impact can therefore be considered to be Low.

**12.66** The magnitude of flood impact is assessed as Low and the sensitivity of local residents of the surrounding area as High. Therefore, there is considered to be direct, temporary, medium-term **Minor to Moderate Adverse (Significant)** effect on Site Occupants.

*Effect of water demand on the of water supply network capacity from Demolition and Construction Activities*

**12.67** The Site is currently served by TW's clean water supply network. The demand for water will vary throughout the demolition and construction programme and will be dependent on the specific activities on Site, however until a time of full occupancy the expected demand is not envisaged to be beyond the current demand.

**12.68** The magnitude of impact is assessed as Negligible, and the sensitivity of the existing water supply network is Medium. Therefore, there is considered to be a local **Negligible (Not Significant)** effect on the existing water network. No further mitigation is required.

*Effect of Drainage Quality on the TW Drainage Network Capacity from Demolition and Construction Activities*

**12.69** As discussed in the baseline conditions, the only relevant sensitive receptor in relation to surface water is the local Thames Water combined sewerage network.

**12.70** During the construction stage there would be a number of activities, which could reduce surface water quality with respect to physical contaminants. These include: Site clearance; excavations; localised ground remediation (if required); and materials handling, storage, stockpiling, spillage and disposal. In addition, during periods of heavy rainfall, vehicle movements associated with construction activities resulting in damage to soil structure may generate increased sedimentation within surface runoff.

**12.71** The sensitivity of the drainage network is considered to be low, and the magnitude of change prior to mitigation, is considered to be Medium adverse. Therefore, there is likely to be a direct, temporary, medium-term **Minor Adverse (Not Significant)** effect on the drainage network prior to the implementation of mitigation measures.

*Effect of Groundwater Quality from Demolition and Construction Activities*

**12.72** As discussed in the baseline conditions, groundwater sensitivity is deemed Low given that the Site is not within a source protection zone.

**12.73** During the construction stage there would be a number of activities, which could impact on groundwater quality with respect to physical contaminants. These include: Site clearance; excavations; localised ground remediation (if required); and materials handling, storage, stockpiling, spillage and disposal.

**12.74** The sensitivity of groundwater is considered to be Low, and the magnitude of change prior to mitigation, is considered to be Medium adverse. Therefore, there is likely to be a direct, temporary, medium-term **Minor Adverse (Not Significant)** effect on groundwater prior to the implementation of mitigation measures.

*Effect of Drainage Quantity on the TW Drainage Network Capacity from Demolition and Construction Activities*

**12.75** Based on the pre-development consultation with TW for foul and surface water, the sensitivity of the combined drainage network is understood to be low. TW have confirmed that there is sufficient capacity for the foul and surface water for the Proposed Development.

**12.76** All surface water and foul water is proposed to be discharged to the TW sewer network. The discharge into the combined sewer will vary depending on the construction activities being carried out and the number of complete phases with future Site occupants. It is understood from TW that the occupied aspects of the Proposed Development can be accommodated based on the existing available capacity and significant reduction in surface water discharge rates and it is anticipated that demand will not be exceeded during construction.

**12.77** The sensitivity of the drainage network is considered to be Low, and the magnitude of change prior to mitigation, is considered to be Low. Therefore, there is likely to be a direct, temporary, medium-term **Negligible/Minor Adverse (Not Significant) effect** on the drainage network. No additional mitigation is required.

### *Completed Development*

*Effect of Flood Risk on Local Residents of the Surrounding Area once occupied*

**12.78** The sensitivity of 'local residents of the surrounding area' to flooding is considered high as described within the 'Effect of Flood Risk on Local Residents from Demolition and Construction Activities' Section.

**12.79** The Site Drainage Strategy has been designed to manage a rainfall event up to a 1:100year return period including a 40% allowance for the effects of climate change as detailed within the FRA **(ES Volume 3, Appendix Water Resources, Flood Risk and Drainage – Annex 1)** which will help in reducing the risk of surface water flooding in the local surrounding areas. Surface water runoff discharged into the public drainage network will reduce both in terms of volume and of peak, which will have a medium positive magnitude of impact on the public combined sewer capacity resulting in potentially less flooding in the wider area. When considered against the increase in foul discharge, the Proposed Development will still result in an overall reduction in combined discharge rates from the Site; this will have an overall low beneficial magnitude of impact when considering the impact of flooding within the surrounding area on local residents.

**12.80** Therefore, the magnitude of impact is assessed as Low beneficial and the sensitivity of local residents of the surrounding area as High. This is considered to be a direct, permanent, long-term **Minor to Moderate Beneficial (Significant) effect** on local residents of the surrounding area of when considering the mitigation measures as defined in the Flood Risk Assessment and Drainage Strategy.

*Effect of Flood Risk on Future Site Occupants once Occupied*

**12.81** The sensitivity of future 'Site Occupants' to flooding is considered High.

**12.82** The Proposed Development will not impact on the floodplain storage capacity as the Site is located within the defended tidal floodplain and not an active floodplain, as such the Proposed Development will not increase any flooding risk off Site.

**12.83** As detailed in the FRA, there are inherent mitigation measures that form part of the Proposed Development design (i.e. raised Final Flood Level and Flood Evacuation Plans) that will be placed to ensure residents and Site occupants remain safe for the lifetime of the Proposed Development.

**12.84** The Drainage Strategy has been designed to manage a rainfall event up to a 1:100 year return period including a climate change allowance which will help in reducing the risk of flooding within the Proposed Development Site. Surface water runoff discharged into the public drainage network will reduce both in terms of volume and of peak, through the appropriate use of SuDS and attenuation on-Site, which will have a medium beneficial magnitude of impact on the probability of flooding within the Site.

**12.85** The magnitude of impact is assessed Medium beneficial and the sensitivity of future Site Occupants as High. Therefore, this is considered to result in a direct, permanent long-term effect locally on-Site Occupants of **Moderate to Major Beneficial (Significant)** when considering the environmental design and management measures which will be adopted as part of the standard practice.

*Effect of Drainage Quality on the TW Drainage Network Capacity Once Occupied.*

**12.86** As discussed in the baseline conditions, the only relevant sensitive receptor in relation to surface water is the local Thames Water combined sewerage network.

**12.87** The Drainage Strategy has been designed for the inclusion of SuDS (blue/green roofs) as well as traditional SuDS features. All drainage will be designed to minimise pollution, and if required adequate petrol interceptors/treatment devices will be incorporated in accordance with best practice to reduce any risk of pollution.

**12.88** The sensitivity of the drainage network is considered to be Low, and the magnitude of change prior to mitigation, is considered to be Medium beneficial. Therefore, there is likely to be a direct, permanent, long-term **Minor Beneficial (Not Significant)** on the drainage network. No additional mitigation is required.

*Effect of Groundwater Quality once Occupied.*

**12.89** Following completion on Site, all hardstanding areas will drain to the local combined sewer system in line with the implemented and approved drainage strategy. No surface water will drain via infiltration and therefore there is no inherent pollution risk that could take place on Site that would lead to a detriment to the groundwater regime.

**12.90** The sensitivity of groundwater is considered to be Low, and the magnitude of change prior to mitigation, is considered to be Negligible. Therefore, there is likely to be a direct, permanent, long-term **Negligible (Not Significant)** effect on the groundwater regime. No further mitigation is required.

*Effect of Water Demand on the Water Supply Network Capacity Once Occupied*

**12.91** The Site is currently served by TW's clean water supply network. The Proposed Development will increase the water demand above the existing baseline.

**12.92** Based on consultation with TW, there is availability for 99 residential units from initial loading calculations conducted by TW. However, there is the requirement for more detailed modelling to be undertaken to determine if the Proposed Development as a whole can be accommodated within the clean water network. Modelling analysis will be undertaken by TW post planning to confirm any potential improvement works that may be required within the surrounding area to increase water supply within the network to directly meet the demand requirements of the Proposed Development. Based on the information available the water supply network is considered to have a medium sensitivity.

**12.93** The Proposed Development will include water efficient fixtures and fittings where appropriate, to minimise and reduce water usage.

**12.94** The magnitude of impact is assessed as Medium and the sensitivity of water supply network capacity as Medium. Therefore, this is considered to result in a local **Moderate Adverse (Significant)** effect on water supply network capacity from the demand for water resulting from the Proposed Development prior to the implementation of mitigation measures.

## MITIGATION, MONITORING AND RESIDUAL EFFECTS

### *Demolition and Construction Mitigation and Completed Development.*

**12.95** The main mitigation required is the implementation of a Construction Environmental Management Plan (CEMP) secured via a planning condition. The implementation of standard construction management controls through a Construction Environmental Management Plan (CEMP) or similar during the demolition and construction activities will aid in minimising the potential for significant environmental effects resulting from contamination of water resources and potential for flooding, and is likely to include standard best practice measures such as:

- Implementation of bunding and sediment traps to act as pollution prevention measures;
- Agreement of allowable water demand with TW during the construction activities;
- Agreement of allowable foul and surface water drainage with TW during the construction activities;
- Implementation of a Piling Risk Assessment; and
- Implementation of a Contamination Remediation Strategy.

### *Demolition and Construction*

*Effect of Flood Risk on Construction Workers from Demolition and Construction Activities*

**12.96** Prior to mitigation, the magnitude of flood impact is assessed as Low and the sensitivity of Construction Workers as High. Therefore, there is considered to be a direct, temporary, medium-term **Moderate Adverse (Significant)** effect locally on Construction Workers without mitigation.

**12.97** A temporary drainage strategy will be implemented during the construction stage as part of the Construction Environmental Management Plan (CEMP),and will ensure that water quality/groundwater quality is managed on site. The temporary drainage strategy will include temporary pumping arrangements in the case that groundwater emergence occurs in the excavations. The proposed temporary drainage strategy for the construction stage will be developed by the contractor prior to enabling works and approved by the LBTH.

**12.98** The sensitivity of construction workers is considered to be High, and the magnitude of effect following mitigation, is considered to be Low following mitigation. Therefore, there is likely to be a direct, temporary, medium-term **Minor Adverse (Not Significant)** effect on the construction workers following the implementation of mitigation measures.

*Effect of Flood Risk on Local Residents of the Surrounding Area from Demolition and Construction Activities*

**12.99** Prior to mitigation, the sensitivity of local residents of the surrounding area to flooding is considered High as the residents of the surrounding area live and sleep within their properties, and generally lack the awareness of the activities undertaken at nearby sites during construction works.

**12.100** A temporary drainage strategy will be implemented during the construction stage as part of the Construction Environmental Management Plan (CEMP),and will ensure that water quality/groundwater quality is managed on site. The temporary drainage strategy will include temporary pumping arrangements in the case that

groundwater emergence occurs in the excavations. The proposed temporary drainage strategy for the construction stage will be developed by the contractor prior to enabling works and approved by the LBTH.

**12.101** The sensitivity of Local Residents is considered to be High, and the magnitude of effect following mitigation, is considered to be Low following mitigation. Therefore, there is likely to be a direct, temporary, medium-term **Minor Adverse (Not Significant)**.

*Effect of Flood Risk on New Site Occupants from Demolition and Construction Activities*

**12.102** Prior to mitigation, the magnitude of flood impact is assessed as Low and the sensitivity of new site occupants of the surrounding area as High. Therefore, there is considered to be direct, temporary, medium-term **Moderate Adverse (Significant)** effect on Site Occupants.

**12.103** A temporary drainage strategy will be implemented during the construction stage as part of the Construction Environmental Management Plan (CEMP) and will ensure that water quality/groundwater quality is managed on site. The temporary drainage strategy will include temporary pumping arrangements in the case that groundwater emergence occurs in the excavations. The proposed temporary drainage strategy for the construction stage will be developed by the contractor prior to enabling works and approved by the LBTH.

**12.104** The magnitude of flood impact is assessed as Negligible following mitigation and the sensitivity of new site occupants of the surrounding area as High. Therefore, there is considered to be direct, temporary, medium-term **Minor Adverse (Not Significant)** effect on Site Occupants.

*Effect of Drainage Quality on the TW Drainage Network Capacity from Demolition and Construction Activities*

**12.105** Prior to mitigation, the sensitivity of the drainage network is considered to be low, and the magnitude of change is considered to be medium adverse. Therefore, there is likely to be a direct, temporary, medium-term minor adverse (not significant) effect on the drainage network.

**12.106** A temporary drainage strategy will be implemented during the construction stage as part of the Construction Environmental Management Plan (CEMP),and will ensure that water quality/groundwater quality is managed on site. The temporary drainage strategy will include temporary pumping arrangements in the case that groundwater emergence occurs in the excavations. The proposed temporary drainage strategy for the construction stage will be developed by the contractor prior to enabling works and approved by the LBTH.

**12.107** The sensitivity of the drainage network is considered to be Low following mitigation, and the magnitude of change is considered to be Low. Therefore, there is likely to be a direct, temporary, medium-term **Negligible/Minor Adverse (Not Significant)** effect on the drainage network.

*Effect of Groundwater Quality from Demolition and Construction Activities*

**12.108** Prior to mitigation the sensitivity of groundwater is considered to be Low, and the magnitude of change is considered to be medium adverse. Therefore, there is likely to be a direct, temporary, medium-term minor adverse effect on groundwater.

**12.109** A temporary drainage strategy will be implemented during the construction stage as part of the Construction Environmental Management Plan (CEMP) and will ensure that water quality/groundwater quality is managed on site. The temporary drainage strategy will include temporary pumping arrangements in the case that groundwater emergence occurs in the excavations. The proposed temporary drainage strategy for the construction stage will be developed by the contractor prior to enabling works and approved by the LBTH.

**12.110** The sensitivity of groundwater is considered to be Low, and the magnitude of change prior following mitigation is considered to be Low adverse. Therefore, there is likely to be a direct, temporary, medium-term **Negligible/Minor (Not Significant)** adverse effect on the groundwater following the implementation of mitigation measures.

### *Completed Development*

*Effect of Water Demand on the Water Supply Network Capacity Once Occupied*

**12.111** The magnitude of impact is assessed as medium and the sensitivity of water supply network capacity as Medium. Therefore, this is considered to result in a local moderate adverse effect on water supply network capacity from the demand for water resulting from the Proposed Development prior to the implementation of mitigation measures. The requirement for reasonable upgrade works that are directly related to the Proposed Development will be further established post planning during appropriate detailed design from a specialist consultant in consultation with TW for implementation as part of the Proposed Development. Such improvement works will be implemented prior to occupancy of the Proposed Development, which results in a magnitude of impact of negligible significance. This will be secured by a planning condition from Thames Water.

**12.112** Therefore, following the upgrade works (mitigation) taking place before occupancy, the magnitude of impact is assessed as Negligible and the sensitivity of water supply network capacity as Medium. Therefore, there is likely to be a direct, permanent long-term **Negligible (Not Significant)** adverse effect on water supply network.

**12.113** No additional mitigation and monitoring measures are required during both the demolition and construction and once the Proposed Development is complete and occupied over the embedded mitigation measures set out within this ES Chapter which will be adopted as part of the standard practice.

**12.114** The mitigation measures as outlined in the Flood Risk Assessment and Drainage Strategy are deemed to be inherent/embedded design requirements, and the conclusions/strategies outlined in each report will be in place before Site occupancy takes place, in line with current planning policy requirements.

### *Residual Effects*

**12.115** Likely significant effects of the Proposed Development have been assessed in relation to Water Resources, Drainage and Flood risk. A summary of the residual effects during both the 'Demolition and Construction' stage and 'Completed Development' stage for the Proposed Development can be seen below in **Table 12.5.**

**Table 12.5 Sensitive Receptors**

| Receptor | Description of the Residual Effect | Scale and Nature | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | |
| Construction Workers | Flood Risk on Construction Workers | Minor Adverse | Not Significant | L | D | T | Mt |
| Local Residents | Flood Risk on Local Residents of the surrounding area | Minor Adverse | Not Significant | L | D | T | Mt |
| Site Occupants | Flood Risk on Site Occupants | Minor Adverse | Not Significant | L | D | T | Mt |
| TW Water Supply Network | Water demand on the of water supply network capacity | Negligible | Not Significant | N/A | | | |
| TW Drainage Network | Drainage quantity and quantity on the drainage network capacity | Negligible/Min or Adverse | Not Significant | L | D | T | Mt |
| Groundwater | Quality of groundwater | Negligible/Min or Adverse | Not Significant | L | D | T | Mt |
| **Completed Development** | | | | | | | |
| Local Residents | Flood Risk on Local Residents of the surrounding area | Moderate Beneficial | Not Significant | L | D | P | LT |
| Site Occupants | Flood Risk on Site Occupants | Moderate Beneficial | Not Significant | L | D | P | LT |
| TW Water Supply Network | Water demand on the of water supply network capacity | Negligible | Not Significant | L | D | P | LT |
| TW Drainage Network | Drainage quantity on the drainage network capacity | Negligible | Not Significant | N/A | | | |
| TW Drainage Network | Drainage quality on the drainage network capacity | Minor Beneficial | Not Significant | L | D | P | LT |
| Groundwater | Quality of groundwater | Negligible | Not Significant | L | D | P | LT |

Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)

D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline Scenario*

**12.116** In the absence of the Proposed Development, it is likely that similar applications would come forward on the Site. Should no development take place at the Site, it is considered that in the future baseline, the conditions in relation to Water Resources, Drainage and Flood Risk at the Site would remain relatively unchanged over the short / medium term. However, they would also be subject to climate change in the long-term. The intensity of precipitation falling on the Site (and elsewhere) could increase due to climate change, as well as potentially increased risk from tidal/fluvial flooding if the TE2100 strategy is not implemented.

**12.117** With climate change (UKCP18) projections, there is increasing evidence to show that the supply and demand of potable water is likely to worsen within London as a result of climate change due to drier summers in the future and longer periods of drought not recharging the potable water supply within the groundwater, this is further re-iterated as part of the Future Flows and Groundwater Levels work undertaken by CEH in partnership with the EA and others.

**12.118** The need to manage surface water in the future scenario will depend on government guidance on climate change rainfall prediction, as the moment all surface water drainage strategy takes into account climate change predictions and ensure that sites do not flood for all events up to the 1:100 year plus climate change event. This approach is unlikely to change going forward.

**12.119** The management of groundwater quality will remain relatively unchanged in the long term, given the need to ensure the protection of potable water abstraction sites. The EA who police potential pollution incidents will in the long terms continue to enforce their requirements for any possible risks that could take place which all development should adhere too or otherwise face prosecution/penalties.

**12.120** However, as with most climate change predictions there is significant amounts of variance depending on future government guidance.

### *Cumulative Effects Assessment*

*Demolition and Construction*

**12.121** Cumulative effects to water resources, drainage and flood risk during demolition and construction processes are associated with the generation of sediments and the release into the sewer drainage network; spillage and leakage of oils and fuels; disturbance of contaminated land; and disturbance to groundwater and foul drainage.

**12.122** Measures exist to manage and control these effects and reduce the magnitude and significance of effects to a minimum as outlined for the Proposed Development in the Environmental Design and Management section above, as well as mitigation as outlined. These measures are anticipated to be adopted as part of all surrounding committed developments as a matter of standard construction management and best practice. Therefore, as a result of these control measures, and the fact that not all committed developments in the area will discharge into receiving surface waters or groundwater at exactly the same time, the cumulative effect on water resources, drainage and flood risk is considered to be **Negligible (Not Significant).**

**12.123** The flood risk effect on construction workers, local residents during construction projects is effectively managed as part of temporary drainage solutions in line with industry best practice, and well as implemented CEMP which will ensure that there is no adverse flooding risk associated with construction projects, regardless on the number of projects locally in an area.

**12.124** Water supply demand would be managed by Thames Water as part of any construction project, to ensure that no increased risk or supply issues for any committed development schemes taking place, and if required improvement works are undertaken to ensure capacity exists for all within the local area.

*Completed Development*

**12.125** In general, there will be a beneficial effect on surface water flood risk and residual tidal and fluvial flood risk once the Proposed Development is completed and operational, and taking account of surrounding committed developments. It is acknowledged that most new urban developments within London aim to reduce the surface water runoff in accordance with best practice and national/local policy (e.g. London Plan) and implement appropriate mitigation measures to manage the residual risks of a breach event. In addition, the now mainstream use of SuDS will also help in terms of water quality and wider sustainability criteria.

**12.126** From a fluvial/tidal flooding perspective, the Site is located in a defended floodplain and hence there will be no impact on floodplain storage capacity even when considering the combined effect of various committed developments.

**12.127** Water demand is expected to increase as a result of committed developments and hence TW are consistently looking to improve the water resources available in the short term and long term, to cater for urban development as part of their long-term water resources management strategies to manage the increased demand from the committed developments also located within areas considered to be sensitive to water supply.

**12.128** The public foul drainage network demand will cumulatively increase as a result of surrounding committed developments; however, TW are constantly assessing the available capacity within their network and ensure suitable strengthening works are conducted where required.

**12.129** Overall when taking into consideration the committed developments, there will be a negligible effect to the TW water supply and drainage capacity due to the ongoing improvements works being undertaken by TW. There will also be a potential beneficial effect on surface water flooding within the local area due to the inherent environmental design and management measures which will be adopted as part of the standard practice.

## LIKELY SIGNIFICANT EFFECTS

**12.130** There are no likely significant effects anticipated for the Proposed Development associated with Water Resources, Flood Risk and Drainage once inherent design measures and supplementary mitigation measures are taken into account.

# Chapter 13: Wind Microclimate

| Wind Microclimate | |
|---|---|
| **AUTHOR** | RWDI |
| **SUPPORTING APPENDIX** | **ES Volume 3: Appendix: Wind Microclimate:**<br>Annex 1: Policy and Guidance<br>Annex 2: Technical Appendix |
| **KEY CONSIDERATIONS** | This ES Chapter assesses the effects of the Proposed Development on wind microclimate conditions on the site and considers if the resulting changes in wind speeds would be suitable, with regards to comfort and safety, for the intended usage of sensitive locations in and around the Site.<br>Key wind microclimate considerations associated with the Proposed Development include:<br>The creation of undesirable wind speeds (resulting in effects for pedestrian comfort and safety) at ground level within the site, around the buildings surrounding the site and within nearby areas off-site (including building entrances, throughfares, bus stops, balconies and roof terraces) during the demolition and construction work; and<br>The creation of undesirable wind speeds at ground level (specifically at building entrances and pedestrian thoroughfares) within the site, at the Proposed Development's podium, balcony and roof terrace levels, around the buildings surrounding the site and within nearby areas off-site (including building entrances, throughfares, bus stops, balconies and roof terraces) once the Proposed Development is completed and occupied. |
| **CONSULTATION** | An EIA Scoping Report was prepared and submitted to the LBTH in August 2021 requesting a formal Scoping Opinion. The EIA Scoping Report is presented in **ES Volume 3, Appendix EIA Methodology** – Annex 1. LBTH's EIA Scoping Opinion was received on the 8th September 2021 and has requested some adjustments to the scope and approach of the wind assessment. This assessment addresses the points raised in the Opinion which are of relevance to wind. The Scoping Opinion Report can be found within **ES Volume 3, Appendix Methodology – Annex 2.** |

## INITIAL DESIGN REVIEW

**13.1** Prior to the wind tunnel assessment that is discussed thoroughly in this ES chapter, RWDI conducted a desk-based design review assessment to provide the design team with initial insight into the expected wind conditions at the Proposed Development during the initial design phase. A follow-up wind mitigation workshop to adjust the massing of the Illustrative Scheme was conducted and the guidance provided by RWDI to improve wind conditions within and around the Proposed Development have been taken into consideration during the design process of the Proposed Development and have been implemented in the current assessment.

## EXECUTIVE SUMMARY

**13.2** Several wind tunnel assessments of the Proposed Development (Outline Proposals, Detailed Proposals and Illustrative Scheme) have been undertaken to support the hybrid planning application, both with and without the proposed landscaping and wind mitigation measures. Ten configurations were assessed to simulate different phases of the Proposed Development as it comes forward including existing baseline and future baseline scenarios, taking into account other cumulative schemes in the locality.

**13.3** For the Detailed Proposals alone (Phase A) in the context of existing surrounds, the majority of wind conditions would be suitable for the intended use with the exception of several areas with significant effects at two entrance locations and at an existing bus stop during the windiest season and at a stack of balconies during the summer season, when amenity spaces would be expected to be most frequently used. There would be no instance of strong winds in the Detailed Proposals in this context. Qualitative mitigation measures have been recommended to resolve the windy areas within the Detailed Proposals. Refer to page 14 for a detailed breakdown of these wind conditions. Wind mitigation measures are proposed on page 41.

**13.4** With the introduction of the hybrid Proposed Development (comprising the Outline Proposals with the Detailed Proposals), wind conditions would improve around the Detailed Proposals particularly on the northern elevation of Plot F, however, significant effects would persist at entrance locations and the existing bus stop. For the area within the Site encompassing the Outline Proposals, significant effects would occur at several locations including thoroughfares, potential entrances during the windiest season and ground level amenity and roof terraces during the summer season. There would be instances of strong winds with the potential to be a safety concern to cyclists, more vulnerable pedestrians and terrace occupants in 22 areas. Refer to **page 21** for a detailed breakdown of these wind conditions. Due to the nature of the Outline Proposals (based on maximum parameters), the impact of the wind mitigation measures has been investigated only for the Illustrative Scheme, as the Outline Proposals would not be representative of a scheme that could be developed (taking into account balconies, roof plant and the need for high quality design and façade treatments).

**13.5** Replacing the maximum parameter model of the Outline Proposals with that of the Illustrative Scheme would improve wind conditions between Plots B2/B3 and C/E, however, the majority of wind conditions and significant effects would remain similar to Outline Proposals in the context of existing surrounding buildings. Refer to page 30 for a detailed breakdown of these wind conditions.

**13.6** With the introduction of proposed landscaping and the implemented wind mitigation measures to the Illustrative Proposals plus Detailed Proposals in the context of existing surrounds, wind conditions would improve such that the majority of areas would be suitable for the intended use with the exception of several thoroughfares, entrances, an existing bus stop during the windiest season and ground level amenity and roof terraces during the summer season, which would continue to have significant effects. There would be strong winds exceeding the threshold at one location at the north-west corner of Plot C. Refer to **page 39** for a detailed breakdown of these wind conditions.

**13.7** Wind mitigation measures have been suggested in addition to the developed proposed landscaping and wind mitigation measures which would be expected to improve wind conditions further at the remaining windy areas of the Proposed Development. The effectiveness of these measures to ensure a suitable wind microclimate will be assessed at the reserved matters stages and secured through an appropriately worded planning condition for the Outline Proposals and should, where possible be integrated into the detailed design of the Proposed Development and associated landscaping scheme. All of the wind microclimate residual effects, following the implementation of wind mitigation measures, would be not significant, where the wind conditions would be expected to be the same or calmer than the desired comfort category.

**13.8** In the context of cumulative surrounding buildings, wind conditions at the Proposed Development in the aforementioned phasing scenarios would all improve, however, the significant effects at the majority of areas would persist including the safety exceedances. Refer to **pages 58, 66, 77, 88** for a detailed breakdown of the wind conditions in the context of cumulative surrounds.

**13.9** Wind mitigation measures required to improve wind conditions in the context of existing surrounding buildings would remain necessary in the context of cumulative surrounding buildings. Similarly measures expected to improve wind conditions in the context of existing surrounding buildings would be expected to remain effective in the cumulative scenarios.

**13.10** In all off-site locations wind conditions would remain suitable for the intended use for the tested scenarios.

## ASSESSMENT METHODOLOGY

### *Defining the Baseline*

**13.11** The baseline conditions of the Site in its existing condition (referred to as the 'existing Site') together with the wider surrounding area (within a 450m radius of the site) have been defined using wind tunnel testing to provide a detailed, quantitative assessment of the existing wind microclimate conditions in terms of pedestrian comfort and safety.

**13.12** Mean and peak wind speeds have been measured at each location around the existing Site and within the wider surrounding area at a scaled height of 1.5m (in accordance with the Lawson Comfort Criteria) above ground level for both the windiest season (normally winter in the UK) to show the worst-case scenario, and summer season for amenity spaces (amenity spaces are assessed during the summer season as these areas are expected to be used most frequently during this period with an expectation of calmer conditions compared to other times of the year). They have also been measured at locations across the existing Site and at other surrounding buildings, paths, roads, areas of open spaces and elevated amenity spaces (including balconies) for 36 wind directions in 10° increments within a 450m radius of the Site which is considered a large enough scale to ensure all wind effects are captured. Details of the tunnel test methodology is presented in the 'Wind Tunnel Test Methodology' section of this ES Chapter.

**13.13** The results have been combined with long-term meteorological climate data for the London area (Heathrow and London City Airports). The meteorological data used in this assessment is deemed to be representative of the local wind microclimate for the London area. The meteorological data used is presented within 'Baseline Condition – Meteorological Data' section and shown as a 'wind rose' in **Figure 2** of **ES Volume 3, Appendix: Wind Microclimate** – **Annex 2**.

**13.14** The baseline conditions are reflected within the wind scenario – 'Configuration 1: Existing Site with Existing Surrounding Buildings' (also referred as the 'Baseline Scenario'). Further detail on the wind tunnel testing methodology can be found in **ES Volume 3, Appendix: Wind Microclimate – Annex 2**.

**13.15** It is acknowledged that a direct comparison with the baseline conditions would be useful to understand changes from the existing (baseline) wind conditions across the site due to the Proposed Development. However, a comparison of the measured wind environment for the Proposed Development with the existing conditions does not take into account any change in pedestrian activity that would accompany the Proposed Development. Comparisons between the baseline scenario and 'completed development' scenarios have therefore been made where pedestrian activity is the same in the baseline and with the Proposed Development in place.

### *Evolution of the Baseline*

**13.16** The evolved baseline is a baseline condition at an indeterminate point in the future, for a scenario which assumes all of the cumulative schemes are built in the surrounding environment and that the surrounding environment, including the Site, has naturally evolved (e.g. trees / scrub have grown larger), in the absence of the Proposed Development being implemented. The cumulative scenario would provide information of the general changes, if any, in wind conditions around the site as a result of the cumulative schemes.

**13.17** The likely evolution of the baseline wind conditions at the Site in the future, in the absence of the Proposed Development, has been tested in the wind tunnel in 'Configuration 6: Existing Site with Cumulative Surrounding Buildings'. The cumulative effects assessment takes into account the relevant cumulative schemes within the area surrounding the Site that have the potential to influence wind conditions within and immediately surrounding the site (presented within **ES Volume 1, Chapter 2: EIA Methodology**).

## *Impact Assessment Methodology*

### *Demolition and Construction*

**13.18** The potential microclimate impacts during demolition and construction works have not been directly assessed within the wind tunnel, as this is a temporary condition and would be highly variable as the existing buildings are demolished and the Proposed Development is constructed. The potential wind impacts of the Proposed Development during construction are assessed using the professional judgement of an experienced wind engineer in **ES Volume 3, Appendix Introduction – Annex 1**, based on an assessment of the background wind microclimate at the Site (the results of the tested configurations for the baseline and completed development scenarios) and an understanding of the likely effects based on RWDI's experience of assessing wind in the built environment.

**13.19** This approach was taken assuming that the activity on-site during this time (i.e. construction activity) is less sensitive to wind conditions (due to protection from site hoarding, and site access being restricted to site workers) than when the Proposed Development is completed and occupied (which would include new building entrances and outdoor seating with amenity spaces, for example). In addition, there would be appropriate health and safety measures implemented (through a Construction Environmental Management Plan (CEMP)) to ensure that the construction workers were adequately protected.

**13.20** Windier conditions (in terms of pedestrian comfort) will be tolerable across the active demolition and construction site as this area is not for typical pedestrian use (see section 'Assumptions and Limitations' below).

**13.21** With regard to the use of cranes on-site, it can be noted that these are typically slender and relatively "open" in structure. They would therefore not be expected to introduce any material microclimate effects to the site or surrounding area that would require assessment in this ES chapter. The indicative crane locations are displayed in **ES Volume 1, Chapter 5: Demolition and Construction**.

### *Phasing*

**13.22** Wind conditions at the Proposed Development have been quantitatively assessed for the completed and operational development only as this would be expected to be the worst case (i.e. windiest) scenario. Wind conditions during the demolition/construction phase have been assessed qualitatively as detailed above based on the expected change in wind conditions between the existing site and the Completed Development.

**13.23** Phasing has been quantitatively assessed for the scenario of the Detailed Proposals (Phase A) only, as they come forward ahead of the Outline Proposals, in Configurations 2 and 7 and with the outline phases of the masterplan in Configurations 3-5 and 8-10. The details of these configurations are discussed in **Paragraph 13.39** and images of the setup are shown in **ES Volume 3, Appendix: Wind Microclimate – Annex 2**.

### *Completed Development*

**13.24** In order to assess the local wind environment associated with the completed Proposed Development and the resulting pedestrian comfort within and surrounding the Site, wind tunnel testing of the Proposed Development has been undertaken.

**13.25** Wind tunnel testing is one of the most well-established and robust means of assessing the pedestrian wind microclimate. Such testing allows the pedestrian level wind microclimate within and surrounding the Site to be quantified and classified in accordance with the accepted criteria (refer to 'Assessment Criteria' section of this ES Chapter).

**13.26** Wind tunnel testing provides a detailed assessment of the mean and gust wind conditions in and around the site for 36 wind directions, in 10° increments in terms of pedestrian comfort and safety and provides a basis to assess the potential wind microclimate impacts and likely effects of the Proposed Development with regards to its intended use. Strong winds are also reported when they occur.

### *Outline Proposals*

**13.27** The Maximum Parameter massing of the Outline phase of the Proposed Development has been assessed to represent the worst-case scenario and the Illustrative Scheme that is more representative of the potential massing that could come forward as part of the approved design, within subsequent Reserved Matter Applications. It should also be recognised that the maximum parameters do not include the locations of entrances, balconies and/or amenity spaces, but worst-case assumptions have therefore been used where appropriate relating to the likely pedestrian uses, with mitigation identified as necessary.

**13.28** The Illustrative Scheme model of the Proposed Development includes a proposed landscaping scheme and provides architectural details (such as recessed entrances, parapets, balustrades etc.) which fundamentally affect the aerodynamics of buildings and this would be expected to be more representative of the eventual detailed scheme which could come forward through Reserved Matters Application's (RMA's). Assessment of the Illustrative Scheme also allows for locations to be referenced to a target use of the Site (i.e. entrances, amenity space, thoroughfares etc.) which is a key component of wind microclimate assessments, and provides a scenario representative of the likely on-site wind microclimate. By undertaking an assessment of the Illustrative Scheme, it demonstrates that a detailed scheme could come forward within the parameters sought for approval, which would be acceptable from a wind perspective.

**13.29** Testing the Maximum Parameter Model of the Proposed Development and the Illustrative Scheme provides a robust assessment of the worst range of possible wind conditions on-site (being the Maximum Parameter Model of the Outline Proposals of the Proposed Development) with a more realistic scenario (the Illustrative Scheme). Mitigation is only conducted on the Illustrative Scheme as it provides a more realistic representation of the real wind conditions when the Proposed Development comes forward. Mitigating the Maximum Parameter Model scheme would not be reasonable and would result in unnecessarily large measures which could be unfeasible and unrealistic; this would not be representative of a scheme which could be developed and for which no landscaping has been proposed.

**13.30** The detailed wind mitigation strategy would be tested at the RMA stage and secured by an appropriately worded planning condition as relevant and more specific mitigation would be developed if required and be part of the design/landscaping of each specific future detailed phase of development.

### *Assumptions and Limitations*

**13.31** It is assumed that there will be site hoarding with restricted access (i.e. not accessible to the general public) across the site during the demolition and construction work. As the area would not typically be for the pedestrian use, windier conditions would be tolerable during demolition and construction activities.

**13.32** The assessment is based on worst-case wind speeds, expected to be encountered during the winter season (December, January and February) in the UK. Additional consideration has been made for summer (June, July and August) wind conditions due to the presence of roof terrace level public amenity space. This complies with the standard methodology set out by Lawson (discussed in **paragraph 13.43**) for wind-microclimate assessments.

**13.33** The usage of outdoor amenity spaces and rooftop terraces has been assessed for the summer season only as it is expected that the wind environment will play a larger role in the usability of these spaces during this period. During the windiest season (winter), it is expected that other environmental factors (such as precipitation and temperature) would play more of a role in the usability of these spaces.

## *Wind Tunnel Testing Methodology*

**13.34** The methodology for quantifying the pedestrian level wind environment is outlined below within four steps. Full details of the assessment methodology can be obtained by reference to **ES Volume 3, Appendix Wind Microclimate - Annex 2**:

- Step 1: The subject site's induced wind speeds are measured for the appropriate configuration(s) at the appropriate pedestrian level(s) in the wind tunnel;

- Step 2: Standard meteorological data is adjusted to account for conditions at a subject site (for this assessment, meteorological data has been derived from London meteorological stations (Heathrow and London City Airports));
- Step 3: Data from Step 1 and Step 2 is combined to obtain the expected frequency and magnitude of wind speed for the appropriate configuration(s) and at the appropriate pedestrian level(s); and
- Step 4: The results of Step 3 are compared with the Lawson Comfort Criteria (and where relevant, the change in the wind microclimate conditions between appropriate test configuration(s)) to 'grade / score' the conditions within and around a subject site.

**13.35** To produce the results within the wind tunnel, a 1:300 scale model comprising the site and the surrounding area (including relevant existing and future buildings and other topographical features) was constructed allowing for the surrounding area within a 450 metre (m) radius of the centre of the site of the Proposed Development to be modelled (the radius is determined based on the scale model and due to the physical constraints of the wind tunnel test section) (**Figure 13.1**). This radius is considered a large enough scale to ensure all likely wind effects are captured. Other developments outside the 450m radius of the site would not individually be expected to modify the wind approaching the site and as such have been included within the analysis of the surrounding terrain.

**13.36** In order to model the likely effects of gustiness or turbulence (which depends on the geographical location) a series of spires and floor roughness elements have been employed in the wind tunnel in order to create a 'boundary layer' that is representative of the urban location of the site.

**13.37** Wind speed measurements around the Site for the tested configurations were established using Irwin probes. These measure the mean and peak (gust) wind speeds at a full-scale height of approximately 1.5m above the surface upon which the probe is located. These results are combined with long-term meteorological climate data for the London area and then benchmarked against the Lawson Comfort Criteria (LDDC variant - both in terms of pedestrian comfort and safety), to determine the suitability of different areas within and surrounding the site.

**13.38** The wind speed was measured at up to 496 locations for the Proposed Development scenarios and the baseline scenarios for all wind directions in equal increments, with 0˚ representing wind blowing from the north and 90˚ wind from the east (and so on). Some probe numbers will not be present in specific configurations due to probe locations clashing with the existing buildings or the probed building is not forming part of the assessment.

### *Model Configurations Assessed*

**13.39** The assessment of the wind microclimate is based on the results from the test of the physical model within the wind tunnel to provide a detailed, quantitative assessment.

**13.40** Therefore, the wind microclimate across the Site was tested for the following configurations:

- Configuration 1: Existing Site with Existing Surrounding Buildings;
- Configuration 2: Detailed Proposals (Phase A) with Existing Surrounding Buildings;
- Configuration 3: Proposed Development (Outline Proposals plus Detailed Proposals) with Existing Surrounding Buildings;
- Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings;
- Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures;
- Configuration 6: Existing Site with Cumulative Surrounding Buildings;
- Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings;
- Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings;
- Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings; and
- Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures.

**13.41** No landscaping has been assessed for Configurations 1-4 and 6-9 in order to present a worst-case scenario. The proposed landscaping design along with the developed wind mitigation measures have been incorporated into Configurations 5 and 10 to test the effectiveness of the proposed landscaping scheme and wind mitigation measures.

**13.42** Discussion of Configurations 5 and 10 are based on outcomes of several wind mitigation workshops that were undertaken with the design team to collectively establish and agree suitable wind mitigation measures to resolve any comfort/safety issues within and around the Proposed Development.

**13.43** The cumulative schemes identified within the 450m radius of the Site assessed in the wind tunnel model (in Configurations 6-10) are:

- Leven Road Gasworks (Planning Ref: PA/18/02803/A1);
- Former Poplar Bus Depot (Planning Ref: PA/19/02148/A1)
- Ailsa Wharf (Planning Ref: PA/16/02692 & PA/18/03461); and
- Islay Wharf (Planning Ref: PA/19/01760).

**Figure 13.1 View from the south of the Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings in the wind tunnel (Configuration 8)**

### *Assessment Criteria*

#### *Lawson Comfort Criteria*

**13.44** The assessment of the wind conditions requires a standard against which the measurements can be compared. The assessment of the wind tunnel test results presented in this ES chapter adopts the Lawson Comfort Criteria

('the Lawson Criteria') (LDDC version)[1]. The Lawson Comfort Criteria, which seek to define the reaction of an average pedestrian to the wind, are described in **Figure 13.1**. If the measured wind conditions exceed the threshold wind speed for more than 5% of the time, then they are unacceptable for the stated pedestrian activity and the expectation is that there may be complaints of nuisance or people will not use the area for its intended purpose

**13.45** The Lawson Comfort Criteria sets out four pedestrian activities and reflects the fact that less active pursuits require more benign wind conditions. The four categories are sitting, standing, strolling and walking, in ascending order of activity level, with a fifth category for conditions that are uncomfortable for all pedestrian uses. In other words, the wind conditions in an area for sitting need to be calmer than a location that people merely walk past. The distinction between strolling and walking is that in the strolling scenario pedestrians are more likely to take on a leisurely pace, with the intention of taking time to move through the area, whereas in the walking scenario pedestrians are intending to move through the area quickly and are therefore expected to be more tolerant of stronger winds.

**13.46** The Lawson Comfort Criteria are derived for open air conditions and assume that pedestrians would be suitably dressed for the season. Thermal comfort is not evaluated as part of the assessment.

**13.47** The coloured key in **Table 13.1** corresponds to the presentation of wind tunnel test results described later in this ES Chapter.

**Table 13.1 Lawson Comfort Criteria**

| Key | Comfort Category | Threshold | Description |
|---|---|---|---|
| | Sitting | 0-4 m/s | Light breezes desired for outdoor restaurants and seating areas where one can read a paper or comfortably sit for long periods. |
| | Standing | 4-6 m/s | Gentle breezes suitable for main building entrances, pick-up/drop-off points and bus stops. |
| | Strolling[2] | 6-8 m/s | Moderate breezes that would be appropriate for strolling along a city/town centre street, plaza or park. |
| | Walking | 8-10 m/s | Relatively high speeds that can be tolerated if the objective is to walk, run or cycle without lingering. |
| | Uncomfortable | >10 m/s | Winds of this magnitude are considered a nuisance for most activities, and wind mitigation is typically recommended. |

*Target Wind Conditions*

**13.48** For a mixed-use urban environment, such as the site and surrounding area, the desired wind microclimate for the Proposed Development and surrounding area would typically need to have areas suitable for sitting, standing/entrance use and strolling.

**13.49** The walking and uncomfortable classifications may be acceptable in isolated areas, but these classifications are also associated with occasional strong winds (which are described below) and so the aim has been to avoid conditions falling into these categories.

**13.50** The assessment is based on worst-case wind speeds, expected to be encountered during the winter season (December, January and February) in the UK. Additional consideration has been made for summer (June, July and August) wind conditions due to the presence of above ground amenity spaces (podium, terrace and balcony levels). This complies with the standard methodology set out by Lawson for wind-microclimate assessments.

*Thoroughfares*

**13.51** A pedestrian thoroughfare should be suitable for strolling or calmer during the windiest season. The assessment for pedestrian thoroughfares therefore focuses on the windiest season result, as a worst-case assessment.

**13.52** Localised occurrences of walking conditions may be acceptable in areas with limited footfall, or service areas, as long as the strong wind criteria (see section '*Strong Winds*') is not exceeded.

*Entrances*

**13.53** In areas in proximity to building entrances, a wind environment suitable for standing or calmer is desired, as pedestrians will transition from the calm indoors to the windier outdoors throughout the year. The assessment for building entrances therefore focuses on the windiest season result, as a worst-case assessment.

**13.54** Generally, an entrance that is recessed provides a transitional zone with calmer wind conditions for pedestrians exiting the building. If strolling conditions were observed on the pavement outside a recessed entrance, acceptable standing conditions would be expected at the recessed entrance and would therefore be suitable for an entrance use.

*Pedestrian Crossings*

**13.55** Pedestrian crossings should be suitable for walking or calmer use during the windiest season.

*Bus Stops*

**13.56** Bus stops should have wind conditions suitable for standing or calmer use during the windiest season.

*Amenity Areas and Podium Terraces*

**13.57** The target conditions for seating in amenity areas is a wind microclimate that is suitable for sitting use during the summer season. This is because these areas are more likely to be frequently used during the summer when pedestrians would expect to be able to sit comfortably. If an area is classified as suitable for sitting in the summer, the windier conditions that occur during the winter season usually mean that the area would be classified as suitable for standing in the windiest season, unless additional shelter was provided. This is considered to be tolerable on the basis that such an area would be most frequently used for sitting during the summer months. At other times of the year, the expectation of usability is lower due to other factors such as temperature and precipitation.

**13.58** Large upper-level terraces and large amenity spaces are assessed on the basis that they are intended for good weather use only. A mix of sitting and standing conditions during the summer would be acceptable provided that any desired seating areas are situated in areas having sitting use wind conditions.

*Balconies*

**13.59** The target wind conditions for balcony levels is a wind microclimate that is suitable for standing use or calmer during the summer season.

*Strong Winds*

**13.60** The Lawson Criteria also specifies a strong wind threshold when winds exceed 15m/s for more than 0.025% of the time (approximately 2.2 hours of the year) and would have the potential to cause distress to pedestrians and cyclists. These instances are referred to as 'S15 Exceeded' in the figures. Exceedance of this threshold may indicate a need for remedial measures or a careful assessment of the expected use of that location; e.g. is it reasonable to expect older adults or young children to be present at the location on the windiest day of the year?

**13.61** Wind speeds that exceed 20m/s for more than 0.025% of the time (approximately 2.2 hours of the year) represent safety issues for all members of the population and would require mitigation to provide an appropriate wind microclimate environment. These instances are referred to as 'S20 Exceeded' in the figures.

**13.62** Strong winds are generally associated with areas which would be classified as acceptable for walking or conditions which would be considered uncomfortable. In a mixed-use urban development scheme, walking and uncomfortable conditions would not usually form part of the 'target' wind environment and would usually require mitigation due to pedestrian comfort considerations. This mitigation would also have the impact of reducing the frequency of, or even eliminate, any strong winds.

*Vehicles and Cyclists*

**13.63** The Lawson Criteria does not specifically assess the potential for vehicles to overturn in high winds. However, given that strong wind occurrences would require mitigation in any case (for the safety of pedestrians and cyclists), such mitigation would also minimise the risk of vehicle overturning.

[1] *Building Aerodynamics, (2001); Lawson T.*

[2] *The distinction between strolling and walking is that in the strolling scenario, pedestrians are more likely to take on a leisurely pace, with the intention of taking time to move through the area, whereas in the walking scenario pedestrians are intending to move through the area quickly and are therefore expected to be more tolerant of stronger winds.*

**13.64** The Lawson Criteria does not specify criteria for acceptable wind conditions for cyclists; however, the occurrence of winds exceeding the strong winds threshold would be considered unsuitable for cyclists. The assessment for roads focuses on annual strong winds.

### *Methodology for Defining Effects*

#### *Receptors and Receptor Sensitivity*

**13.65** The sensitivity of a receptor at the Site in the presence of the Proposed Development is high and equal for all measurement locations. This is because the effect criteria for the wind assessment is based on whether the wind environment of the Site is acceptable for the intended use. As such, an equal sensitivity is assigned to each receptor within and surrounding the Proposed Development. The geographical extent of the wind microclimate is expected to be within the Site and its immediate surroundings i.e. a local effect, for all receptors.

**13.66** The description of receptor categories for the site and the approach taken to the allocation of the probe locations to the categories is as follows:

- On-site locations:
  - Pedestrian Thoroughfares: includes areas that are immediately adjacent to the Proposed Development (i.e. within 5m of the building line). This also includes thoroughfares within the Proposed Development;
  - Entrances: includes entrances at ground level;
  - Amenity areas: ground floor, podium, balcony and roof terrace.
- Off-site locations:
  - All receptors falling outside the definition of the boundary of the Site; such as along roadways, car parks, surrounding building entrances, amenity areas (including terraces and balconies of nearby buildings), thoroughfares, bus stops and pedestrian crossings.

#### *Magnitude of Impact*

**13.67** The magnitude of impact for all receptors are defined as high. The impact of all receptors is consistent (in respect of the specific wind direction and speed defined by standard meteorological data) and the effect at each probe location is in accordance with the Lawson Comfort Criteria, described in **Figure 13.1.** The impacts to all receptors are the same, as any receptor which has wind conditions windier than required for the intended use will require mitigation, regardless of location.

#### *Defining the Effect*

**13.68** The assessment of the likely scale of effect is based on the comparison of the predicated wind conditions at a particular measurement location with the desired pedestrian use of the site as defined in the Lawson Comfort Criteria and defined in **Figure 13.2.** Where appropriate, wind conditions experienced across the site are also compared against the baseline conditions.

**13.69** In line with Lawson's overall methodology, strong winds (affecting pedestrian safety) are reported separately from the comfort assessment and do not form a part of the scale of effect criteria. This is due to the fact that any strong wind exceedance is considered to be significant and cannot be scaled to major / moderate / minor. Where strong winds occur, mitigation is required (as per adverse effects related to pedestrian comfort).

**Table 13.2 Scale And Nature of Effect**

| Expected Wind Microclimate | Scale and Nature of Effect |
|---|---|
| Wind conditions are 3-steps calmer than those desired | Major Beneficial |
| Wind conditions are 2-steps calmer than those desired | Moderate Beneficial |
| Wind conditions are 1-step calmer than those desired | Minor Beneficial |
| Wind conditions are as desired | Negligible |
| Wind conditions are 1-step winder than those desired | Minor Adverse |
| Wind conditions are 2-steps windier than those desired | Moderate Adverse |
| Wind conditions are 3-steps windier than those desired | Major Adverse |

**13.70** The minor, moderate and major categories indicate the severity of the change in wind conditions between the desired wind microclimate and the wind microclimate presented in the modelled results. As an example, if the desired wind conditions at a location are required to be suitable for 'Standing', but the predicted wind conditions are suitable for 'Strolling', the difference between the desired and predicted wind conditions is one category windier than desired. In this case, the scale of the effect would be identified as 'Minor Adverse'.

**13.71** The residual effects reported during demolition / construction of the Proposed Development are considered to be direct, local and short-term (temporary), whereas effects outlined in the assessment for the completed and occupied Proposed Development are direct, local and long-term (permanent).

#### *Categorising Likely Significant Effects*

**13.72** Any adverse effect is a 'significant effect' because it implies that a location, or area, has a wind microclimate that is unsuitable for the desired use of that area. On this basis, effects that are adverse need mitigating. Beneficial effects that are minor, moderate or major in scale are not considered to be significant. In addition, any identified strong winds will be classed as 'significant'.

**13.73** The 'Mitigation, Monitoring and Residual Effects' section of this ES chapter describes the remedial measures expected to mitigate the effect in the event of adverse effects occurring.

**13.74** In terms of off-site areas, wind conditions are compared to the baseline scenario and the intended use. If wind conditions remain consistent with or calmer than the baseline scenario, or remain suitable for the intended use, this would represent a negligible effect. However, if wind conditions around the site are winder than the baseline scenario and unsuitable for the intended use, the effect would be adverse and significant. Wind conditions off-site will only be classified as beneficial if wind conditions were not suitable for the intended use in the baseline scenario and are improved to be calmer than required for the intended use with the Proposed Development completed. If conditions are windier than the baseline, but remain suitable for the intended use, this would remain a negligible effect.

**13.75** Strong winds (affecting pedestrian safety) are not assigned a scale of effect and so overall significance but, are reported separately as any strong wind exceedance is significant and cannot be scaled to major/moderate/minor. Where strong winds occur, mitigation is required (as per adverse conditions related to pedestrian comfort).

**13.76** The discussion of wind conditions focused on the significant effects only due to the large number of receptors used for this assessment. All unmentioned areas would be appropriate for the intended use and thus deemed not significant.

## BASELINE CONDITIONS

### *Meteorological Data*

**13.77** The UK Meteorological Office supplies records of the number of hours that wind occurs for ranges of wind speed and by direction. Meteorological data for London Combined (Heathrow and London City Airports) provides a representation of the local wind microclimate for the wider London area. Further details of the meteorological data used for this assessment can be found in section 2.4 in **ES Volume 3, Appendix: Wind Microclimate - Annex 2**.

**13.78** The meteorological data obtained for London indicates that the prevailing wind throughout the year is from the south-west (i.e. 210 to 240 degrees on the compass). This is typical for many areas of southern England. There is a secondary peak from the north-east during the late spring and early summer. The winds from the north-east are not as strong as the prevailing winds from the south-west.

**13.79** The meteorological data from each airport has been corrected to open country conditions at 10m height, to account for the effects of nearby terrain, using the methodology set out in ESDU 01008[3].

*Configuration 1: Existing Site with Existing Surrounding Buildings*

**13.80** Wind conditions for Configuration 1 (the baseline scenario) are presented in **Figure 13.2** for the windiest season and **Figure 13.3** for the summer season. **Figure 13.4** presents summer season results for elevated levels. Occurrence of annual strong winds are presented in **Figure 13.5** for ground floor and **Figure 13.6** for elevated levels.

*Pedestrian Comfort*

**13.81** During the windiest season (**Figure 13.2**) wind conditions at all on-site and off-site probe locations (throughfares, entrances, bus stops and pedestrian crossings) range from suitable for sitting to standing use.

**13.82** Wind conditions during the summer season (**Figure 13.3**) are typically the same or one category calmer with a larger area fulfilling the sitting use criteria.

**13.83** Wind conditions at elevated levels of off-site buildings noted in **Figure 13.7** would also be suitable for sitting to standing use during the summer season (**Figure 13.4)**.

*Strong Winds*

**13.84** There are no instances of strong winds exceeding the safety threshold at any probe location within and around the site in the baseline scenario.

[3] *ESDU International, Computer program for wind speeds and turbulence properties: flat or hilly sites in terrain with roughness changes, ESDU 01008, 2001 01008*

**Figure 13.2 Configuration 1: Existing Site with Existing Surrounding Buildings – Ground Level (Windiest Season)**

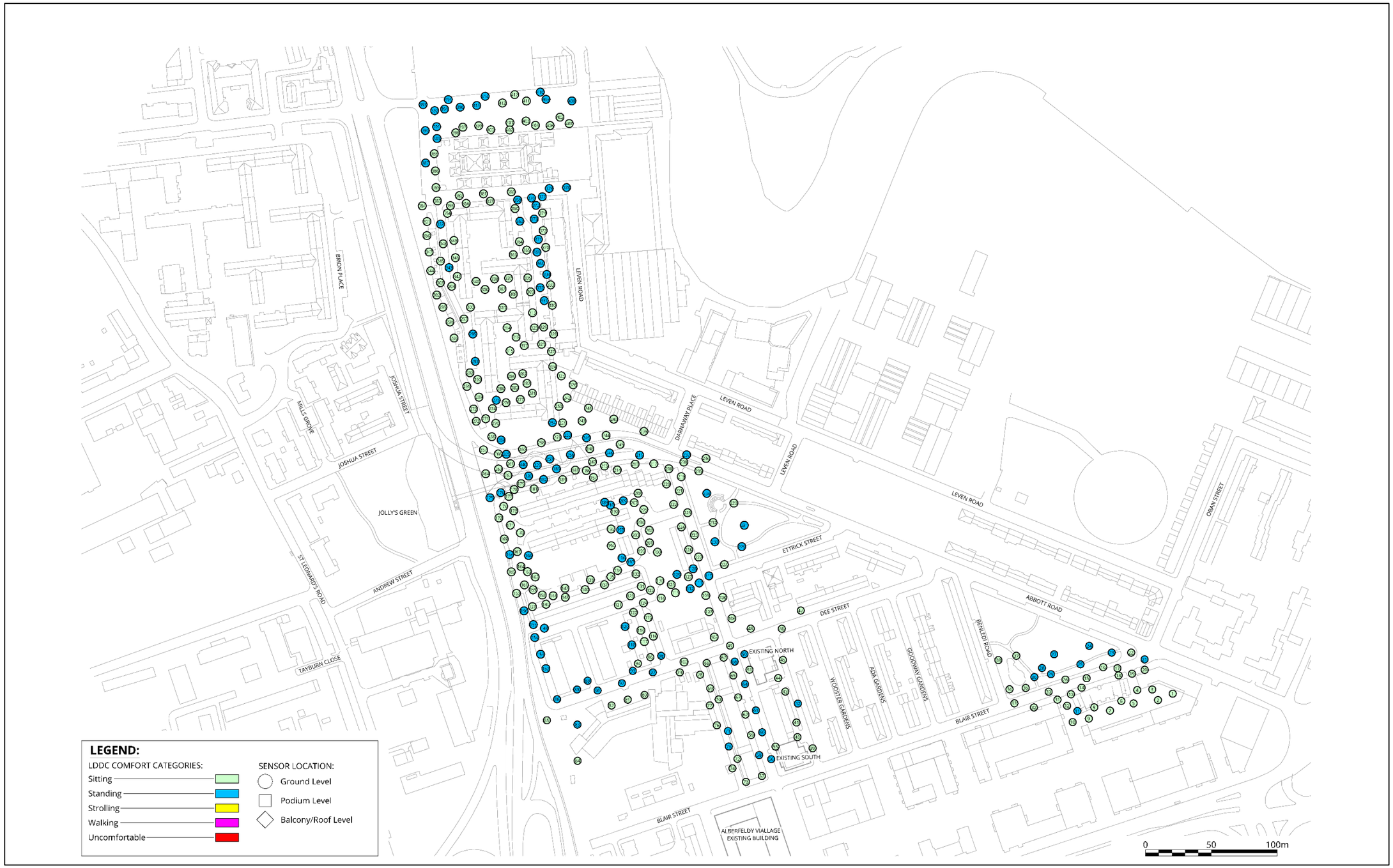


**Figure 13.3 Configuration 1: Existing Site with Existing Surrounding Buildings – Ground Level (Summer Season)**

**Figure 13.4 Configuration 1: Existing Site with Existing Surrounding Buildings – Elevated Levels (Summer Season)**

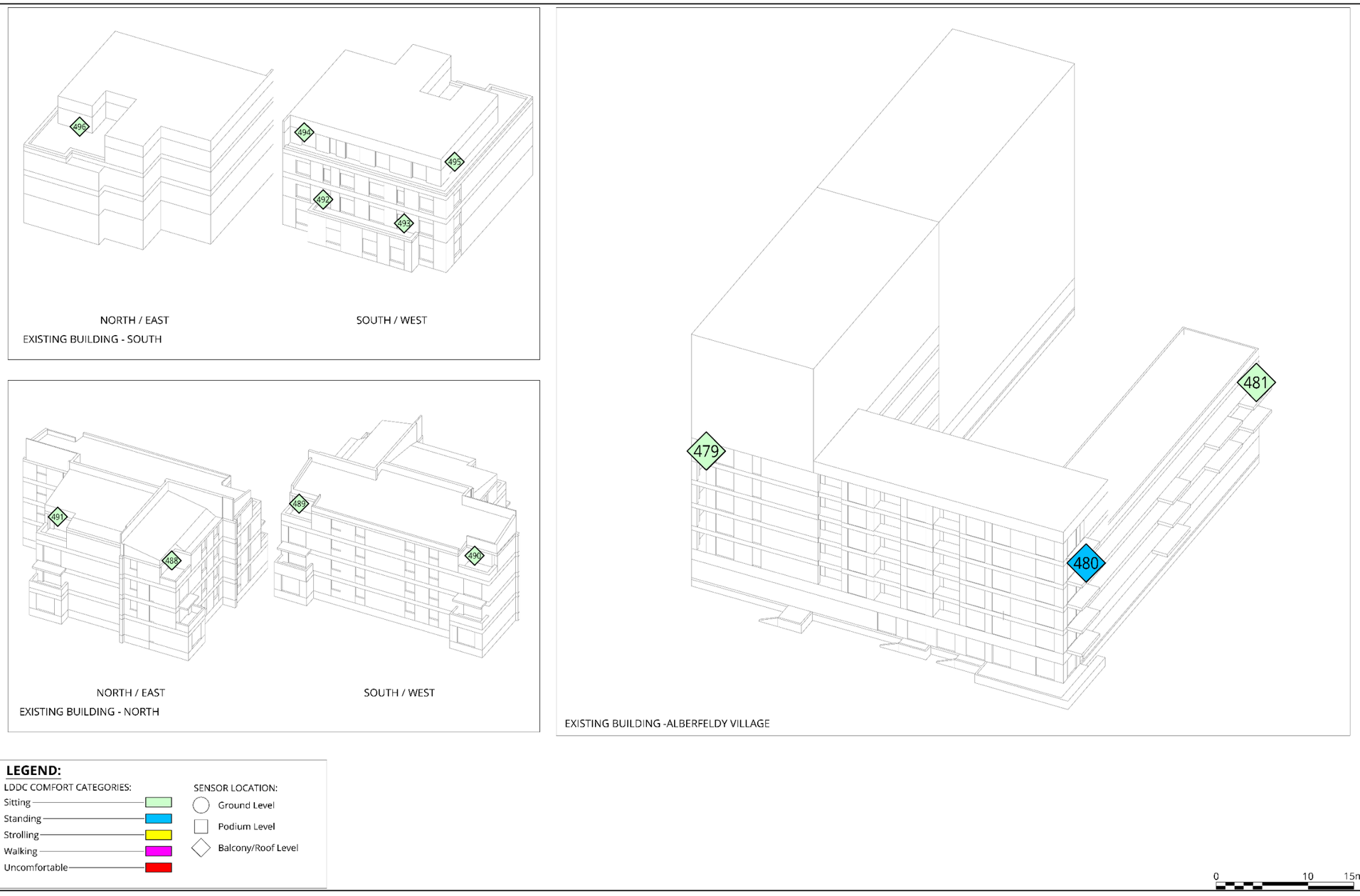


**Figure 13.5 Configuration 1: Existing Site with Existing Surrounding Buildings – Ground Level (Strong Winds)**

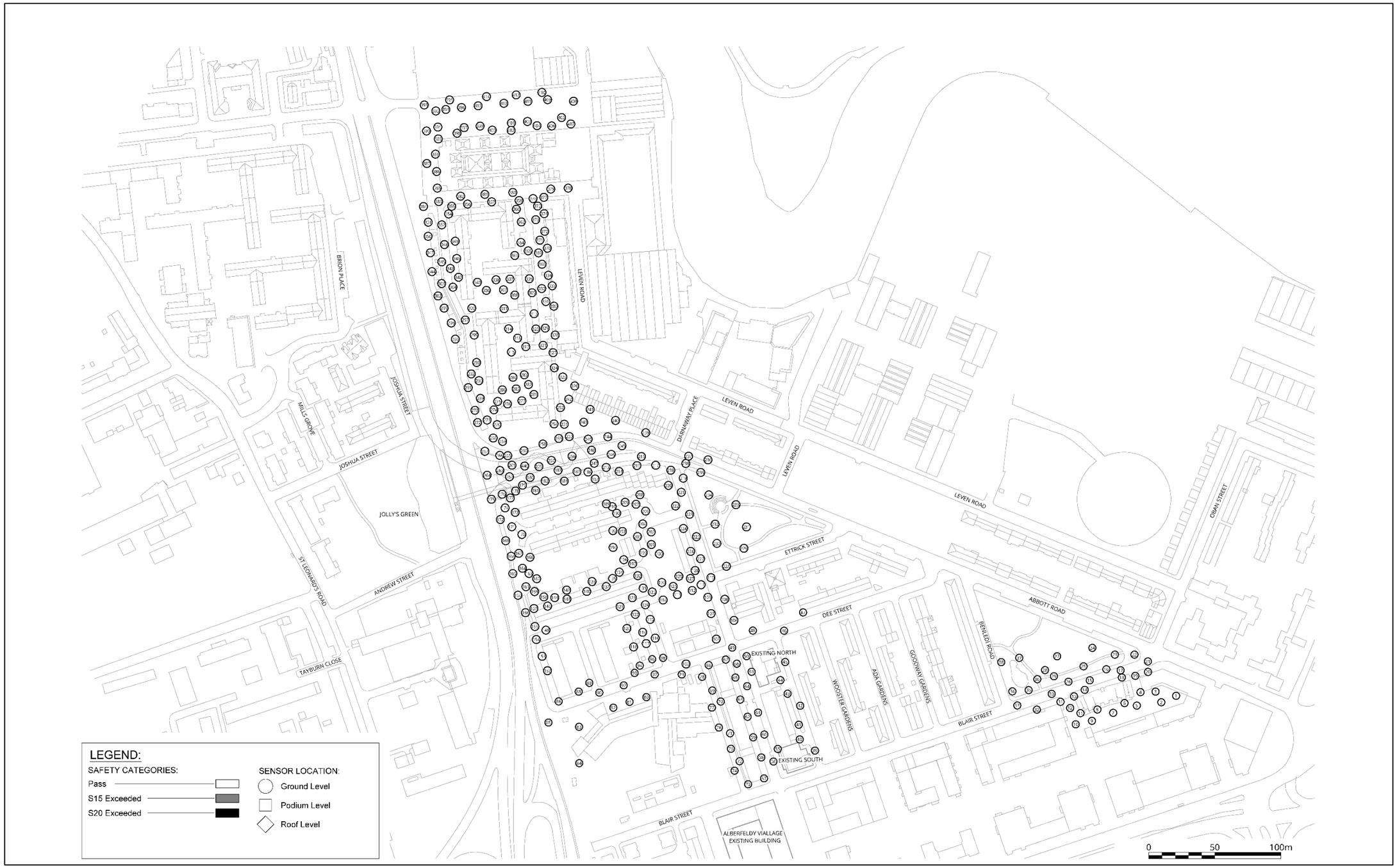
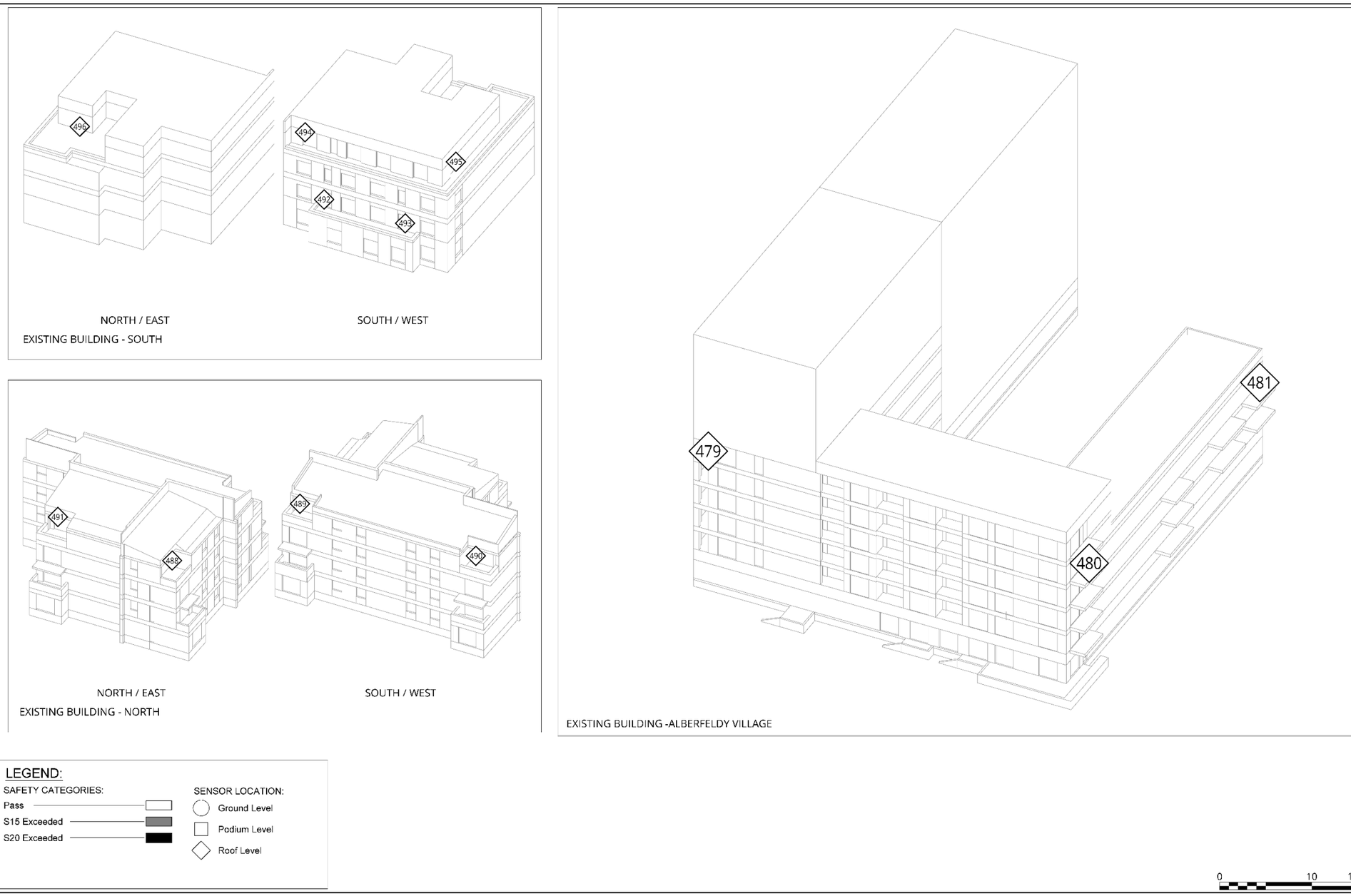


**Figure 13.6 Configuration 1: Existing Site with Existing Surrounding Buildings – Elevated Levels (Strong Winds)**



## RECEPTORS AND RECEPTOR SENSITIVITY

### *Existing*

**13.85** The existing sensitive receptors that could be affected by the Proposed Development include pedestrians and construction workers using the surrounding thoroughfares, the users of entrances at the immediate surrounding buildings and bus stops, and users of amenity space (including terraces and balconies)**. Table 13.3** sets out the probe location numbers and the corresponding receptors on the Site and in the surrounding area that would be affected by the Proposed Development.

**Table 13.3 Likely receptors of the Existing Site**

| Receptor Type (Season) | Required Wind Conditions | Receptor Reference (Measurement location numbers) |
|---|---|---|
| On-site | | |
| Pedestrian thoroughfares (Windiest) | Strolling | 1, 2, 3, 4, 6, 8, 11, 13, 16, 19, 22, 23, 25, 26, 28, 29, 31, 36, 37, 50, 51, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 74, 76, 77, 85, 88, 89, 93, 94, 96, 100, 107, 108, 110, 111, 112, 113, 116, 117, 118, 119, 121, 123, 124, 125, 126, 127, 128, 129, 130, 131, 134, 135, 137, 138, 140, 143, 144, 146, 148, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 167, 169, 170, 171, 175, 176, 177, 184, 185, 186, 187, 189, 192, 193, 194, 196, 197, 199, 200, 201, 202, 203, 204, 205, 207, 208, 209, 210, 215, 216, 217, 218, 219, 221, 223, 225, 227, 249, 252, 254, 257, 259, 264, 265, 267, 268, 270, 271, 272, 273, 274, 275, 276, 277, 281, 282, 283, 284, 286, 290, 293, 295, 297, 298, 299, 300, 302, 304, 306, 307, 309, 311, 313, 314, 315, 317, 318, 321, 326, 327, 329, 332, 335, 337, 338, 340, 343, 344, 345, 346, 348, 349, 350, 352, 354, 355, 356, 357, 359, 360, 362, 364, 365, 366, 369, 372, 373, 375, 376, 384, 391, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 410, 412, 414 |
| Entrances (Windiest) | Standing | 14, 18, 20, 32, 70, 71, 72, 73, 132, 142, 239, 240, 241, 285, 308, 334 |
| Bus Stops (Windiest) | Standing | 105, 106, 168 |
| Pedestrian Crossings (Windiest) | Walking | 237, 238 |
| Ground Level Amenity – Mixed Use (Summer) | Sitting/Standing | 24, 27, 34, 35, 38, 165, 166, 172, 173, 180, 183, 190, 213, 214, 371 |
| Roads/Car Parks (Strong Winds) | No Strong Winds | 5, 7, 9, 10, 12, 15, 17, 21, 30, 33, 39, 40, 41, 42, 43, 44, 45, 49, 69, 75, 86, 90, 92, 97, 98, 99, 109, 114, 115, 120, 122, 174, 178, 179, 181, 182, 220, 222, 224, 226, 242, 243, 244, 245, 246, 247, 248, 250, 251, 255, 256, 258, 260, 261, 262, 263, 266, 269, 289, 291, 292, 296, 303, 320, 324, 331, 342, 347, 351, 368, 392, 394, 409, 411, 413, 415, 440 |
| Off-site | | |
| Pedestrian thoroughfares (Windiest) | Strolling | 47, 48, 78, 79, 84, 228, 229, 230, 231, 232, 233, 234, 235, 236, 374, 383, 385, 387, 388, 390, 393 |
| Roof Amenity – Mixed Use (Summer) | Sitting/Standing | 496 |
| Balconies (Summer) | Sitting/Standing | 479, 480, 481, 488, 489, 490, 491, 492, 493, 494, 495 |
| Roads/Car Parks (Strong winds) | No Strong Winds | 46, 80, 81, 82, 328, 330, 333, 370, 377, 378, 379, 380, 381, 382, 386, 389 |

**13.86** Millennium Green was instrumented as it is located directly to the east of Block D and wind conditions would likely be influenced by the presence of this Block. In contrast, Leven Road Open Space is located much further away (to the east of Millennium Green) and wind conditions would unlikely be influenced by the presence of the Proposed Development.

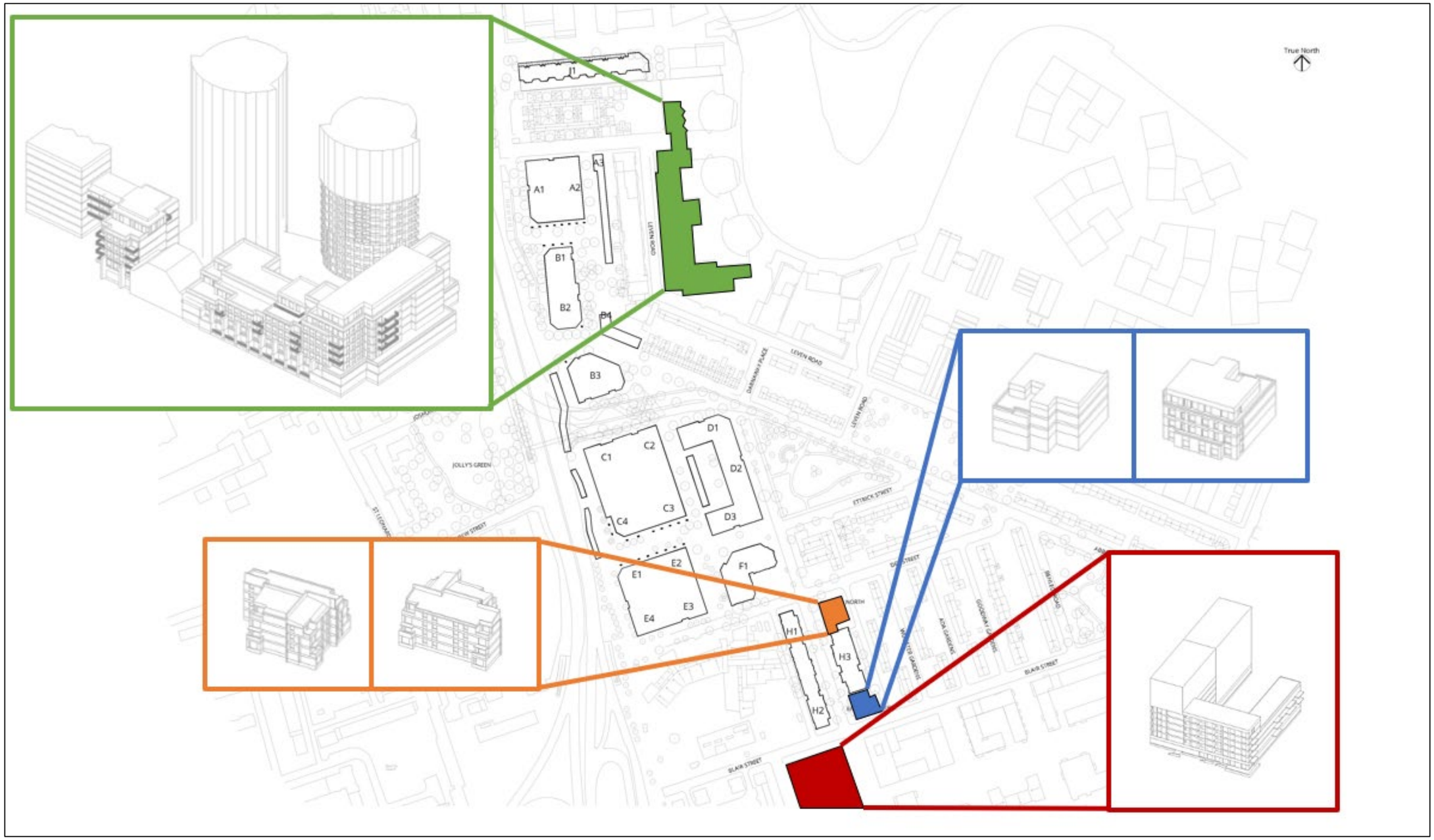
### *Introduced*

**13.87** The new sensitive receptors resulting from the introduction of the Proposed Development includes the users entering/exiting the Proposed Development; users of the open amenity areas/public realm in the Proposed Development (podium amenity, roof terraces and balconies); and pedestrians along thoroughfares that form part of the Proposed Development, in addition to the existing off-site sensitive receptors identified above. **Table 13.4** sets out the receptors and their corresponding location that are being introduced on the site as part of the Proposed Development. off-Site buildings within close proximity to the Proposed Development were instrumented to assess the balconies and roof terraces around the Proposed Development are presented in **Figure 13.7**.

**Table 13.4 Likely receptors of the Proposed Development**

| Receptor Type (Season) | Required Wind Conditions | Receptor Reference (Measurement location numbers) |
|---|---|---|
| On-site | | |
| Pedestrian thoroughfares (Windiest) | Strolling | 1, 2, 3, 4, 6, 8, 11, 13, 16, 19, 22, 23, 25, 26, 28, 29, 31, 36, 37, 41, 44, 50, 51, 53, 55, 56, 57, 60, 61, 64, 66, 67, 68, 71, 73, 74, 76, 77, 85, 87, 88, 93, 94, 95, 96, 98, 99, 101, 103, 104, 107, 108, 111, 117, 119, 123, 124, 128, 131, 132, 134, 135, 136, 144, 147, 148, 150, 151, 156, 157, 158, 160, 161, 164, 165, 167, 169, 172, 174, 175, 176, 177, 178, 179, 180, 182, 183, 185, 186, 187, 189, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 216, 217, 218, 219, 220, 227, 244, 245, 246, 247, 248, 249, 250, 251, 253, 254, 256, 258, 263, 264, 266, 267, 268, 269, 270, 271, 272, 274, 275, 277, 282, 283, 284, 288, 290, 292, 294, 296, 297, 298, 299, 301, 302, 303, 305, 307, 308, 310, 311, 314, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 329, 331, 332, 334, 336, 341, 342, 344, 345, 347, 350, 351, 354, 355, 358, 359, 363, 365, 368, 369, 371, 372, 373, 375, 376, 384, 391, 392, 394, 396, 398, 400, 402, 404, 405, 406, 407, 408, 409, 411, 413, 415 |
| Entrances (Windiest) | Standing | 14, 18, 20, 32, 40, 43, 52, 54, 58, 59, 62, 63, 65, 70, 72, 89, 91, 102, 109, 112, 113, 114, 116, 118, 120, 121, 129, 130, 138, 139, 141, 142, 145, 149, 162, 166, 170, 173, 181, 184, 188, 190, 191, 194, 195, 214, 215, 222, 224, 239, 240, 241, 242, 255, 260, 276, 278, 280, 287, 293, 295, 300, 306, 309, 313, 315, 335, 339, 346, 349, 353, 356, 357, 361, 366, 397, 399, 401, 403 |
| Bus Stops (Windiest) | Standing | 105, 106, 168 |
| Pedestrian Crossings (Windiest) | Walking | 237, 238 |
| Ground Level Amenity – Mixed Use (Summer) | Sitting/Standing | 24, 27, 34, 35, 38, 193, 257, 259, 261, 262, 440 |
| Ground Level Amenity – Seating (Summer) | Sitting | 115, 122, 192, 226, 265, 312, 316 |
| Podium Level Amenity – Mixed Use (Summer) | Sitting/Standing | 419, 420, 421, 428, 429, 430, 437, 438, 439 |
| Balconies (Summer) | Sitting/Standing | 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 477, 478 |
| Roads/Car Parks (Strong Winds) | No Strong Winds | 5, 7, 9, 10, 12, 15, 17, 21, 30, 33, 39, 42, 45, 49, 69, 75, 86, 90, 92, 97, 100, 110, 125, 126, 127, 133, 137, 140, 143, 146, 152, 153, 154, 155, 159, 163, 171, 221, 223, 225, 243, 252, 273, 279, 281, 285, 286, 289, 291, 304, 337, 338, 340, 343, 348, 352, 360, 362, 364, 367, 395, 410, 412, 414 |
| Off-site | | |
| Pedestrian thoroughfares (Windiest) | Strolling | 47, 48, 78, 79, 84, 228, 229, 230, 231, 232, 233, 234, 235, 236, 328, 330, 333, 370, 374, 377, 385, 386, 388, 389 |
| Ground Level Amenity – Mixed Use (Summer) | Sitting/Standing | 83 |
| Roof Amenity – Mixed Use (Summer) | Sitting/Standing | 483, 484, 486, 487, 496 |
| Balconies (Summer) | Sitting/Standing | 479, 480, 481, 488, 489, 490, 491, 492, 493, 494, 495 |
| Roads/Car Parks (Strong winds) | No Strong Winds | 46, 80, 81, 82, 237, 378, 379, 380, 381, 382, 383, 387, 390, 393 |

**Figure 13.7** **Off-Site Buildings Instrumented to Assess Balcony and Roof Terrace Wind Conditions**



## POTENTIAL EFFECTS

### *Demolition and Construction*

**13.88** Based on the description of the baseline environment (Configuration 1), it would be expected that conditions during demolition and construction would be suitable for a working construction site and pedestrian thoroughfares around the site (with the hoarding in place). Therefore, the likely effect is expected to be **Negligible (Not Significant)** and no design and/or management measures are considered necessary during the demolition and construction of the Proposed Development.

**13.89** During the demolition and construction period all off-site locations (thoroughfares, entrances and bus stops) would remain suitable for their intended uses. Strong winds exceeding the safety threshold would not occur at any off-site locations. It is therefore considered that there would be a **Negligible (Not Significant)** effect during demolition and construction of the Proposed Development.

**13.90** As construction of the Proposed Development (Outline and Detailed Proposals) progresses, wind conditions at the Site would gradually adjust from those of the existing Site to those of the completed Proposed Development, as described in the following section 'Completed Development' (the effects of which range from **Major Beneficial (Not Significant)** to **Moderate Adverse (Significant)** once the Proposed Development is accessible). The Completed Development results are considered to be a worst-case assessment for the likely wind environment during construction works.

**13.91** Wind mitigation measures discussed in **paragraphs 13.183 and 13.216** would need to be installed prior to the completion and occupation of the Proposed Development to mitigate against adverse wind conditions on-site once the Proposed Development is completed.

### *Completed Development*

#### *Detailed Proposals*

*Configuration 2: Detailed Proposals (Phase A) with Existing Surrounding Buildings*

**13.92** The assessment of the wind conditions for Configuration 2 is based on the results presented in **Figure 13.8** and **Figure 13.9** for the windiest and summer seasons respectively for ground floor level and **Figure 13.10** for elevated levels during the summer season. Safety exceedances are presented in **Figure 13.11** and **Figure 13.12** respectively for ground and elevated levels.

*Pedestrian Comfort*

**13.93** With the Detailed Proposals built out, wind conditions within and surrounding the Site would be suitable for sitting use to strolling use during the windiest season.

**13.94** During the summer season, wind conditions are either the same category or one category calmer and range from suitable for sitting to strolling use.

*Thoroughfares*

On-site

**13.95** Wind conditions at thoroughfares within the Detailed Proposed would range from sitting to strolling use during the windiest season. This would represent **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.96** All other thoroughfares within the Site would range from suitable for sitting to strolling use during the windiest season representing a **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

Off-site

**13.97** Off-site thoroughfares in the vicinity of the Site would be suitable for sitting (probe locations 47, 48, 79, 84, 228, 230, 231, 232, 233, 234, 235, 236, 328, 330, 333, 370, 374, 385, 386 and 388), and standing (probe locations 78, 229, 377 and 389) use during the windiest season, which would represent a **Negligible** (Not Significant) effect.

*Entrances*

**13.98** Wind conditions at the majority of entrances to the Detailed Proposals would be range from suitable for sitting to standing use representing a **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.99** The exception to this would be at probe locations 112 and 114 which would one category windier than suitable representing a **Minor Adverse (Significant)** effect.

**13.100** All other entrances within the Site would range from suitable for sitting to standing use during the windiest season representing a **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

*Bus stops*

**13.101** Bus stops around the Site would have wind conditions suitable for sitting (probe location 169) and standing (probe location 106) during the windiest season. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effect.

**13.102** Probe location 105 would be suitable for strolling use during the windiest season, one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Pedestrian Crossings*

**13.103** Wind conditions at pedestrian crossings around the Site (probe locations 237 and 238) would range from suitable for sitting to standing use during the windiest season representing a **Major Beneficial (Not Significant)** to **Moderate Beneficial (Not Significant)** effect.

*Ground Level Amenity – Mixed Use*

On-Site

**13.104** Wind conditions at ground level amenity spaces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.105** All other mixed-use amenity spaces around the Site would range from suitable for sitting to standing use during the summer season, representing a **Negligible (Not Significant)** effect.

Off-Site

**13.106** Wind conditions at the school court (represented by probe 83) would be suitable for sitting use during the summer season. This represents **Negligible (Not Significant)** effect.

*Ground Level Amenity – Seating*

**13.107** Wind conditions at ground level seating area (north-west of Plot F) within the Detailed Proposals presented by probe location 115 would be one category windier than suitable for sitting use. This represents **Minor Adverse (Significant)** effect.

*Roof Terrace Amenity – Mixed Use*

On-site

**13.108** Wind conditions at roof terraces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

Off-site

**13.109** Wind conditions at off-site roof terraces represented by probe location 496 would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Balcony Levels*

On-site

**13.110** The majority of wind conditions at balconies within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

**13.111** The exception to this would be at probe location 455 which would be one category windier than suitable for balcony use. This would represent a **Minor Adverse (Not Significant)** effect for the stack of balconies that probe 455 represents.

Off-site

**13.112** Wind conditions at off-site balconies of neighbouring buildings represented by probe locations 479, 480, 481, 488, 489, 490, 491, 492, 493, 494 and 495 would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Strong winds*

**13.113** There would be no instances of strong winds exceeding the safety threshold within or around the Detailed Proposals, including roads and car parks.

**Figure 13.8** **Configuration 2: Detailed Proposals (Phase A) with Existing Surrounding Buildings – Ground Level (Windiest Season)**

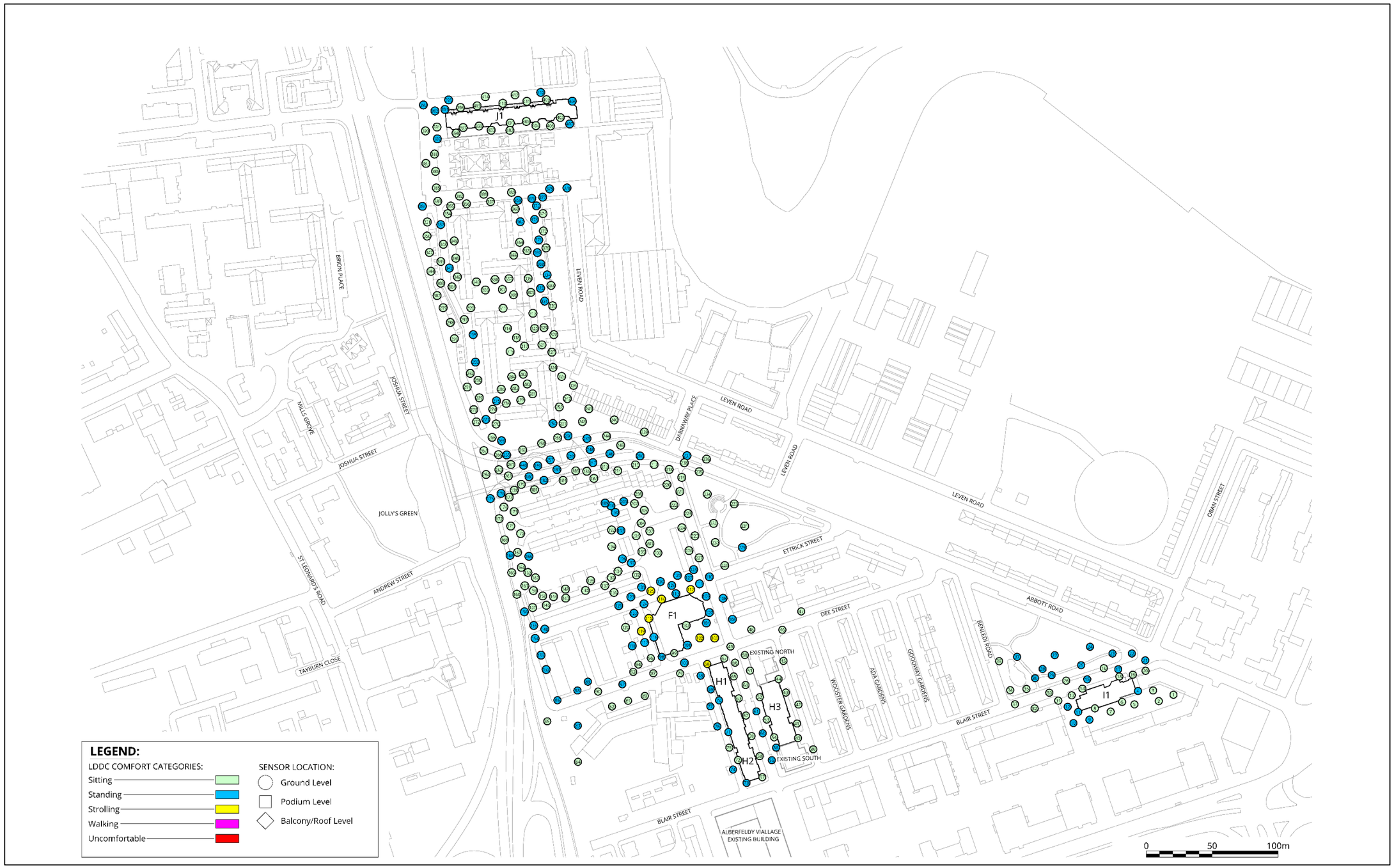


**Figure 13.9** **Configuration 2: Detailed Proposals (Phase A) with Existing Surrounding Buildings – Ground Level (Summer Season)**

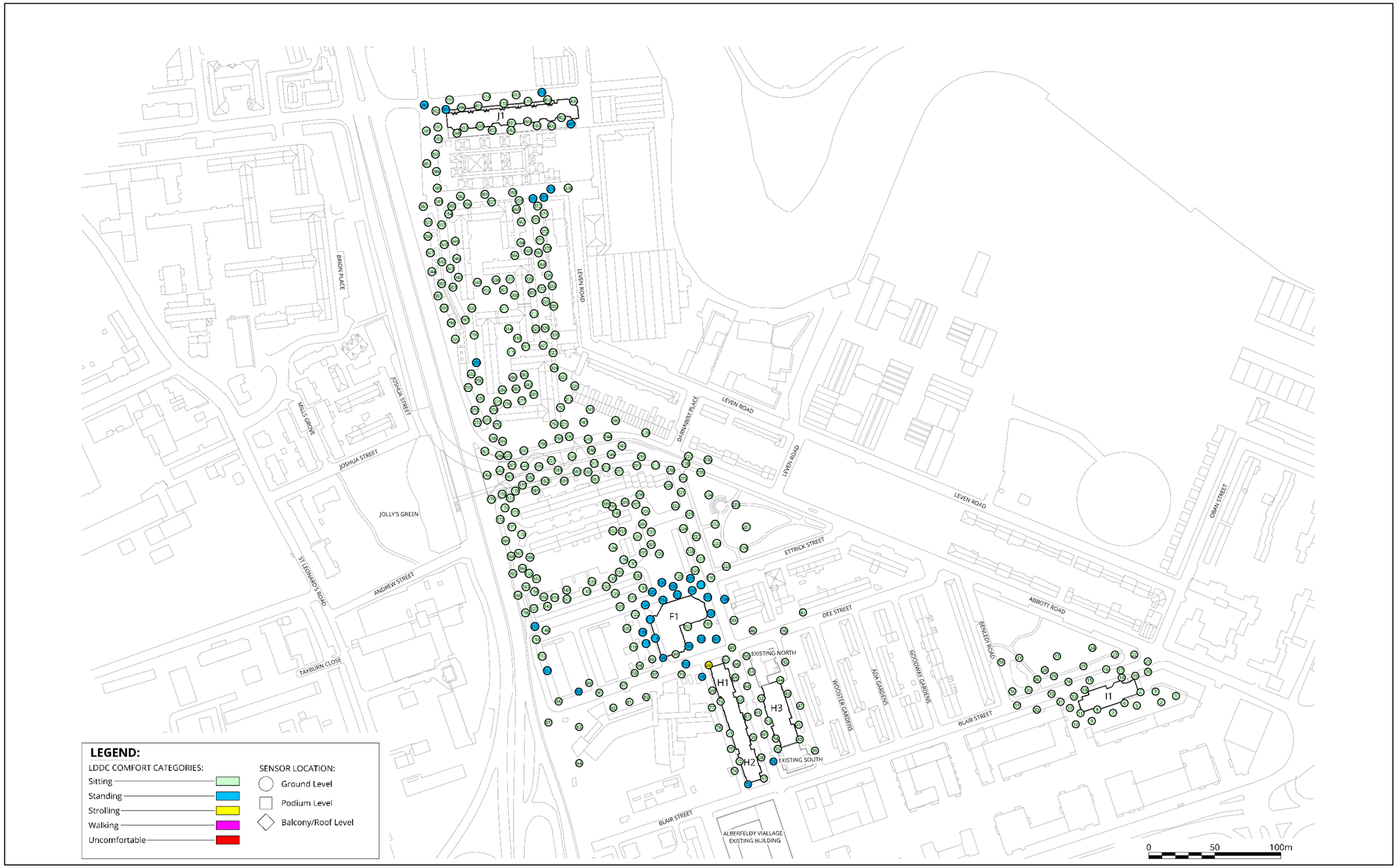


**Figure 13.10 Configuration 2: Detailed Proposals (Phase A) with Existing Surrounding Buildings – Elevated Levels (Summer Season)**

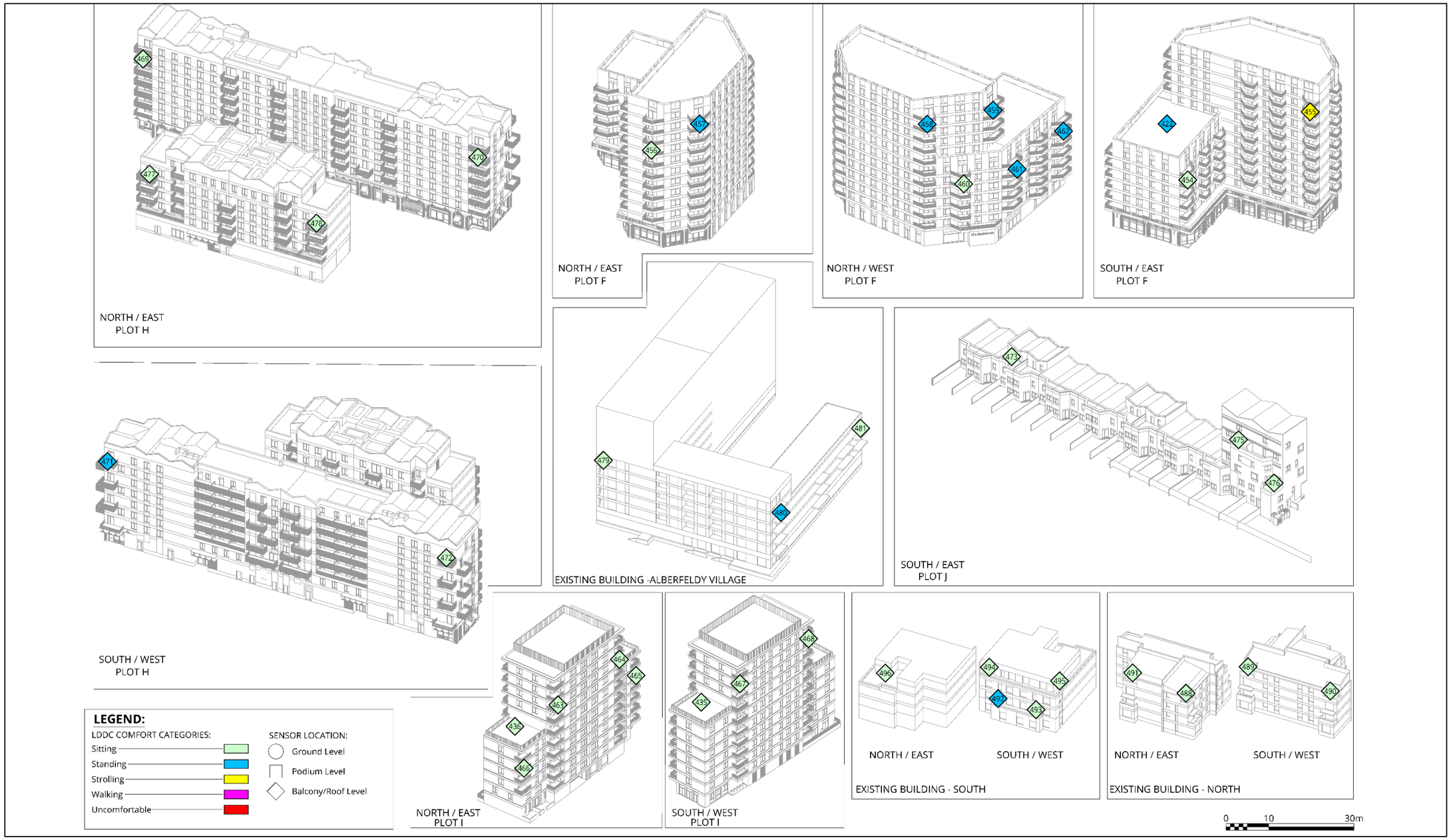


**Figure 13.11 Configuration 2: Detailed Proposals (Phase A) with Existing Surrounding Buildings – Ground Level (Strong Winds)**

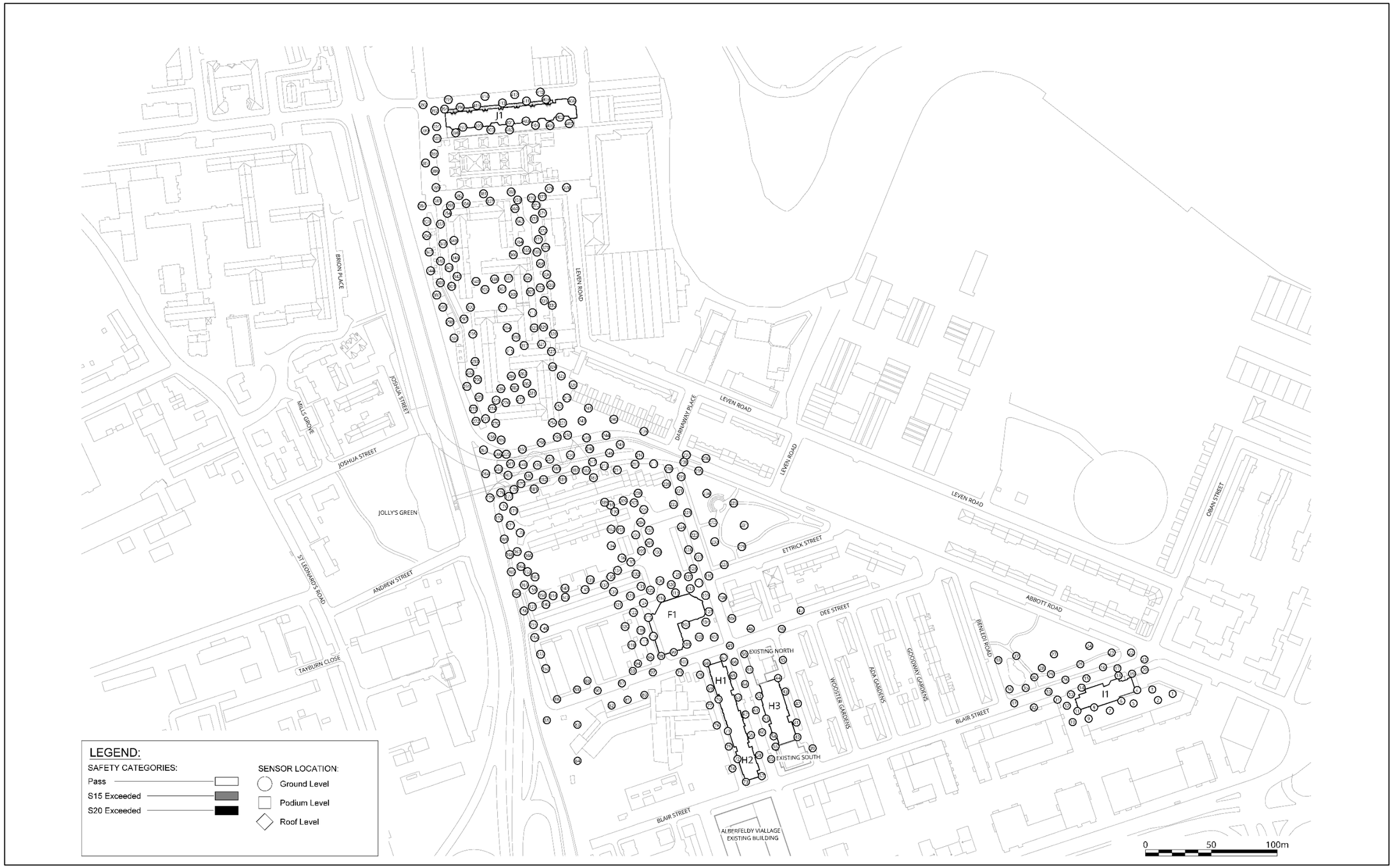
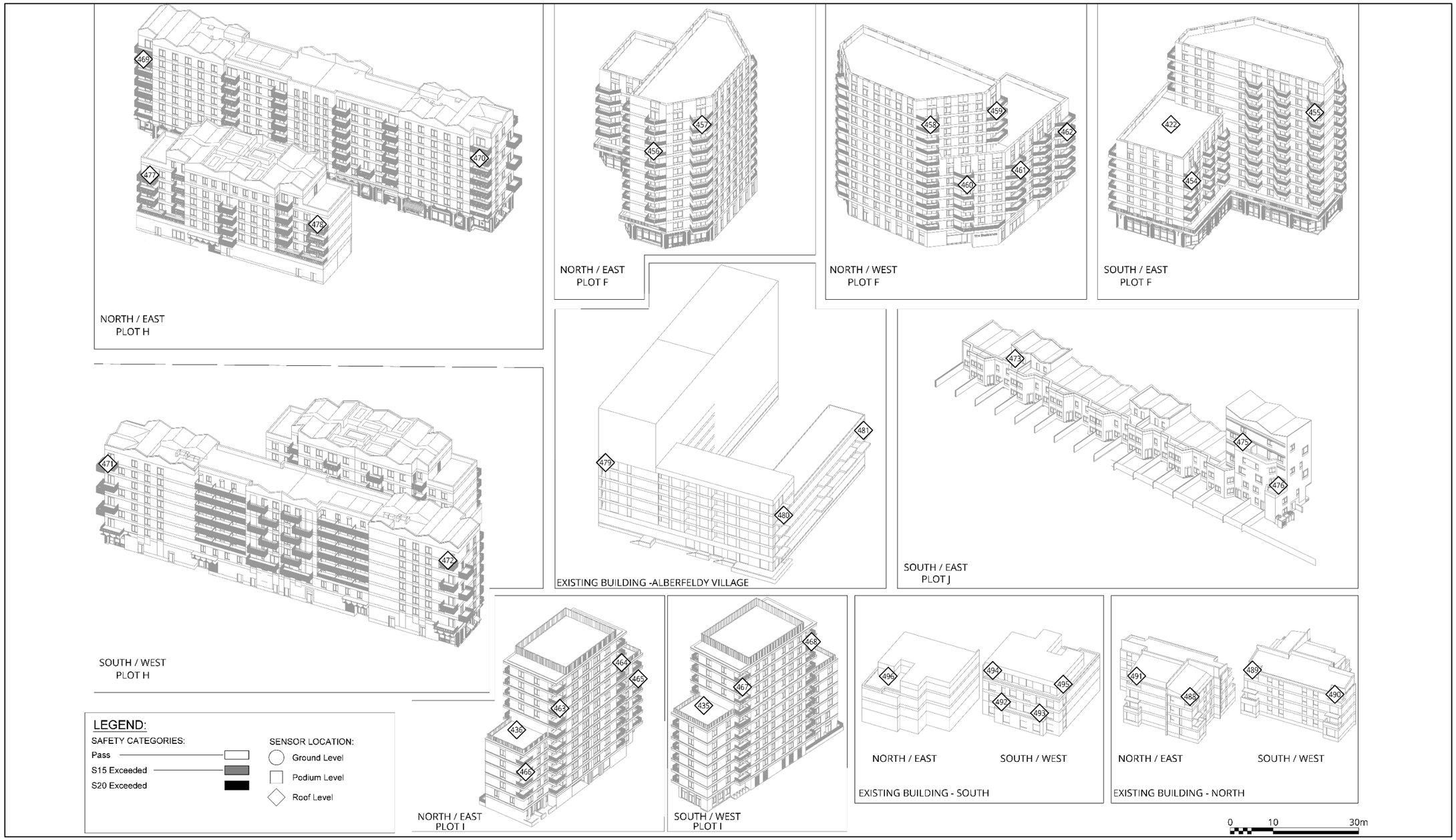


**Figure 13.12 Configuration 2: Detailed Proposals (Phase A) with Existing Surrounding Buildings – Elevated Levels (Strong Winds)**



*Proposed Development*

*Configuration 3: Proposed Development (Outline Proposals plus Detailed Proposals) with Existing Surrounding Buildings*

**13.114** The assessment of the wind conditions for Configuration 3 is based on the results presented in **Figure 13.13** and **Figure 13.14** for the windiest and summer seasons respectively for ground floor level and **Figure 13.15** and **Figure 13.16** for elevated levels during the summer season. Safety exceedances are presented in **Figure 13.17** and **Figure 13.18** and **Figure 13.19** respectively for ground and elevated levels.

*Pedestrian Comfort*

**13.115** With the introduction of the rest of the masterplan and Outline Proposals, wind conditions would improve around the Detailed Proposals particularly on the northern elevation of Plot F. However, the rest of the masterplan would continue to range from suitable for sitting to walking use during the windiest season.

**13.116** During the summer season, wind conditions are either the same category or one category calmer and range from suitable for sitting to strolling use.

*Thoroughfares*

Detailed Proposals

**13.117** Wind conditions at thoroughfares within the Detailed Proposals would range from suitable for sitting to strolling use during the windiest season, representing a **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

Outline Proposals

**13.118** Wind conditions at the majority of thoroughfares within the Outline Proposals would range from suitable for sitting to strolling use during the windiest season, representing a **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.119** The exception to this would be at probe locations 158, 177, 274, 275, 277, 284 and 305 which would be one category windier than suitable for the intended use. These conditions would represent a **Minor Adverse (Significant)** effect.

Off-site

**13.120** Off-site thoroughfares in the vicinity of the Proposed Development would range from suitable for sitting to strolling use representing a **Negligible (Not Significant)** effect.

*Entrances*

Detailed Proposals

**13.121** Wind conditions at the majority of entrances to the Detailed Proposals would range from suitable for sitting to standing use during the windiest season, representing a **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.122** The exception to this would be at probe locations 116 which would be one category windier than suitable for the intended use, thus representing a **Minor Adverse (Significant)** effect.

Outline Proposals

**13.123** Wind conditions at the majority of potential entrances to the Outline Proposals would range from suitable for sitting to standing use during the windiest season, representing a **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.124** The exception to this would be at probe locations 139, 142, 145, 162, 195, 255, 276, 278 and 280 which would be one category windier than suitable for entrance use representing a **Minor Adverse (Significant)** effect.

**13.125** Probe locations 141, 313 and 339 would be two categories windier than suitable for entrance use representing a **Moderate Adverse (Significant)** effect.

*Bus stops*

**13.126** Bus stops around the Proposed Development would have wind conditions suitable for sitting (probe location 169) and standing (probe location 106) during the windiest season. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effect.

**13.127** Probe location 105 would be suitable for strolling use during the windiest season, one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Pedestrian Crossings*

**13.128** Wind conditions at pedestrian crossings around the Site (probe locations 237 and 238) would be suitable for standing use during the windiest season representing a **Moderate Beneficial (Not Significant)** effect.

*Ground Level Amenity – Mixed Use*

Detailed Proposals

**13.129** Wind conditions at ground level amenity spaces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

Outline Proposals

**13.130** Wind conditions at the majority of ground level amenity spaces within the Outline Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.131** The exception to this would be at probe location 259 which would be one category windier than suitable for amenity use representing a **Minor Adverse (Significant)** effect.

Off-Site

**13.132** Wind conditions at the school court (represented by probe 83) would be suitable for sitting use during the summer season. This represents **Negligible (Not Significant)** effect.

*Ground Level Amenity – Seating*

Detailed Proposals

**13.133** Wind conditions at designated seating areas within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Outline Proposals

**13.134** Wind conditions at the majority of designated seating areas within the Outline Proposals would be suitable for sitting use during the summer season representing a **Negligible (Not Significant)** effect.

**13.135** The exception to this would be at probe locations 312 and 316 which would be one category windier than suitable for the intended use representing a **Minor Adverse (Significant)** effect.

**13.136** Probe location 265 would be two categories windier than suitable for the intended use representing a **Moderate Adverse (Significant)** effect.

*Podium Level Amenity – Mixed Use*

Outline Proposals

**13.137** Podium amenity spaces (at probe locations 419, 420, 421, 428, 429, 430, 437, 438 and 439) would range from suitable for sitting to standing use during the summer season. These wind conditions would represent a **Negligible (Not Significant)** effect.

*Roof Terrace Amenity – Mixed Use*

Detailed Proposals

**13.138** Wind conditions at roof terraces within the Detailed Proposals would be suitable for sitting use during the summer season. This represents a **Negligible (Not Significant)** effect.

Outline Proposals

**13.139** Wind conditions at the majority of roof terraces within the Outline Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.140** The exception to this would be at probe locations 416, 417, 426, 427, 434 which would be one category windier than suitable during the windiest season. This would represent a **Minor Adverse (Not Significant)** effect.

Off-site

**13.141** Wind conditions at off-site roof terraces represented by probe location 496 would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Balcony Levels*

Detailed Proposals

**13.142** Wind conditions at balconies within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Outline Proposals

**13.143** Wind conditions at balconies within the Outline Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Off-site

**13.144** Wind conditions at off-site balconies of neighbouring buildings represented by probe locations 479, 480, 481, 488, 489, 490, 491, 492, 493, 494 and 495 would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

### *Strong winds*

Detailed Proposals

**13.145** There would be no instances of strong winds exceeding the safety threshold within the Detailed Proposals.

Outline Proposals

**13.146** There would be instances of strong winds exceeding the safety threshold at probe locations 137, 140, 141, 143, 158, 177, 195, 265, 274, 277, 281, 286, 290, 305, 337, 338, 339, 340, 416, 426, 427 and 434 within or around the Proposed Development including roads and car parks.

**Figure 13.13 Configuration 3: Proposed Development (Outline Proposals plus Detailed Proposals) with Existing Surrounding Buildings – Ground Level (Windiest Season)**

**Figure 13.14 Configuration 3: Proposed Development (Outline Proposals plus Detailed Proposals) with Existing Surrounding Buildings – Ground Level (Summer Season)**

**Figure 13.15 Configuration 3: Proposed Development (Outline Proposals plus Detailed Proposals) with Existing Surrounding Buildings – Elevated Levels (Summer Season)**

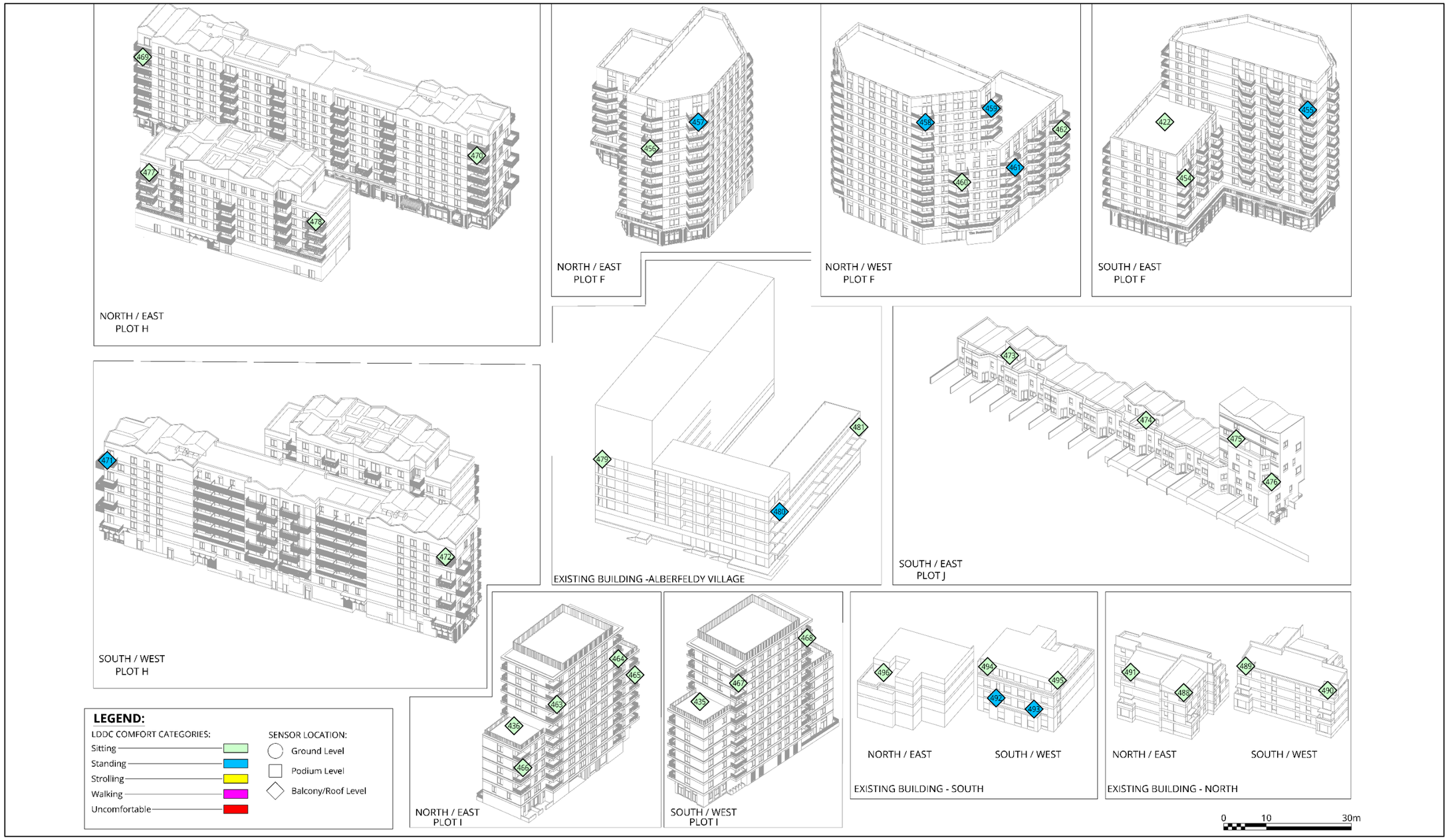


**Figure 13.16** **Configuration 3: Proposed Development (Outline Proposals plus Detailed Proposals) with Existing Surrounding Buildings – Elevated Levels (Summer Season)**

**Figure 13.17 Configuration 3: Proposed Development (Outline Proposals plus Detailed Proposals) with Existing Surrounding Buildings – Ground Level (Strong Winds)**

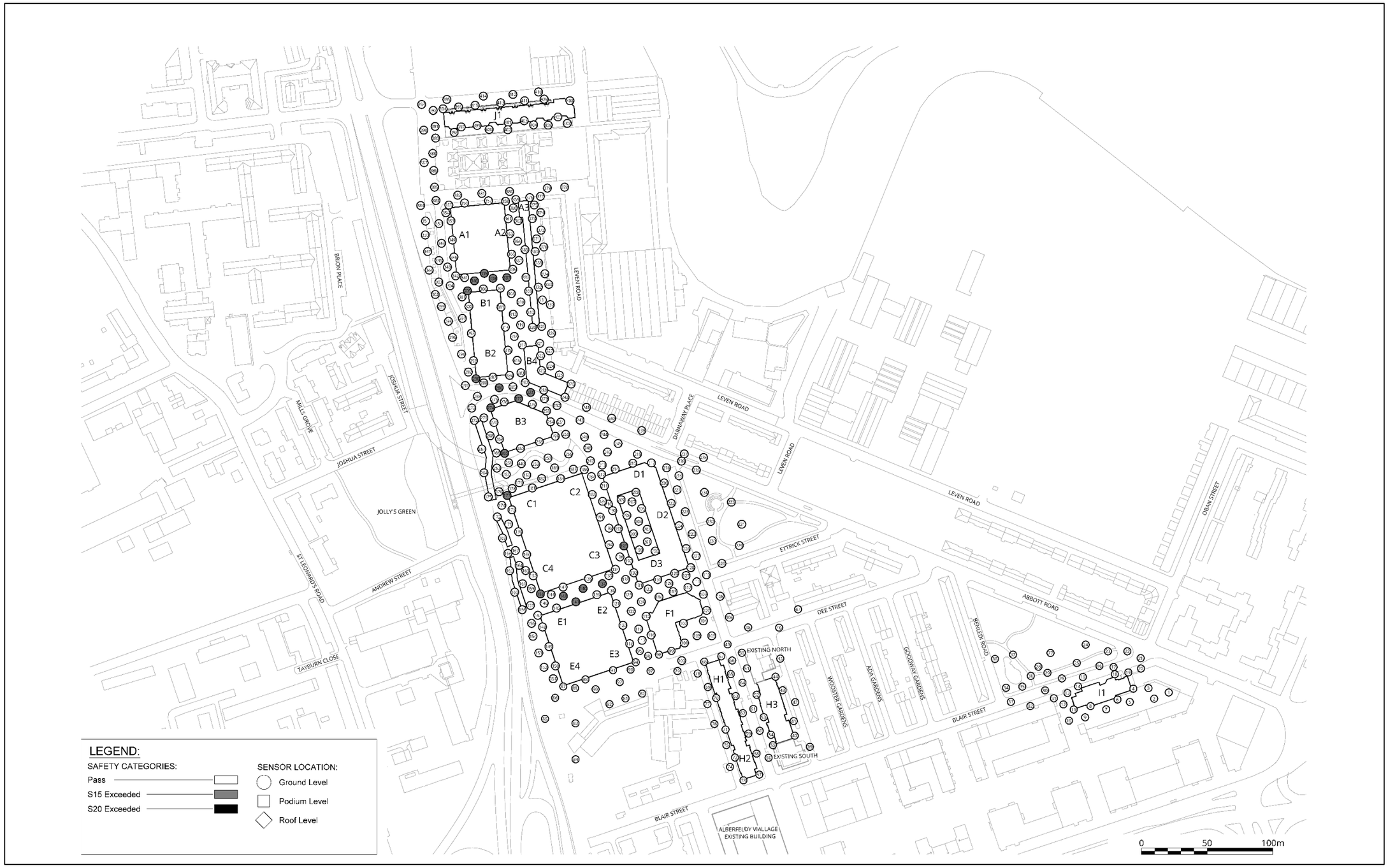


**Figure 13.18 Configuration 3: Proposed Development (Outline Proposals plus Detailed Proposals) with Existing Surrounding Buildings – Elevated Levels (Strong Winds)**

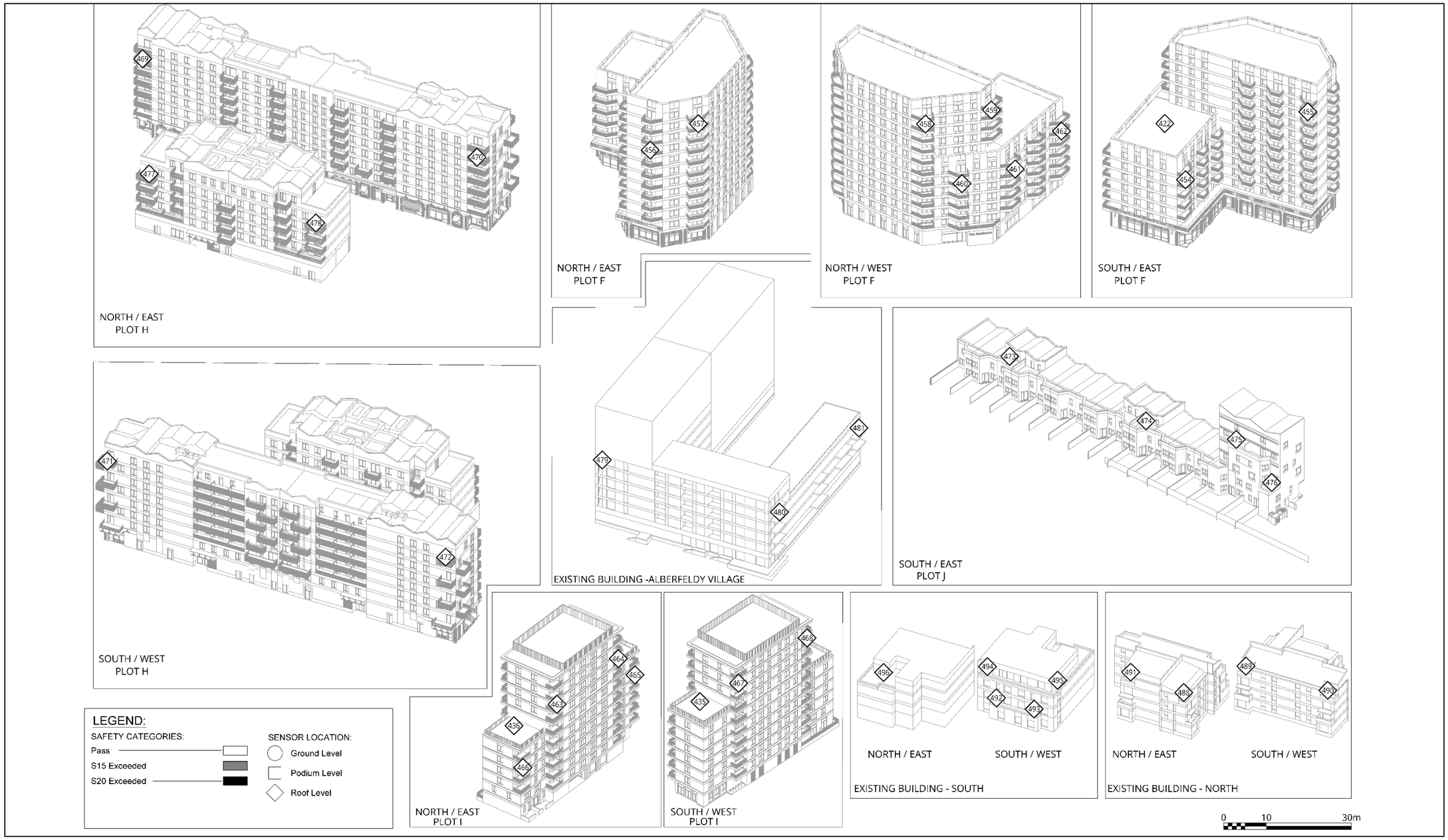
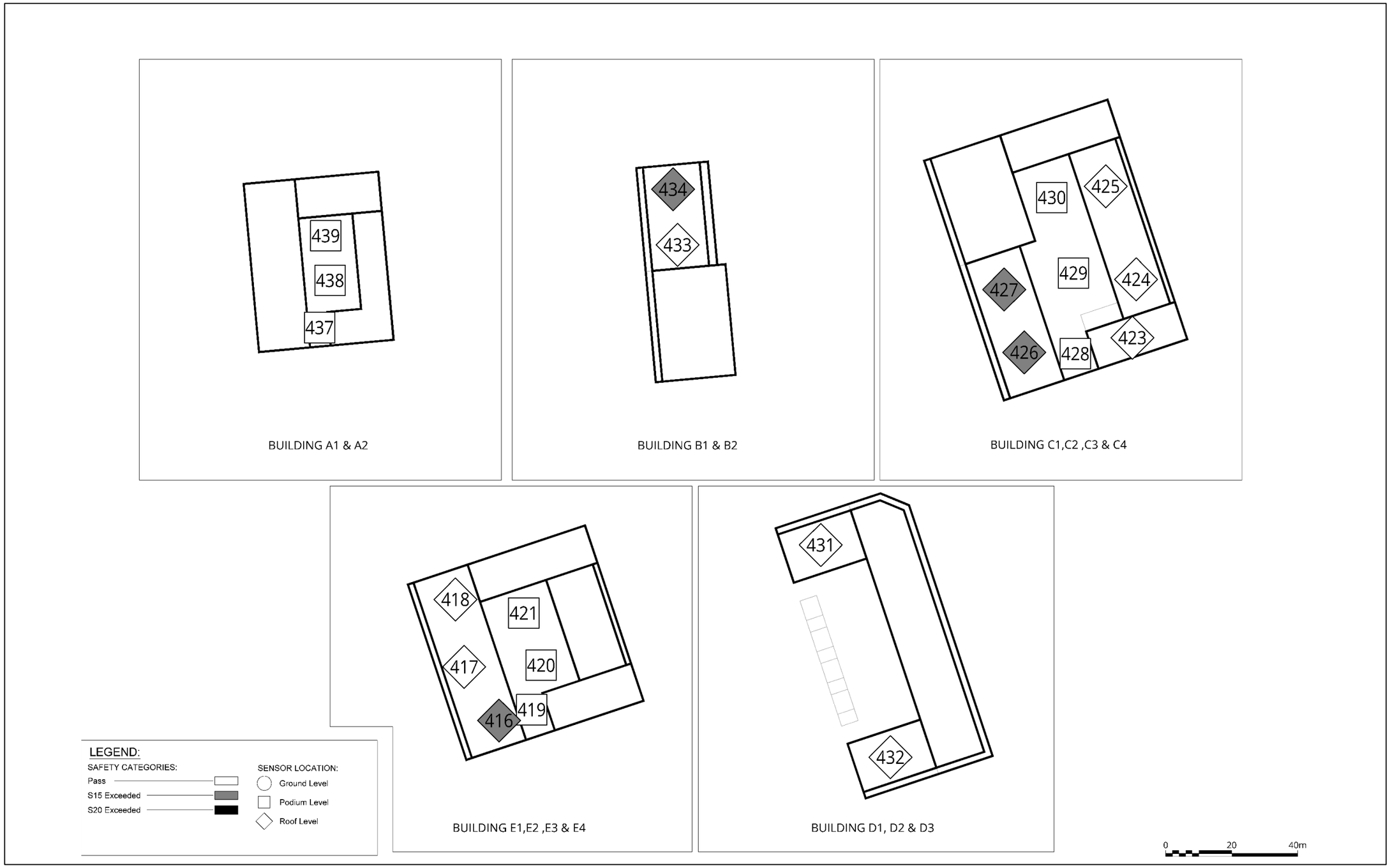


**Figure 13.19 Configuration 3: Proposed Development (Outline Proposals) and Phase A with Existing Surrounding Buildings – Elevated Levels (Strong Winds)**



*Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings*

**13.147** The assessment of the wind conditions for Configuration 4 is based on the results presented in **Figure 13.20** and **Figure 13.21** for the windiest and summer seasons respectively for ground floor level and **Figure 13.22** and **Figure 13.23** for elevated levels during the summer season. Safety exceedances are presented in **Figure 13.24** for ground floor level and **Figure 13.25** and **Figure 13.26** for elevated levels.

*Pedestrian Comfort*

**13.148** With the Illustrative Scheme in place of the Outline Proposals (in Configuration 3), wind conditions would remain largely similar to Configuration 3 and would continue to range from suitable for sitting to walking use during the windiest season.

**13.149** During the summer season, wind conditions are either the same category or one category calmer and range from suitable for sitting to strolling use.

*Thoroughfares*

Detailed Proposals

**13.150** Wind conditions at thoroughfares within the Detailed Proposals would range from suitable for sitting to strolling use during the windiest season, representing **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

Illustrative Scheme

**13.151** Wind conditions at the majority of thoroughfares within the Illustrative Scheme would range from suitable for sitting to strolling use during the windiest season, representing **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.152** The exception to this would be at probe locations 158, 177, 266, 274, 277 and 305 which would be one category windier than suitable for the intended use. These conditions would represent a **Minor Adverse (Significant)** effect.

Off-site

**13.153** Off-site thoroughfares in the vicinity of the Site would be suitable for sitting (probe locations 47, 79, 84, 228, 229, 230, 231, 232, 233, 234, 235, 330, 333, 370, 374 and 377), standing (probe locations 48, 78, 236, 328, 386, 388 and 389) and strolling (probe location 385) use during the windiest season, which would represent a **Negligible** (Not Significant) effect.

*Entrances*

Detailed Proposals

**13.154** Wind conditions at the majority of entrances to the Detailed Proposals would range from suitable for sitting to standing use during the windiest season, representing a **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.155** The exception to this would be at probe locations 116 which would be one category windier than suitable for the intended use, thus representing a **Minor Adverse (Significant)** effect.

Illustrative Scheme

**13.156** Wind conditions at the majority of entrances to the Illustrative Scheme would range from suitable for sitting to standing use during the windiest season. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.157** The exception to this would be at probe locations 141, 142, 145, 162, 195, 260, 280, 300 and 335 which would be one category windier than suitable for entrance use. These would represent a **Minor Adverse (Significant)** effect.

**13.158** Probe locations 276 and 339 would be two categories windier than suitable for entrance use. These would represent a **Moderate Adverse (Significant)** effect.

**13.159** Probe location 306 would be uncomfortable during the windiest season representing a **Major Adverse (Significant)** effect.

*Bus stops*

**13.160** Bus stops around the Proposed Development would have wind conditions suitable for sitting (probe locations 106 and 169) during the windiest season. This would represent **Minor Beneficial (Not Significant)** effect.

**13.161** Probe location 105 would be suitable for strolling use during the windiest season, one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Pedestrian Crossings*

**13.162** Wind conditions at pedestrian crossings around the Site (probe locations 237 and 238) would be suitable for standing use during the windiest season representing a **Moderate Beneficial (Not Significant)** effect.

*Ground Level Amenity – Mixed Use*

Detailed Proposals

**13.163** Wind conditions at ground level amenity spaces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season, representing a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.164** Wind conditions at the majority of ground level amenity spaces would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.165** The exception to this would be at probe locations 259 and 440 which would be one category windier than suitable for amenity use. This would represent a **Minor Adverse (Significant)** effect.

Off-Site

**13.166** Wind conditions at the school court (represented by probe 83) would be suitable for sitting use during the summer season. This represents **Negligible (Not Significant)** effect.

*Ground Level Amenity – Seating*

Detailed Proposals

**13.167** Wind conditions at the majority of designated seating areas within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

**13.168** The exception to this would be at probe location 115 (to the north-west of Plot F) which would be one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

Illustrative Scheme

**13.169** Wind conditions at the majority of designated seating areas within the Illustrative Scheme would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

**13.170** The exception to this would be at probe locations 265 and 316 which would be one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Podium Level Amenity – Mixed Use*

Illustrative Proposals

**13.171** Podium amenity spaces (at probe locations 419, 420, 421, 428, 429, 430, 437, 438 and 439) would range from suitable for sitting to standing use during the summer season. These wind conditions would represent a **Negligible (Not Significant)** effect.

*Roof Terrace Amenity – Mixed Use*

Detailed Proposals

**13.172** Wind conditions at roof terraces within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.173** Wind conditions at the majority of roof terraces would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.174** The exception to this would be at probe locations 416, 418 and 434 which would be one category windier than suitable during the windiest season. This would represent a **Minor Adverse (Significant)** effect.

Off-site

**13.175** Wind conditions at off-site roof terraces represented by probe locations 483, 484, 486, 487 and 496 would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Balcony Levels*

Detailed Proposals

**13.176** Wind conditions at balconies within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.177** Wind conditions at balconies within the Illustrative Scheme would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Off-site

**13.178** Wind conditions at off-site balconies of neighbouring buildings represented by probe locations 479, 480, 481, 488, 489, 490, 491, 492, 493, 494 and 495 would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

### *Strong winds*

Detailed Proposals

**13.179** There would be no instances of strong winds exceeding the safety threshold within the Detailed Proposals.

Illustrative Scheme

**13.180** There would be instances of strong winds exceeding the safety threshold at probe locations 158, 159, 177, 195, 198, 266, 274, 277, 281, 306, 337, 338, 340, 447 and 453 within or around the Proposed Development including roads and car parks.

**Figure 13.20 Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings – Ground Level (Windiest Season)**

**Figure 13.21 Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings – Ground Level (Summer Season)**

**Figure 13.22 Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings – Elevated Levels (Summer Season)**

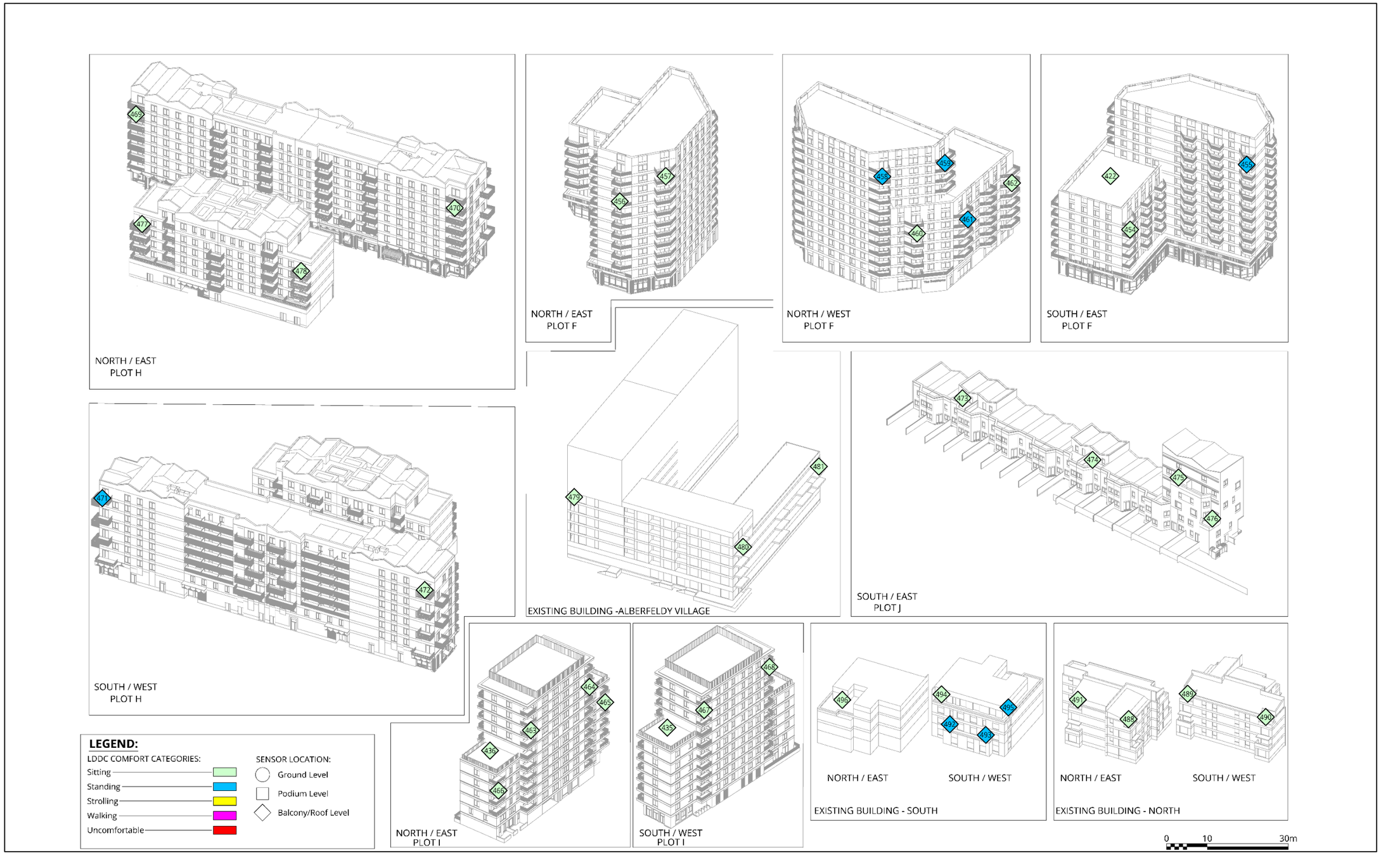


Figure 13.23 Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings – Elevated Levels (Summer Season)

**Figure 13.24 Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings – Ground Level (Strong Winds)**

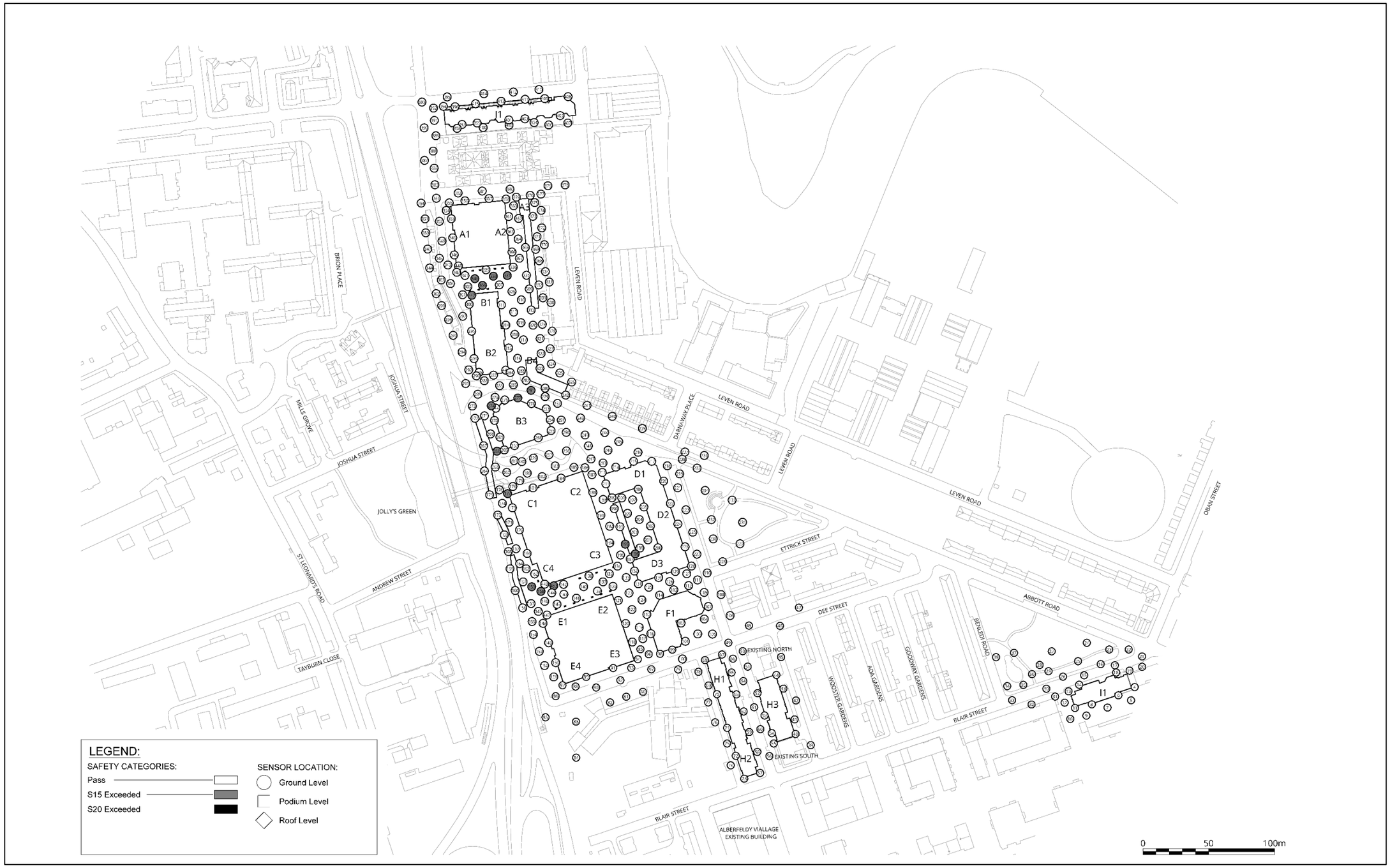


**Figure 13.25 Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings – Elevated Levels (Strong Winds)**

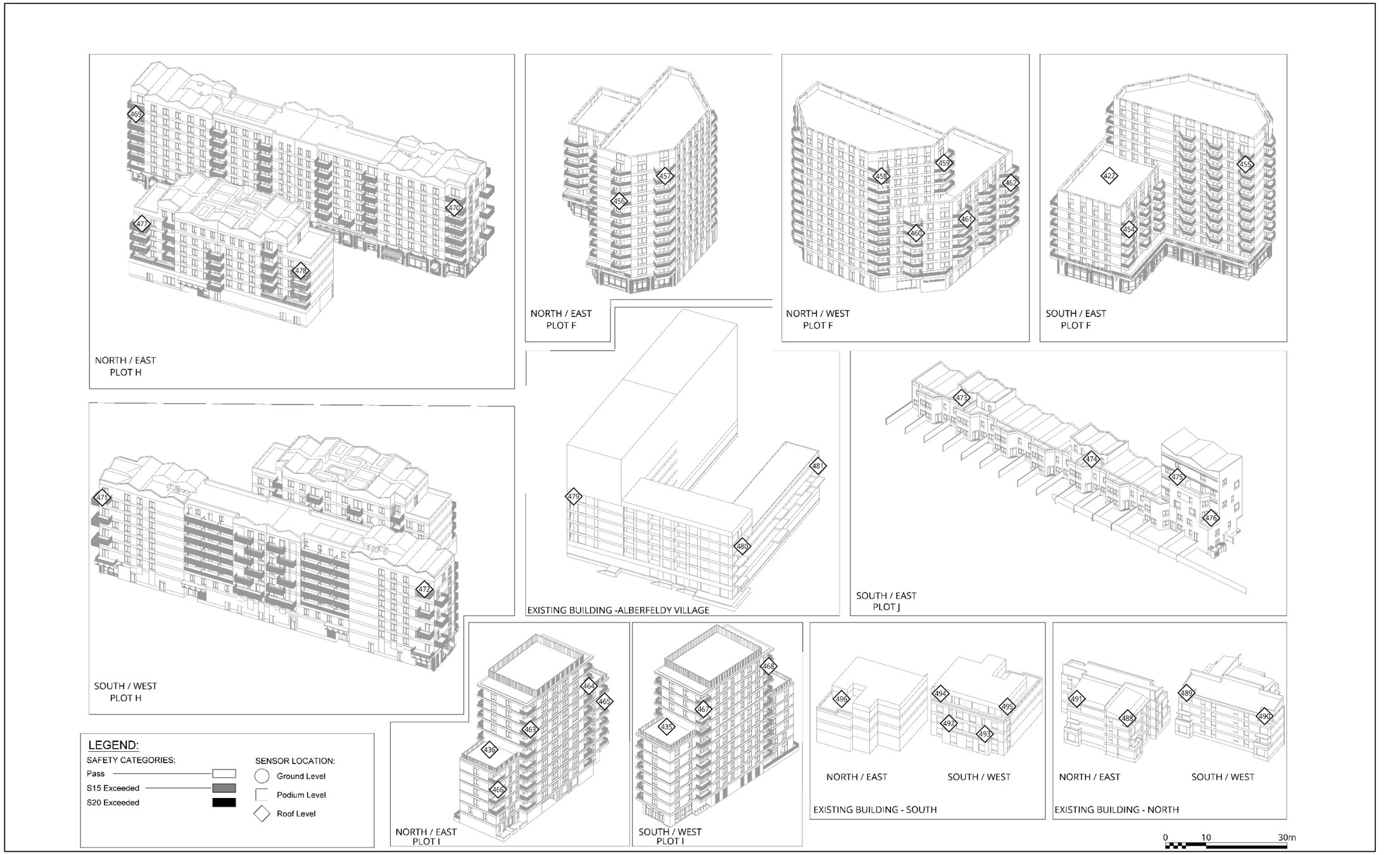
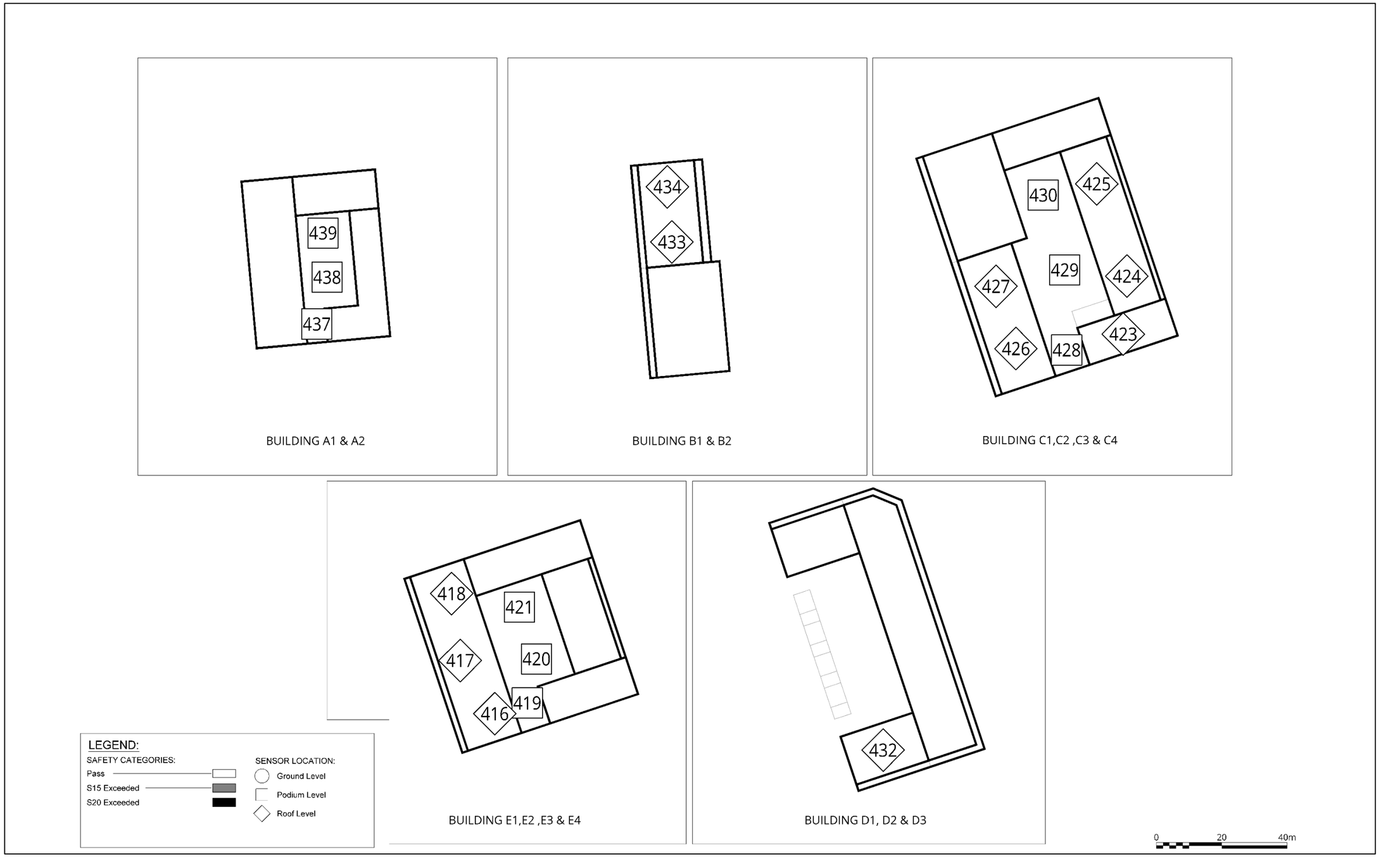


**Figure 13.26 Configuration 4: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings – Elevated Levels (Strong Winds)**



## MITIGATION, MONITORING AND RESIDUAL EFFECTS

### *Demolition and Construction Mitigation*

**13.181** During the demolition and construction stage, the areas under construction are expected to be surrounded by hoarding until the point at which the landscaping measures have been incorporated and the building becomes occupied, which would provide some shelter to the Site. The landscaping (trees and planters) tested within the wind tunnel and the mitigation described below would need to be put in place prior to the completion and occupation of the Proposed Development.

**13.182** No monitoring is required.

### *Completed Development Mitigation*

**13.183** The impact of wind mitigation measures has been investigated only for the Illustrative Proposals of the Proposed Development, as mitigating the maximum built parameters of the Outline Proposals is expected to require unnecessarily large wind mitigation measures which could be unfeasible and unrealistic, and this would not be representative of a scheme which could be developed and for which no landscaping has been proposed. Mitigation is only conducted on the Illustrative Scheme as it provides a more realistic representation of the real wind conditions when the Proposed Development comes forward. Further wind testing will be required at the reserved matters stage (to be implemented through a planning condition) to inform the detailed design and identify any required wind mitigation measures.

**13.184** No specific monitoring measures have been proposed.

**13.185** The following areas of the Illustrative Scheme model of the Proposed Development would require mitigation measures:

*Illustrative Scheme*

- Thoroughfares at **probe locations 158, 177, 266, 274, 277, 305, 447 and 453**;
- Entrances at **probe locations 141, 142, 145, 162, 195, 260, 276, 280, 300, 306, 335 and 339**;
- Ground level amenity at **probe locations 259, 265, 316 and 440**;
- Roof terrace amenity at **probe locations 416, 418 and 434**; and
- Roads at **probe locations 159, 198, 281, 337, 338 and 340**.

*Mitigation Measures*

- Proposed landscaping (as described in the DAS;
- 2x evergreen 6m tall evergreen trees with shrubs 1m in height underneath at the north-western corner of Block A;
- 2x evergreen 6m tall trees with shrubs 1m in height underneath along the northern elevation of Block B1;
- 1x deciduous 6m tall tree with shrubs 1m in height underneath at the centre of the southern elevation of Block A;
- 5x evergreen 6m tall along the northern elevation of Building B3 with shrubs underneath 1-1.5m in height;
- 3x deciduous trees 3m tall at the south-western corner of Building B3 with shrubs underneath 1-1.5m in height;
- Shrubs 1-1.5m in height along the southern elevation of Building B3 to the eastern side of the proposed seating area;
- 1x deciduous trees 6m tall to the existing building north-west of Block C;
- Balustrades 1.5m in height around the perimeter of the roof terraces of Buildings B1 and C4;
- Shrubs 1.5m in height along the western and northern edges of Building B1 roof terrace;
- 4x evergreen 6m tall trees with shrubs 1m in height underneath along the western elevation leading to the south-western corner of Block C;
- 4x evergreen 6m tall trees with shrubs 1m in height underneath along the southern elevation leading to the south-western corner of Block C;
- 3x evergreen 6m tall trees with shrubs 1m in height underneath along the northern elevation of Block E;
- 5x evergreen 6m tall trees with shrubs 1m in height underneath along the southern elevation of Block B3;
- Shrubs 1.5m in height along the western and south edges of Building C4 roof terrace;
- 4x trees 3m in height along the western edge of the roof terraces of Buildings B1 and C4; and
- Replaced 5x deciduous trees at the north-western corner of Block B1 to 6m tall evergreen with 1m tall shrubs underneath.

**13.186** These wind mitigation measures were incorporated to demonstrate that with an appropriately developed wind mitigation strategy the Illustration Scheme would improve such that the majority of areas would be safe and suitable for the intended use. The strategy would likely evolve as the detailed design develops and further wind tunnel testing is undertaken to inform the later reserved matters applications.

*Detailed Proposals*

**13.187** The following exceedances are in the context of the Illustrative Scheme with proposed landscaping and the above wind mitigation measures.

- Entrance at **probe location 116**;
- Ground level amenity – seating area at **probe location 115**; and
- Existing bus stop at **probe locations 105**.

*Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures*

**13.188** The assessment of the wind conditions for Configuration 5 is based on the results presented in **Figure 13.27** and **Figure 13.28** for the windiest and summer seasons respectively for ground floor level and **Figure 13.29** and **Figure 13.30** for elevated levels during the summer season. Safety exceedances are presented in **Figure 13.31** for ground floor level and **Figure 13.32** and **Figure 13.33** for elevated levels.

*Pedestrian Comfort*

**13.189** With the inclusion of the proposed landscaping and the developed wind mitigation measures to the Illustrative Scheme, wind conditions would improve at the majority of areas and would range from suitable for sitting to strolling use during the windiest season at the majority of locations except for two areas to the north-western corners of Plots B3 and C.

**13.190** During the summer season, wind conditions are either the same category or one category calmer and range from suitable for sitting to strolling use.

*Thoroughfares*

Detailed Proposals

**13.191** Wind conditions at thoroughfares with the Detailed Proposals would range from suitable for sitting to strolling use during the windiest season. This would represent **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

Illustrative Scheme

**13.192** Wind conditions at the majority of thoroughfares within the Illustrative Scheme would range from suitable for sitting to strolling use during the windiest season. This would represent **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.193** The exception to this would be at probe locations 177 and 274 which would be one category windier than suitable representing a **Minor Adverse (Significant)** effect.

Off-site

**13.194** Off-site thoroughfares in the vicinity of the Proposed Development would be suitable for sitting (probe locations 47, 79, 84, 228, 229, 230, 231, 232, 233, 234, 235, 330, 333, 370, 374 and 377), standing (probe locations 48,

78, 236, 328, 386, 388 and 389) and strolling (probe location 385) use during the windiest season, which would represent a **Negligible (Not Significant)** effect.

*Entrances*

Detailed Proposals

**13.195** Wind conditions at the majority of entrances within the Detailed Proposals would range from suitable for sitting to standing use. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.196** The exception to this would be at probe location 116 which would be one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

Illustrative Scheme

**13.197** Wind conditions at the majority of entrances within the Illustrative Scheme would range from suitable for sitting to standing use. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.198** The exception to this would be at probe locations 195, 276, 280, 287, 306, 309 and 339 which would be one category windier than suitable for entrance use. This would represent a **Minor Adverse (Significant)** effect.

*Bus stops*

**13.199** Bus stops around the Site would have wind conditions suitable for sitting (probe locations 106 and 169) during the windiest season. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effect.

**13.200** Probe location 105 would be suitable for strolling use during the windiest season, one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Pedestrian Crossings*

**13.201** Wind conditions at pedestrian crossings around the Site (probe locations 237 and 238) would be suitable for standing use during the windiest season representing a **Moderate Beneficial (Not Significant)** effect.

*Ground Level Amenity – Mixed Use*

Detailed Proposals

**13.202** Wind conditions at ground level amenity spaces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.203** Wind conditions at ground level amenity spaces within the Illustrative Scheme would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

Off-Site

**13.204** Wind conditions at the school court (represented by probe 83) would be suitable for sitting use during the summer season. This represents **Negligible (Not Significant)** effect.

*Ground Level Amenity – Seating*

Detailed Proposals

**13.205** Wind conditions at designated seating areas within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.206** Wind conditions at the majority of designated seating areas within the Illustrative Scheme would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

**13.207** The exception to this would be at probe locations 192 and 265 which would be one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Podium Level Amenity – Mixed Use*

Illustrative Scheme

**13.208** Podium amenity spaces (at probe locations 419, 420, 421, 428, 429, 430, 437, 438 and 439) would range from suitable for sitting to standing use during the summer season. These wind conditions would represent a **Negligible (Not Significant)** effect.

*Roof Terrace Amenity – Mixed Use*

Detailed Proposals

**13.209** Wind conditions at roof terraces within the Detailed Proposals would be suitable for sitting use during the summer season representing a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.210** Wind conditions at the majority of roof terraces within the Illustrative Scheme would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.211** The exception to this would be at probe locations 416 and 418 which would be one category windier than suitable during the windiest season. This would represent a **Minor Adverse (Significant)** effect.

Off-site

**13.212** Wind conditions at off-site roof terraces represented by probe locations 483, 484, 486, 487 and 496 would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Balcony Levels*

Detailed Proposals

**13.213** Wind conditions at balconies within the Detailed Proposals would range from suitable for sitting to standing use during the summer season representing a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.214** Wind conditions at balconies within the Illustrative Scheme would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Off-site

**13.215** Wind conditions at off-site balconies of neighbouring buildings represented by probe locations 479, 480, 481, 488, 489, 490, 491, 492, 493, 494 and 495 would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

### *Strong winds*

Detailed Proposals

**13.216** There would be no instances of strong winds exceeding the safety threshold within the Detailed Proposals.

Illustrative Scheme

**13.217** There would be instances of strong winds exceeding the safety threshold at probe location 177 within or around the Proposed Development including roads and car parks.

## *Summary and Residual Effects*

**13.218** With the developed wind mitigation strategy in addition to the proposed landscaping the majority of wind conditions would improve to be safe and suitable for the intended use. The exception to these would be at the following locations:

- Thoroughfares at **probe locations 177 and 274**: Would require additional trees 6m tall localised at two sides of the north-western corner of Plot C1 and B3.
- Entrances at **probe location 116:** Recessing the entrance by 1.5m from the façade line or including shrubs on both sides of the entrance extending 2m from the façade line and 1.5m in height.
- Potential Entrances at **probe locations 195, 276, 280, 287, 306, 309 and 339**: In the first instance, these must not be located in areas with unsuitable wind conditions. Entrances to the Proposed Development must be located in areas with conditions suitable for 'standing' (or calmer) use during the windiest season.

If they are located in windier locations, mitigation will be required to ensure they are suitable for their intended use - mitigation can include recessing the entrances or providing some shelter through landscaping or screens on either side of entrances. Note that if these entrances secondary (i.e. fire exits or used for maintenance) these wind conditions would be acceptable.

- Bus stop at **probe location 105:** The existing bus stop would be equipped with a bus stop shelter that would be expected to provide the adequate protection and therefore no additional mitigation would be required.
- Potential ground level amenity at **probe locations 192 and 265**: 3m tall trees with shrubs 1m in height underneath located on two sides of seating areas to provide localised shelter. Alternatively, the use of solid screens or 50% porous 1.5m in height 2m wide placed two sides of the seating areas.
- Potential roof terrace amenity at **probe locations 416 and 418**: Populating the roof terrace with trees and low dense planting to break-up the open space.
- Amenity areas where seating is proposed will be located in areas with conditions suitable for 'sitting' during the summer season. If located in areas with conditions suitable for standing use, additional localised shelter at least 1.5m in height would be required to the south and west of the seating area.

**13.219** The specific mitigation measures required for the Outline Proposals that will be implemented will be determined and tested at the reserved matters application stage and secured by an appropriately worded planning condition. The measures above would be expected to mitigate adverse effects to a suitable wind environment. The effectiveness of any wind mitigation measures at reducing the occurrence of strong winds will also require further assessment at reserved matters stage.

**13.220** All of the residual effects resulting from the Proposed Development, relating to Configurations 2, 3 and 5, are presented in **Table 13.5**, **Table 13.6**, **Table 13.7** respectively, identifying whether the effect is significant or not.

**Table 13.5 Residual Effects - Detailed Proposals (Configuration 2)**

| Receptor | Description of the Residual Effect | Scale and Nature | Qualitative Mitigation Measures | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | | |
| Demolition Site | Wind conditions at the demolition and construction site | Negligible | N/A | Not Significant | L | D | P | St |
| **Completed Development (On-Site)** | | | | | | | | |
| Thoroughfares (Windiest) | Wind conditions on thoroughfares | Moderate Beneficial to Negligible | N/A | Not Significant | L | D | P | Lt |
| Entrances (Windiest) | Wind conditions at entrances | Minor Beneficial to Minor Adverse | Probe location 116: Recessing the entrance by 1.5m from the façade line or including shrubs on both sides of the entrance extending 2m from the façade line and 1.5m in height. | **Significant** | L | D | P | Lt |
| Bus Stops (Windiest) | Wind conditions at bus stops | Minor Beneficial to Minor Adverse | The existing bus stop would be equipped with a bus stop shelter that would be expected to provide the adequate protection and therefore no additional mitigation would be required. | **Significant** | L | D | P | Lt |
| Pedestrian Crossing (Windiest) | Wind conditions at pedestrian crossings | Major Beneficial to Moderate Beneficial | N/A | Not Significant | L | D | P | Lt |
| Ground Level Amenity – Mixed Use (Summer) | Wind conditions at ground level amenity – mixed use | Negligible | N/A | Not Significant | L | D | P | Lt |
| Ground Level Amenity – Seating (Summer) | Wind conditions at ground level amenity seating areas | Minor Adverse | Probe location 115: 3m tall trees with shrubs 1m in height underneath located on two sides of seating areas to provide localised shelter. Alternatively, the use of solid screens or 50% porous 1.5m in height 2m wide placed two sides of the seating areas. | **Significant** | L | D | P | Lt |
| Roof Terrace Amenity (Summer) | Wind conditions roof terrace amenity | Negligible | N/A | Not Significant | L | D | P | Lt |
| Balcony Levels (Summer) | Wind conditions at balcony levels | Negligible to Minor Adverse | Probe location 455: the stack of balconies represented by this receptor would require 1.5m tall solid balustrade or alternatively the use of 50% porous balustrade of similar height. | **Significant** | L | D | P | Lt |
| Strong Winds | Strong winds exceeding 15m/s for more than 0.025% of the time | N/A | N/A | Not Significant | L | D | P | Lt |
| **Completed Development (Off-Site)** | | | | | | | | |
| Thoroughfares (Windiest) | Wind conditions on thoroughfares | Negligible | N/A | Not Significant | L | D | P | Lt |
| Ground Level Amenity – Mixed Use (Summer) | Wind conditions at ground level amenity – mixed use | Negligible | N/A | Not Significant | L | D | P | Lt |
| Roof Terrace Amenity (Summer) | Wind conditions roof terrace amenity | Negligible | N/A | Not Significant | L | D | P | Lt |
| Balcony Levels (Summer) | Wind conditions at balcony levels | Negligible | N/A | Not Significant | L | D | P | Lt |
| Strong Winds | Strong winds exceeding 15m/s for more than 0.025% of the time | Negligible | N/A | Not Significant | L | D | P | Lt |

**Notes:**

Residual Effect

- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)

D = Direct / I = Indirect

P = Permanent / T = Temporary

St = Short Term / Mt = Medium Term / Lt = Long Term

N/A = not applicable / not assessed

**Table 13.6 Residual Effects - Outline Proposals and Detailed Proposals (Configuration 3)**

| Receptor | Description of the Residual Effect | Scale and Nature | Qualitative Mitigation Measures | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | | |
| Demolition Site | Wind conditions at the demolition and construction site | Negligible | N/A | Not Significant | L | D | P | St |
| **Completed Development (On-Site)** | | | | | | | | |
| Thoroughfares (Windiest) | Wind conditions on thoroughfares | Moderate Beneficial to Minor Adverse | The impact of wind mitigation measures has been investigated only for the Illustrative Proposals of the Proposed Development, as mitigating the Outline Proposals is expected to require unnecessarily large wind mitigation measures which could be unfeasible and unrealistic, and this would not be representative of a scheme which could be developed.<br><br>Mitigation is only conducted on the Illustrative Scheme as it provides a more realistic representation of the real wind conditions when the Proposed Development comes forward.<br><br>Therefore, significant residual effects are still reported here for the Outline Proposals, and these would be addressed through further detailed design and the associated reserved matters applications, which would be controlled by the LBTH through appropriately worded planning conditions on the Outline Proposals. | **Significant** | L | D | P | Lt |
| Entrances (Windiest) | Wind conditions at entrances | Minor Beneficial to Moderate Adverse | | **Significant** | L | D | P | Lt |
| Bus Stops (Windiest) | Wind conditions at bus stops | Minor Beneficial to Minor Adverse | | **Significant** | L | D | P | Lt |
| Pedestrian Crossing (Windiest) | Wind conditions at pedestrian crossings | Moderate Beneficial | | Not Significant | L | D | P | Lt |
| Ground Level Amenity – Mixed Use (Summer) | Wind conditions at ground level amenity – mixed use | Negligible to Minor Adverse | | **Significant** | L | D | P | Lt |
| Ground Level Amenity – Seating (Summer) | Wind conditions at ground level amenity seating areas | Negligible to Moderate Adverse | | **Significant** | L | D | P | Lt |
| Podium Level Amenity (Summer) | Wind conditions at podium level amenity | Negligible | | Not Significant | L | D | P | Lt |
| Roof Terrace Amenity (Summer) | Wind conditions roof terrace amenity | Negligible to Minor Adverse | | **Significant** | L | D | P | Lt |
| Balcony Levels (Summer) | Wind conditions at balcony levels | Negligible | | Not Significant | L | D | P | Lt |
| Strong Winds | Strong winds exceeding 15m/s for more than 0.025% of the time | N/A | | **Significant** | L | D | P | Lt |
| **Completed Development (Off-Site)** | | | | | | | | |
| Thoroughfares (Windiest) | Wind conditions on thoroughfares | Negligible | N/A | Not Significant | L | D | P | Lt |
| Ground Level Amenity – Mixed Use (Summer) | Wind conditions at ground level amenity – mixed use | Negligible | N/A | Not Significant | L | D | P | Lt |
| Roof Terrace Amenity (Summer) | Wind conditions roof terrace amenity | Negligible | N/A | Not Significant | L | D | P | Lt |
| Balcony Levels (Summer) | Wind conditions at balcony levels | Negligible | N/A | Not Significant | L | D | P | Lt |
| Strong Winds | Strong winds exceeding 15m/s for more than 0.025% of the time | Negligible | N/A | Not Significant | L | D | P | Lt |

**Table 13.7 Residual Effects – Illustrative Proposals and Detailed Proposals (Configuration 5)**

| Receptor | Description of the Residual Effect | Scale and Nature | Qualitative Mitigation Measures | Significant / Not Significant | Geo | D I | P T | St Mt Lt |
|---|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | | |
| Demolition Site | Wind conditions at the demolition and construction site | Negligible | N/A | Not Significant | L | D | P | St |
| **Completed Development (On-Site)** | | | | | | | | |
| Thoroughfares (Windiest) | Wind conditions on thoroughfares | Moderate Beneficial to Negligible | Illustrative Proposals - 177 and 274: Would require additional trees 6m tall localised at two sides of the north-western corner of Plot C1 and B3. | Not Significant | L | D | P | Lt |
| Entrances (Windiest) | Wind conditions at entrances | Minor Beneficial to Negligible | Illustrative Proposals - 195, 276, 280, 287, 306, 309 and 339: In the first instance, these must not be located in areas with unsuitable wind conditions. Entrances to the Proposed Development must be located in areas with conditions suitable for 'standing' (or calmer) use during the windiest season. If they are located in windier locations, mitigation will be required to ensure they are suitable for their intended use - mitigation can include recessing the entrances or providing some shelter through landscaping or screens on either side of entrances. Note that if these entrances secondary (i.e. fire exits or used for maintenance) these wind conditions would be acceptable.<br><br>Detailed Proposals – 116: Recessing the entrance by 1.5m from the façade line or including shrubs on both sides of the entrance extending 2m from the façade line and 1.5m in height. | Not Significant | L | D | P | Lt |
| Bus Stops (Windiest) | Wind conditions at bus stops | Minor Beneficial to Negligible | The existing bus stop would be equipped with a bus stop shelter that would be expected to provide the adequate protection and therefore no additional mitigation would be required. | Not Significant | L | D | P | Lt |
| Pedestrian Crossing (Windiest) | Wind conditions at pedestrian crossings | Moderate Beneficial | N/A | Not Significant | L | D | P | Lt |
| Ground Level Amenity – Mixed Use (Summer) | Wind conditions at ground level amenity – mixed use | Negligible | N/A | Not Significant | L | D | P | Lt |
| Ground Level Amenity – Seating (Summer) | Wind conditions at ground level amenity seating areas | Negligible | Illustrative Proposals: 192 and 265: 3m tall trees with shrubs 1m in height underneath located on two sides of seating areas to provide localised shelter. Alternatively, the use of solid screens or 50% porous 1.5m in height 2m wide placed two sides of the seating areas. | Not Significant | L | D | P | Lt |
| Podium Level Amenity (Summer) | Wind conditions at podium level amenity | Negligible | N/A | Not Significant | L | D | P | Lt |
| Roof Terrace Amenity (Summer) | Wind conditions roof terrace amenity | Negligible | N/A | Not Significant | L | D | P | Lt |
| Balcony Levels (Summer) | Wind conditions at balcony levels | Negligible | N/A | Not Significant | L | D | P | Lt |
| Strong Winds | Strong winds exceeding 15m/s for more than 0.025% of the time | N/A | N/A | Not Significant | L | D | P | Lt |
| **Completed Development (Off-Site)** | | | | | | | | |
| Thoroughfares (Windiest) | Wind conditions on thoroughfares | Negligible | N/A | Not Significant | L | D | P | Lt |
| Ground Level Amenity – Mixed Use (Summer) | Wind conditions at ground level amenity – mixed use | Negligible | N/A | Not Significant | L | D | P | Lt |
| Roof Terrace Amenity (Summer) | Wind conditions roof terrace amenity | Negligible | N/A | Not Significant | L | D | P | Lt |
| Balcony Levels (Summer) | Wind conditions at balcony levels | Negligible | N/A | Not Significant | L | D | P | Lt |
| Strong Winds | Strong winds exceeding 15m/s for more than 0.025% of the time | Negligible | N/A | Not Significant | L | D | P | Lt |

**Notes:**
Residual Effect
- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)
D = Direct / I = Indirect
P = Permanent / T = Temporary
St = Short Term / Mt = Medium Term / Lt = Long Term
N/A = not applicable / not assessed

**Figure 13.27 Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Ground Level (Windiest Season)**

**Figure 13.28 Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Ground Level (Summer Season)**

**Figure 13.29 Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Summer Season)**

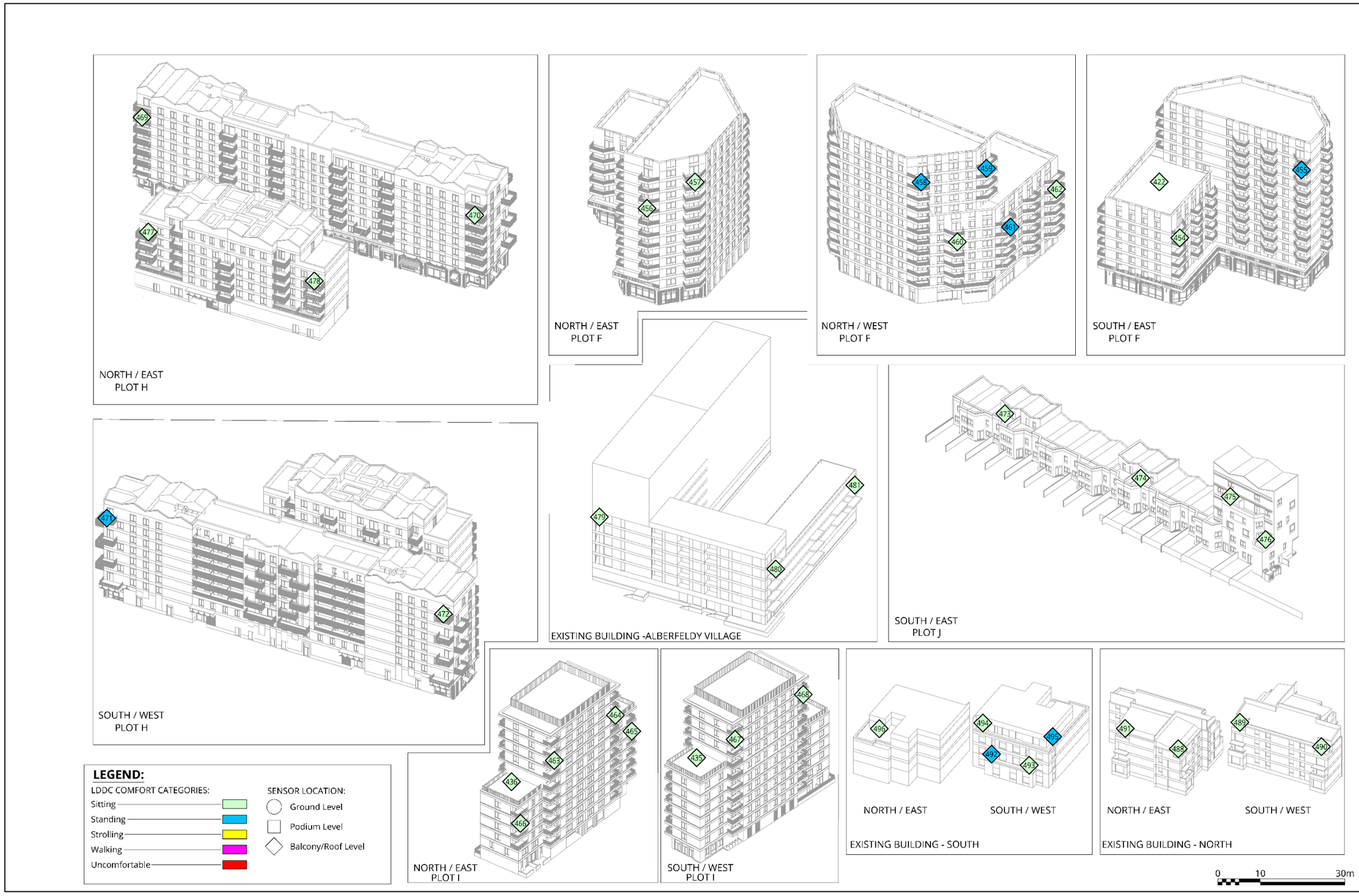


**Figure 13.30 Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Summer Season)**

**Figure 13.31 Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Ground Level (Strong Winds)**

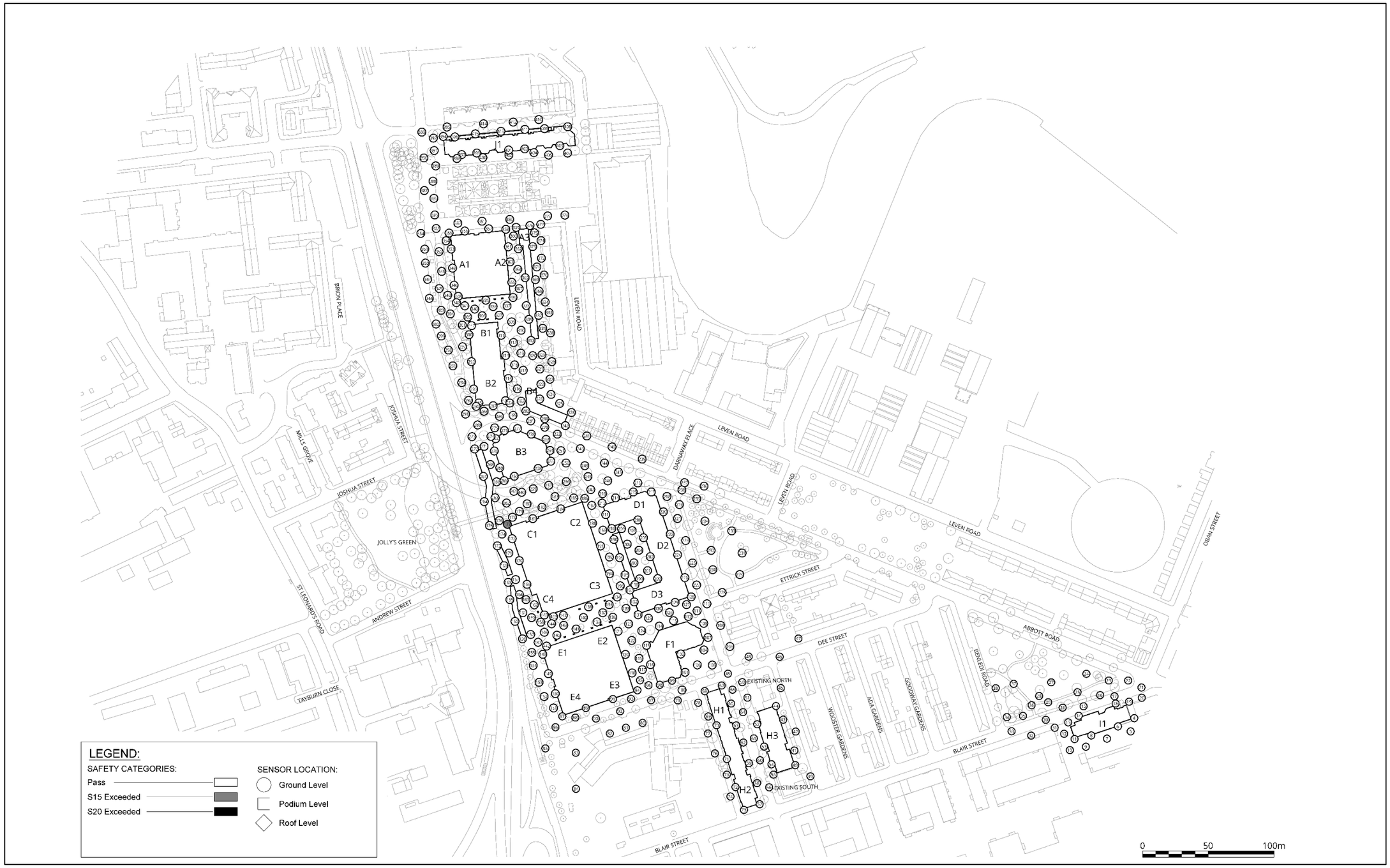


**Figure 13.32 Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Strong Winds)**

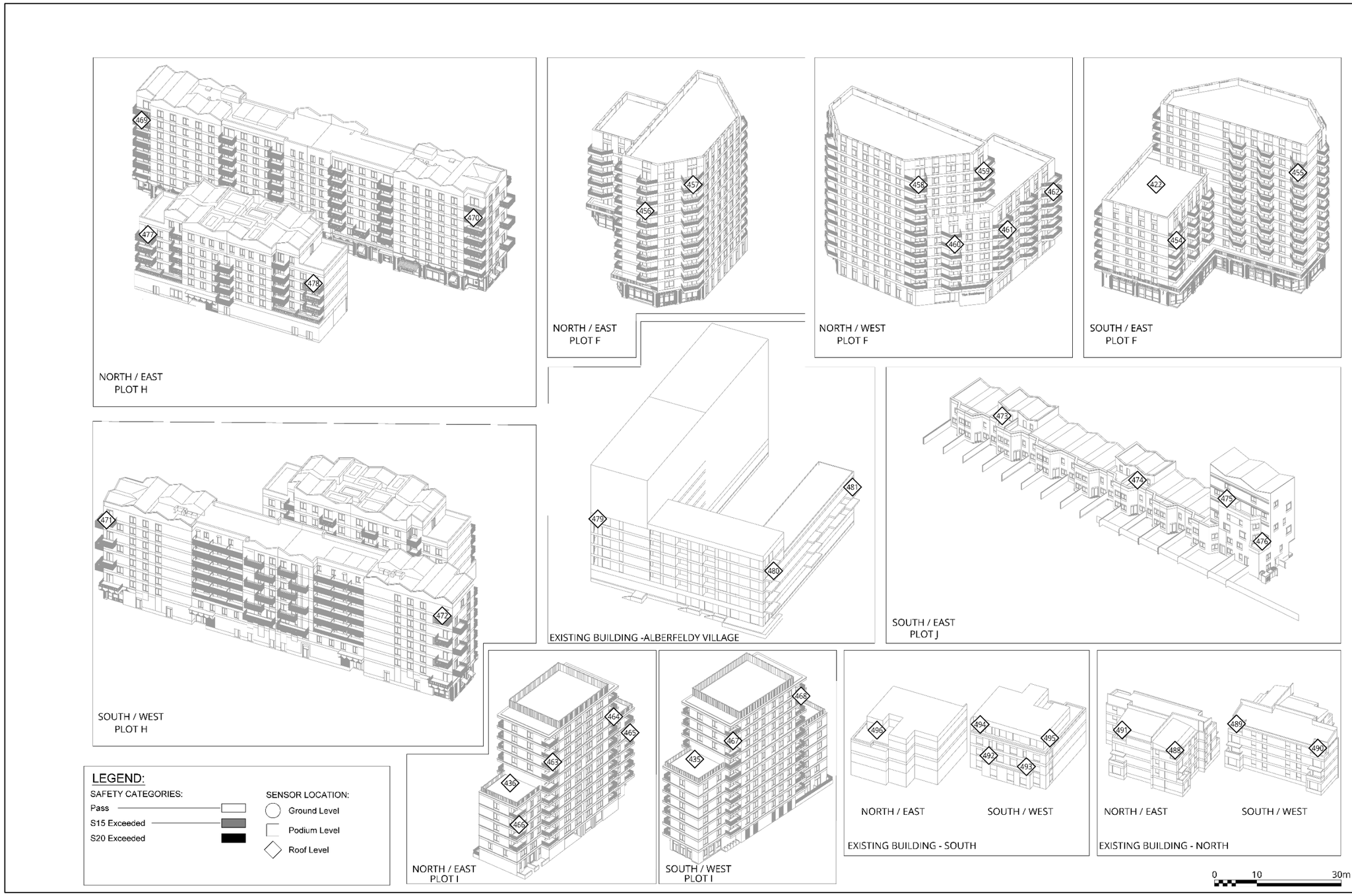


**Figure 13.33 Configuration 5: Proposed Development (Illustrative Scheme) and Phase A with Existing Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Strong Winds)**

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline Scenario*

**13.221** The assessment of the cumulative effects has been carried out including the following cumulative schemes identified within a 450m radius of the centre of the Site.

**13.222** Cumulative schemes identified within a 450m radius of the Site and included within the wind tunnel model are:

- Leven Road Gasworks (Planning Ref: PA/18/02803/A1);
- London Docklands Travelodge Hotel (Planning Ref: PA/18/03088/A1);
- Ailsa Wharf (Planning Ref: PA/16/02692 & PA/18/03461); and
- Islay Wharf (Planning Ref: PA/19/01760).

**13.223** Several probes (482, 483, 484, 485, 486, 487) were also included on balconies and roof terraces of the nearby cumulative scheme to assess the wind microclimate at those amenity spaces.

#### *Configuration 6: Existing Site with Cumulative Surrounding Buildings*

**13.224** Wind conditions for Configuration 6 (the future baseline scenario) are presented in **Figure 13.34** for the windiest season and **Figure 13.35** for the summer season. **Figure 13.36** presents summer season results for elevated levels. Occurrence of annual strong winds are presented in **Figure 13.37** for ground floor and **Figure 13.38** for elevated levels.

##### *Pedestrian Comfort*

**13.225** During the windiest season (**Figure 13.34**) wind conditions at all on-site and off-site probe locations (throughfares, entrances, bus stops and pedestrian crossings) range from suitable for sitting to standing use.

**13.226** Wind conditions during the summer season (**Figure 13.35**) are typically the same or one category calmer with a larger area fulfilling the sitting use criteria.

**13.227** Wind conditions at elevated levels of the off-Site buildings shown in Figure 13.7 would also be suitable for sitting to standing use during the summer season (**Figure 13.36)**.

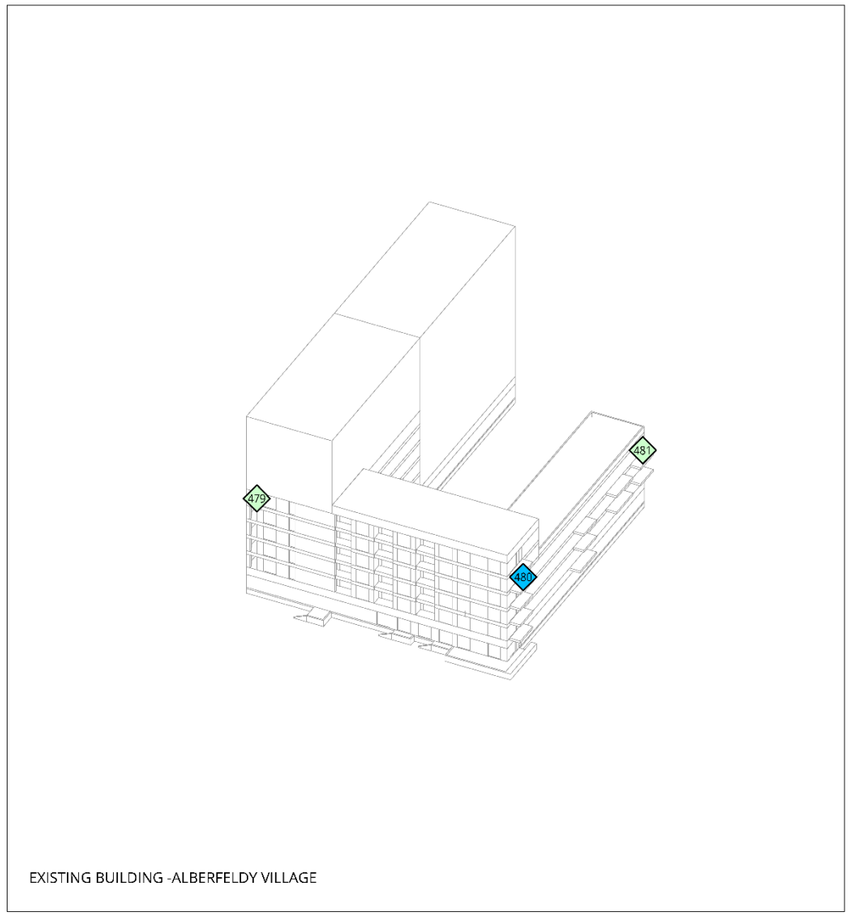
##### *Strong Winds*

**13.228** There are no instances of strong winds exceeding the safety threshold at any probe location within and around the Site in the future baseline scenario.

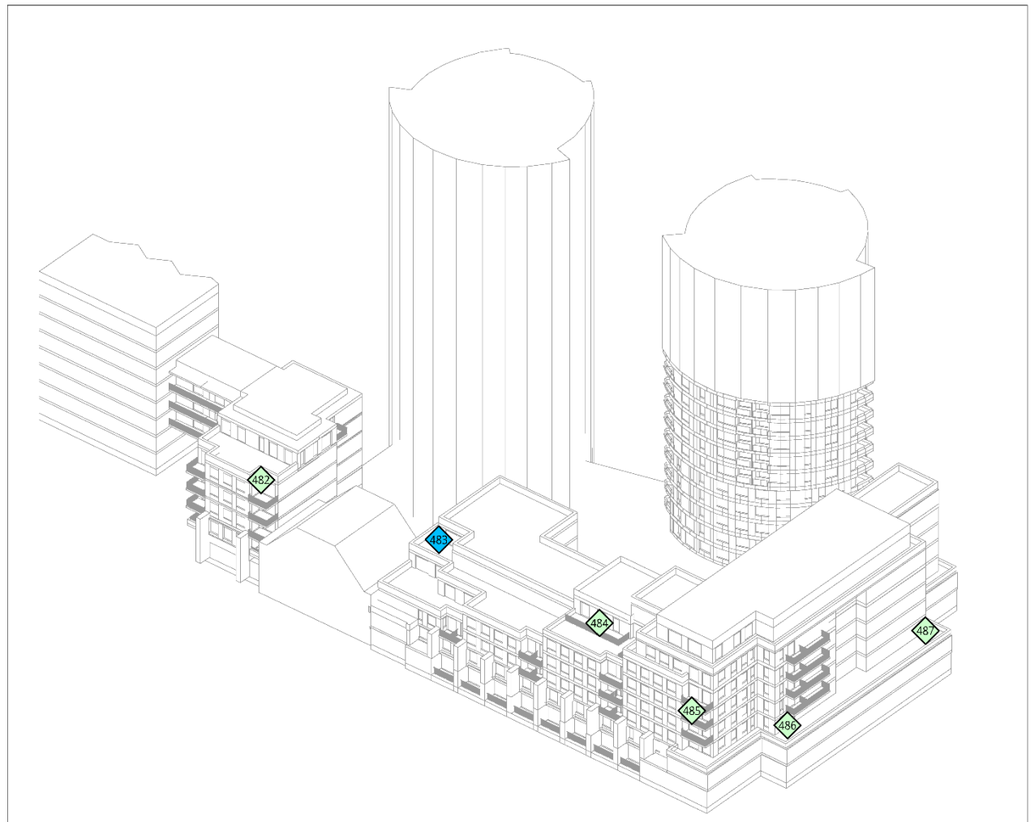
**Figure 13.34 Configuration 6: Existing Site with Cumulative Surrounding Buildings – Ground Level (Windiest Season)**

**Figure 13.35 Configuration 6: Existing Site with Cumulative Surrounding Buildings – Ground Level (Summer Season)**

**Figure 13.36 Configuration 6: Existing Site with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**




EXISTING BUILDING -ALBERFELDY VILLAGE

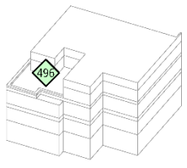



CUMULATIVE - LEVEN BUS STATION

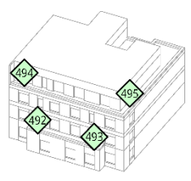
**LEGEND:**

LDDC COMFORT CATEGORIES:
- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

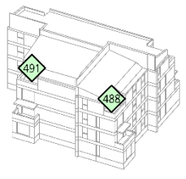
SENSOR LOCATION:
- Ground Level
- Podium Level
- Balcony/Roof Level




EXISTING BUILDING - SOUTH




EXISTING BUILDING - SOUTH



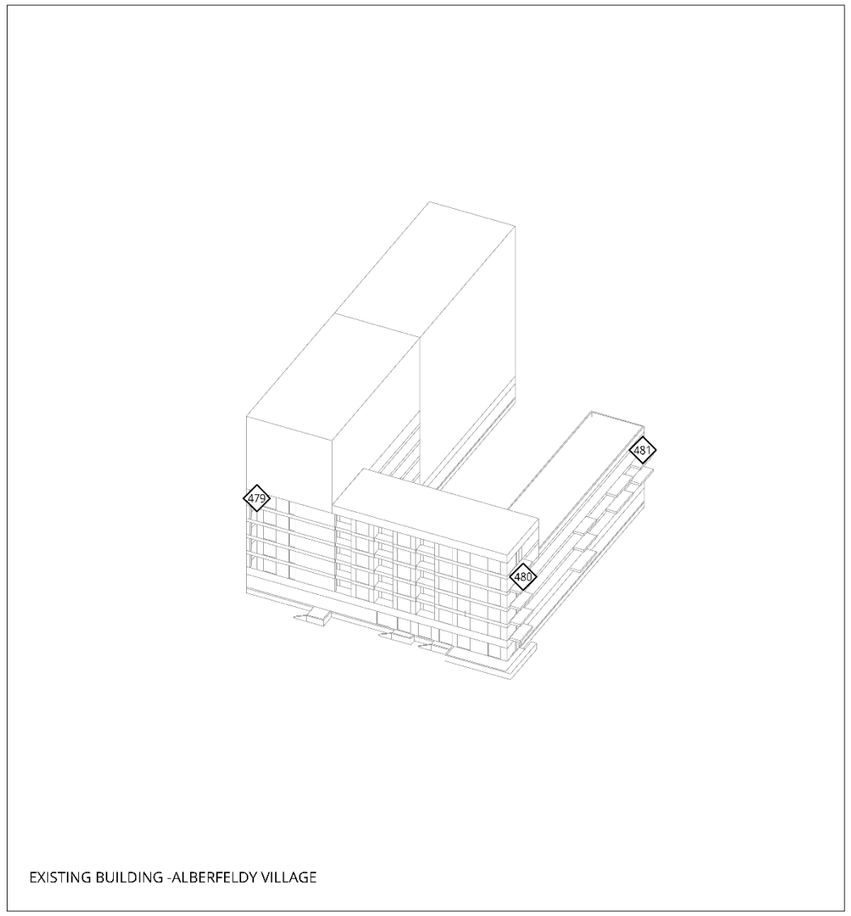

EXISTING BUILDING - NORTH


EXISTING BUILDING - NORTH

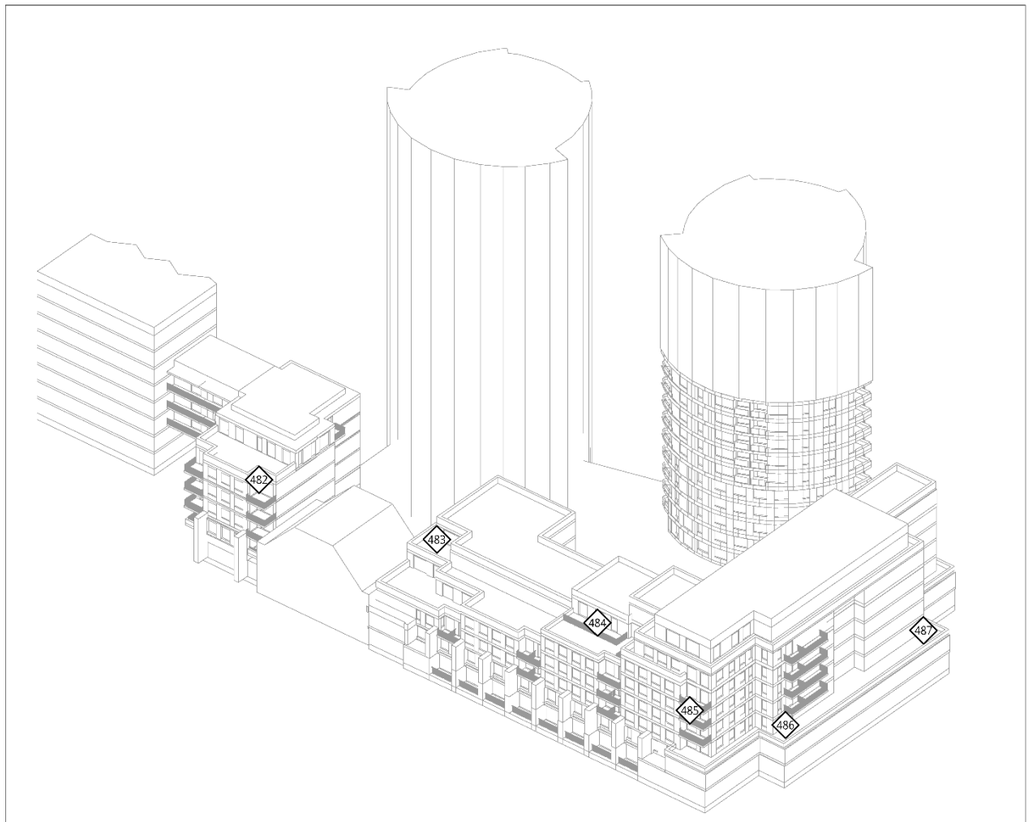
0 10 30m

**Figure 13.37 Configuration 6: Existing Site with Cumulative Surrounding Buildings – Ground Level (Strong Winds)**

**Figure 13.38 Configuration 6: Existing Site with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**




EXISTING BUILDING -ALBERFELDY VILLAGE

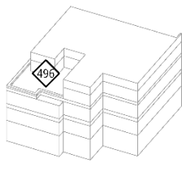



CUMULATIVE - LEVEN BUS STATION

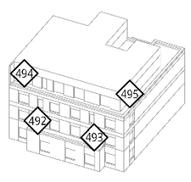
LEGEND:

SAFETY CATEGORIES:
- Pass
- S15 Exceeded
- S20 Exceeded

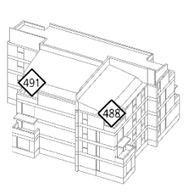
SENSOR LOCATION:
- Ground Level
- Podium Level
- Roof Level



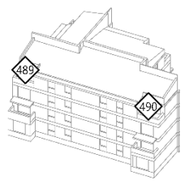

EXISTING BUILDING - SOUTH




EXISTING BUILDING - SOUTH




EXISTING BUILDING - NORTH




EXISTING BUILDING - NORTH

0 10 30m

### *Cumulative Effects Assessment*

*Demolition and Construction*

**13.229** The cumulative schemes would likely provide sheltering effect on the wind microclimate at the site during demolition and construction, therefore, wind conditions during the demolition and construction works at the site and surrounding area would represent a likely **Negligible (Not Significant)** effect.

### *Completed Development*

*Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings*

**13.230** The assessment of the wind conditions for Configuration 7 is based on the results presented in **Figure 13.39** and **Figure 13.40** for the windiest and summer seasons respectively for ground floor level and **Figure 13.41 and Figure 13.42** for elevated levels during the summer season. Safety exceedances are presented in **Figure 13.43** for the ground level and **Figure 13.44 and Figure 13.45** for elevated levels.

*Pedestrian Comfort*

**13.231** With the Detailed Proposals in the context of cumulative surrounding buildings wind conditions within and surrounding the Site would improve compared to Configuration 2 and would be suitable for sitting use to strolling use during the windiest season. This is due to the cumulative buildings providing shelter to parts of the Site from winds.

**13.232** During the summer season, wind conditions are either the same category or one category calmer and range from suitable for sitting to strolling use.

*Thoroughfares*

**13.233** Wind conditions at thoroughfares within the Detailed Proposed would range from sitting to strolling use during the windiest season. This would represent **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

**13.234** All other thoroughfares within the Site would range from suitable for sitting to strolling use during the windiest season representing a **Moderate Beneficial (Not Significant)** to **Negligible (Not Significant)** effects.

Off-site

**13.235** Off-site thoroughfares in the vicinity of the Proposed Development would be suitable for sitting (probe locations 47, 48, 79, 84, 228, 230, 231, 232, 233, 234, 235, 236, 328, 330, 333, 370, 374, 377, 385, 386, 388 and 389), and standing (probe locations 78 and 229) use during the windiest season, which would represent a **Negligible** (Not Significant) effect.

*Entrances*

**13.236** Wind conditions at the majority of entrances to the Detailed Proposals would be range from suitable for sitting to standing use representing a **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.237** The exception to this would be at probe locations 114 which would one category windier than suitable representing a **Minor Adverse (Significant)** effect.

**13.238** All other entrances within the Site would range from suitable for sitting to standing use during the windiest season representing a **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

*Bus stops*

**13.239** Bus stops around the Site would have wind conditions suitable for sitting (probe location 169) and standing (probe locations 105, 106) during the windiest season. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effect.

*Pedestrian Crossings*

**13.240** Wind conditions at pedestrian crossings around the Site (probe locations 237 and 238) would range from suitable for sitting to standing use during the windiest season representing a **Major Beneficial (Not Significant)** to **Moderate Beneficial (Not Significant)** effect.

*Ground Level Amenity – Mixed Use*

On-Site

**13.241** Wind conditions at ground level amenity spaces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.242** All other mixed-use amenity spaces around the Site would range from suitable for sitting to standing use during the summer season, representing a **Negligible (Not Significant)** effect.

Off-Site

**13.243** Wind conditions at the school court (represented by probe 83) would be suitable for sitting use during the summer season. This represents **Negligible (Not Significant)** effect.

*Ground Level Amenity – Seating*

**13.244** Wind conditions at ground level seating area (north-west of Plot F) within the Detailed Proposals presented by probe location 115 would be one category windier than suitable for sitting use. This represents **Minor Adverse (Significant)** effect.

*Roof Terrace Amenity – Mixed Use*

**13.245** Wind conditions at roof terraces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

Off-site

**13.246** Wind conditions at off-site roof terraces represented by probe locations 483, 484, 486, 487 and 496 would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Balcony Levels*

On-site

**13.247** Wind conditions at balconies within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Off-site

**13.248** Wind conditions at off-site balconies of neighbouring buildings represented by probe locations 479, 480, 481, 482, 485, 488, 489, 490, 491, 492, 493, 494 and 495 would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

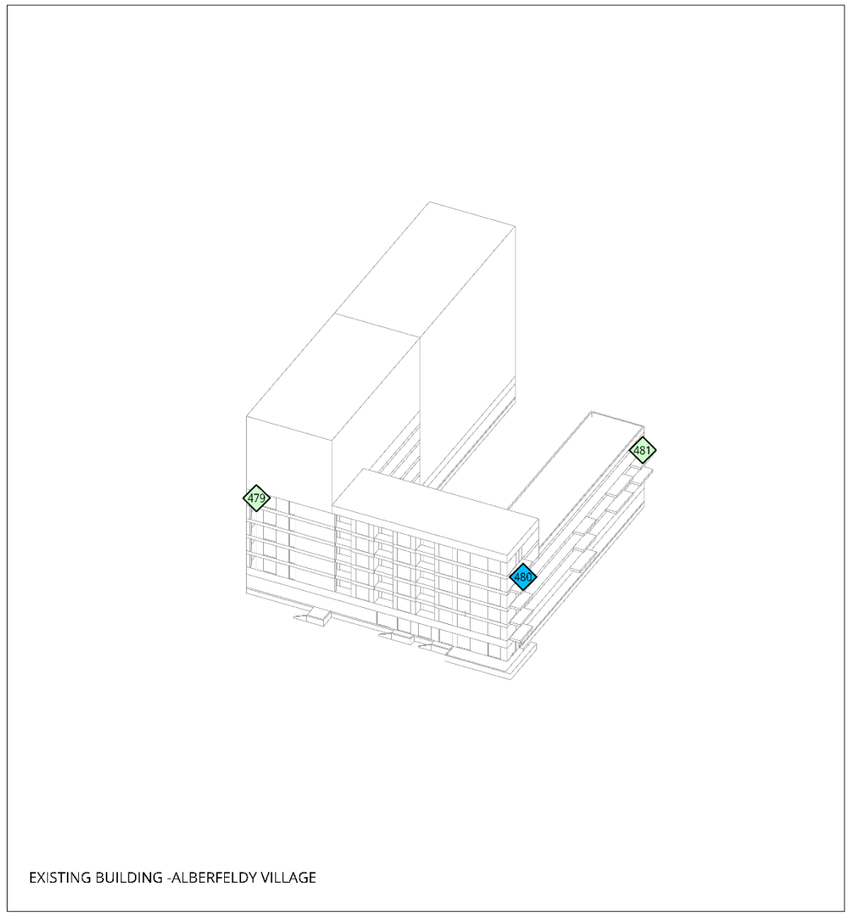
*Strong winds*

**13.249** There would be no instances of strong winds exceeding the safety threshold within or around the Site including roads and car parks.

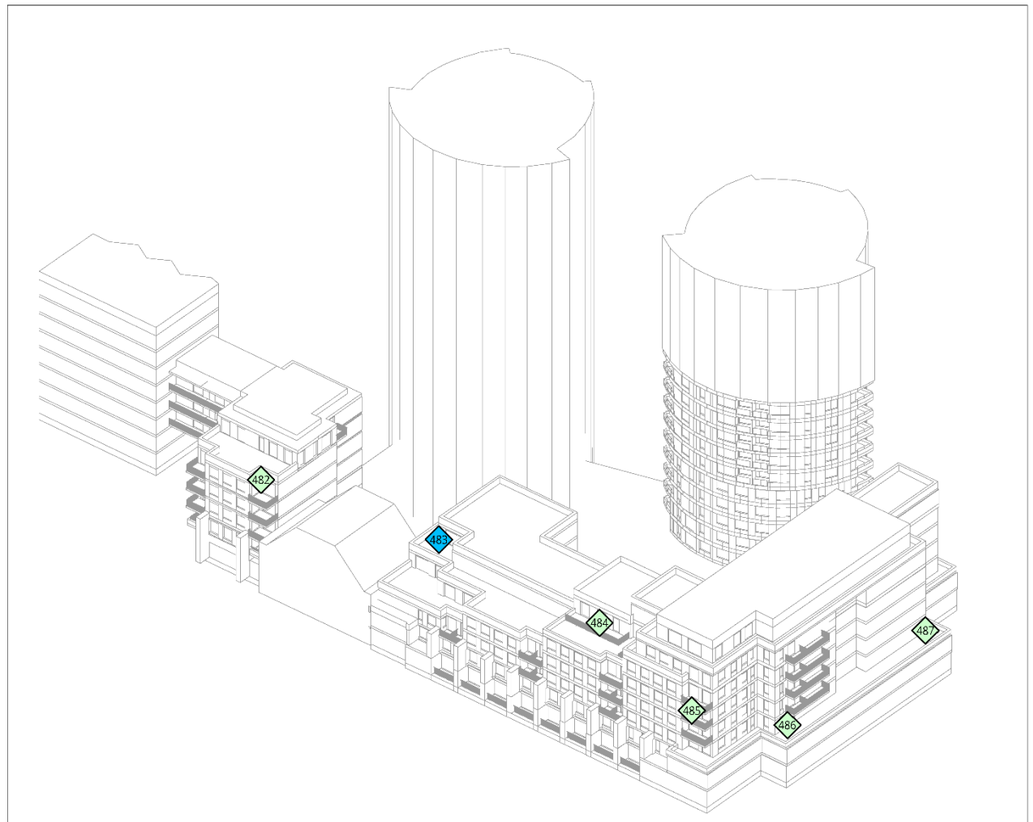
**Figure 13.39 Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings – Ground Level (Windiest Season)**

**Figure 13.40 Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings – Ground Level (Summer Season)**

**Figure 13.41 Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**




EXISTING BUILDING -ALBERFELDY VILLAGE

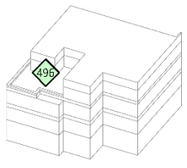



CUMULATIVE - LEVEN BUS STATION

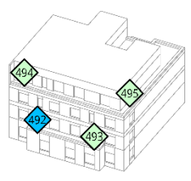
**LEGEND:**

LDDC COMFORT CATEGORIES:
- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

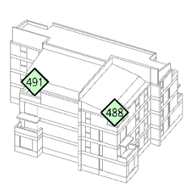
SENSOR LOCATION:
- Ground Level
- Podium Level
- Balcony/Roof Level



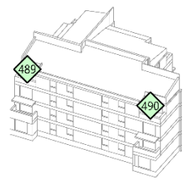

EXISTING BUILDING - SOUTH




EXISTING BUILDING - SOUTH




EXISTING BUILDING - NORTH




EXISTING BUILDING - NORTH

0 10 30m

**Figure 13.42 Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**

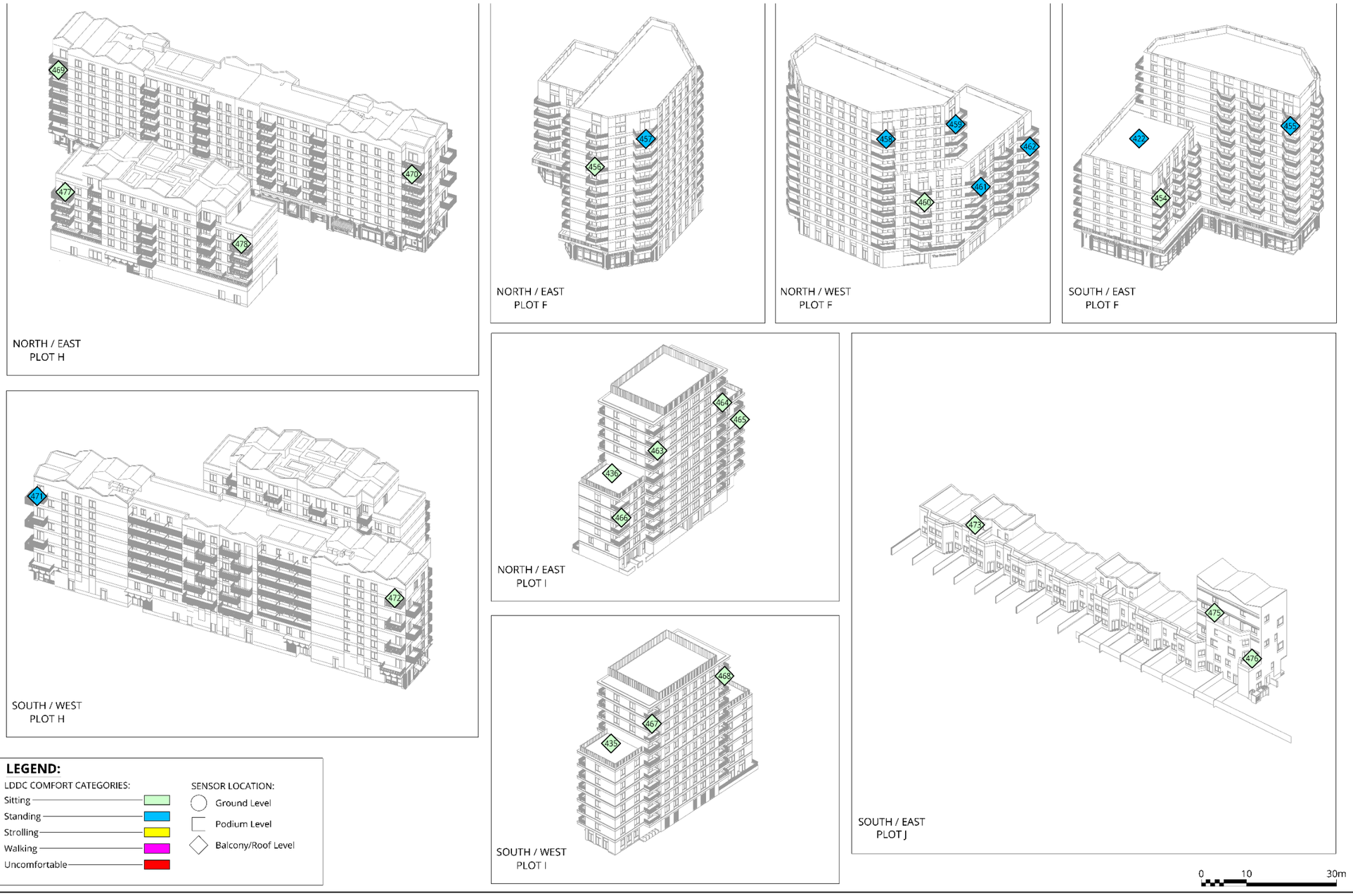


**Figure 13.43 Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings – Ground Level (Strong Winds)**

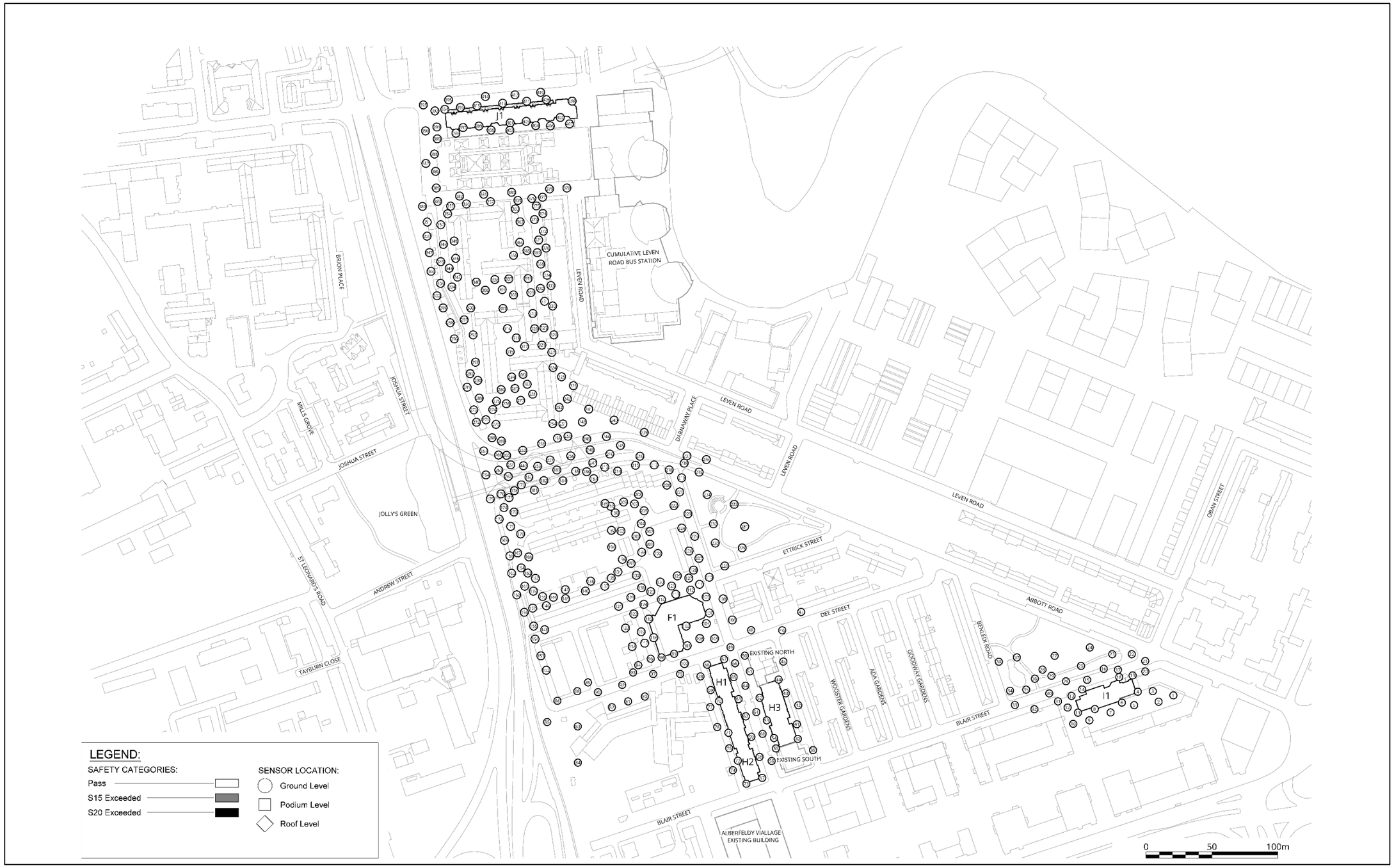
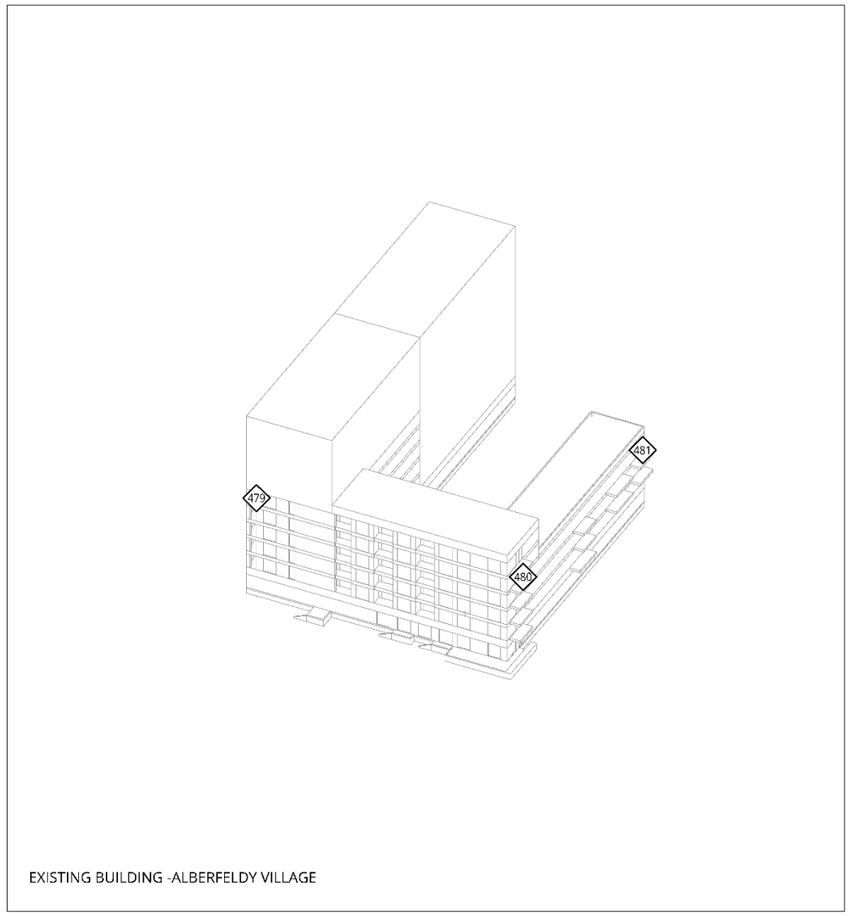


**Figure 13.44 Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**



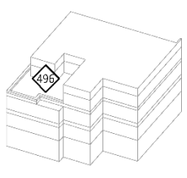

EXISTING BUILDING -ALBERFELDY VILLAGE

CUMULATIVE - LEVEN BUS STATION

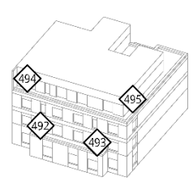
LEGEND:

SAFETY CATEGORIES:
Pass
S15 Exceeded
S20 Exceeded

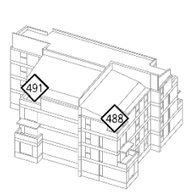
SENSOR LOCATION:
Ground Level
Podium Level
Roof Level



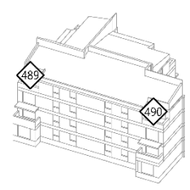

EXISTING BUILDING - SOUTH




EXISTING BUILDING - SOUTH



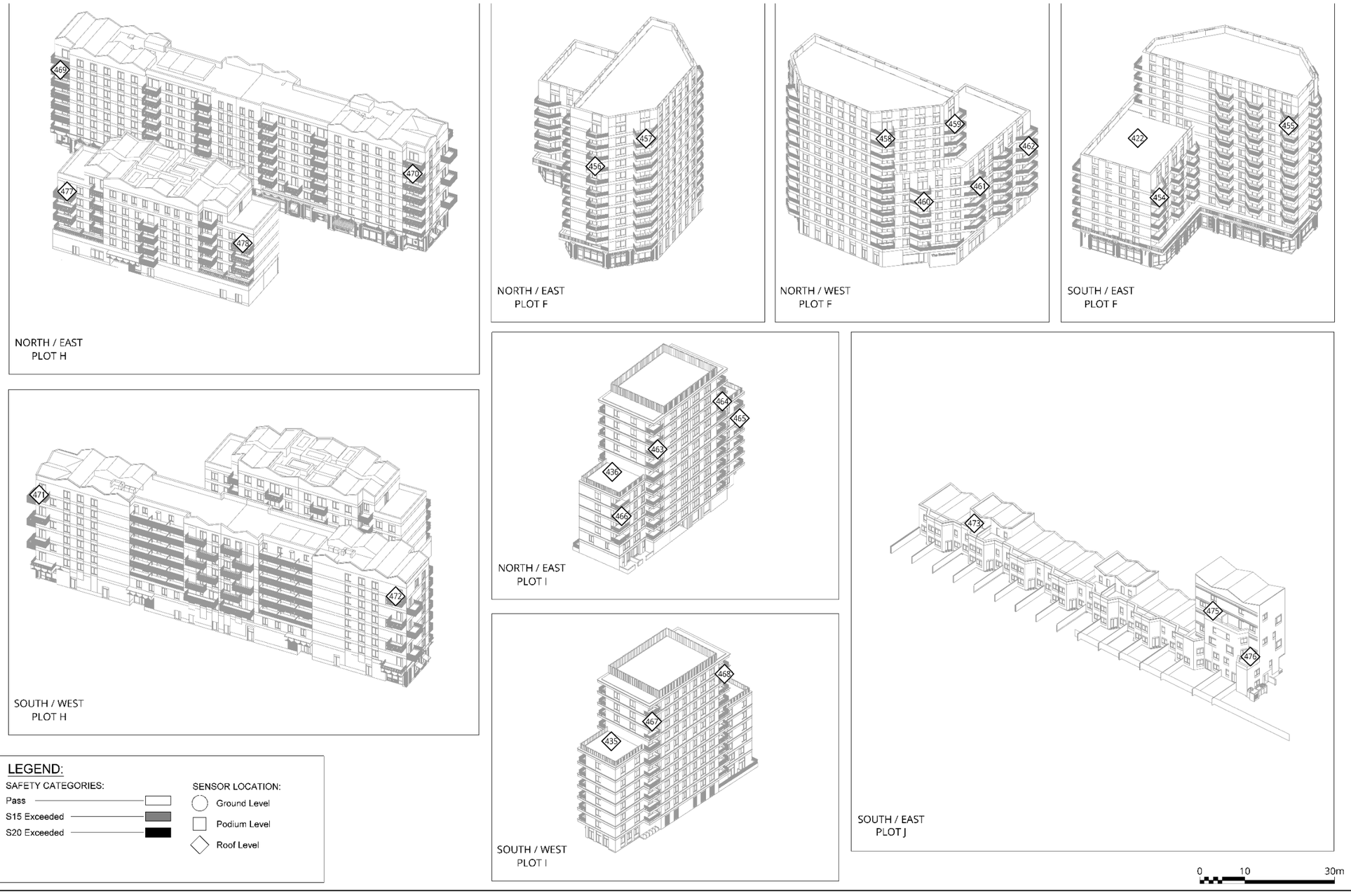

EXISTING BUILDING - NORTH




EXISTING BUILDING - NORTH

0 10 30m

**Figure 13.45 Configuration 7: Detailed Proposals (Phase A) with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**



### *Completed Proposed Development*

*Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings*

**13.250** The assessment of the wind conditions for Configuration 8 is based on the results presented in **Figure 13.46** and **Figure 13.47** for the windiest and summer seasons respectively for ground floor level and **Figure 13.48, Figure 13.49 and Figure 13.50** for elevated levels during the summer season. Safety exceedances are presented in **Figure 13.51** for the ground level and **Figure 13.52, Figure 13.53 and Figure 13.54** for elevated levels.

*Pedestrian Comfort*

**13.251** With the introduction of the overall Proposed Development in the context of cumulative surrounds, wind conditions would improve compared to Configuration 3 and would range from suitable for sitting to walking use during the windiest season.

**13.252** During the summer season, wind conditions are either the same category or one category calmer and range from suitable for sitting to strolling use.

*Thoroughfares*

Detailed Proposals

**13.253** Wind conditions at thoroughfares within the Detailed Proposals would range from suitable for sitting to strolling use during the windiest season, representing a **Moderate Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

Outline Proposals

**13.254** Wind conditions at the majority of thoroughfares within the Outline Proposals would range from suitable for sitting to strolling use during the windiest season, representing a **Moderate Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.255** The exception to this would be at probe locations 158, 177, 274, 277 and 305 which would be one category windier than suitable for the intended use. These conditions would represent a **Minor Adverse (Significant)** effect.

Off-site

**13.256** Off-site thoroughfares in the vicinity of the Proposed Development would be suitable for sitting (probe locations 47, 48, 79, 228, 229, 230, 231, 232, 233, 234, 235, 328, 330, 333, 370, 374 and 377), standing (probe locations 78, 84, 236, 386, 388 and 389) and strolling (probe location 385) use during the windiest season, which would represent a **Negligible** (Not Significant) effect.

*Entrances*

Detailed Proposals

**13.257** Wind conditions at the majority of entrances to the Detailed Proposals would range from suitable for sitting to standing use during the windiest season, representing a **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.258** The exception to this would be at probe locations 116 which would be one category windier than suitable for the intended use, thus representing a **Minor Adverse (Significant)** effect.

Outline Proposals

**13.259** Wind conditions at the majority of potential entrances to the Outline Proposals would range from suitable for sitting to standing use during the windiest season, representing a **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.260** The exception to this would be at Probe locations 139, 145, 162, 195, 278, 280 and 313 which would be one category windier than suitable for entrance use. This would represent a **Minor Adverse (Significant)** effect.

**13.261** Probe locations 141 and 339 would be two categories windier than suitable for entrance use. This would represent a **Moderate Adverse (Significant)** effect.

*Bus stops*

**13.262** Bus stops around the Site would have wind conditions suitable for sitting (probe location 169) and standing (probe location 106) during the windiest season. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effect.

**13.263** Probe location 105 would be suitable for strolling use during the windiest season, one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Pedestrian Crossings*

**13.264** Wind conditions at pedestrian crossings around the Site (probe locations 237 and 238) would be suitable for standing use during the windiest season representing a **Moderate Beneficial (Not Significant)** effect.

*Ground Level Amenity – Mixed Use*

Detailed Proposals

**13.265** Wind conditions at ground level amenity spaces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

Outline Proposals

**13.266** Wind conditions at the majority of ground level amenity spaces within the Outline Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.267** The exception to this would be at probe location 259 which would be one category windier than suitable for amenity use. This would represent a **Minor Adverse (Significant)** effect.

Off-Site

**13.268** Wind conditions at the school court (represented by probe 83) would be suitable for sitting use during the summer season. This represents **Negligible (Not Significant)** effect.

*Ground Level Amenity – Seating*

Detailed Proposals

**13.269** Wind conditions at designated seating areas within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Outline Proposals

**13.270** Wind conditions at the majority of designated seating areas within the Outline Proposals would be suitable for sitting use during the summer season representing a **Negligible (Not Significant)** effect.

**13.271** The exception to this would be at probe location 316 which would be one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

**13.272** Probe location 265 would be two categories windier than suitable for the intended use. This would represent a **Moderate Adverse (Significant)** effect.

*Podium Level Amenity – Mixed Use*

Outline Proposals

**13.273** Podium amenity spaces (at probe locations 419, 420, 421, 428, 429, 430, 437, 438 and 439) would range from suitable for sitting to standing use during the summer season. These wind conditions would represent a **Negligible (Not Significant)** effect.

*Roof Terrace Amenity – Mixed Use*

Detailed Proposals

**13.274** Wind conditions at roof terraces within the Detailed Proposals would be suitable for sitting use during the summer season. This represents a **Negligible (Not Significant)** effect.

Outline Proposals

**13.275** Wind conditions at the majority of roof terraces within the Outline Proposals would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.276** The exception to this would be at probe locations 416, 417, 426, 427, 434 which would be one category windier than suitable during the windiest season. This would represent a **Minor Adverse (Significant)** effect.

Off-site

**13.277** Wind conditions at off-site roof terraces represented by probe locations 483, 484, 486, 487 and 496 would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Balcony Levels*

Detailed Proposals

**13.278** Wind conditions at balconies within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Outline Proposals

**13.279** Wind conditions at balconies within the Outline Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Off-site

**13.280** Wind conditions at off-site balconies of neighbouring buildings represented by probe locations 479, 480, 481, 488, 489, 490, 491, 492, 493, 494 and 495 would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

### *Strong winds*

Detailed Proposals

**13.281** There would be no instances of strong winds exceeding the safety threshold within the Detailed Proposals.

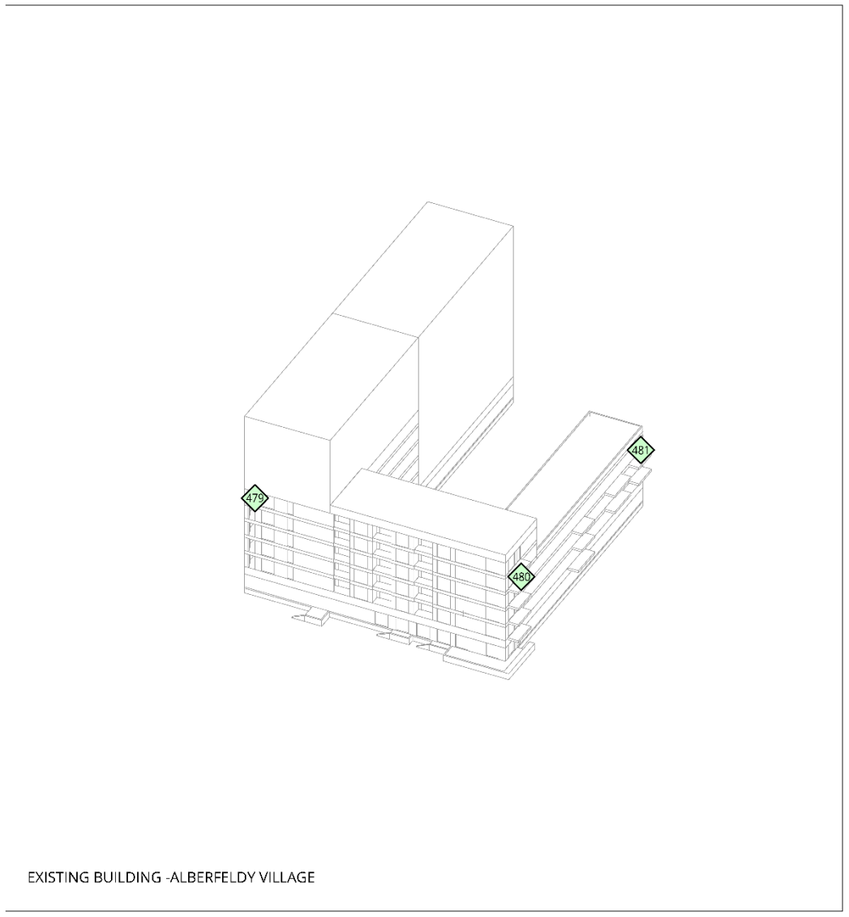
Outline Proposals

**13.282** There would be instances of strong winds exceeding the safety threshold at probe locations 137, 140, 141, 143, 158, 177, 195, 265, 277, 281, 290, 305, 338, 416, 426 and 427 within or around the Proposed Development including roads and car parks.

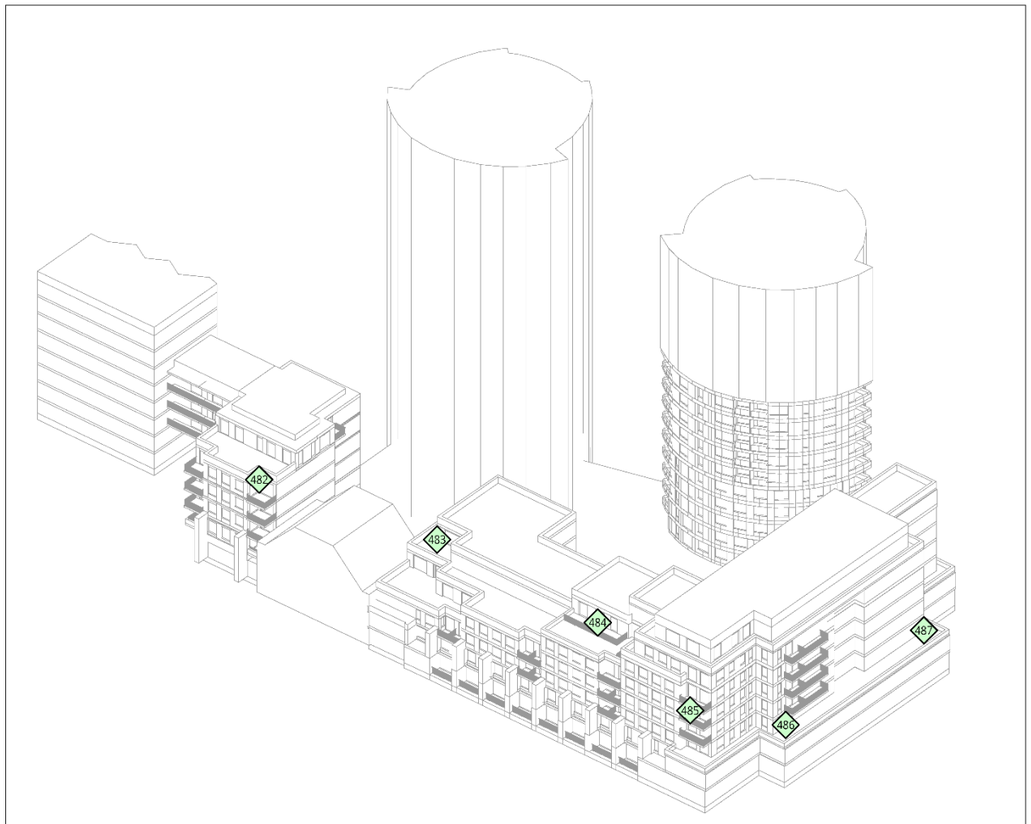
**Figure 13.46 Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Ground Level (Windiest Season)**

**Figure 13.47 Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Ground Level (Summer Season)**

**Figure 13.48 Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**




EXISTING BUILDING -ALBERFELDY VILLAGE

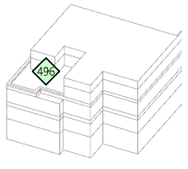



CUMULATIVE - LEVEN BUS STATION

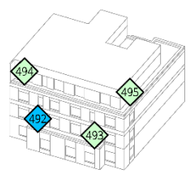
**LEGEND:**

LDDC COMFORT CATEGORIES:
- Sitting
- Standing
- Strolling
- Walking
- Uncomfortable

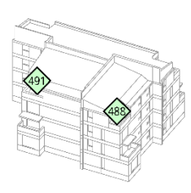
SENSOR LOCATION:
- Ground Level
- Podium Level
- Balcony/Roof Level



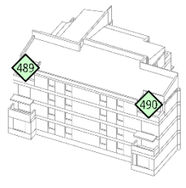

EXISTING BUILDING - SOUTH




EXISTING BUILDING - SOUTH




EXISTING BUILDING - NORTH




EXISTING BUILDING - NORTH

0 10 30m

**Figure 13.49 Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**

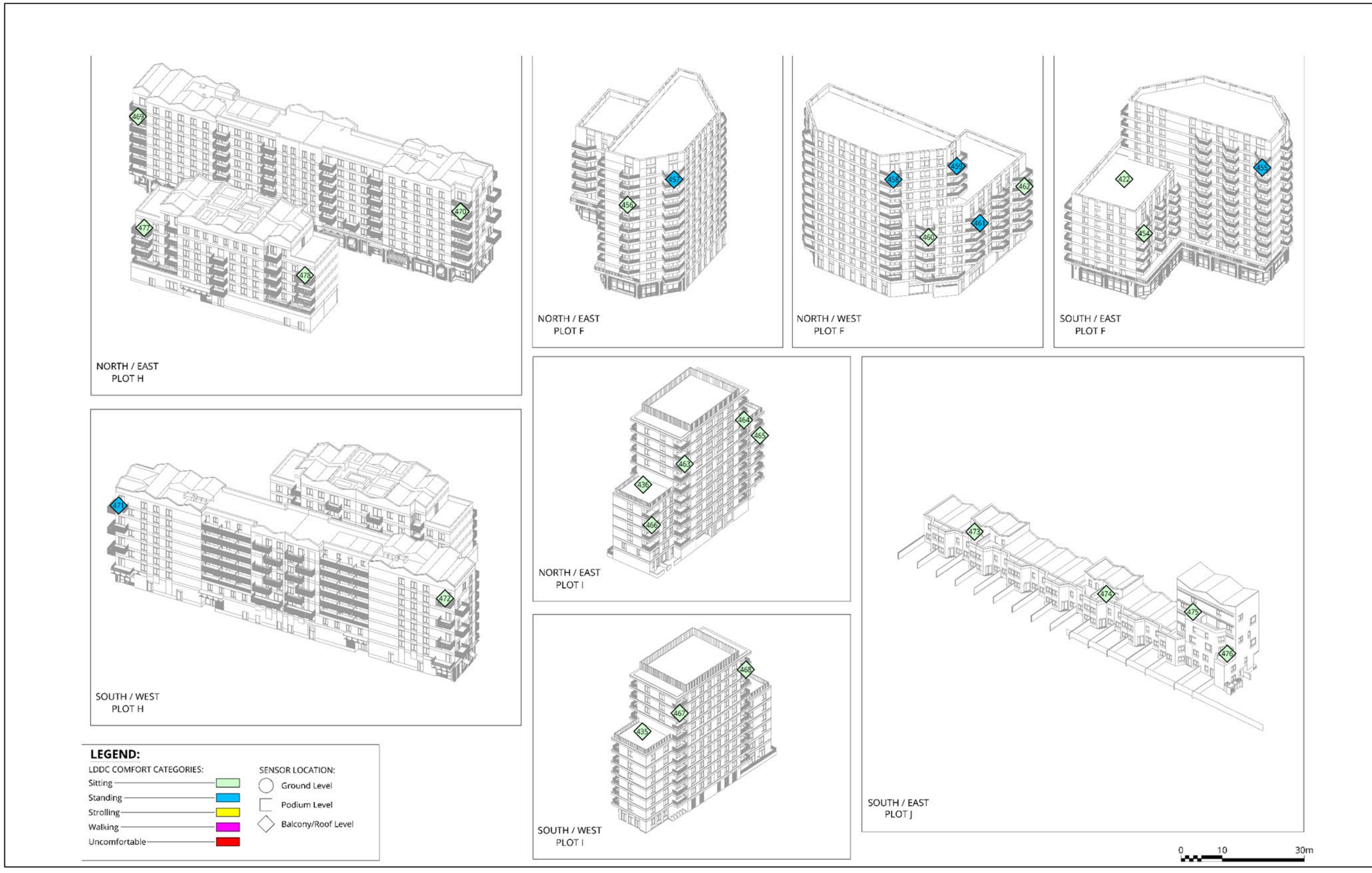


**Figure 13.50 Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**

**Figure 13.51 Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Ground Level (Strong Winds)**

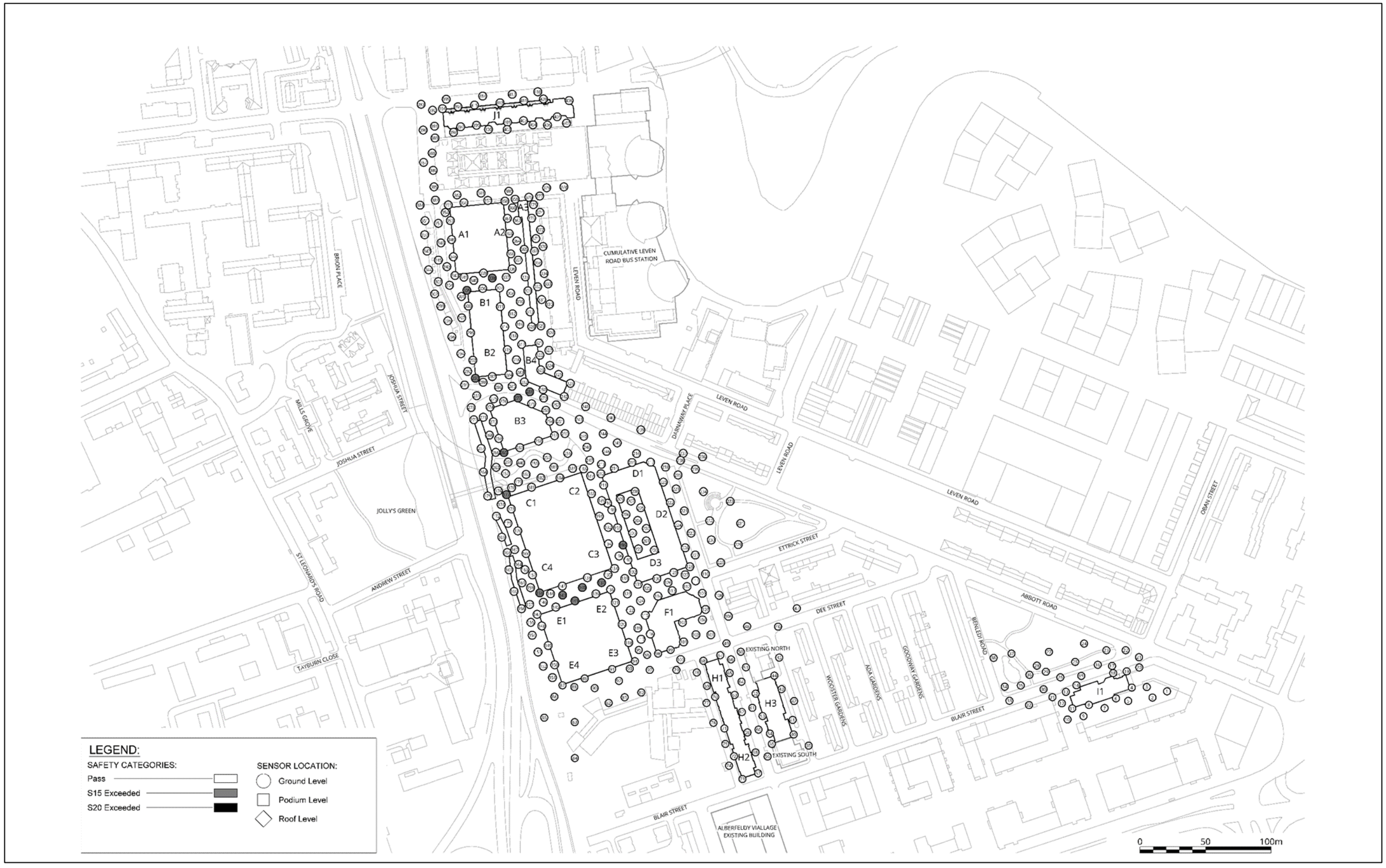
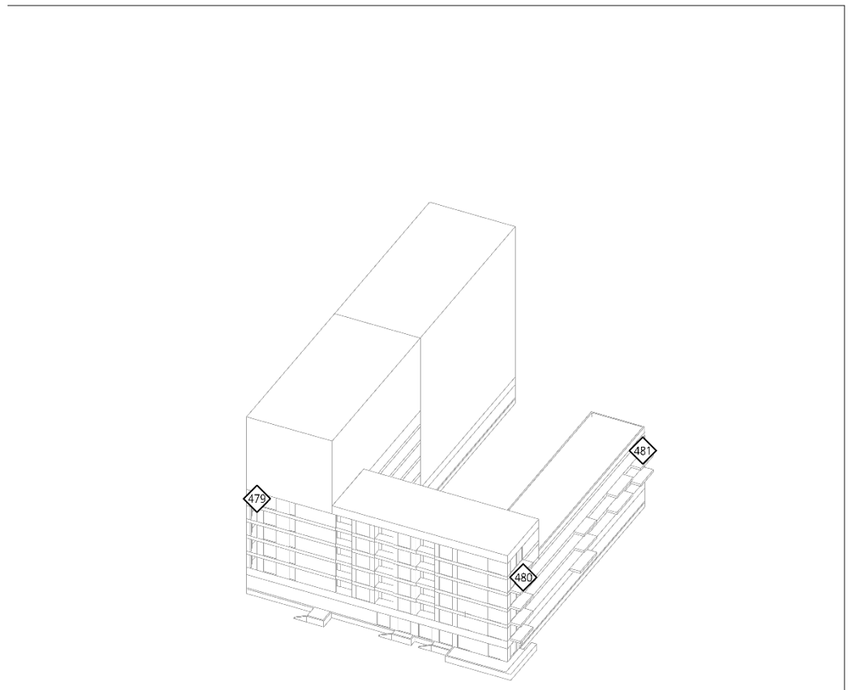
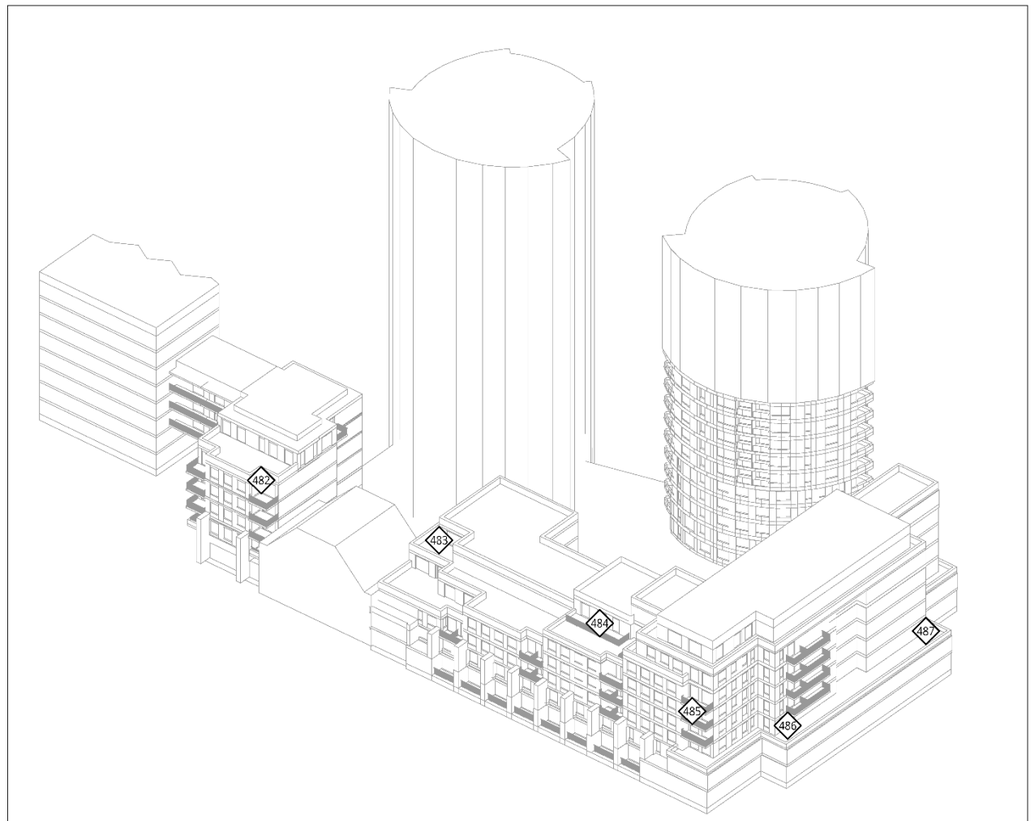


**Figure 13.52 Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**




EXISTING BUILDING -ALBERFELDY VILLAGE

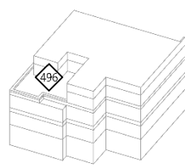



CUMULATIVE - LEVEN BUS STATION

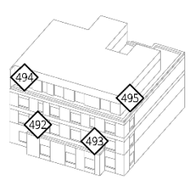
LEGEND:

SAFETY CATEGORIES:
- Pass
- S15 Exceeded
- S20 Exceeded

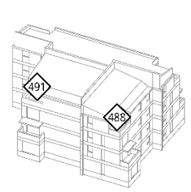
SENSOR LOCATION:
- Ground Level
- Podium Level
- Roof Level



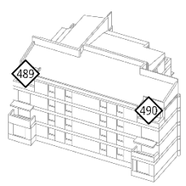

EXISTING BUILDING - SOUTH




EXISTING BUILDING - SOUTH



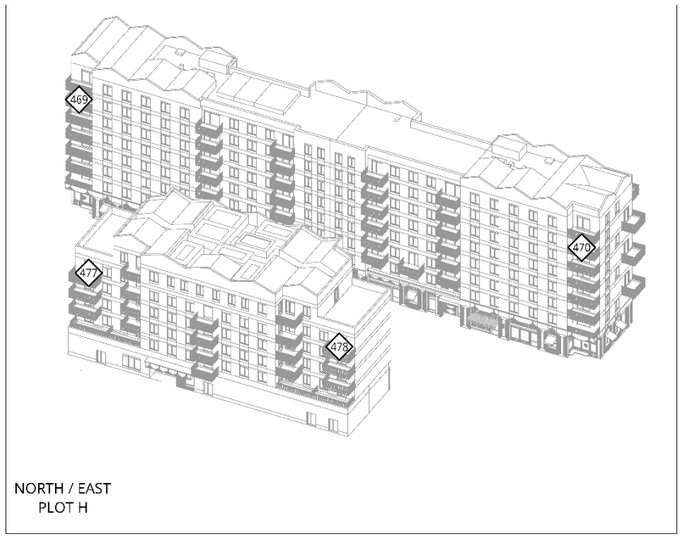

EXISTING BUILDING - NORTH

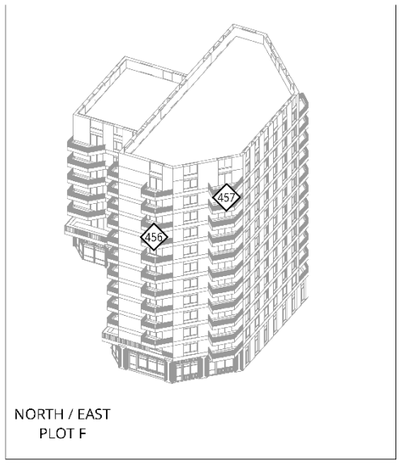


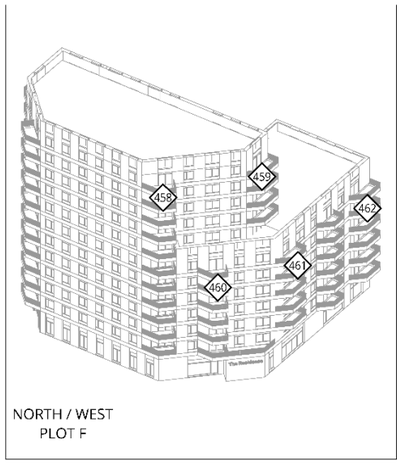

EXISTING BUILDING - NORTH

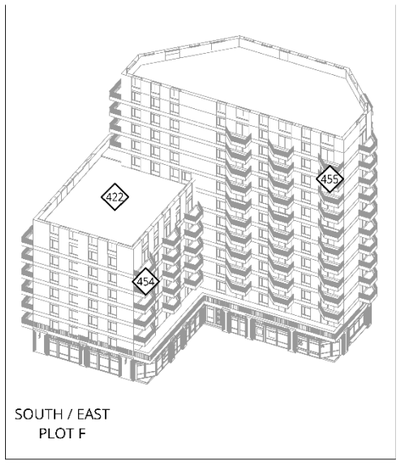
0 10 30m

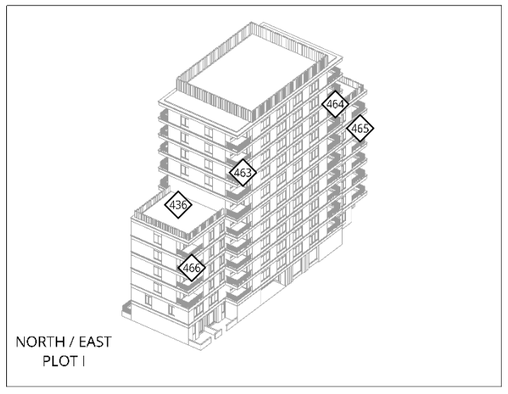
**Figure 13.53 Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**

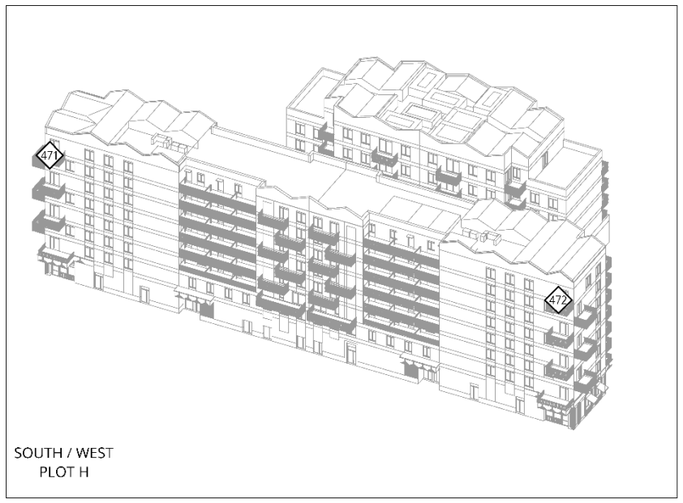


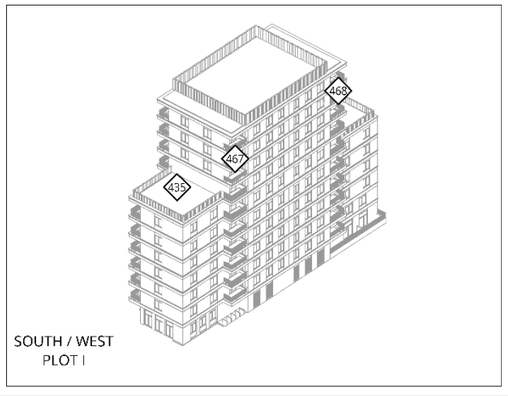



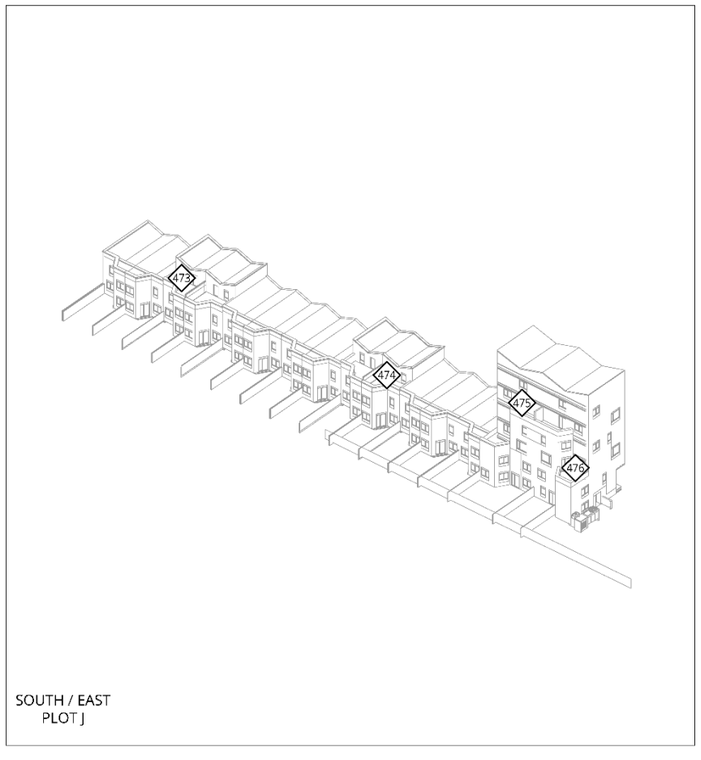



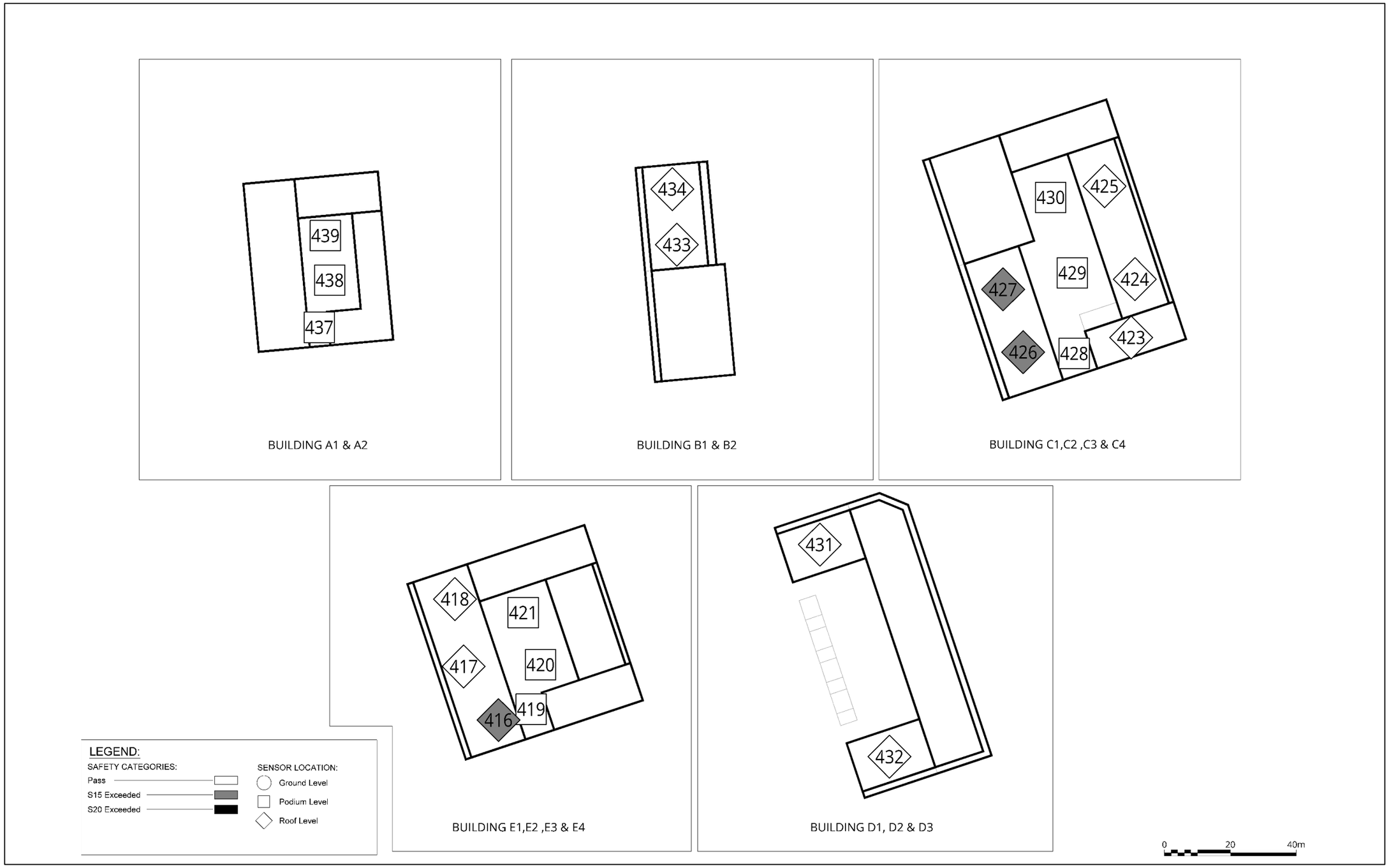

LEGEND:

SAFETY CATEGORIES:
- Pass
- S15 Exceeded
- S20 Exceeded

SENSOR LOCATION:
- Ground Level
- Podium Level
- Roof Level

0 10 30m

**Figure 13.54** **Configuration 8: Proposed Development (Outline Proposals plus Detailed Proposals) with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**



*Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings*

**13.283** The assessment of the wind conditions for Configuration 9 is based on the results presented in **Figure 13.55** and **Figure 13.56** for the windiest and summer seasons respectively for ground floor level and **Figure 13.57, Figure 13.58 and Figure 13.59** for elevated levels during the summer season. Safety exceedances are presented in **Figure 13.60** for the ground level and **Figure 13.61, Figure 13.62 and Figure 13.63** for elevated levels.

*Pedestrian Comfort*

**13.284** With the introduction of the overall Proposed Development in the context of cumulative surrounds, wind conditions would improve compared to Configuration 4 and would range from suitable for sitting to walking use during the windiest season.

**13.285** During the summer season, wind conditions are either the same category or one category calmer and range from suitable for sitting to strolling use.

*Thoroughfares*

Detailed Proposals

**13.286** Wind conditions at thoroughfares within the Detailed Proposals would range from suitable for sitting to strolling use during the windiest season, representing **Moderate Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

Illustrative Scheme

**13.287** Wind conditions at the majority of thoroughfares within the Illustrative Scheme would range from suitable for sitting to strolling use during the windiest season, representing **Moderate Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.288** The exception to this would be at probe locations 158, 177 and 274 which would be one category windier than suitable for strolling use during the windiest season. These conditions would represent a **Minor Adverse (Significant)** effect.

Off-site

**13.289** Off-site thoroughfares in the vicinity of the Proposed Development would be suitable for sitting (probe locations 47, 79, 84, 228, 229, 230, 231, 232, 233, 234, 235, 330, 333, 370, 374 and 377), standing (probe locations 48, 78, 236, 328, 386, 388 and 389) and strolling (probe location 385) use during the windiest season, which would represent a **Negligible** (Not Significant) effect.

*Entrances*

Detailed Proposals

**13.290** Wind conditions at the majority of entrances to the Detailed Proposals would range from suitable for sitting to standing use during the windiest season, representing a **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.291** The exception to this would be at probe locations 116 which would be one category windier than suitable for the intended use, thus representing a **Minor Adverse (Significant)** effect.

Illustrative Scheme

**13.292** Wind conditions at the majority of entrances to the Illustrative Scheme would range from suitable for sitting to standing use during the windiest season. This would represent **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.293** The exception to this would be at probe locations 141, 162, 195, 260, 276, 280, 300 and 339 which would be one category windier than suitable for entrance use. This would represent a **Minor Adverse (Significant)** effect.

**13.294** Probe locations 306 would be two categories windier than suitable for entrance use. This would represent a **Moderate Adverse (Significant)** effect.

*Bus stops*

**13.295** Bus stops around the Site would have wind conditions suitable for sitting (probe location 106) and standing (probe location 169) during the windiest season. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effect.

**13.296** Probe location 105 would be suitable for strolling use during the windiest season, one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Pedestrian Crossings*

**13.297** Wind conditions at pedestrian crossings around the Site (probe locations 237 and 238) would be suitable for standing use during the windiest season representing a **Moderate Beneficial (Not Significant)** effect.

*Ground Level Amenity – Mixed Use*

Detailed Proposals

**13.298** Wind conditions at ground level amenity spaces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season, representing a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.299** Wind conditions at the majority of ground level amenity spaces would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.300** The exception to this would be at probe locations 259 which would be one category windier than suitable for amenity use. This would represent a **Minor Adverse (Significant)** effect.

Off-Site

**13.301** Wind conditions at the school court (represented by probe 83) would be suitable for sitting use during the summer season. This represents **Negligible (Not Significant)** effect.

*Ground Level Amenity – Seating*

Detailed Proposals

**13.302** Wind conditions at the majority of designated seating areas within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

**13.303** The exception to this would be at probe location 115 (to the north-west of Plot F) which would be one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

Illustrative Scheme

**13.304** Wind conditions at the majority of designated seating areas within the Illustrative Scheme would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

**13.305** The exception to this would be at probe locations 265 and 316 which would be one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Podium Level Amenity – Mixed Use*

Illustrative Scheme

**13.306** Podium amenity spaces (at probe locations 419, 420, 421, 428, 429, 430, 437, 438 and 439) would range from suitable for sitting to standing use during the summer season. These wind conditions would represent a **Negligible (Not Significant)** effect.

*Roof Terrace Amenity – Mixed Use*

Detailed Proposals

**13.307** Wind conditions at roof terraces within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.308** Wind conditions at the majority of roof terraces would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

**13.309** The exception to this would be at probe location 434 which would be one category windier than suitable during the windiest season. This would represent a **Minor Adverse (Significant)** effect.

Off-site

**13.310** Wind conditions at off-site roof terraces represented by probe locations 483, 484, 486, 487 and 496 would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Balcony Levels*

Detailed Proposals

**13.311** Wind conditions at balconies within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.312** Wind conditions at balconies within the Illustrative Scheme would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Off-site

**13.313** Wind conditions at off-site balconies of neighbouring buildings represented by probe locations 479, 480, 481, 488, 489, 490, 491, 492, 493, 494 and 495 would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

### *Strong winds*

Detailed Proposals

**13.314** There would be no instances of strong winds exceeding the safety threshold within the Detailed Proposals.

Illustrative Scheme

**13.315** There would be instances of strong winds exceeding the safety threshold at probe locations 158, 159, 177, 195, 274, 306, 338, 340, 353 and 453 within or around the Proposed Development including roads and car parks.

**Figure 13.55 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Ground Level (Windiest Season)**

**Figure 13.56 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Ground Level (Summer Season)**

**Figure 13.57 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**

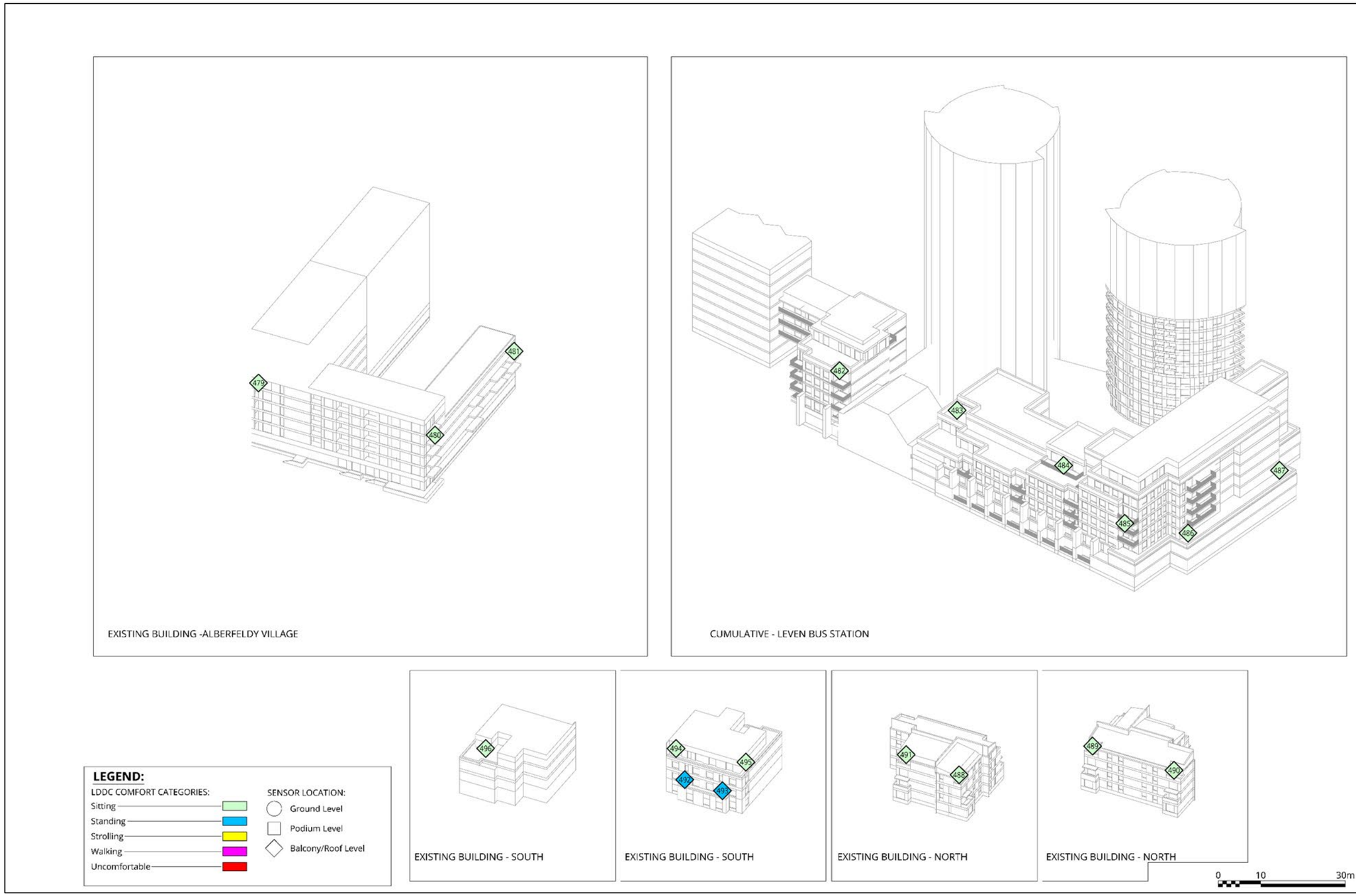


**Figure 13.58 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**

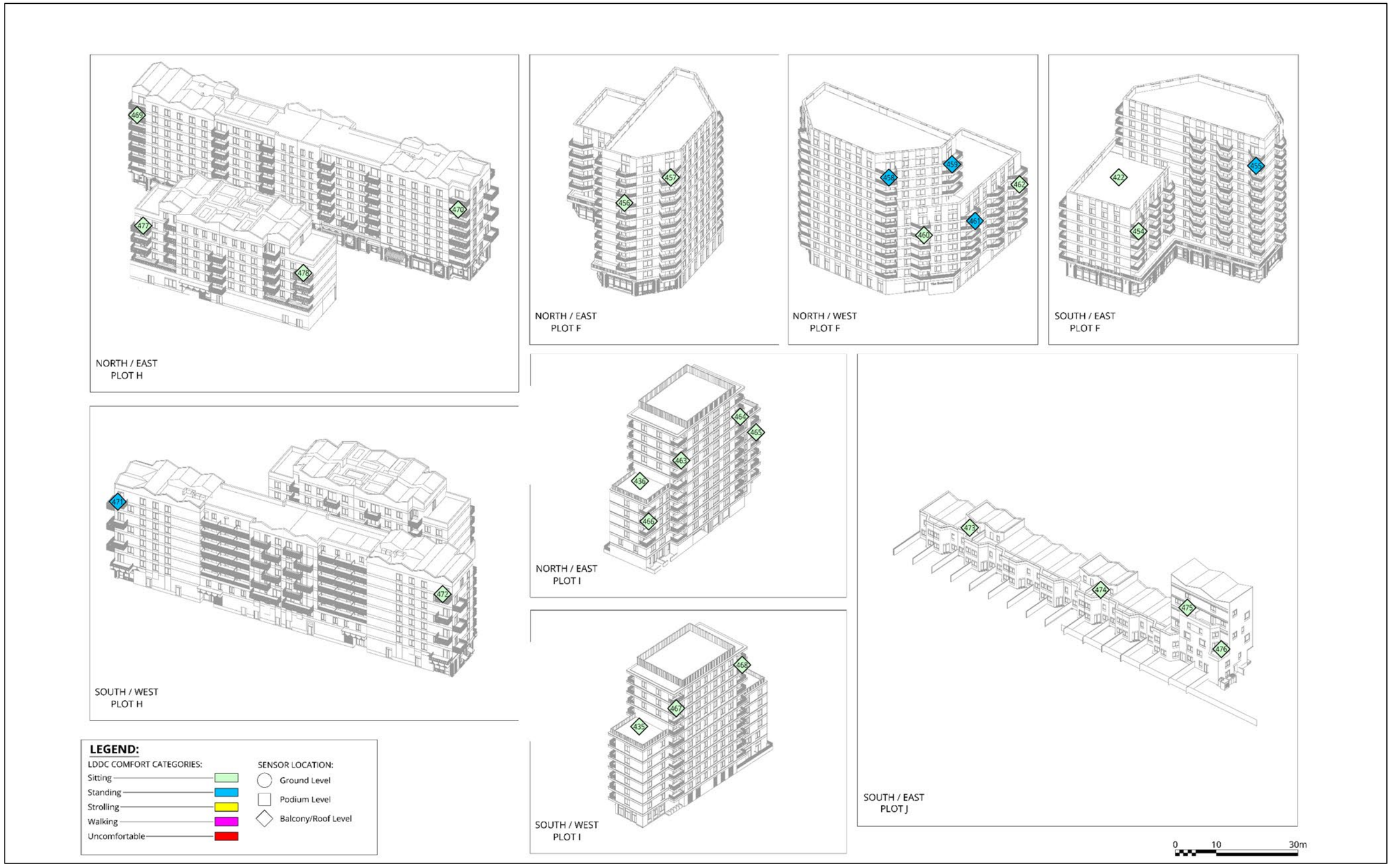


**Figure 13.59 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Elevated Levels (Summer Season)**

**Figure 13.60 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Ground Level (Strong Winds)**

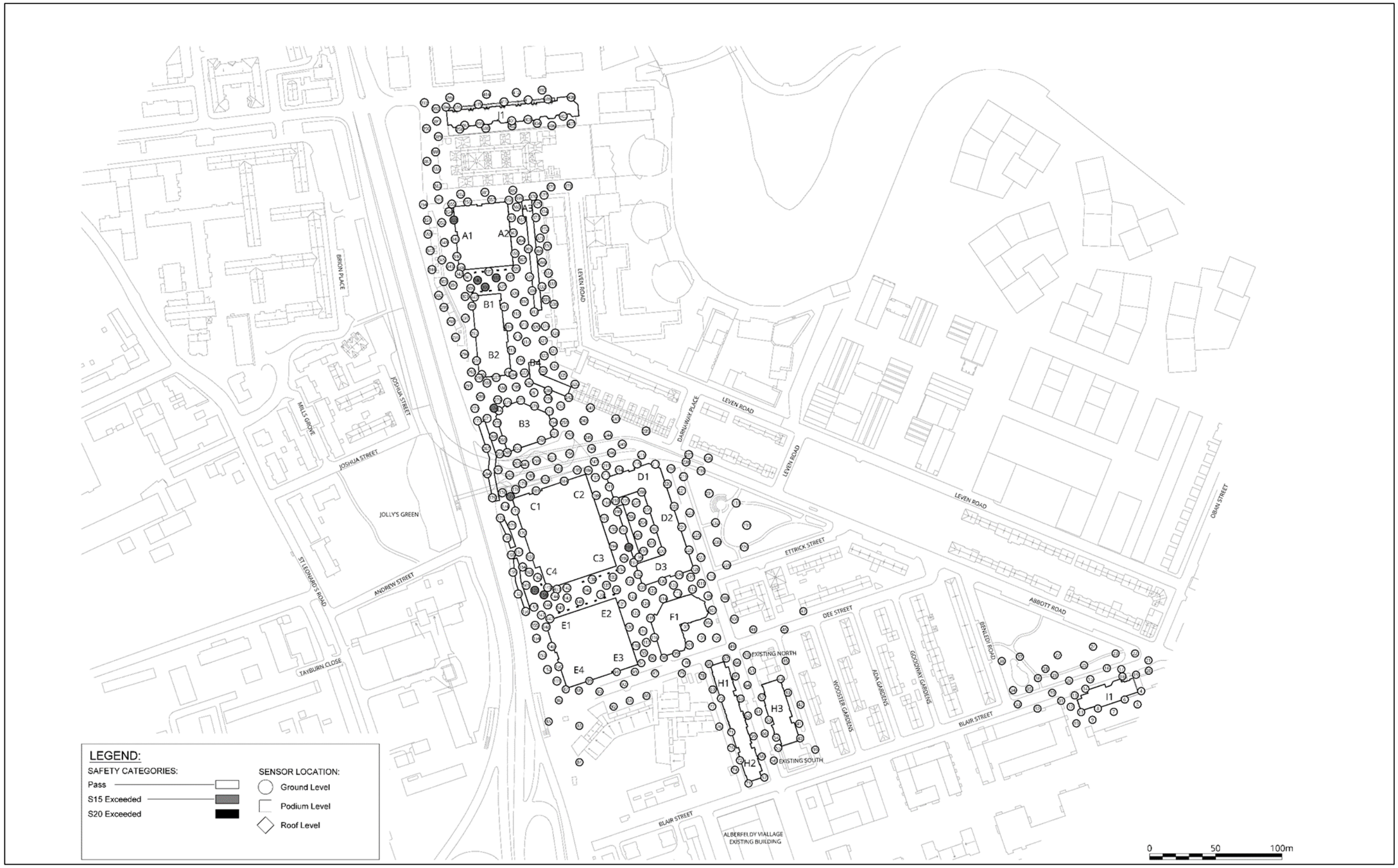


**Figure 13.61 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**

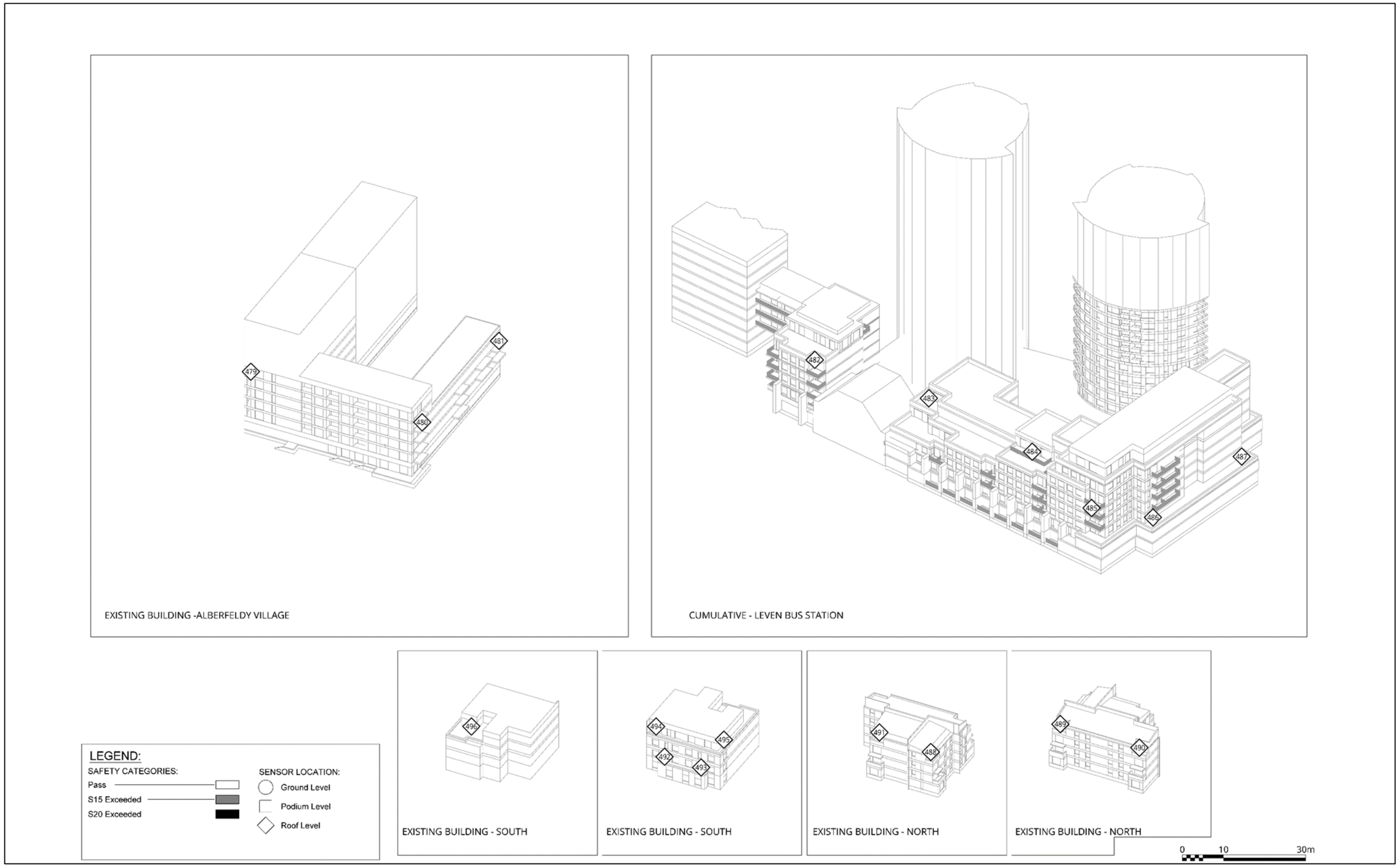


**Figure 13.62 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**

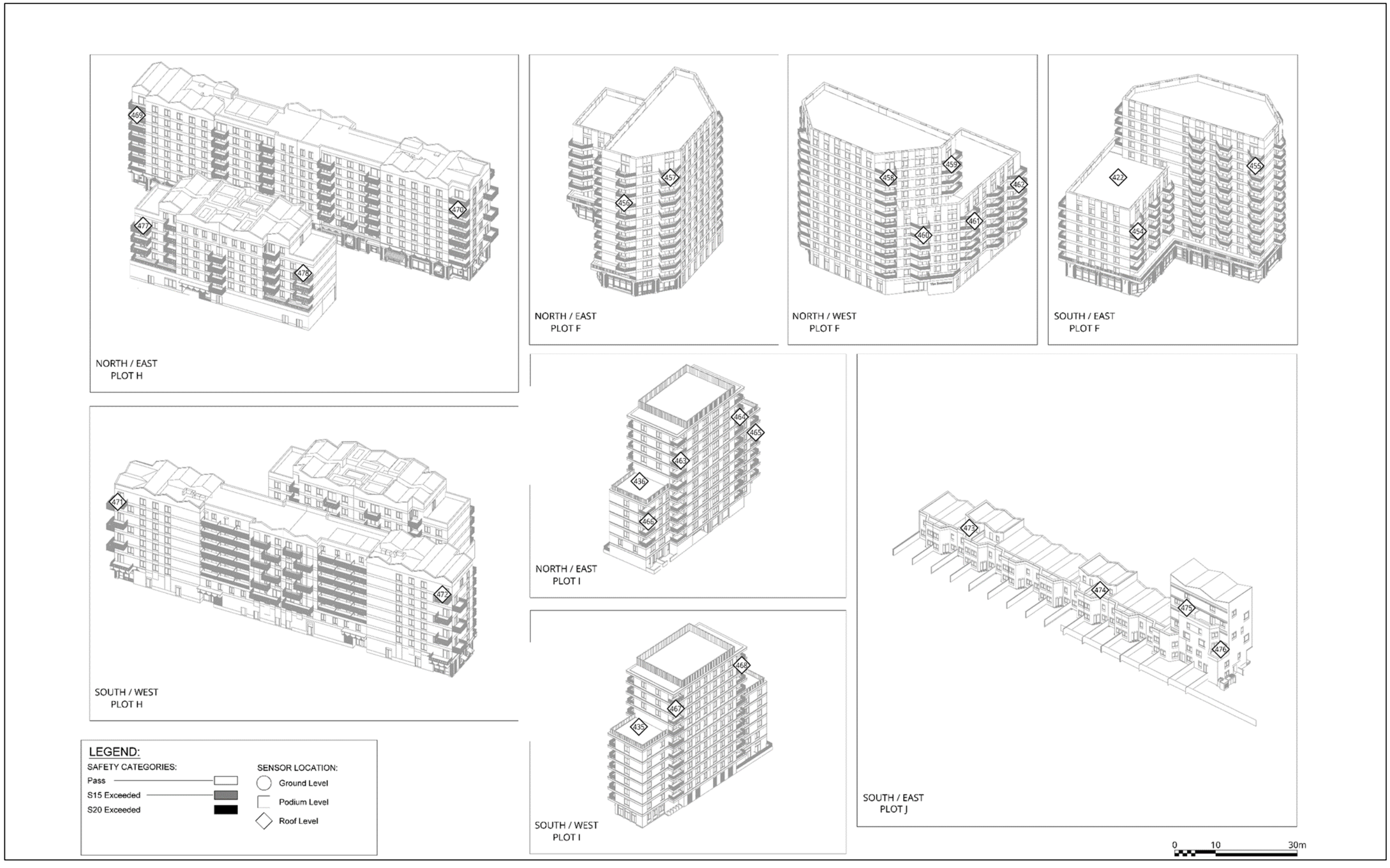
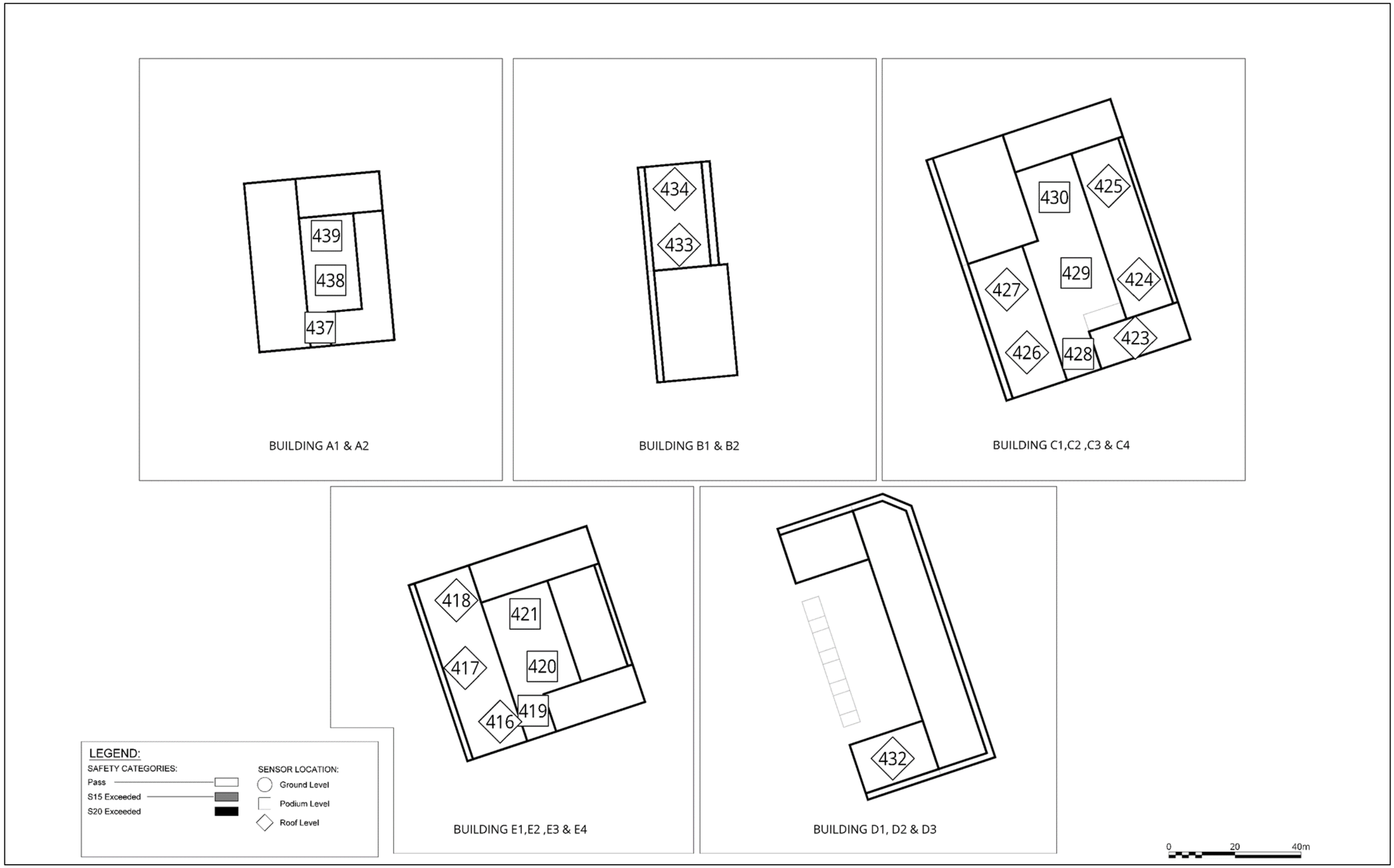


**Figure 13.63 Configuration 9: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings – Elevated Levels (Strong Winds)**



*Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures*

**13.316** The assessment of the wind conditions for Configuration 10 is based on the results presented in **Figure 13.64** and **Figure 13.65** for the windiest and summer seasons respectively for ground floor level and **Figure 13.66, Figure 13.67 and Figure 13.68** for elevated levels during the summer season. Safety exceedances are presented in **Figure 13.69** for the ground level and **Figure 13.70, Figure 13.71 and Figure 13.72** for elevated levels.

*Pedestrian Comfort*

**13.317** With the inclusion of the proposed landscaping and wind mitigation measures wind conditions would improve at the majority of areas compared to Configuration 9 and would range from suitable for sitting to strolling use during the windiest season with the exception of the north-western corner of Plot C which would be suitable for walking use.

**13.318** During the summer season, wind conditions are either the same category or one category calmer and range from suitable for sitting to strolling use.

*Thoroughfares*

Detailed Proposals

**13.319** Wind conditions at thoroughfares within the Detailed Proposals would range from suitable for sitting to strolling use during the windiest season, representing **Moderate Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

Illustrative Scheme

**13.320** Wind conditions at the majority of thoroughfares within the Illustrative Scheme would range from suitable for sitting to strolling use during the windiest season, representing **Moderate Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.321** The exception to this would be at probe location 177 which would be one category windier than suitable for strolling use during the windiest season. These conditions would represent a **Minor Adverse (Significant)** effect. The wind mitigation measures suggested for Configuration 5 would likely improve wind conditions at this location in the context of cumulative surrounds.

Off-site

**13.322** Off-site thoroughfares in the vicinity of the Proposed Development would be suitable for sitting (probe locations 47, 48, 79, 228, 229, 230, 231, 232, 233, 234, 235, 328, 330, 333, 370, 374 and 377), standing (probe locations 78, 84, 236, 386, 388 and 389) and strolling (probe location 385) use during the windiest season, which would represent a **Negligible** (Not Significant) effect.

*Entrances*

Detailed Proposals

**13.323** Wind conditions at the majority of entrances to the Detailed Proposals would range from suitable for sitting to standing use during the windiest season, representing a **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.324** The exception to this would be at probe locations 116 which would be one category windier than suitable for the intended use, thus representing a **Minor Adverse (Significant)** effect.

Illustrative Scheme

**13.325** Wind conditions at the majority of entrances to the Illustrative Scheme would range from suitable for sitting to standing use during the windiest season. This would represent **Minor Beneficial** (Not Significant) to **Negligible** (Not Significant) effects.

**13.326** The exception to this would be at probe locations 195, 276, 280, 287, 306, 309 and 339 which would be one category windier than suitable for entrance use. This would represent a **Minor Adverse (Significant)** effect.

*Bus stops*

**13.327** Bus stops around the Site would have wind conditions suitable for sitting (probe location 106) and standing (probe locations 105 and 168) during the windiest season. This would represent **Minor Beneficial (Not Significant)** to **Negligible (Not Significant)** effect.

*Pedestrian Crossings*

**13.328** Wind conditions at pedestrian crossings around the Site (probe locations 237 and 238) would be suitable for standing use during the windiest season representing a **Moderate Beneficial (Not Significant)** effect.

*Ground Level Amenity – Mixed Use*

Detailed Proposals

**13.329** Wind conditions at ground level amenity spaces within the Detailed Proposals would range from suitable for sitting to standing use during the summer season, representing a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.330** Wind conditions at ground level amenity spaces would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

Off-Site

**13.331** Wind conditions at the school court (represented by probe 83) would be suitable for sitting use during the summer season. This represents **Negligible (Not Significant)** effect.

*Ground Level Amenity – Seating*

Detailed Proposals

**13.332** Wind conditions at designated seating areas within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.333** Wind conditions at the majority of designated seating areas within the Illustrative Scheme would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

**13.334** The exception to this would be at probe location 265 which would be one category windier than suitable for the intended use. This would represent a **Minor Adverse (Significant)** effect.

*Podium Level Amenity – Mixed Use*

Illustrative Scheme

**13.335** Podium amenity spaces (at probe locations 419, 420, 421, 428, 429, 430, 437, 438 and 439) would range from suitable for sitting to standing use during the summer season. These wind conditions would represent a **Negligible (Not Significant)** effect.

*Roof Terrace Amenity – Mixed Use*

Detailed Proposals

**13.336** Wind conditions at roof terraces within the Detailed Proposals would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.337** Wind conditions at roof terraces within the Illustrative Scheme would range from suitable for sitting to standing use during the summer season. This represents a **Negligible (Not Significant)** effect.

Off-site

**13.338** Wind conditions at off-site roof terraces represented by probe locations 483, 484, 486, 487 and 496 would be suitable for sitting use during the summer season. This would represent a **Negligible (Not Significant)** effect.

*Balcony Levels*

Detailed Proposals

**13.339** Wind conditions at balconies within the Detailed Proposals would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Illustrative Scheme

**13.340** Wind conditions at balconies within the Illustrative Scheme would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

Off-site

**13.341** Wind conditions at off-site balconies of neighbouring buildings represented by probe locations 479, 480, 481, 488, 489, 490, 491, 492, 493, 494 and 495 would range from suitable for sitting to standing use during the summer season. This would represent a **Negligible (Not Significant)** effect.

### *Strong winds*

Detailed Proposals

**13.342** There would be no instances of strong winds exceeding the safety threshold within the Detailed Proposals.

Illustrative Scheme

**13.343** There would be instances of strong winds exceeding the safety threshold at probe location 177 within or around the Proposed Development including roads and car parks.

## LIKELY SIGNIFICANT EFFECTS

**13.344** The Detailed Proposals (Phase A) in the context of existing surrounds would have wind conditions that are significant at two entrance locations (probe locations 112 and 114), an existing bus stop (probe location 105) during the windiest season and at a stack of balconies (represented by probe location 455) during the summer season, when amenity spaces would be expected to be most frequently used. There would be no instance of strong winds in the Detailed Proposals in this context.

**13.345** With the introduction of the Outline Proposals alongside the Detailed Proposals, wind conditions would improve around the Detailed Proposals particularly on the northern elevation of Plot F, however, significant effects would persist at entrance location 116 and the existing bus stop at probe location 105. For the Outline Proposals significant effects would occur at several locations including thoroughfares (probe locations 141, 158, 177, 274, 275, 277, 284 and 305), potential entrances (probe locations 139, 142, 145, 162, 195, 255, 276, 278, 280, 313 and 339) during the windiest season and ground level amenity (probe locations 259, 265, 312 and 316), roof terraces (probe locations 416, 417, 426, 427 and 434) during the summer season. There would be instances of strong winds with the potential to be a safety concern to cyclists, more vulnerable pedestrians and terrace occupants in areas represented by probe locations 137, 140, 141, 143, 158, 177, 195, 265, 274, 277, 281, 286, 290, 305, 337, 338, 339, 340, 416, 426, 427 and 434.

**13.346** Replacing the Outline Proposals of the Outline Proposals with that of the Illustrative Scheme would improve wind conditions between Plots B2/B3 and C/E, however, the majority of wind conditions and significant effects would remain similar to Configuration 3.

**13.347** With the introduction of proposed landscaping and the implemented wind mitigation measures to the Illustrative Scheme, in the context of existing surrounds, wind conditions would improve such that the majority of areas would be suitable for the intended use with the exception of thoroughfares (probe locations 177 and 274), entrances (probe locations 116, 195, 276, 280, 287, 306, 309, 339), existing bus stop (probe location 105) during the windiest season and ground level amenity (probe locations 192 and 265) roof terraces (probe locations 416 and 418) during the summer season, which would continue to have significant effects. There would be strong winds exceeding the threshold at one probe location 177 at the north-west corner of Plot C.

**13.348** Wind mitigation measures have been suggested in addition to the developed proposed landscaping and implemented wind mitigation measures which would be expected to improve wind conditions at the remaining windy areas of the Proposed Development. The effectiveness of these measures to ensure a suitable wind microclimate will be assessed at reserved matters stage and should, where possible be integrated into the detailed design of the Proposed Development and associated landscaping scheme. All of the wind microclimate residual effects, following the implementation of wind mitigation measures, would be not significant, where the wind conditions would be expected to be the same or calmer than the desired comfort category.

**13.349** In the context of cumulative surrounding buildings, wind conditions at the Proposed Development in the aforementioned phasing scenarios would all improve, however, the significant effects at the majority of areas would persist including the safety exceedances.

**13.350** Wind mitigation measures required to improve wind conditions in the context of existing surrounding buildings would remain necessary in the context of cumulative surrounding buildings. Similarly measures expected to improve wind conditions in the context of existing surrounding buildings would be expected to remain effective in the cumulative scenarios.

**13.351** At all off-site locations wind conditions would remain suitable for the intended use for the tested scenarios.

**Figure 13.64** **Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Ground Level (Windiest Season)**

**Figure 13.65** **Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Ground Level (Summer Season)**

**Figure 13.66 Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Summer Season)**

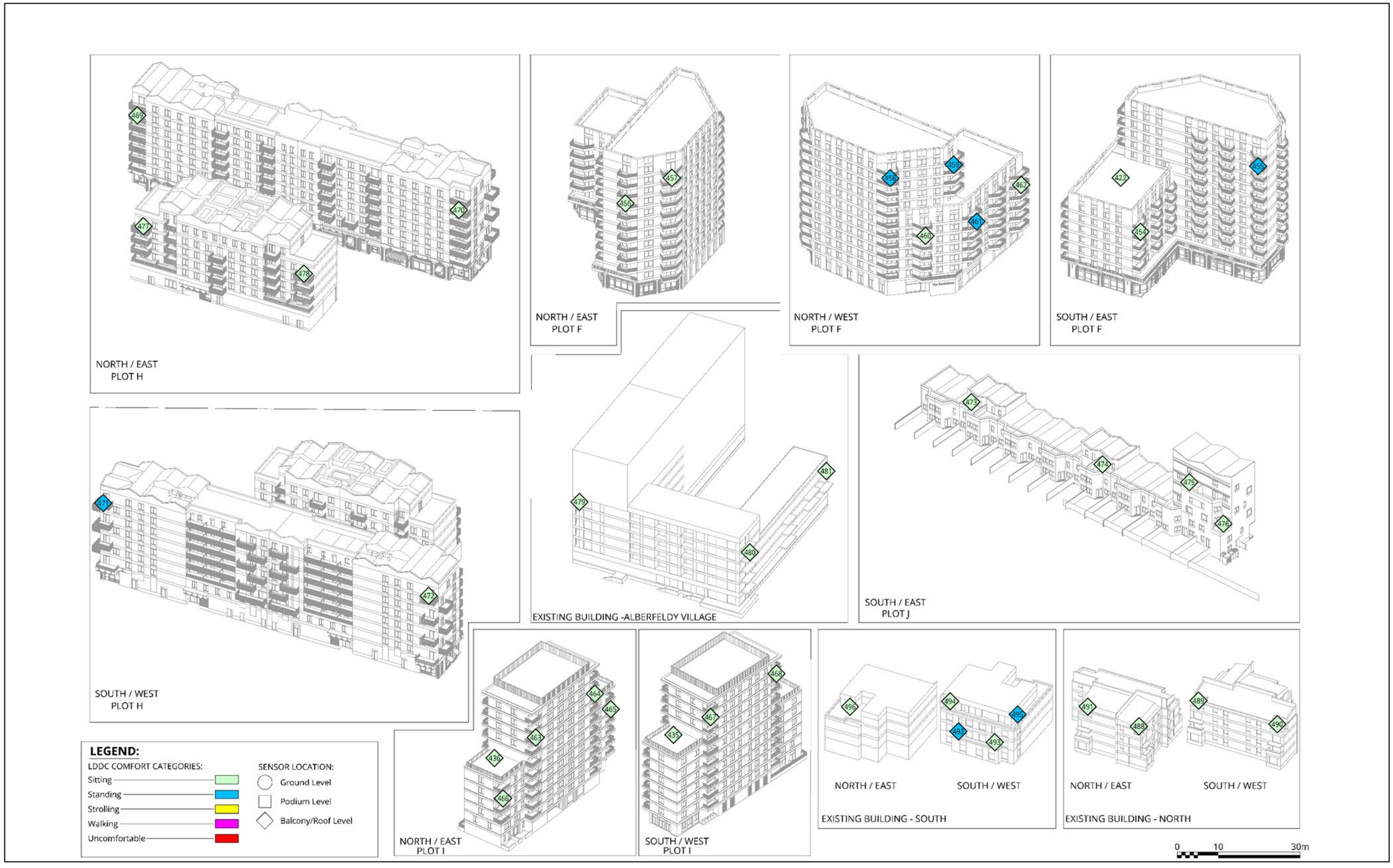


**Figure 13.67 Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Summer Season)**

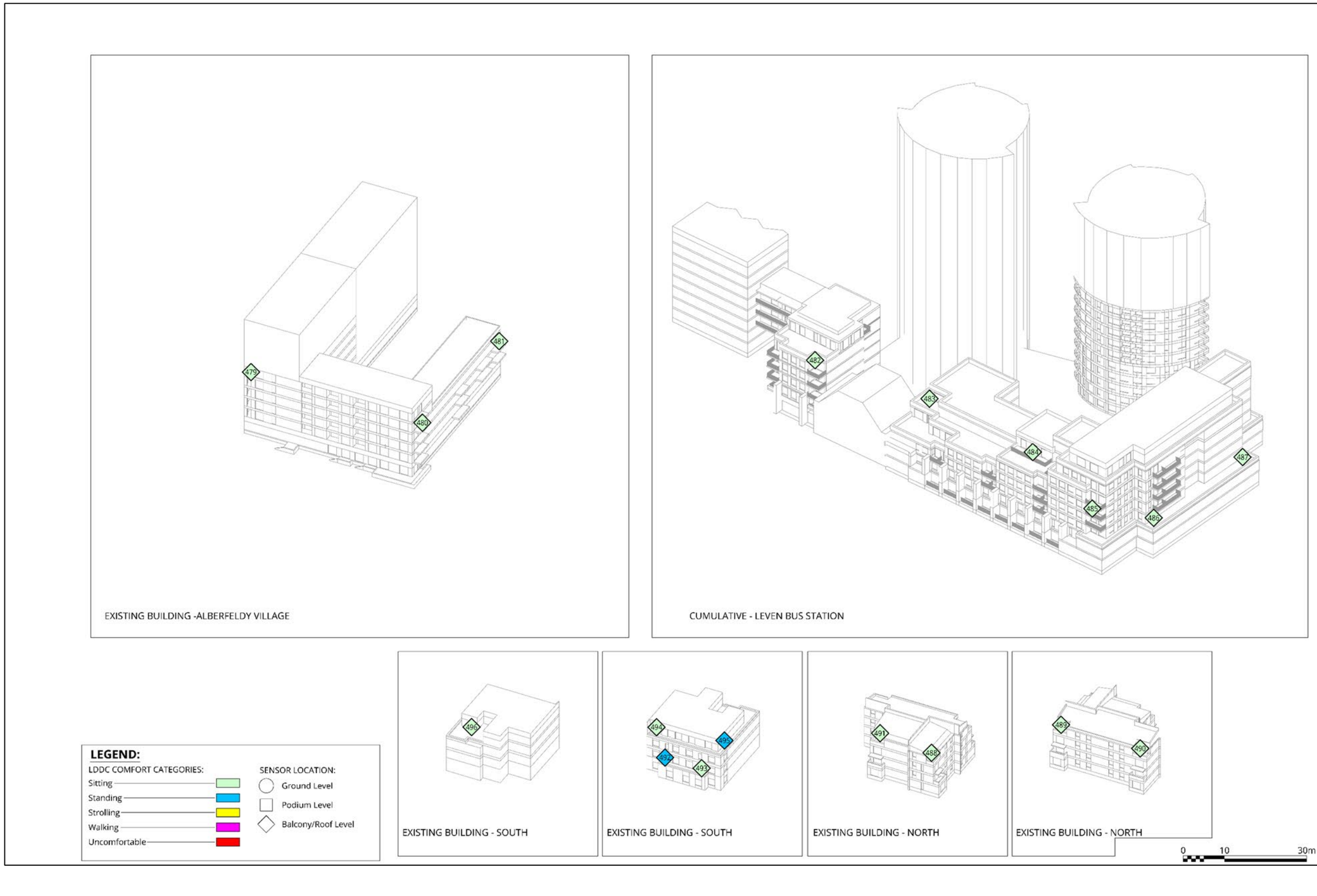


**Figure 13.68 Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Summer Season)**

**Figure 13.69 Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Ground Level (Strong Winds)**

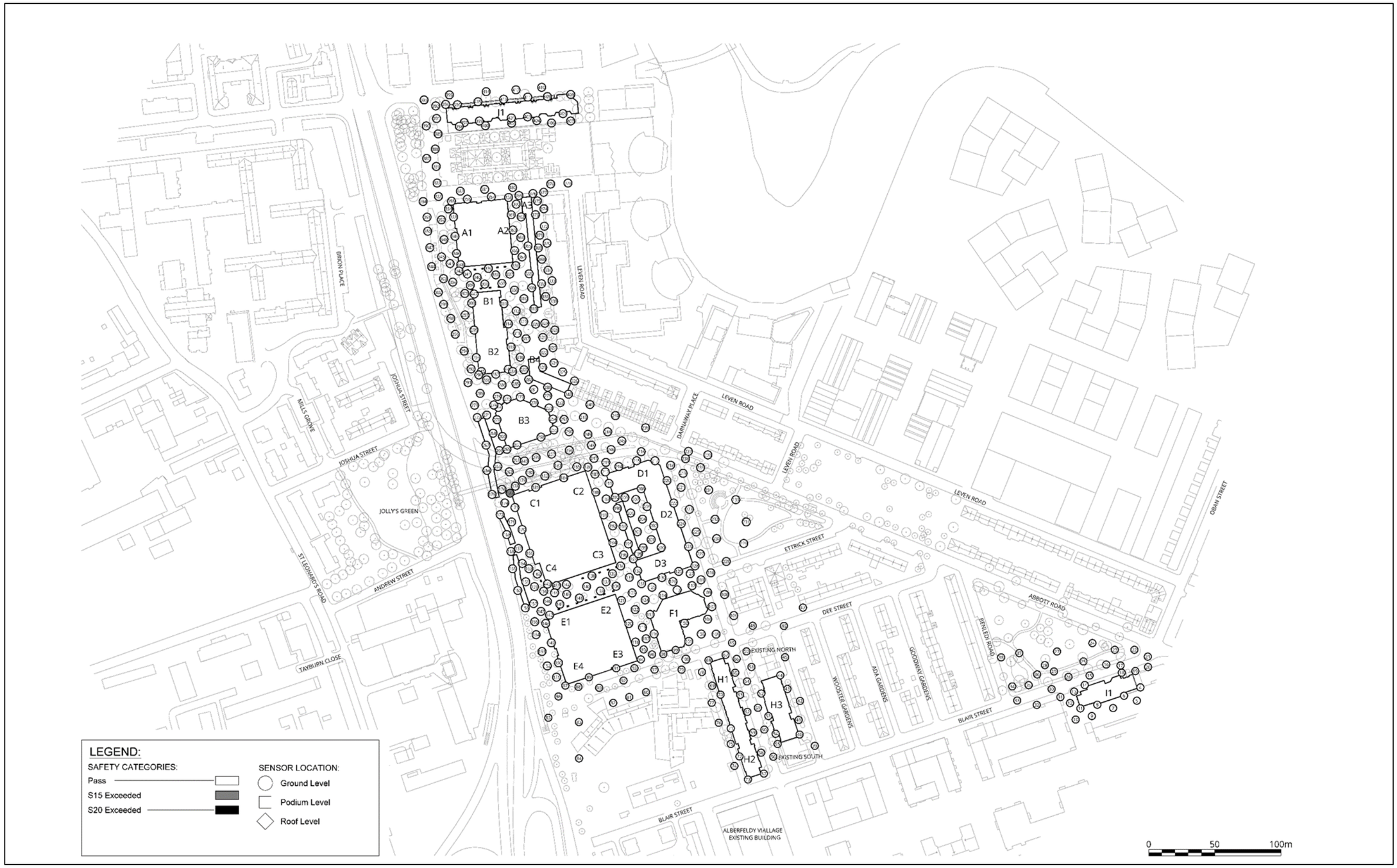


**Figure 13.70 Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Strong Winds)**

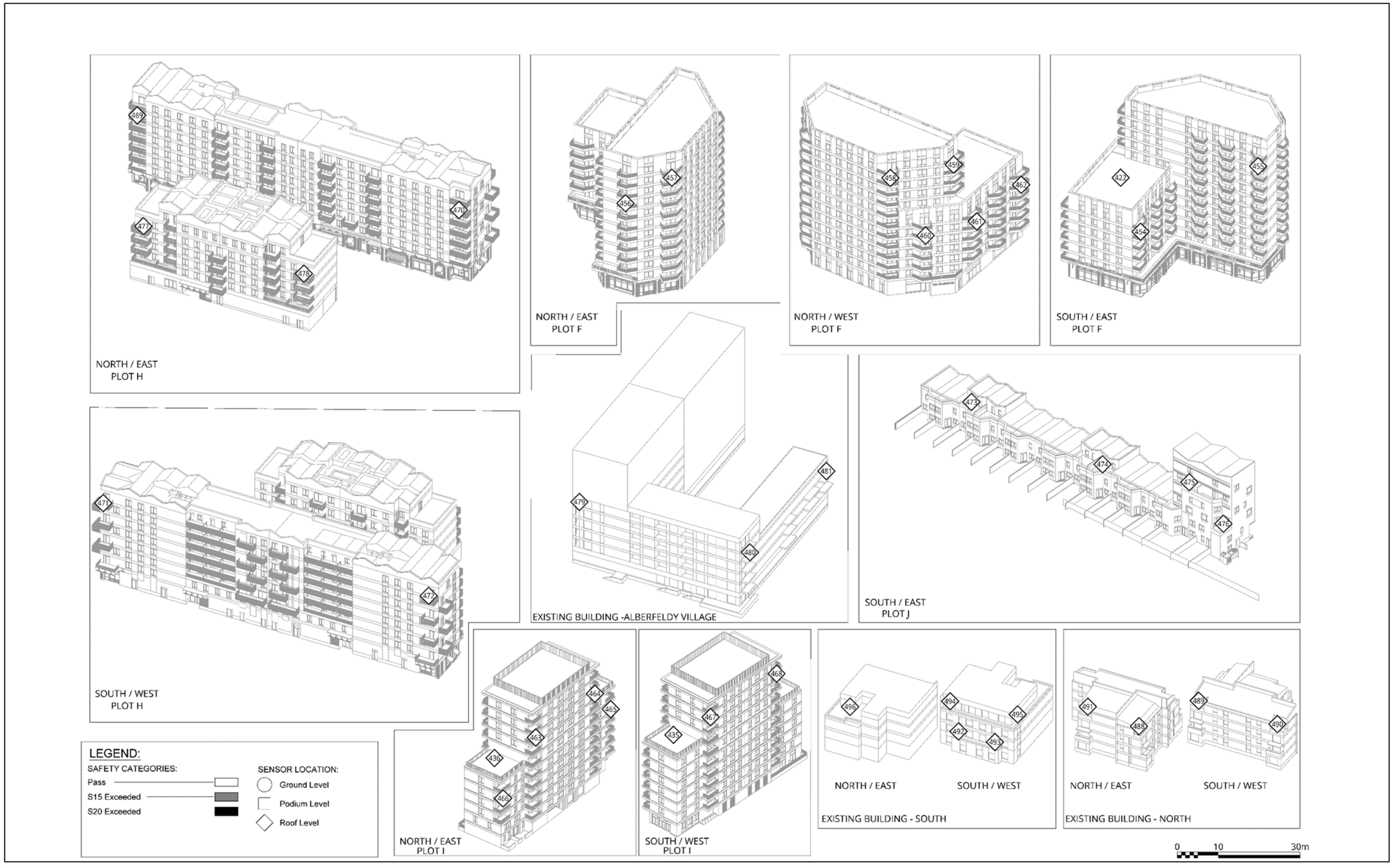


**Figure 13.71 Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Strong Winds)**

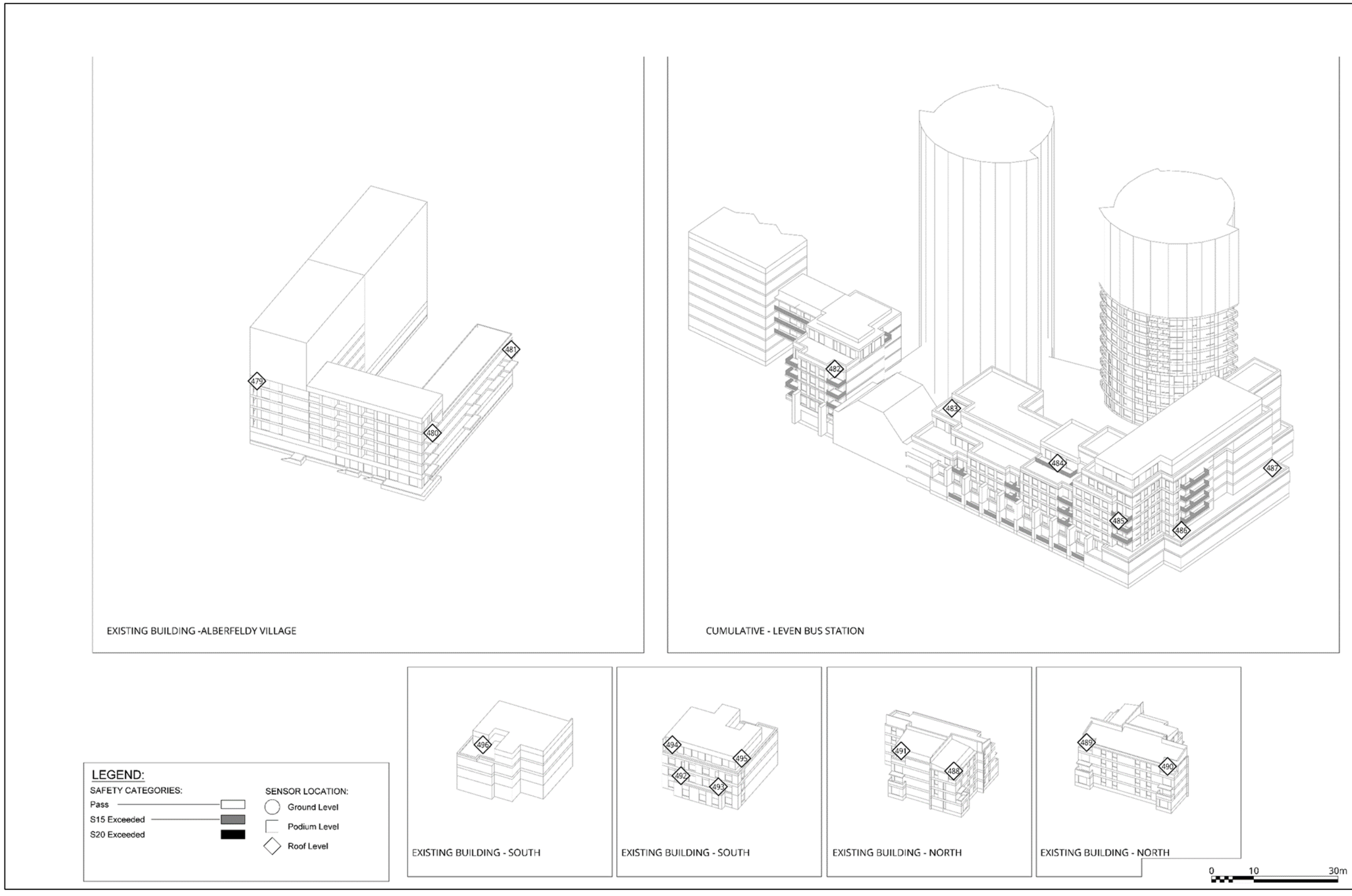
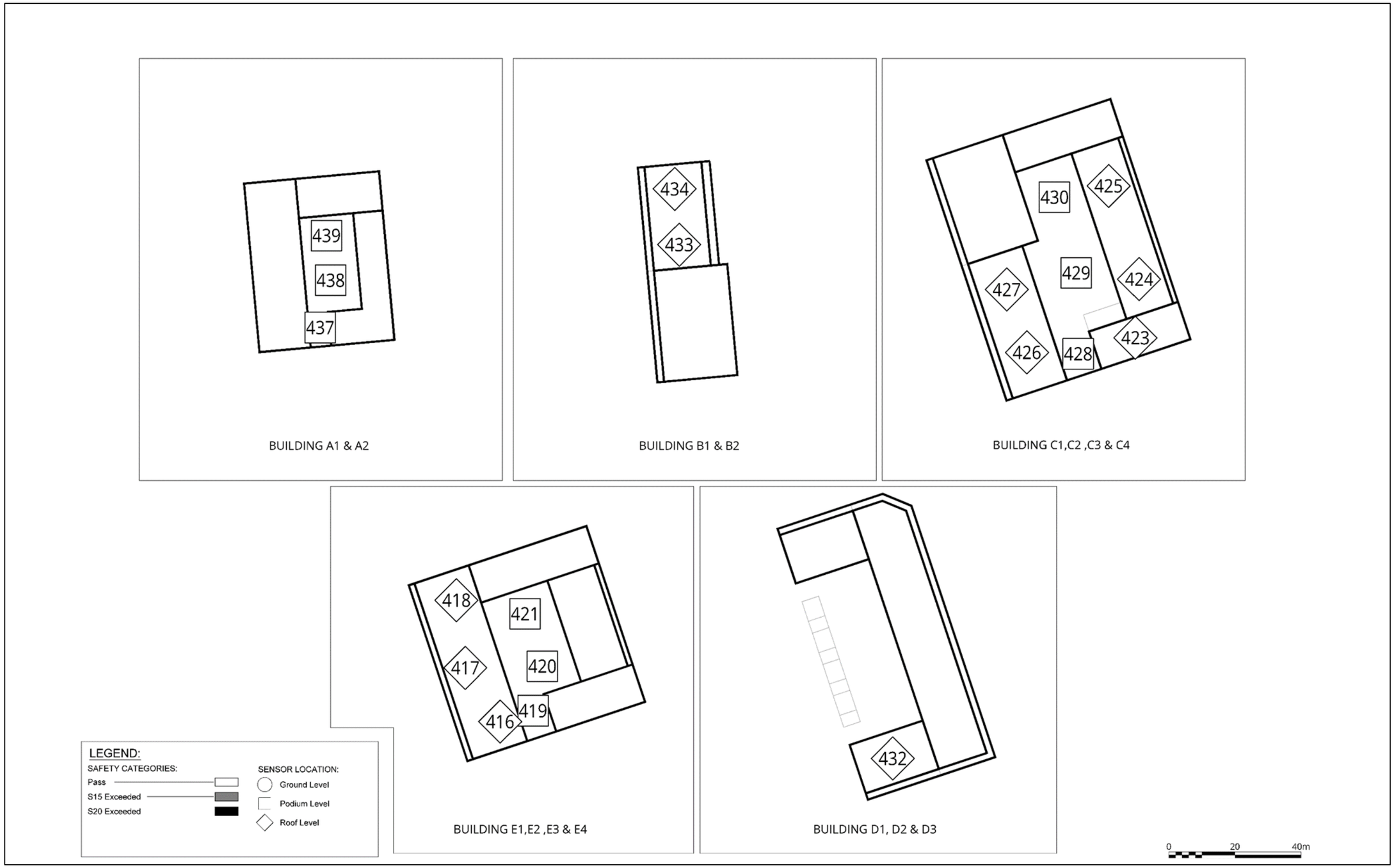


**Figure 13.72 Configuration 10: Proposed Development (Illustrative Scheme) and Phase A with Cumulative Surrounding Buildings, Proposed Landscaping and Wind Mitigation Measures – Elevated Levels (Strong Winds)**



# Chapter 14: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare

| **Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare** | | |
|---|---|---|
| **AUTHOR** | Gordon Ingram Associates (GIA) | |
| **SUPPORTING APPENDIX** | **ES Volume 3: Appendix: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare:**<br>• Annex 1: Planning Policy<br>• Annex 2: Methodology and Baseline Results<br>• Annex 3: Scenario Overviews and Window Maps<br>• Annex 4: Daylight and Sunlight Results<br>• Annex 5: Overshadowing Results<br>• Annex 6: Solar Glare Results | |
| **KEY CONSIDERATIONS** | The following are the key daylight, sunlight, overshadowing and solar glare issues have been assessed within this chapter:<br>• Alterations to daylight and sunlight at sensitive surrounding existing and future properties;<br>• Overshadowing to sensitive surrounding amenity areas;<br>• Solar glare effects at nearby sensitive locations; and<br>• The potential for light pollution at surrounding sensitive receptors. | |
| **CONSULTATION** | An EIA Scoping Report was prepared and submitted to the London Borough of Tower Hamlets (LBTH) in August 2021 to request an EIA Scoping Opinion on the proposed scope of the EIA **(ES Volume 3, Appendix EIA Methodology – Annex 1)**. The following comments were made by LBTH in their Scoping Opinion **(ES Volume 3, Appendix EIA Methodology – Annex 2)** and are addressed in the ES Chapter. | |
| | **LBTH Scoping Opinion** | **Where This is Addressed** |
| | LBTH notes that approximately 7,500m$^2$ GIA of non-residential uses (including restaurant, retail and office (Use Class E(a), E(b) and E(g))) will be provided. Therefore, LBTH expects that a light pollution assessment should be undertaken for the non-residential uses of the Proposed Development or justification should be provided in the ES, if it is considered that such an assessment is not required. | As noted, in **paragraph 14.109** of this chapter a light pollution assessment is not required which provides further justification for scoping out this assessment. |
| | The study area and individual properties assessed should be clearly stated and justified within the ES and shown on a figure for ease of understanding. It is noted that a list of receptors to be considered has been provided in Paragraph 175 of the Scoping Report, however no figure is provided so the exact receptors to be assessed is not known. Reference is made to Aberfeldy Road, which is understood to refer to Aberfeldy Street, and Carndale House, which is understood to refer to Carradale House. Bromley Hall School, Poplar Baptist Church, River Thames and Tidal Tributaries SINC, and receptors on Brion Place should be identified as receptors. | A map of receptors with buildings, clearly identified, with naming corrections is provided – see **Figures 14.1- 14.3**.<br>The additional buildings, Bromley Hall School, Poplar Baptist Church and receptors on Brion Place are considered in the Sensitive Receptors Section, with the likely significant effects considered in the Potential Effects Section.<br>The River Thames is south of the Proposed Development and therefore not considered sensitive. Bow Creek / River Lea are Tidal Tributaries which are assessed as sensitive receptors. |
| | The effects on and from cumulative schemes must be assessed such as Leven Road Gas Works (PA/18/02803), Leven Road Bus Depot (PA/19/02148), Islay Wharf (PA/19/01760) and Ailsa Wharf (PA/18/03461 and PA/21/01739), in addition to Phase 1-3 of Aberfeldy Masterplan. | These cumulative schemes are included in the Cumulative Scenario for potential cumulative effects. Ailsa Wharf (PA/16/02692 & PA/18/03461) is under construction and is included the baseline condition as fully built out. Leven Road Gasworks (PA/18/02803/A1) and Poplar Business Park (PA/11/03375) whilst also under construction are located too far from the Site to be affected and therefore have not been included within the assessment. |
| | The demolition and construction phase assessment should consider, at least qualitatively, likely effects from construction equipment, such as with cranes in situ." | This is qualitatively considered in the Demolition and Construction assessment section. |
| | The Applicant is also required to provide a summary table for daylight, which includes the following:<br>The receptor (i.e. each building);<br>The number of windows / rooms in the receptor tested;<br>The number of windows / rooms which meet the BRE criteria;<br>The number of windows / rooms which do not meet the BRE criteria, split by minor, moderate and major significance, as per the criteria outlined above;<br>The number of dwellings affected; and<br>Commentary on minor, moderate and major sunlight and daylight losses. | Information about individual dwellings, such as apartment buildings, information is not always available and as such reporting by dwellings is not always a viable option.<br>A summary table is provided in the chapter detailing the number of windows/rooms tested and affected per receptor, split by minor, moderate and major impacts. The daylight and sunlight technical results report on the specific windows and rooms which impacts occur, which are mapped on corresponding illustrations of windows/rooms to show exactly which window/room is affected. Therefore, it is possible to cross reference the daylight and sunlight impacts to individual windows/rooms. The assessment within the chapter discusses the individual impacts to windows and rooms, providing an overall conclusion to the effect to the building as a whole. This allows for a detailed breakdown and overview of the impacts occurring. |
| | LBTH agrees Daylight, Sunlight and Overshadowing – Internal, new receptors within the Proposed Development can be scoped out of the ES as an aspect chapter on the basis that a standalone report is submitted in support of the planning application and the results of this report are summarised in the Daylight, Sunlight, Overshadowing and Solar Glare aspect chapter, supported by a summary/conclusion paragraph of the daylight and sunlight levels. | A summary is provided at the end of this ES Chapter |
| | The overshadowing of public amenity spaces to be provided within the Proposed Development is to be assessed in the ES to ensure such spaces are suitable for the intended use. Two-hour sun contour drawings on the 21st March and transient overshadowing diagrams should be provided for all open space provided as part of the Proposed Development. | The following 'Internal Amenity Areas' have been assessed<br>- Braithwaite Park (existing)<br>- Leven Road Green (existing)<br>- Highland Place (proposed) |

## ASSESSMENT METHODOLOGY

### *Defining the Baseline*

**14.1** A baseline characterisation was completed by firstly undertaking a review of the surrounding land uses, using information and data sources from the Council (Valuation Office Agency (VOA) website)[1] and Google Maps[2]. Using professional judgement, properties, amenity areas and viewpoints in close enough proximity to the Site to be affected by the Proposed Development were identified.

**14.2** The review of information and data was followed by a Site visit in November 2020 to confirm the accuracy of existing conditions. The conditions recorded are not considered to have changed from the day of the Site visit to the time of writing this ES chapter.

**14.3** From the review of the surrounding context, a 3D computer model was developed for the existing surrounding properties and amenity areas as well as the existing conditions. The context model is based on photogrammetry, updated by Site visit photographs, documents available from the planning portal, real estate agency websites and land registry information.

**14.4** As noted within the EIA Scoping Report Phases 1- 3a and 3b of the previously consented masterplan (Consented Development) are considered in the baseline.

[1] *VOA website,* http://cti.voa.gov.uk/cti/refs.asp?lcn=0&EBAR=1

[2] *Google Maps,* https://www.google.com/maps

### *Evolution of the Baseline*

**14.5** An evolved baseline scenario, which assumes all cumulative schemes in the surrounding environment are built out in the absence of the Proposed Development being implemented, is considered in the Future Baseline Section of this ES Chapter.

## *Impact Assessment Methodology*

### *Demolition and Construction*

**14.6** Owing to the evolving and changing nature of the Demolition and Construction, the assessment of potential effects of the Proposed Development on daylight, sunlight, overshadowing and solar glare to surrounding receptors has not been modelled. Instead, a qualitative assessment has been undertaken using professional judgement and experience.

**14.7** The potential daylight, sunlight, overshadowing and solar glare effects relating to demolition and construction works would vary throughout the construction programme and gradually increase to the potential effects identified for the completed Proposed Development. It is considered that the completed Proposed Development represents the worst-case assessment in terms of likely effects on levels of daylight, sunlight, overshadowing and solar glare at sensitive receptors.

### *Completed Development*

**14.8** The hybrid planning application for the Proposed Development comprises Plots A, B, C, D and, E in the outline proposals and Plots H1-2, H3, F, I and J in detail proposals, as shown in drawings found in **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 3**. The completed Proposed Development as fully built out represents the worst-case scenario in terms of daylight, sunlight, overshadowing and solar glare impacts and so that is what has been assessed.

**14.9** An Illustrative Masterplan has been developed for this application which provides an example of how the outline proposals blocks could be articulated. Whilst this is not technically assessed within the ES, the Standalone Daylight and Sunlight Impacts Upon Neighbours Report provides a daylight and sunlight assessment of the Illustrative Masterplan, which provides a contextual analysis of the levels of light which are likely to be achieved at surrounding receptors, particularly at those closest to the Proposed Development. Therefore, this ES Chapter, which assesses the worst-case scenario of the maximum parameters, should be read in conjunction with the Standalone Daylight and Sunlight Impacts Upon Neighbours Report, which provides a worked example of the level of daylight and sunlight impacts of future development within Plots A-E. However, the full design of plots A-E will be agreed through future RMAs, which will be assessed once the detailed design is known.

#### *Outline Elements of the Completed Development*

**14.10** The maximum parameter plots represent a worst-case scenario, including a buffer zone for balconies, building maintenance units and Heating, Ventilation, and Air Conditioning systems (HVAC). Therefore, the results presented within this ES Chapter represent a worst-case scenario of the maximum envelope, which would not, in reality, be built out to these maximum extents.

**14.11** A contextual assessment of daylight and sunlight effects to surrounding to properties using the illustrative scheme, which demonstrates a potential iteration of how the Proposed Development could be bought forward is presented in the standalone Daylight and Sunlight Impacts Upon Neighbours Report which accompanies the planning application.

**14.12** The outline elements and detailed elements (described below) have been technically assessed to report the daylight, sunlight and overshadowing effects within the ES chapter.

**14.13** For the solar glare assessment, the maximum parameters for plots A, B, C, D and E proposed in outline have been excluded from the technical assessment. This is because if the block massing of the maximum parameters within these plots would shield views of potential reflections arising from the plots proposed in detail from surrounding viewpoints. Therefore, the technical assessment represents a reasonable worst-case scenario.

**14.14** However, the locations which would potentially have a view of reflections from plots A-E (once designed) are identified, with a high level commentary on the likely significant effects. Subsequently, should there be potential for significant solar glare effects at detailed design stage, once the façade specifications are known, this will be technically assessed as part of RMAs.

#### *Detailed Elements of the Completed Development*

**14.15** As described above, the detailed proposals of the Proposed Development together with the outline proposals have been assessed for the daylight, sunlight and overshadowing assessments.

**14.16** For the solar glare assessment, Plots H1-2, H3, F, I and J proposed in detail have been technically assessed, as this represents a reasonable worst-case scenario.

#### *Methodology*

**14.17** The following scenarios have been assessed and are reported within this chapter of the ES, and are discussed further below:

- Baseline;
- Proposed Development; and
- Cumulative.

#### *Baseline*

**14.18** This scenario considers the baseline condition of the Site and surrounding context assumed for the purposes of this ES Chapter, which is considered to represent a realistic scenario at the time the Proposed Development would be implemented. Ailsa Wharf (PA/16/02692 & PA/18/03461) is under construction are included the baseline condition as fully built out. Leven Road Gasworks (PA/18/02803/A1) and Poplar Business Park (PA/11/03375) whilst also under construction are located too far from the Site to be affected and therefore have not been included within the assessment.

#### *Proposed Development*

**14.19** The Proposed Development scenario is depicted within ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 3.

**14.20** This scenario consists of the completed Proposed Development in the context of the surrounding environment, assessing the potential daylight, sunlight, overshadowing and solar glare effects of the Proposed Development on the surrounding receptors.

**14.21** In ascertaining the potential daylight, sunlight and overshadowing effects, comparisons are made with the baseline scenario.

**14.22** The assessment of solar glare is undertaken upon the detailed façades of Plots H1-2, H3, F, I and J at surrounding sensitive road viewpoints. For the purposes of the technical assessment, the outline proposals plots are not included in the modelling given that the facade detail of these plots are not yet known. This allows for a worst-case assessment for the detailed proposals Plots. A qualitative assessment is however provided on the potential for solar glare at surrounding sensitive road viewpoints from the outline proposals plots.

**14.23** This assessment is not comparative and therefore considers the potential for reflections in absolute terms.

#### *Supplementary Assessments*

**14.24** The assessment of the Proposed Development's maximum parameters includes a buffer zone for balconies, building maintenance units and HVAC and therefore represent a worst-case scenario. Therefore, to provide further context, the assessments are supported by supplementary analysis, which is described in further detail in the Methodology section including:

- No Balconies assessment; and
- Consented Development Assessment.

#### *Cumulative*

**14.25** The cumulative schemes that have been considered in the cumulative assessment scenario, owing to their proximity to the Proposed Development include:

- Former Poplar Bus Depot (PA/19/02148/A1); and
- Islay Wharf (PA/19/01760).

**14.26** This scenario consists of the completed Proposed Development in conjunction with the above schemes in the context of the surrounding environment, assessing the potential daylight, sunlight and overshadowing effects of the Proposed Development on the surrounding receptors.

**14.27** In ascertaining the potential cumulative daylight, sunlight and overshadowing effects, comparisons are made with the baseline scenario.

**14.28** Solar glare is not assessed in a cumulative scenario, as the Proposed Development scenario is considered in absolute terms. The presence of cumulative schemes would shield views of the Proposed Development from surrounding road locations assessed.

**14.29** Additionally, owing to the residential nature of surrounding cumulative schemes, the following three buildings have been assessed as future sensitive receptors:

- Former Poplar Bus Depot (PA/19/02148/A1);
- Islay Wharf (PA/19/01760); and
- 45-47 Abbott's Road (PA/19/02137/A1).

*Methodology*

**14.30** The full methodology is found within ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing Light Pollution and Solar Glare – Annex 2.

**14.31** The assessments have been undertaken in line with national, regional and local policy and guidance. The relevant documents are listed and summarised within **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 1.**

*Daylight*

**14.32** The following methodologies are used to assess daylight:

- Vertical Sky Component (VSC);
- No Sky Line (NSL) Method; and
- Average Daylight Factor (ADF).

**14.33** VSC is a 'spot' measure of the skylight reaching the mid-point of a window from an overcast sky. It represents the amount of visible sky that can be seen from that reference point, from over and around an obstruction in front of the window. That area of visible sky is expressed as a percentage of an unobstructed hemisphere of sky, and, therefore, represents the amount of daylight available for that particular window.

**14.34** NSL is a measure of the distribution of diffuse daylight within a room. The NSL simply 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.

**14.35** The ADF is considered an appropriate metric to assess proposed surrounding residential receptors. The BRE Guidelines state that this method of assessment for daylight should be applied to new developments to determine daylight availability rather than existing neighbouring buildings, unless the internal subdivision of the properties is known. The ADF gives a more detailed assessment of the daylight within a room and takes into account the highest number of factors in establishing a quantitative output. Because the internal subdivision of rooms within Ailsa Wharf Block A, D and KL and Former Poplar Bus Depot (PA/19/02148/A1), Islay Wharf (PA/19/01760) and 45-47 Abbott's Road (PA/19/02137/A1) are known, the ADF method of assessment has been used.

**14.36** These methods of daylight assessment used for the Proposed Development assessment are described in further detail in the following section and within **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 1.**

*Sunlight*

**14.37** The Annual Probable Sunlight Hours (APSH) is used to assess sunlight.

**14.38** APSH is a measure of sunlight that a given window may expect over a year period. The Building Research Establishment (BRE) Guidelines recognises that sunlight is less important than daylight in the amenity of a room and is heavily influenced by orientation. North-facing windows may receive sunlight on only a handful of occasions in a year, and windows facing eastwards or westwards will only receive sunlight for some of the day. The BRE Guidelines states that only windows with an orientation within 90° of south need be assessed. Therefore, in terms of sunlight, only windows facing within 90° of due south are assessed for APSH as north facing windows will not receive direct sunlight.

**14.39** The baseline of both total APSH and Winter Probable Sunlight Hours (PSH) are assessed. The APSH and Winter PSH have different BRE Guidelines criteria (refer **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 2**). For the assessment of the Proposed Development, the total APSH and Winter PSH are reported separately, to provide a more detailed assessment reflecting the different sunlight conditions.

**14.40** These methods of sunlight assessment used for the Proposed Development assessment are described in further detail in the following section and within **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 2.**

*Overshadowing*

**14.41** The following methodologies are used to assess overshadowing:

- Transient Overshadowing (TOS); and
- Sun Hours on Ground.

**14.42** Both TOS and Sun Hours on Ground assessments determine the extent of overshadowing on surrounding amenity areas. TOS is initially used as a screening exercise to determine which amenity areas should be included for the purpose of the Sun Hours on Ground assessment.

**14.43** For large amenity areas TOS is used as the main assessment given the difficulties to quantify using the Sun Hours on Ground assessment.

**14.44** For smaller amenity areas with distinct boundaries, Sun Hours on Ground is used as the main assessment.

**14.45** BRE Guidelines suggest that 'sun hours on ground' assessment should be undertaken on the two Equinoxes (spring Equinox on 21st March and autumn Equinox on 21st September). Using specialist software, the path of the sun has been tracked to determine where the sun would reach the ground and where it would not on these dates.

**14.46** It is recommended that at least half of an amenity area should receive at least 2 hours of sunlight on March 21st or the area which receives two hours of direct sunlight should not be reduced to less than 0.8 times its former value (i.e. there should be no more than a 20 % reduction).

**14.47** A sun exposure test has been undertaken on June 21st, depicting a heat map of the number of potential hours of direct sunlight received within a distinct boundary. This is presented to provide a contextual understanding of sunlight received within the sensitive amenity areas.

**14.48** The BRE Guidelines criteria summarised in **Table 14.1** are used as guidance for the assessments. Numerical analysis and professional judgement have also been used to determine the scale and nature of the potential effects.

**14.49** These methods of overshadowing assessment used for the Proposed Development assessment are described in further detail in the following section and within **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 2.**

**14.50** **Table 14.1** provides a summary of the daylight, sunlight and overshadowing criteria set out within the BRE Guidelines.

**Table 14.1 Summary of BRE Guidelines Criteria**

| Topic | Method | BRE Guidelines Criteria |
|---|---|---|
| Daylight | Vertical Sky Component (VSC) | A window may be adversely affected if the VSC measured at the centre of the window is less than 27% and less than 0.8 times its former value. |
| | No Sky Line (NSL) | A room may be adversely affected if the daylight distribution (NSL) is reduced beyond 0.8 times its existing area. |
| | Average Daylight Factor (ADF) | The recommended ADF levels for dwelling are for dwellings of 2 % for kitchens, 1.5 % for living rooms and 1 % for bedrooms. No criteria are given to measure alterations in ADF levels. |
| Sunlight | Annual Probable Sunlight Hours (APSH) | A window may be adversely affected if a point at the centre of the window receives for the whole year, less than 25% of the APSH including at least 5% of the PSH during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period, and (for existing neighbouring |

| | | |
|---|---|---|
| | | buildings), if there is a reduction in total APSH which is greater than 4%. |
| Overshadowing | Sun Hours on Ground | An area of amenity space or garden may be adversely affected if less than half (50%) of the area is prevented by buildings from receiving two hours of sunlight on the 21st March (as suggested in BRE Guidelines) and the area which can receive some sun on the 21st March is less than 0.8 times its former value. |

*Alternative Daylight Targets*

**14.51** It is acknowledged that the values in the BRE Guidelines are derived on the basis of a 2-3 storey suburban model, therefore the application of its guidelines in urban environments should be treated flexibly. This form of assessment does not take account of context or detailed matters such as window size, room use, room size, window number or dual-aspect rooms. This assessment also assumes that all obstructions to the sky are 100% non-reflective. It should be noted that the BRE Guidelines acknowledges this and state, in paragraph 2.2.3; *'The numerical values given here are purely advisory. Different criteria may be used based on the requirements for daylighting in an area viewed against other site layout constraints.'*

**14.52** Clearly in more urban environments, if development is to meet the scale and proportion of neighbouring buildings, large factor reductions are very difficult to avoid. GIA's experience in daylight and sunlight matters in dense urban environments suggest that weight should also be given to the retained values rather than just the percentage change. GIA's experience in the field would suggest that a more realistic VSC level in a dense urban environment would be considered to be around 15%.

**14.53** GIA's view on retained VSC levels is supported by the Greater London Authority's hearing report for the Monmouth House and Featherstone Street development (application reference: P2015/3136/FUL) where it was considered in Para 120, Page 31:

'For general guidance, whilst the BRE guidelines recommend a target value of 27% VSC when measured on an absolute scale, that value is derived from a low density suburban housing model. In an inner city urban environment, VSC values in excess of 20% should be considered as reasonably good, and VSC in the mid-teens should be acceptable'.

*Supplementary No Balcony Assessment*

**14.54** Paragraph 2.2.11 of BRE Guidelines note that windows to surrounding properties with balconies above them typically receive less daylight because the balcony cuts out light from the top part of the sky, even a modest obstruction opposite may result in a large relative impact on the VSC. Therefore, a daylight and sunlight assessment within a no balconies scenario, whereby balconies are removed from the surrounding sensitive properties demonstrates that the presence of the balcony, rather than the size of the new obstruction, is the main factor in the relative loss of light. It should be noted that the no balcony assessment is supplementary for contextual purposes and is not factored into the significance of effect.

**14.55** The results of the No Balconies are presented in ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 3.

*Consented Development Assessment*

**14.56** Paragraph F2 of BRE Guidelines notes that an extant planning permission may be used as a supplementary assessment. Since the permitted scheme only exists on paper, it would be inappropriate for it to be treated in the same way as an existing building, and set 0.8 times the values for the permitted scheme as benchmarks. Therefore, the 2012 Outline Planning Permission (OPP)[3] for the Site has been assessed in order to determine the change in effects compared with the Proposed Development.

**14.57** Drawings and the daylight and sunlight results of the Consented Development are presented in **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing and Solar Glare – Annex 3.**

*Illustrative Masterplan*

**14.58** As described above, the maximum parameter outline for Plots A-E have been assessed. However, the parameters include a buffer zone for balconies, building maintenance units and HVAC and therefore represent a worst-case scenario. The Illustrative Masterplan indicates a worked example of how development within plots A-E would be articulated at RMA stage. This is not included in the ES Chapter, however, a contextual assessment is provided within the Standalone Daylight and Sunlight Impacts Upon Neighbours Report for the discussion of the impacts of the Illustrative Masterplan.

*Solar Glare*

**14.59** Solar glare is particularly important at pedestrian crossings and road junctions, where glare can cause temporary blinding of drivers. Typically, elements considered to be reflective are either glazed apertures or specular metal cladding.

**14.60** The BRE Guidelines includes the following statement in regard to the potential for reflected solar glare from a new development:

"Glare or solar dazzle can occur when sunlight is reflected from a glazed façade. This can affect road users outside and the occupants of adjoining buildings. The problem can occur either when there are large areas of reflective glass or cladding on the façade, or when there are areas of glass or cladding which slope back so that high altitude sunlight can be reflected along the ground. Thus solar dazzle is only a long term problem for some heavily glazed (or mirror clad) buildings…"

**14.61** Solar Glare effects can only be quantitively assessed where the façade details of a proposed building are known. Typically, only highly glazed buildings are considered, which are visible from sensitive receptors like road junctions or railway lines. As such, the solar glare technical assessment only considers the potential effects of the detailed elements of the Proposed Development.

*Solar Glare Technical Assessment*

**14.62** The potential for reflected solar glare or dazzle from glazed or reflective façades from the Proposed Development has been assessed using specialist lighting software, Radiance, showing the path of the sun for the entire year. From this, two computer generated angular images have been produced for each selected viewpoint, indicating the area which sees the reflection of the sun path at any point during the year. A modified diagram portraying a standardised extent of human vision is then overlaid onto the image.

**14.63** The methodology for solar glare is not aimed at addressing the intensity of an instance of reflected solar glare, but rather its occurrence, duration throughout the year and the location of this occurrence in respect of an individual's line of sight. It is also to be noted that the hours presented reflect solar time and therefore do not take Daylight Saving Hours into account.

**14.64** The outline elements of the Proposed Development are not technically assessed at this stage, as the façade details are not yet known at this stage. Therefore, potentially sensitive locations which would have a view of Plots A-E are identified within a qualitative consideration of the likely significant effects of the Outline Proposals of the Proposed Development. The detailed design of the outline elements would be fully assessed at RMA stage, when the height, massing, elevation and façade details will have been fully developed.

**14.65** The solar glare assessments undertaken assume a worst-case scenario whereby the sun will shine every day during daylight hours which is not the case within the UK.

**14.66** For this purpose of the solar glare assessment the glazed and metal elements of the facades of the Proposed Development is assumed to have the same properties of a mirror i.e. it is fully reflective, and all of its reflected component is specular. This therefore portrays a worst-case scenario.

**14.67** Potentially sensitive viewpoints around the Site are selected, which have a view of the detailed plots. These viewpoints represent locations where reflected solar glare may cause adverse impacts to those travelling towards the development, such as car or train drivers. The viewpoints are generally located at the minimum stopping distance and at the driver's eye height. The focal point is where the Proposed Development is closest to the line of sight.

**14.68** Identifying the road viewpoints based on the stopping distance is calculated as the combination of thinking and braking distances.

**14.69** Indicative locations of potentially sensitive viewpoints for plots A-E are provided, however, these have not been technically assessed, given that the façade details for the outline element are not yet known.

*Assumptions and Limitations*

**14.70** No assumptions are made in relation to construction as no technical assessments are undertaken in relation to construction. It is however assumed that the Completed Development is the worst-case scenario for daylight, sunlight and overshadowing and therefore, the construction phase is not quantitatively assessed within this ES chapter.

**14.71** For the existing surrounding sensitive receptors where layout information was not available, assumptions have been made as to the use and internal configuration of the rooms (from external observations) behind the fenestration observed. In such cases a standard 4.3m (14ft) room depth has been assumed, unless the building form dictated otherwise. This is common practice where access to buildings for surveying is unavailable. Obtaining these room layouts enables precise evaluation of the diffuse levels of daylight within each of the rooms via the No Sky Line (NSL).

**14.72** Floor levels have been assumed for surrounding properties where access has not been obtained. With the working plane located 850mm above the finished floor level, this has the potential to affect the assessment of NSL.

**14.73** For solar glare, although great care has been taken in identifying typical viewpoints, this does not guarantee that there are no additional sensitive locations where reflected solar glare could present a particular risk. For practical reasons, the area of the assessment has been limited to the area surrounding the Proposed Development. This area extends to a radius of approximately 500m around the Site in all directions. At greater distances, the likelihood of solar reflections causing significant glare is reduced as the time that buildings will reflect is reduced and the area of façade visible constitutes a reduced angle and so reduces the possibility of the whole sun disk being reflected. This approach to solar glare assessment within EIA has been adopted using professional judgement and by reference to Commission Internationale L'Eclairage (CIE) Collection on Glare 2002.

**14.74** In addition, the methodology for solar glare is not aimed at addressing the intensity of an instance of reflected solar glare, but rather its occurrence, duration throughout the year, and the location of this occurrence in respect of an individual's line of sight. It must also be noted that the hours presented reflect solar time and therefore do not take Daylight Saving Hours into account. This approach to solar glare assessment within EIA has been adopted using professional judgement and by reference to CIE Collection on Glare 2002.

**14.75** Whilst noted in BRE Guidelines that solar reflections from a new development can affect occupants of adjoining buildings, this has not been assessed within this ES chapter. Reflections to occupants at the surrounding buildings is not considered to present the same level of risk as to road users.

### *Methodology for Defining Effects*

#### *Receptors and Receptor Sensitivity*

**14.76** In terms of sensitivity, existing surrounding residential properties (i.e. receptors) are considered highly sensitive to daylight and sunlight levels, and specifically habitable rooms within the properties such as living rooms, kitchens and bedrooms, in accordance with BRE Guidelines. All existing residential receptors assessed within this ES chapter are considered highly sensitive due to the expectation of natural light and are given equal weighting, and therefore each individual residential receptor is treated as highly sensitive.

**14.77** It should be noted that the BRE Guidelines paragraph 2.2.8 consider bedrooms to be less important in relation to daylight distribution, given that the primary use of the room is for sleeping and they therefore have a lower requirement for daylight. The BRE Guidelines also consider bedrooms to be less important with regards to sunlight, although it is stated that care should be taken not to block too much sun.

**14.78** Commercial spaces such as offices and retail areas are not considered sensitive receptors and are therefore not assessed as industry standard and recommended by BRE Guidelines (Section 2.2). However, BRE Guidelines suggest that buildings such as schools and religious buildings may be considered as having a requirement for daylight. Therefore, as requested by LBTH, schools and religious buildings have been assessed, which are also considered highly sensitive.

**14.79** For TOS and Sun on Ground, all public areas of open space such as parks and squares and neighbouring communal amenity areas and private gardens are considered highly sensitive.

#### *Magnitude of Impact*

**14.80** The key terminology used to describe the magnitude of impacts are as follows and is determined with reference to the BRE Guidelines criteria presented within **Table 14.1**:

- High;
- Medium;
- Low; and
- No impact.

#### *Defining the Effect*

**14.81** The effects are defined by reference to BRE Guidelines, which outline the methodology by which an adverse effect may be considered to occur. However, as noted in national regional and local policy, as well as in BRE Guidelines, an appropriate degree of flexibility should be applied to the criteria presented below.

#### *Daylight*

**14.82** For daylight, the BRE Guidelines outline the approach within the accompanying appendix, in terms of assigning criteria to assess the effects:

"Adverse impacts occur when there is a significant decrease in the amount of skylight […] 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 […] 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 […] 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 […] are affected, a minor adverse impact would be more appropriate, especially if there is a particularly strong requirement for daylight […] in the affected building […]."

"Where the loss of skylight […] 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 […]; and/or*

**14.83** The affected building […] has a low level of requirement for skylight […]."

**14.84** The classification of major adverse impacts is documented within Paragraph 7 of 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 […], e.g. a living room in a dwelling […]."*

**14.85** The numerical criteria for determining the category of effect for Vertical Sky Component (VSC) and No-Sky Line (NSL) is based on percentage alterations, as seen in **Table 14.2**.

**Table 14.2 Percentage Alterations from the Baseline (VSC and NSL)**

| Scale of Effect | Daylight Criteria |
|---|---|
| **Negligible** | 0-19.9% alteration |
| **Minor** | 20-29.9% alteration |
| **Moderate** | 30-39.9% alteration |
| **Major** | ≥ 40% alteration |

**14.86** Where BRE Guidelines criteria are met and there is an alteration below 20%, the effects will be considered negligible. Additionally, if the retained VSC levels are ≥27% and the NSL levels are >80%, the effects are considered negligible, regardless of the alteration.

**14.87** When assigning significance per property however, consideration has been given to the proportion of rooms / windows affected, as well as the percentage alterations, absolute changes, existing levels, retained levels and any other relevant factors, such as orientation, balconies, overhangs or design features. As such, the criteria are not applied mechanistically.

*Sunlight*

**14.88** For sunlight, the BRE Guidelines outline the approach of assigning criteria to assess the effects:

"Adverse impacts occur when there is a significant decrease in the amount of […] 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 […] 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 […] 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 […] sunlight in the affected building […]."

"Where the loss of […] 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 […] sunlight; and/or*
- *The affected building […] only has a low level of requirement for […] sunlight."*

"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 […], e.g. a living room in a dwelling […]."*

**14.89** With regard to BRE Guidelines criteria, the initial numerical criteria for determining the scale of effect is based on percentage alterations from the baseline, as seen in **Table 14.3**. Using the BRE criteria, professional judgement has then been used to determine the extent of sunlight effects.

**Table 14.3 Percentage Alterations from the Baseline (Annual and Winter PSH)**

| Scale of Effect | Daylight Criteria |
|---|---|
| **Negligible** | 0-19.9% alteration |
| **Minor** | 20-29.9% alteration |
| **Moderate** | 30-39.9% alteration |
| **Major** | ≥ 40% alteration |

**14.90** If the retained total APSH levels are ≥ 25% with at least 5% of this occurring in the winter months, the effects are considered negligible in line with BRE Guidelines, regardless of the alteration.

*Overshadowing*

*Transient Overshadowing*

**14.91** BRE Guidelines does not include criteria for the scale and nature of effects and subsequent significance of TOS other than to identify the different times of the day and year when shadow would be cast over a surrounding area.

**14.92** The assessment of potential effects as a result of TOS is therefore based on professional judgement, taking into consideration the conditions of the existing Site and surrounding area, and comparing these conditions against the resultant impact of the Proposed Development.

*Sun Hours on Ground*

**14.93** It is suggested in BRE Guidelines that for an area to appear adequately sunlit throughout the year, at least half (50%) of any assessment area should see direct sunlight for at least two hours on the 21st March. If, as a result of new development, an existing assessment area will not meet BRE Guidelines criteria and the area which can receive two hours of direct sunlight on 21st March is reduced to less than 0.8 times its former area, then the loss of sunlight is likely to be noticeable.

**14.94** Where the results show compliance with BRE Guidelines criteria, the occupants are unlikely to experience any noticeable change to their sunlight amenity levels. For the purposes of this assessment, such an effect would be considered negligible and not significant. Should the relevant criteria not be achieved, a judgement has to be made as to the scale and nature of effects and their resultant significance based on the level of loss, retained sunlight levels and the relevant baseline scenario.

**14.95** **Table 14.4** sets out the numerical criteria adopted in relation to the sun on ground assessment. All effects greater than minor adverse are considered significant.

**Table 14.4 Percentage Alterations from the Baseline (Sun hours on ground)**

| Scale of Effect | Numerical Criteria on 21st March |
|---|---|
| **Negligible** | Over 50% of the amenity area will receive 2 hours of sunlight or less than 20% alteration in area which receives 2 hours of direct sunlight. |
| **Minor** | 20-29.9% reduction or increase in the area which receives 2 hours of direct sunlight (and below 50% retained area). |
| **Moderate** | 30-39.9% reduction or increase in the area which receives 2 hours of direct sunlight (and below 50% retained area). |
| **Major** | ≥ 40% reduction or increase in the area which receives 2 hours of direct sunlight (and below 50% retained area). |

*Solar Glare*

**14.96** There are no quantitative criteria within BRE Guidelines or elsewhere regarding acceptable levels of solar glare.

**14.97** For the purposes of this Hybrid Planning Application, a solar glare assessment has been undertaken upon the detailed components of the Proposed Development. For the purposes of the technical assessment, the outline plots are not included in the modelling given that the facade detail of these plots are not yet known. This allows for a worst-case assessment for the detailed plots. A qualitative assessment, is however provided on the potential for solar glare at surrounding sensitive road viewpoints from the outline plots.

**14.98** For the outline element of the Proposed Development, at reserved ,matters approval stage should the detailed design for plots A-E be considered likely to generate significant effects in terms of solar glare, further assessment will be undertaken to determine the scale of effects.

**14.99** Solar Glare is not a comparative assessment; the fact it may occur in the baseline does not necessarily justify its occurrence as a result of a Proposed Development. Therefore, the assessment considers the effect of the Proposed Development in absolute terms and not against a baseline condition.

**14.100** Professional judgement has therefore been applied to assign the significance of solar glare arising from the Proposed Development and to determine the criteria for assessing the scale and nature of solar glare effects.

**14.101** Multiple viewpoints are chosen for each of the traffic lanes or signals affected from a location. If for example, one location has multiple lanes or traffic signals, multiple viewpoints will be assessed from this single location to ensure that all effects are fully understood.

**14.102** Whilst multiple viewpoints may be identified, professional judgement has been used to determine the effect at the location, rather than the individual perspectives at a signal traffic junction. Factors that could influence the nature, scale and resultant significance of effect may include:

- Sunlight availability probability;
- Area of façade off which reflections are visible;
- Period of time when reflections are visible;
- Angle at which reflections are visible from line of sight;

- Views of the development being obscured for example by trees; and/or
- The time of day at which the solar reflection will occur, for example during peak traffic times.

**14.103** The factors in  will be used to ascertain the scale of effect for each view and the factors listed above will then be taken into consideration to determine the overall significance for the designated viewpoint.

**14.104** It is considered that no effect would occur at a viewpoint when the Proposed Development is either not visible, or the Proposed Development is visible, but no solar reflections occur.

**14.105** **Table 14.5** sets out the numerical criteria adopted in relation to solar glare assessment. All effects greater than minor adverse are considered significant.

**Table 14.5 Percentage Alterations from the Baseline (Solar Glare)**

| Scale of Effect | Numerical Criteria on 21st March |
|---|---|
| **Negligible** | No reflections are visible or if visible all occur at angles greater than 30° from the driver's line of sight and so, as stated by the Commission Internationale de l'eclairage (CIE), will be of "little significance". |
| **Minor** | Solar reflections are visible within 30° to 10° or between 10° to 5° of the driver's line of sight for a short period of time |
| **Moderate** | Solar reflections are visible within 10° and 5° of the driver's line of sight occurring for a long period of time. |
| **Major** | Solar reflections are visible within 5° of a driver's line of sight. |

*Categorising Likely Significant Effects*

**14.106** BRE Guidelines does not advise on significance of an effect. Where an effect is determined as in excess of the recommended criteria it is considered significant. As such, the following criteria is applied:

- '**Moderate'** or '**Major'** effects are deemed to be '**significant'**; and
- '**Minor**' or '**Negligible'** effects are considered '**not significant'**.

**14.107** Appendix I paragraph 19 of BRE Guidelines notes that an adverse impact on one property cannot be balanced against negligible or beneficial impacts on another and in these instances, it is more appropriate to quote a range of impacts. As such, where appropriate and there is a range in the magnitude of impacts to windows / rooms at a particular building, the overall effect may be expressed as a range.

**14.108** The nature of the effects may be either **adverse** (negative or detrimental) or **beneficial** (advantageous or positive) and are identified as such. Throughout demolition and construction, effects are considered '**temporary**, '**local**', and **direct**'. Effects, once the Proposed Development is complete and operation are considered '**permanent**', '**local**' and '**direct**'.

*Light Pollution*

**14.109** Light pollution is defined as any light emitting from artificial sources into spaces where it is unwanted, such as spillage of light from office or commercial buildings onto residential accommodation, where this would cause nuisance to the occupants.

**14.110** The elements of the Proposed Development which are detailed comprise primarily residential uses which are not considered to be a source of light intrusion and therefore do not require assessment. The commercial uses proposed are not considered likely to results in any significant light intrusion effects, owing to the relative distance from sensitive uses and are therefore not assessed.

**14.111** As a mixed-use scheme, there is the potential for the proposed residential elements to be located within 20m of commercial buildings and thus considered future sensitive receptors in terms of light pollution. However, the non-residential uses of Proposed Development comprising commercial uses are currently proposed in outline and as such no light pollution assessment can be undertaken at this time. An assessment of the light pollution effects relies on the detailed design of the scheme, for both the commercial buildings that would emit the artificial lighting and the apertures of the proposed residential buildings. Owing to the application for the Proposed Development being partly in outline, the façade materials, including glazing, as well as the lighting design, internal layouts and room uses are not yet known for the outline element. As such, a full detailed analysis of light pollution cannot be undertaken at this stage in respect of the outline element. Any emerging lighting strategy will be designed with respect to the ILP Guidance Notes and will ensure that any significant effects are mitigated as part of the detailed design development and assessed if necessary as required at RMA stage.

## RECEPTORS AND RECEPTOR SENSITIVITY

### *Existing*

*Daylight and Sunlight*

**14.112** In terms of sensitivity, existing surrounding residential properties (i.e. receptors) are considered highly sensitive to daylight and sunlight levels, and specifically habitable rooms within the properties such as living rooms, kitchens and bedrooms, in accordance with the BRE Guidelines. All existing residential receptors assessed within this ES chapter are considered highly sensitive due to the expectation of natural light and are given equal weighting, and therefore each individual residential receptor is not assigned a level of sensitivity as per general EIA methodology i.e. high, medium, low or very low.

**14.113** It should be noted that the BRE Guidelines paragraph 2.2.2 consider bedrooms to be less important in relation to daylight distribution, given that the primary use of the room is for sleeping and they therefore have a lower requirement for daylight. However, the BRE Guidelines state that care should be taken not to block too much sun.

**14.114** Section 2.2 of the BRE Guidelines state that commercial spaces such as offices and retail areas are not considered sensitive receptors and are therefore not assessed as industry standard.

**14.115** However, the BRE Guidelines may be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight. As such, two educational buildings and a religious building have been considered within the assessments.

**14.116** In addition, owing to the emerging context, there are consents for future residential accommodation, which have the potential to be affected by the Proposed Development and are therefore considered with this ES Chapter. The future sensitive buildings are listed in **Table 14.6** and in **Figure 14.1**.

**14.117** Therefore, the following 42 surrounding buildings considered sensitive to daylight and sunlight are listed below in **Table 14.6** and **Figures 14.1** and **Figure 14.2.**

**14.118** As per the Scoping Opinion, Bromley Hall School has been included as an additional sensitive receptor. However, it was possible to determine, that Poplar Baptist Church and receptors on Brion Place would not be affected beyond BRE Guidelines as the angle from continuous obstructions of the Proposed Development, was less than 25° at the lowest window of these buildings and therefore not likely to be significantly affected (BRE Guidelines 2.2.5). As such these buildings have been scoped out.

**14.119** In addition, the consented Former Poplar Bus Depot (PA/19/02148/A1), Islay Wharf (PA/19/01760) and 45-47 Abbott's Road (PA/19/02137/A1) have been assessed as future sensitive receptors in the Assessment of the Future Environment section.

**14.120** It is noted that the Scoping Opinion requests that Leven Road Gas Works (PA/18/02803) is considered, however, it was possible to determine using the 25 ° guide, suggested by BRE, that this building would not be impacted and it is therefore scoped out. This is evidenced by the negligible effects occurring to the furthest window at Leven Road Phase 3, which sits closer to the Proposed Development (see discussion of impacts to Leven Road Phase 3 at **paragraph 14.369**.

**Table 14.6 Daylight and Sunlight Sensitive Receptors**

| Address | Description |
|---|---|
| **Existing Sensitive Daylight and Sunlight Receptors** | |
| 1. Carradale House | Residential |
| 2. Balfron Tower | Residential |
| 3. Culloden Primary School | Educational |
| 4. Aberfeldy Estate Phase 3 - Block J | Residential |
| 5. Aberfeldy Estate Phase 3 - Block G | Residential |
| 6. Aberfeldy Estate Phase 2 - Block D | Residential |
| 7. Aberfeldy Estate Phase 1 - Block A | Residential |

| Address | Description |
|---|---|
| 8. Aberfeldy Estate Phase 1 - Block C | Residential |
| 9. 49-67 Abbott Road | Residential |
| 10. 9-15 Wooster Gardens | Residential |
| 11. 2-12 Lansbury Gardens | Residential |
| 12. 1-7 Wooster Gardens | Residential |
| 13. Loren Apartments (Aberfeldy Tavern) | Residential |
| 14. Sherman House | Residential |
| 15. St. Nicholas Church | Religious |
| 16. 177-195 Abbott Road | Residential |
| 17. 134-144 Leven Road | Residential |
| 18. 128-132 Leven Road | Residential |
| 19. 199-225 Abbott Road | Residential |
| 20. 110-126 Leven Road | Residential |
| 21. Devons Wharf | Residential |
| 22. Leven Road Phase 3 | Residential |
| 23. Atelier Court | Residential |
| 24. Bromley Hall School | Educational |
| 25. Ailsa Wharf - Block A | Residential |
| 26. Ailsa Wharf - Block D | Residential |
| 27. Ailsa Wharf - Blocks K-L | Residential |
| 28. 1-14 & 16-46 Dewberry St | Residential |
| 29. 4, 6-14, 1-15, 17-33 & 35-41 Joshua St | Residential |
| 30. 1-9, 2-10, 9-15, 12-20, 17-25 Mills Grove | Residential |
| 31. 118-132, 134-146, 148-154 St Leonards Rd | Residential |
| **Future Sensitive Daylight and Sunlight Receptors** | |
| 32. Former Bus Depot | Residential |
| 33. Islay Wharf | Residential |
| 34. 45-47 Abbott Road | Residential |

**Figure 14.1 Existing Daylight and Sunlight Receptors**

**Figure 14.2 Future Daylight and Sunlight Receptors**


*Overshadowing*

**14.121** For Transient Overshadowing, all public areas of open space such as parks and squares and neighbouring communal amenity areas and private gardens are considered highly sensitive. The sensitive amenity areas are listed below in **Table 14.7** and shown in **Figure 14.3** and **Figure 14.4**.

**Table 14.7 Overshadowing Sensitive Receptors**

| Ref | Address | Description |
|---|---|---|
| **External Overshadowing Receptors** | | |
| 1-43 | Abbotts Road and Leven Road | Rear garden |
| 44 | Aberfeldy Millennium Green | Public Amenity |
| 45-46 | 2 St Nicholas Church | Private Amenity |
| 47-48 | 54 Sherman | Private Amenity |
| 49-50 | Dee Street | Rear Gardens |
| 51-64 | Wooster Gardens and Landbury Gardens | Rear Gardens |
| 65-78 | Bromley Hall | Private Amenity |
| N/A | Culloden Primary School Playground | Educational Playground |
| N/A | The River Thames Tidal Tributaries SINC (Bow Creek / River Lea) | Sensitive Ecological Area |
| **Internal Overshadowing Receptors** | | |
| 79 | Allotments | Proposed Amenity within the Site |
| 80 | Highland Place | Proposed Amenity within the Site |
| 81 | Level Road Green | Existing amenity within the Site |
| 82 | Braithwaite Park | Existing amenity within the Site |
| 83 | The Square | Proposed Amenity within the Site |
| 84 | Culloden Green | Proposed Amenity within the Site |

**Figure 14.3 External Overshadowing Receptors**


**Figure 14.4 Internal Overshadowing Receptors**


*Solar Glare*

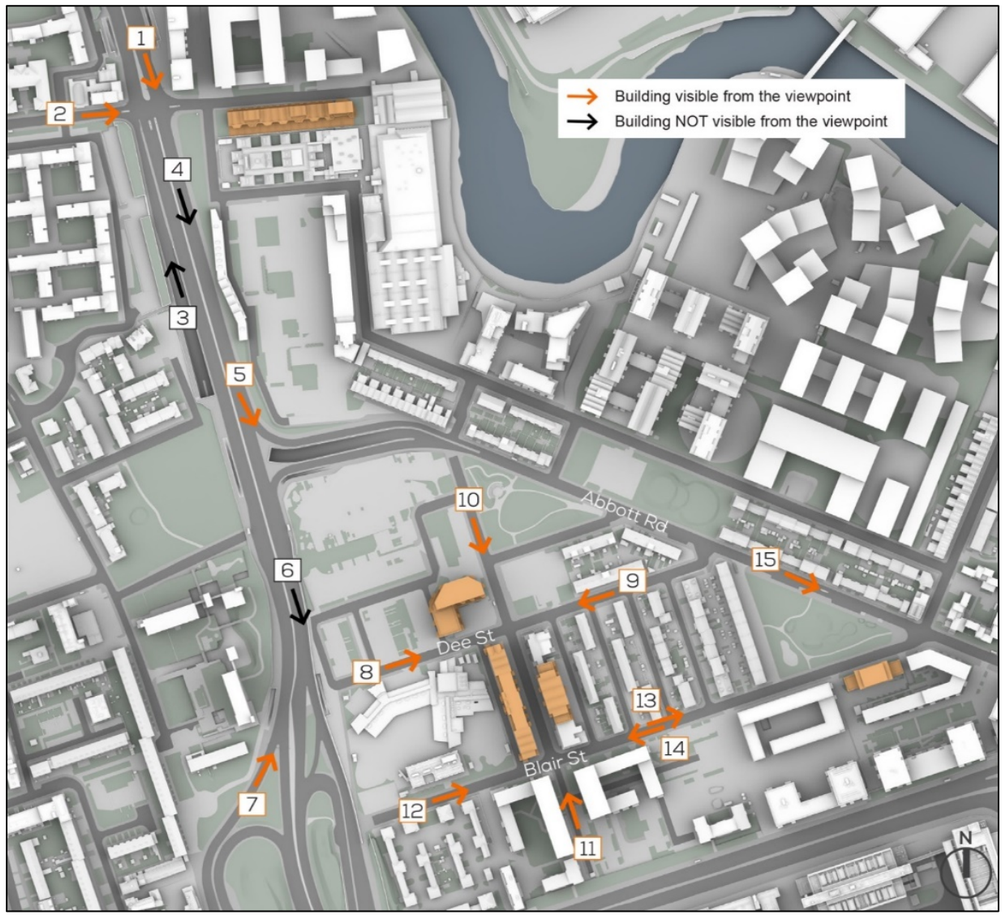
**14.122** For Solar Glare, all road viewpoints with the potential to be affected by the detailed elements of the Proposed Development identified are considered to be of high sensitivity. The sensitive viewpoints considered relevant for assessment are listed below in **Table 14.8** and shown in **Figure 14.5.**

**14.123** At RMA stage, it is likely that additional viewpoints along roads surrounding the Site would have a view of the detailed design of plots A-E (currently proposed in outline). Once the detailed design emerges, the road locations will be reviewed to determine the viewpoints which are sensitive to solar reflections from future development within these plots. In particular viewpoints 1-7 (along the A12) will be technically assessed at RMA stage. Additionally, any introduced road junctions will be technically assessed in relation to potential solar glare effects at RMA. For the purposes of this ES Chapter, these locations are considered qualitatively.

**Table 14.8 Solar Glare Sensitive Receptors**

| Viewpoint | Description |
|---|---|
| 1 – Southbound along A12 | Road viewpoint |
| 2 – Eastbound along Zetland Street | Road viewpoint |
| 3 – Northbound along A12 | Road viewpoint |
| 4 – Southbound along A12 | Road viewpoint |
| 5 – Southbound along A12 | Road viewpoint |
| 6 – Southbound along A12 | Road viewpoint |
| 7 – Northeast-bound along A12 | Road viewpoint |
| 8 – Eastbound along Dee Street | Road viewpoint |
| 9 – Westbound along Dee Street | Road viewpoint |
| 10 – Southbound along Aberfeldy Street | Road viewpoint |
| 11 – Northbound along Aberfeldy Street | Road viewpoint |
| 12 – Eastbound along Blair Street | Road viewpoint |
| 13 – Eastbound along Blair Street | Road viewpoint |
| 14 – Westbound along Blair Street | Road viewpoint |

**Figure 14.5 Solar Glare Receptors**




## BASELINE CONDITIONS

**14.124** The full daylight and sunlight baseline assessment results are presented in ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 2.

**14.125** Within the 42 existing buildings considered as sensitive receptors, a total of 2,699 windows serving 1,470 habitable rooms were assessed to determine the existing daylight levels. Each of the buildings were also considered sensitive to sunlight, within which 1,352 windows serving 1,352 windows were assessed to determine the existing sunlight levels.

**14.126** For daylight in the baseline condition, a total of 1,197 of the 2,699 (44.3%) windows would meet the BRE Guidelines criteria for VSC and 1,257 of the 1,470 rooms (85.5%) would meet the BRE Guidelines criteria for NSL and are therefore considered to experience a **Negligible (Not Significant)** effect.

**14.127** For sunlight in the baseline condition, 975 of the 1352 total windows (72.1%) would meet the BRE Guidelines criteria for APSH and therefore be considered to experience a **Negligible (Not Significant)** effect.

**14.128** The full overshadowing baseline assessment results are presented in **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 5**. Of the 78 individual amenity areas assessed, 31 would not meet the BRE Guidelines criteria of achieving at least two hours of sun on at least 50% of their total area.

**14.129** Solar glare is not assessed in the baseline condition as the assessment considers the reflections occurring from the façades of the Proposed Development in isolation.

## POTENTIAL EFFECTS

### *Demolition and Construction*

**14.130** The magnitude of impact and resultant potential effect in relation to the daylight, sunlight, overshadowing and solar glare on the surrounding receptors would vary throughout the demolition and construction phase, depending on the level of obstruction caused.

**14.131** During the construction phase, a number of tall temporary structures are likely to be present on-Site. In some cases, scaffolding, cranes and hoarding would marginally increase the size of the Proposed Development's maximum massing, however this would be temporary and is unlikely to result in additional noticeable effects due to the scale of these structures and their transient nature.

**14.132** The construction of the new buildings on the Site would have a gradual effect upon the levels of daylight, sunlight and overshadowing as the massing of the Proposed Development increases over time. It is therefore considered that the completed Proposed Development represents the worst-case assessment in terms of likely resultant effects. The effects during the demolition and construction works would almost certainly be less than that of the Proposed Development, given that the extent of permanent massing would increase throughout the construction programme, until the Proposed Development is complete.

**14.133** Sensitive buildings within the Site boundary would experience short to medium term, temporary effects as a result of earlier phases being constructed. However, the Application proposes the redevelopment of these buildings and as such a technical daylight and sunlight assessment has not been undertaken for the earlier phases of the Proposed Development however an internal sunlight and daylight assessment, of the Proposed Development once completed has been undertaken and submitted alongside the planning application to determine the level of sunlight and daylight in all the various buildings. Phase, and this represents the worst case and as a result no Phase A assessment has been undertaken.

**14.134** The effect in terms of solar glare would range from being negligible effects during demolition, gradually increasing as construction works progress and the facades of the Proposed Development are installed. Therefore, the effects as set out in the assessment of the Completed Development scenario below represents the worst-case scenario.

**14.135** Therefore, the effects have the potential to be adverse on surrounding receptors. It is considered that the effects would be temporary and not be any worse that those presented by the completed Proposed Development without mitigation.

**14.136** Therefore, reference should be made to the assessments of the completed Proposed Development in relation to potential daylight, sunlight, overshadowing and solar glare effects which are discussed in the sections below.

### *Completed Development*

**14.137** The full daylight assessment for the Completed Development can be found within **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 4** and is summarised in below in **Table 14.9**.

**14.138** Additionally, analysis of the No Balcony and Consented Development assessments has been provided as discussion. Cross references to the Standalone Daylight and Sunlight Impacts Report, where the Illustrative Masterplan is considered, has also been provided, for those properties affected by the outline blocks.

**14.139** A total of 42 buildings have been assessed for daylight and all windows and rooms assessed within three of these would meet BRE's criteria for both VSC and NSL. The three buildings (highlighted in blue in **Table 14.9**) experience little to no impact (less than 20% alteration) or retain values in line with BRE Guidelines criteria and are therefore considered to experience a **Negligible** effect:

- 134-144 Leven Road;
- 49-67 Abbott Road; and
- Aberfeldy Estate Phase One Block A.

**14.140** The results of the 39 remaining buildings are discussed in further detail below.

**Table 14.9 Daylight Assessment of the Proposed Development at Surrounding Sensitive Receptors (VSC and NSL)**

| Address | VSC | | | | | | NSL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total No. of Windows | No. Windows that meet BRE criteria | Below BRE Guidelines criteria | | | | Total No. of Rooms | No. Rooms that meet the 0.8 times former value criteria | Below BRE Guidelines criteria | | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total |
| 110-126 Leven Road | 95 | 42 | 21 | 24 | 8 | 53 | 36 | 36 | 0 | 0 | 0 | 0 |
| 128-132 Leven Road | 35 | 25 | 10 | 0 | 0 | 10 | 24 | 22 | 2 | 0 | 0 | 2 |
| 134-144 Leven Road | 56 | 56 | 0 | 0 | 0 | 0 | 24 | 24 | 0 | 0 | 0 | 0 |
| 177-195 Abbott Road | 85 | 54 | 15 | 12 | 4 | 31 | 48 | 43 | 2 | 2 | 1 | 5 |
| 199-225 Abbott Road | 179 | 100 | 3 | 12 | 64 | 79 | 90 | 88 | 0 | 2 | 0 | 2 |
| 49-67 Abbott Road | 70 | 70 | 0 | 0 | 0 | 0 | 41 | 41 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase One Block A | 57 | 57 | 0 | 0 | 0 | 0 | 45 | 45 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase One Block C | 98 | 51 | 13 | 5 | 29 | 47 | 61 | 46 | 8 | 4 | 3 | 15 |
| Aberfeldy Estate Phase Three Block G | 47 | 36 | 3 | 2 | 6 | 11 | 25 | 24 | 1 | 0 | 0 | 1 |
| Aberfeldy Estate Phase Three Block J | 111 | 74 | 11 | 10 | 16 | 37 | 56 | 56 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase Two Block D | 57 | 35 | 14 | 4 | 4 | 22 | 35 | 34 | 0 | 1 | 0 | 1 |
| Ailsa Wharf Block A | 45 | 39 | 5 | 1 | 0 | 6 | 21 | 21 | 0 | 0 | 0 | 0 |
| Ailsa Wharf Block D | 228 | 164 | 31 | 14 | 19 | 64 | 88 | 86 | 1 | 1 | 0 | 2 |
| Ailsa Wharf Blocks K L | 62 | 58 | 1 | 3 | 0 | 4 | 27 | 27 | 0 | 0 | 0 | 0 |
| Atelier Court | 117 | 14 | 3 | 5 | 95 | 103 | 97 | 26 | 11 | 9 | 51 | 71 |
| Balfron Tower | 62 | 48 | 6 | 0 | 8 | 14 | 54 | 53 | 0 | 1 | 0 | 1 |
| Bromley Hall | 100 | 89 | 5 | 1 | 5 | 11 | 31 | 31 | 0 | 0 | 0 | 0 |
| Carradale House | 77 | 37 | 10 | 22 | 8 | 40 | 44 | 44 | 0 | 0 | 0 | 0 |
| Culloden Primary School | 90 | 33 | 5 | 21 | 31 | 57 | 21 | 18 | 0 | 0 | 3 | 3 |
| Dewberry Street 16-46 | 72 | 42 | 24 | 6 | 0 | 30 | 44 | 44 | 0 | 0 | 0 | 0 |
| Dewberry Street 2-14 | 44 | 42 | 0 | 1 | 1 | 2 | 25 | 25 | 0 | 0 | 0 | 0 |
| Devons Wharf | 169 | 104 | 52 | 5 | 8 | 65 | 91 | 86 | 1 | 2 | 2 | 5 |
| Joshua Street 1-15 | 77 | 62 | 3 | 6 | 6 | 15 | 31 | 31 | 0 | 0 | 0 | 0 |
| Joshua Street 17-33 | 55 | 48 | 2 | 4 | 1 | 7 | 36 | 36 | 0 | 0 | 0 | 0 |
| Joshua Street 35-41 | 30 | 21 | 5 | 3 | 1 | 9 | 17 | 17 | 0 | 0 | 0 | 0 |
| Joshua Street 4 | 4 | 3 | 1 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 |
| Joshua Street 6-14 | 27 | 24 | 1 | 2 | 0 | 3 | 17 | 17 | 0 | 0 | 0 | 0 |
| Lansbury Gardens 2-12 | 43 | 25 | 0 | 1 | 17 | 18 | 18 | 7 | 1 | 0 | 10 | 11 |
| Leven Road Phase Three | 73 | 26 | 4 | 2 | 41 | 47 | 62 | 28 | 2 | 3 | 29 | 34 |

| Address | VSC | | | | | | NSL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total No. of Windows | No. Windows that meet BRE criteria | Below BRE Guidelines criteria | | | | Total No. of Rooms | No. Rooms that meet the 0.8 times former value criteria | Below BRE Guidelines criteria | | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total |
| Loren Appartments | 26 | 4 | 0 | 3 | 19 | 22 | 18 | 4 | 2 | 1 | 11 | 14 |
| Mills Grove 1-9 | 25 | 24 | 0 | 1 | 0 | 1 | 17 | 15 | 1 | 0 | 1 | 2 |
| Mills Grove 12-20 | 25 | 20 | 4 | 0 | 1 | 5 | 15 | 15 | 0 | 0 | 0 | 0 |
| Mills Grove 17-25 | 27 | 18 | 9 | 0 | 0 | 9 | 15 | 15 | 0 | 0 | 0 | 0 |
| Mills Grove 2-10 | 25 | 24 | 1 | 0 | 0 | 1 | 15 | 15 | 0 | 0 | 0 | 0 |
| Mills Grove 9-15 | 22 | 15 | 6 | 0 | 1 | 7 | 12 | 11 | 0 | 1 | 0 | 1 |
| St Leonards Road 118-132 | 40 | 29 | 10 | 0 | 1 | 11 | 23 | 23 | 0 | 0 | 0 | 0 |
| St Leonards Road 134-146 | 43 | 31 | 12 | 0 | 0 | 12 | 28 | 28 | 0 | 0 | 0 | 0 |
| St Leonards Road 148-154 | 20 | 18 | 2 | 0 | 0 | 2 | 10 | 10 | 0 | 0 | 0 | 0 |
| Sherman House | 69 | 29 | 1 | 2 | 37 | 40 | 43 | 23 | 3 | 1 | 16 | 20 |
| St.Nicholas Church | 59 | 36 | 10 | 0 | 13 | 23 | 31 | 31 | 0 | 0 | 0 | 0 |
| Wooster Gardens 1-7 | 33 | 31 | 2 | 0 | 0 | 2 | 16 | 13 | 1 | 2 | 0 | 3 |
| Wooster Gardens 9-15 | 20 | 18 | 2 | 0 | 0 | 2 | 16 | 16 | 0 | 0 | 0 | 0 |
| **Totals** | **2699** | **1776** | **307** | **172** | **444** | **923** | **1470** | **1277** | **36** | **30** | **127** | **193** |

*110-126 Leven Road*

**14.141** These terraced houses are located east of the Site, with two storeys at each property considered for assessment. The rear of these nine properties face towards the Proposed Development.

**14.142** A total of 95 windows serving 36 rooms were assessed for daylight within these buildings. Of these 36 rooms, three would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.143** For VSC, 42 of the 95 (44.2%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.144** Of the 53 affected windows, 21 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and 24 would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining eight windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.145** A total of 21 of the affected windows serve bedrooms on the second storey, which may be considered less sensitive to daylight alterations. Each of the bedroom windows would retain 12-23.9% VSC.

**14.146** A further 16 affected windows serve ground floor kitchens. Four kitchen windows serving 110-116 Leven Road would see moderate to major impacts in VSC, owing to their view of the tower, retaining levels of VSC between 10.9-14.7%. It should be noted that these windows are set back from the rear building line and thereby inherently obstructed. However, these four windows serving kitchens are supplemented by a second window, which would also see impacted but would retain 18.7-22.1% VSC. The remaining eight kitchen windows, which serve four kitchens, retain between 15.5-23.9% VSC.

**14.147** The final 16 affected windows serve ground floor living rooms or assumed living-kitchen-diners (LKDs). These windows see minor to moderate impacts and would retain levels of VSC ranging from 17.1-24%. Additionally, each of the living rooms or assumed LKDs are served by at least one other window located on the front elevation, which is not significantly impacted by the Proposed Development, retaining levels of VSC in excess of 24%.

**14.148** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.149** Overall, VSC impacts can be seen to occur to 53 windows at the rear of these terraced buildings, comprising primarily bedrooms, as well as kitchens and LKDs. With the exception of three bedrooms, which would retain low-teen levels of VSC, the bedrooms are considered to retain good levels of light. Bedrooms may be considered less sensitive to daylight alterations. The levels of VSC retained at the eight impacted kitchens may be considered acceptable when taking account of the retained levels of VSC at both windows per kitchen. Of the affected living rooms / LKD windows, the retained levels of VSC may be considered acceptable and furthermore, each of the rooms is served by a mitigating window at the front of the property. No NSL impacts beyond BRE's criteria would occur and therefore the effect to these properties is considered **Moderate Adverse (Significant).**

*128-132 Leven Road*

**14.150** These terraced houses are located east of the Site, with two storeys at each property considered for assessment. The rear of these three properties face towards the Proposed Development.

**14.151** A total of 35 windows serving 24 rooms were assessed for daylight within these buildings. Of these 24 rooms, 13 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.152** For VSC, 25 of the 35 (71.4%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.153** Of the 10 affected windows, all would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect.

**14.154** These windows comprise one living room window, which retains 23.5% VSC and nine bedroom windows, which retain above 22.6-26.9% VSC. The living room impacted is served by a further four windows which are not affected.

**14.155** For NSL, 22 of the 24 (91.7%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.156** Of the two affected rooms, both would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect. Both rooms are bedrooms, which may be considered less sensitive to daylight alterations and would retain 72.2-75.8% VSC.

**14.157** Overall, owing to the retained levels of daylight, the effect is considered **Negligible to Minor Adverse (Not Significant)**.

*177-195 Abbott Road*

**14.158** These terraced houses are located east of the Site, with two to three storeys at each property considered for assessment. The front of these ten properties face towards the Proposed Development.

**14.159** A total of 85 windows serving 48 rooms were assessed for daylight within these buildings. Of these 48 rooms, 22 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.160** For VSC, 54 of the 85 (63.5%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.161** Of the 31 affected windows, 15 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and 12 would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining four windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.162** A total of 21 of the affected windows are bedrooms located on the second storey. Bedrooms may be considered less sensitive to daylight alterations, however, would retain 15.9-23.4% VSC.

**14.163** A further three affected windows serve ground floor kitchens. Of these kitchen windows, at 195 Abbott Road, which is closest to the Proposed Development and would therefore see a major adverse impact would retain 17.5% VSC. The two other kitchen windows would see minor adverse impacts, retaining 21.8-23.1% VSC.

**14.164** The remaining six windows affected serve living rooms located at ground level. One of the windows retains 15.5% VSC and is located on the north west facing flank wall. This living rooms is served by further two front facing windows unaffected by the Proposed Development. The remaining five affected living rooms windows are located to the rear at ground level. These windows retain 18-26.7% VSC, serving living rooms which also have two additional front facing windows not affected by the Proposed Development.

**14.165** For NSL, 43 of the 48 (89.6%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.166** Of the five affected rooms, two would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and two would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining room would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.167** Three bedrooms, which are located beneath overhanging eaves exacerbating the scale of impact by cutting out a view of the top of the sky, would experience reductions. However, bedrooms may be considered less sensitive to changes in daylight distribution. The kitchen at 195 Abbott Road discussed above would see a moderate adverse reduction although would retain 57.9% NSL. The final affected room is a living room, which experiences an alteration only marginally beyond BRE Guidelines recommendations and is not affected in relation to VSC.

**14.168** Overall, VSC impacts can be seen to occur to 31 windows at the front of these terraced buildings, comprising primarily bedrooms, as well as kitchens and LKDs. All the bedrooms affected levels of VSC ranging from mid-teens to above 20% VSC, however, may be considered less sensitive to daylight alterations. Three kitchen windows are impacted, of which two would retain VSC levels above 20%. One kitchen, which is closest to the Proposed Development would see significant impacts in both VSC and NSL, however, retains 17.5% VSC and 57.9% NSL. Each of the impacted living room windows retain levels of VSC above 15%, with each of the affected living rooms being served by a mitigating window at the rear of the property. Therefore, the effect is considered **Minor to Moderate Adverse (Significant)**.

*199-225 Abbott Road*

**14.169** These terraced houses are located east of the Site, with two storeys at each property considered for assessment. The front of these 16 properties face towards the Proposed Development.

**14.170** A total of 179 windows serving 90 rooms were assessed for daylight within this building. Of these 90 rooms, 57 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.171** For VSC, 100 of the 179 (55.9%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.172** Of the 79 affected windows, three would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and 12 would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 64 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.173** All but one of the 79 affected windows serve rooms understood to be bedrooms, which may be considered less sensitive to daylight alterations. These windows are located on both the ground level, served by bay windows and the first storey, served by windows which are located beneath overhanging architectural features which inherently obstruct daylight availability. The remaining window, which serves an LKD, is located on the north western flank wall of 225 Abbott Road, therefore directly facing the Proposed Development at close proximity. However, this living room is served by a second window at the rear of the property, which is unaffected, seeing 23.5% VSC. This room is therefore considered to remain well daylit overall.

**14.174** For NSL, 88 of the 90 (97.8%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.175** Of the two affected rooms, both would experience an alteration in NSL between 30-39.9% which is considered a Moderate Adverse effect. Both rooms are bedrooms, which retain 59-61% NSL.

**14.176** Overall, the majority of affected rooms are bedrooms, which are obstructed in the baseline condition or are served by bay windows. Whilst significant impacts occur, it should be noted that bedrooms may are considered less sensitive to daylight alterations. The impacted living room would remain well daylit overall, despite seeing a reduction in VSC. Only two NSL impacts beyond BRE's criteria would occur to bedrooms, which retain good levels of daylight distribution. Therefore, the effect is considered **Moderate** to **Major Adverse (Significant).**

**14.177** The impacts to this building are discussed in further detail within the Standalone Daylight and Sunlight Impacts Upon Neighbours Report , providing further contextual considerations and highlighting how acceptable levels of daylight could be preserved upon the implementation of the Illustrative Masterplan.

*Aberfeldy Estate Phase One Block C*

**14.178** Five storeys at this apartment block located south east of the Site are considered for assessment. It has an irregular form such that front facing and flank elevations of the eastern portion and the rear elevation of the southern portion face towards the Proposed Development. The apartments are defined by recessed balconies.

**14.179** A total of 98 windows serving 61 rooms were assessed for daylight within this building. Of these 61 rooms, 15 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.180** For VSC, 51 of the 98 (52%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.181** Of the 47 affected windows, 13 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and five would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 29 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.182** A total of 20 affected window serve bedrooms, which may be considered less sensitive to daylight alterations. Four of these windows are situated beneath recessed balconies and therefore receive very low levels of VSC (below 2.5%) in the baseline condition. Therefore, the percentage alteration is disproportionate to what the occupant would perceive. The remaining 16 bedroom windows would retain 10-20.7% VSC. Bedrooms may be considered less sensitive to daylight alterations.

**14.183** A further five kitchen windows are affected. Two of these, serving one kitchen, are located on the west facing flank wall overlooking the Proposed Development, each retaining 9.9-11.9% VSC. The remaining three kitchen windows are inset into the corner of the 2$^{nd}$, 4$^{th}$ and fifth storey of the courtyard block, retaining 11.4, 16.5 and 20.5% VSC respectively.

**14.184** The remaining affected 20 LKDs and one living room window are located on the ground to 4$^{th}$ to storey. The majority (15) of these windows are located beneath recesses and are therefore inherently obstructed as shown by their low baseline values ranging from 0.1-6.7% VSC. Therefore, the moderate to major alterations are disproportionate to what the occupants would be likely to perceive. The remaining five windows LKD / living room windows, which are flush to the wall would retain 7.6-12.7% VSC. However, these five windows are located on the ground level, which can expect to the receive lower levels of light. All five windows serve three LKDs and a living room which has another window not affected by the Proposed Development, which either see good levels of VSC or is served by a balcony.

**14.185** For NSL, 46 of the 61 (75.4%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.186** Of the 15 affected rooms, eight would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and four would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining three rooms would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.187** A total of six bedrooms are affected, however, these may be considered less sensitive to daylight distribution. The remaining nine rooms are LKDs of which eight are situated beneath recessed balconies and therefore inherently limited in terms of sky visibility, as shown by their comparatively low baseline levels of NSL. These rooms would retain 14.9-53% NSL. One LKD not situated beneath a recess would continue to receive 65% NSL.

**14.188** Overall, VSC impacts can be seen to occur to 47 windows at this apartment block, comprising primarily bedrooms, as well as kitchens and LKDs. Four bedrooms are located beneath recessed and therefore inherently obstructed, with the remaining bedrooms retaining VSC values in the teens. However, bedrooms may be considered less sensitive to daylight alterations. Two windows of a kitchen directly overlooking the Proposed Development is significantly impacted. A ground floor kitchen window, which is inherently restricted in its availability of daylight would be impacted, with a further two retaining good levels of VSC. Of the impacted LKDs, the majority are situated beneath recessed balconies and therefore would not notice the relative alteration in daylight. Five LKD windows which are flush with the wall would be impacted, although these LKDs have mitigating windows. The NSL alterations are not considered significant. Therefore, the effect is considered **Minor** to **Moderate Adverse (Significant).**

*Aberfeldy Estate Phase Three Block G*

**14.189** Four storeys of this apartment block, located south east of the Site, are considered for assessment. The north and west facing elevations of the overlook the Proposed Development. The façades are defined by recessed balconies.

**14.190** A total of 47 windows serving 25 rooms were assessed for daylight within this building. Of these 25 rooms, 14 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.191** For VSC, 36 of the 47 (76.6%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.192** Of the 11 affected windows, three would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and two would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining six windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.193** A total of four affected windows serve bedrooms, which have low baseline levels of VSC (78-8.9%) owing to their location beneath recessed balconies. The remaining seven windows serve LKD windows also beneath recessed balconies, which have low baseline levels of VSC (2.9-5.4%). Therefore, the alterations are disproportionate to the absolute loss of VSC to these windows, which would be only 0.6-2.8%. However, all four bedrooms and each of the LKDs affected are served by one or two mitigating windows which are not affected by the Proposed Development.

**14.194** For NSL, 24 of the 25 (96%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.195** The affected room would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect.

**14.196** This room is an LKD on the first storey, which experiences an alteration only marginally beyond BRE Guidelines criteria, which may therefore not be noticeable.

**14.197** Overall, the impacts occur only to windows located beneath recessed balconies. Each of the bedrooms and LKDs affected are served by mitigating windows which are not affected by the Proposed Development. Therefore, whilst the above factors should be noted, given the significant alterations to the windows and rooms assessed at this building, the effect is considered **Minor (Not Significant).**

**14.198** The impacts of the Proposed Development are no worse than those which would occur as a result of the Consented Masterplan.

*Aberfeldy Estate Phase Three Block J*

**14.199** Five storeys this apartment block, located south of the Site, are considered for assessment. Windows and rooms on the north facing elevations overlook the Proposed Development. The façades are defined by banks of recessed balconies.

**14.200** A total of 111 windows serving 56 rooms were assessed for daylight within this building. Of these 56 rooms, 22 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.201** For VSC, 74 of the 111 (66.7%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.202** Of the 37 affected windows, 11 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and 10 would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 16 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.203** A total of 17 affected windows serve bedrooms. Two of these are on the ground floor and retain 25-26% VSC. The remaining 15 bedrooms windows are located beneath recessed balconies, thereby seeing lower levels of VSC in the baseline condition (13-14%) and exacerbating the reduction. These windows would retain 3.5.9% VSC, however, bedrooms may be considered less sensitive to daylight alterations.

**14.204** The final 20 windows affected serve LKDs. Seven of these windows are flush to the wall, seeing minor to moderate impacts but would retain 23-26% VSC and are therefore considered to remain well daylit. The remaining 13 LKD windows are situated beneath recessed balconies and therefore have lower levels of VSC in the baseline condition with VSC levels of 6-7%. However, each of these LKDs are served by a second window which is not perceptibly affected by the Proposed Development and therefore each of the LKDs seeing reduction would remain well daylit overall.

**14.205** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.206** Overall, each of the LKDs seeing impacts in VSC would remain well daylit by virtue of a secondary window, and only bedrooms, which are considered less sensitive to daylight alterations, served by one window situated beneath a recessed balcony are perceptibly affected, the effect is considered **Minor** to **Moderate Adverse (Significant)**.

**14.207** The impacts of the Proposed Development are no worse than those which would occur as a result of the Consented Masterplan.

*Aberfeldy Estate Phase Two Block D*

**14.208** Five storeys of this apartment block, located south of the Site, are considered for assessment. Windows and rooms on the north and eat facing elevations overlook the Proposed Development. The façades are defined by banks of recessed balconies.

**14.209** A total of 57 windows serving 35 rooms were assessed for daylight within this building. Of these 35 rooms, 15 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.210** For VSC, 35 of the 57 (61.4%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.211** Of the 22 affected windows, 14 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and four would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining four windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.212** A total of nine affected windows serve bedrooms, which may be considered less sensitive to daylight alterations. However, seven of these would retain 13.7-26% VSC, with the remaining two bedroom windows located beneath a recessed balcony, experiencing a reduction only marginally above BRE Guidelines criteria and is therefore unlikely to be noticeable with an absolute loss of 1.2% VSC occurring.

**14.213** A further 12 affected windows serve LKDs, of which three would experience minor impacts only marginally beyond BRE Guidelines criteria, retaining 19-24% VSC. A further six LKD windows are located beneath recessed balconies which exacerbate the reduction, owing to the low baseline levels of VSC between 1.9-6.7%. A remaining three LKD windows are located beneath cantilevered balconies, seeing minor to moderate impacts. All windows beneath balconies serve LKDs which have one or two more windows which are not affected by the Proposed Development and remain well daylit overall.

**14.214** The remaining window serves a single aspect studio, which would see a major adverse impact to the site facing window which is located beneath a balcony.

**14.215** For NSL, 34 of the 35 (97.1%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.216** The affected room would experience an alteration in NSL between 30-39.9% which is considered a Moderate Adverse effect. This room is a bedroom which retains 61.3% NSL and is therefore not considered to be significantly affected.

**14.217** Overall, given that the bedrooms affected, which can be considered less sensitive to daylight alterations, would retain levels of daylight which may be considered acceptable or experience a very small absolute loss of VSC and each of the LKDs seeing VSC alterations remain well daylit overall owing to mitigating windows, the effect is considered **Minor** to **Moderate Adverse (Significant)**.

**14.218** When considering the impacts of the Proposed Development and retained levels of daylight within a no balconies scenario, it can be seen that whilst reductions would still occur, the lower retained levels are a result of balconies.

*Ailsa Wharf Block A*

**14.219** This apartment block is located north east of the Site and is currently under construction. Windows and rooms on the south and west facing elevations of the lowest three residential floors looking towards looking towards the Proposed Development are considered. The façades are defined by banks of recessed balconies.

**14.220** A total of 45 windows serving 21 rooms were assessed for daylight within this building. Of these 21 rooms, 15 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.221** For VSC, 39 of the 45 (86.7%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.222** Of the six affected windows, five would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst one would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect.

**14.223** All six LKD windows are located beneath recessed balconies as shown by the low baseline levels ranging from 5.1-6.3% VSC. Although these LKD windows experience minor to moderate impacts, each of the LKDs are served by three further windows not affected by the Proposed Development and retain very good levels of daylight overall.

**14.224** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.225** Due to this building being under construction, there are no residents there to experience a reduction and the assessment of Average Daylight Factor (ADF) in the rooms considered above has also been undertaken to gauge what the alterations and retained internal levels of daylight would be upon implementation of the Proposed Development.

**14.226** Of the 21 rooms assessed for ADF, 14 would experience no ADF alterations, six would see a marginal reduction by 0.1% ADF and one would see a marginal reduction of 0.2% ADF. These alterations would not change materially the levels of light within these rooms.

**14.227** Overall, the six windows seeing impacts are located beneath recessed balconies and serve LKDs which see only marginal nonmaterial alterations in ADF. Therefore, the effect is considered **Negligible (Not Significant)**.

*Ailsa Wharf Block D*

**14.228** This apartment block is located north of the Site. Windows and rooms on the south, east and west elevations of the lowest six residential floors overlooking the Proposed Development are considered. The north facing windows are also assessed, as there are dual aspect rooms with windows spanning the breadth of the building with north and south facing windows. The façades are defined by banks of recessed balconies

**14.229** A total of 228 windows serving 88 rooms were assessed for daylight within this building. Of these 88 rooms, 49 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.230** For VSC, 164 of the 228 (71.9%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.231** Of the 64 affected windows, 31 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and 14 would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 19 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.232** Of the affected windows, 45 serve bedrooms, which may be considered less sensitive to daylight alterations. Sixteen of these bedroom windows retain VSC levels above 15%. The remaining bedrooms windows are situated beneath balconies and therefore see lower levels of VSC.

**14.233** Of the 19 LKD windows affected, seven retain VSC levels between 17-26%. The remaining 12 LKD windows retain levels of VSC ranging from 5-10%, however, these living rooms are served by one or two further windows which are not affected by the Proposed Development, seeing good levels of VSC overall.

**14.234** The final window seeing VSC impacts serves a studio, retaining 24.7% VSC and is therefore not considered to be significantly affected.

**14.235** For NSL, 86 of the 88 (97.7%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.236** Of the two affected rooms, one would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect whilst one would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect.

**14.237** Both rooms are bedrooms retaining 68-71% NSL and are therefore not considered to be significant affected.

**14.238** Due to this building being under construction, there are no residents there currently to experience a reduction and the assessment of Average Daylight Factor (ADF) in the rooms considered above has also been undertaken to gauge what the alterations and retained internal levels of daylight would be upon implementation of the Proposed Development.

**14.239** Of the 88 rooms assessed for ADF, 16 would experience no ADF alterations, 13 would see marginal reductions by 0.1-0.2% ADF and 59 would see reductions ranging from 0.3% to 1.2% ADF. When looking at the retained ADF levels, all rooms meeting or exceeding BRE's recommendation for ADF in the baseline scenario would still retain levels of internal daylight above guidelines in the Proposed Development scenario. The only bedroom below recommendation in the baseline scenario would see no changes upon implementation of the Proposed Development, whilst the five L/K/Ds below recommendation in the baseline scenario would see negligible or minor alterations of 0.2% to 0.4% ADF and will all retain in excess of 1.2% ADF.

**14.240** Overall, the majority of impacts occur to bedrooms which retain levels of ADF above recommendation. Whilst LKD windows would see impacts, the vast majority of them retain levels of ADF above recommendation, with only five of them falling short of recommendation in the baseline scenario seeing negligible to minor alterations whilst retaining ADF levels above 1.2%ADF. As such, the effect is considered **Minor Adverse (Not Significant)**.

*Ailsa Wharf Blocks K L*

**14.241** This apartment block is located north of the Site. Windows and rooms on the north and west elevations of the lowest four residential floors overlooking the Proposed Development are considered. These façades are defined by banks of recessed balconies.

**14.242** A total of 62 windows serving 27 rooms were assessed for daylight within this building. Of these 27 rooms, 25 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.243** For VSC, 58 of the 62 (93.5%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.244** Of the four affected windows, one would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst three would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect.

**14.245** Three of the affected windows serve a ground floor LKD, situated beneath a recessed balcony. This LKD is served by a fourth window not affected by the Proposed Development. The fourth affected window serves a first storey LKD, seeing a moderate adverse impact and is served by three additional windows not significantly impacted.

**14.246** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.247** Due to this building being under construction, there are no residents currently there to experience a reduction and as a result the assessment also considers the Average Daylight Factor (ADF) (to gauge what the alterations and retained internal levels of daylight would be upon implementation of the Proposed Development.

**14.248** Of the 27 rooms assessed for ADF, 15 would experience no ADF alterations, 8 would see marginal reductions by 0.1-0.2% ADF and four would see reductions ranging from 0.3% to 0.4% ADF. When looking at the retained ADF levels, with the exception of one LKD, all rooms meeting or exceeding BRE's recommendation for ADF in the baseline scenario would still retain levels of internal daylight above guidelines in the Proposed Development scenario. One LKD meeting recommendation in the baseline scenario would see a reduction of 0.4% ADF and retain 1.6% ADF, which is below recommendation although above the recommended ADF level for a living room (without a kitchen, which is 1.5% ADF). Five of the six bedrooms below recommendation in the baseline scenario would see no changes upon implementation of the Proposed Development, with the remaining one seeing a negligible reduction of 0.1% ADF. The five L/K/Ds below recommendation in the baseline scenario would not see any ADF alterations.

**14.249** Overall, the effect on this building is considered **Negligible (Not Significant)**.

*Atelier Court*

**14.250** This block is located east of the Site. The west facing elevation, which reaches seven storeys at the northern portion and three storeys across the southern portion, is defined by recessed balconies. Windows and rooms on the west elevations overlooking the Proposed Development are considered for assessment. Windows on the north facing façade are also considered, as these serve rooms seeing alterations as a result of the Proposed Development. It should be noted that this building overlooks low rise existing massing in the baseline condition, receiving uncharacteristically high levels of daylight. Significant reductions can be expected to occur as a result of massing coming forward.

**14.251** A total of 117 windows serving 97 rooms were assessed for daylight within this building. Of these 97 rooms, 10 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.252** For VSC, 14 of the 117 (12%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.253** Of the 103 affected windows, three would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and five would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 95 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.254** Approximately half (55) of the windows affected serve bedrooms, which may be considered less sensitive to daylight alteration. These windows retain 3.2-25% VSC, with the lower levels of retain light occurring to bedrooms windows situated beneath recessed balconies.

**14.255** A further seven windows affected serve kitchens. Six of these would retain VSC levels between 16.4-23.8% VSC, which may be considered adequate. The remaining kitchen window would achieve 10.8% VSC with the Proposed Development in situ, however, is located on the ground level.

**14.256** The remaining 41 windows affected serve living rooms or LKDs. Seven of these rooms would retain levels of VSC in the mid-teens, with the final 34 windows retaining lower levels of light owing to their location beneath recessed balconies.

**14.257** For NSL, 26 of the 97 (26.8%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.258** Of the 71 affected rooms, 11 would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and nine would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 51 rooms would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.259** Overall, significant reductions can be seen to occur, however, this can be anticipated when a building overlooks a low rise existing massing, where the Proposed Development steps forward making efficient use of the Site. The majority of impacted windows are located beneath recessed balconies, exacerbating the reductions. However, owing to the magnitude of impacts, the overall effect to this building is considered **Major Adverse (Significant)**.

**14.260** When considering the impacts of the Proposed Development and retained levels of daylight within a no balconies scenario, it can be seen that whilst reductions would still occur, the lower retained levels are a result of balconies. In the no balconies scenario, the windows from the first storey and above would retain 13-24% VSC, with only the ground floor retaining 10-12% VSC.

**14.261** The Standalone Daylight and Sunlight Impacts Upon Neighbours Report discusses the no balconies approach in relation to Illustrative Masterplan, concluding that only one kitchen, one LKD, one living room and three bedrooms all located on the ground level would achieve excess of 13-14% VSC, with all other windows on the Site facing elevation retaining >15% VSC.

*Balfron Tower*

**14.262** Five storeys of this apartment block located north of the Site are relevant for assessment. Windows and rooms on the north and west elevations overlooking the Proposed Development are considered. These façades are defined by banks of recessed balconies. The upper storeys (approximately 10) are not considered within the assessment, as it is evident that they not affected by the Proposed Development.

**14.263** A total of 62 windows serving 54 rooms were assessed for daylight within this building. Of these 54 rooms, 40 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.264** For VSC, 48 of the 62 (77.4%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.265** Of the 14 affected windows, six would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst eight would experience an alteration greater than 40% which is considered a Major Adverse Effect.

**14.266** Six of the affected windows serve bedrooms, which may be considered less sensitive to daylight alterations. These windows retain 20-22% VSC and therefore not considered to be significantly affected.

**14.267** Two kitchen windows are affected; however, these are located beneath overhangs resulting in very low baseline levels of 0.2% and 0.4% VSC. Therefore, the major adverse percentage alterations would not result in a noticeable change to these rooms and are therefore not considered to be significantly affected.

**14.268** The remaining six affected windows serve LKDs however, these are located beneath overhangs resulting in very low baseline levels from 0.1-0.4% VSC. Therefore, the major adverse percentage alterations would not result in a noticeable change to these rooms and are therefore not considered to be significantly affected. Each of the these LKDs are served by one or two mitigating windows which see good levels of VSC.

**14.269** For NSL, 53 of the 54 (98.1%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.270** The affected room would experience an alteration in NSL between 30-39.9% which is considered a Moderate Adverse effect. This room is a kitchen situated beneath a deep overhang exacerbating the reductions, however, would retain 47% NSL.

**14.271** Overall, the bedrooms and kitchens are not considered to be significantly affected. Despite the percentage reductions, owing to the low baseline levels resulting in disproportionate percentage alterations and the presence of mitigating windows, the LKDs are also not considered to be significantly affected. Therefore, the effect is considered **Negligible to Minor Adverse (Not Significant)**. The upper storeys have not been assessed given that it is evident that these windows are not impacted by the Proposed Development.

*Bromley Hall*

**14.272** This educational building is located to the north of the Proposed Development. All windows and rooms are assessed at this building

**14.273** A total of 100 windows serving 31 rooms were assessed for daylight within this building. Of these 31 rooms, 25 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.274** For VSC, 89 of the 100 (89%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.275** Of the 11 affected windows, five would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and one would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining five windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.276** A staff room would be impacted, however, would retain 17% VSC and is served by further windows which are not impacted and is therefore not considered to a see significant reduction in daylight. The remaining impacted windows serve four classrooms. Two of these would retain 21-22% VSC at the impacted windows and are

serve by additional mitigating windows which are not affected by the Proposed Development. The remaining impacted windows serve two classrooms served by skylights and therefore would remain well daylit overall.

**14.277** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.278** Owing to the retained levels of VSC and mitigating windows, the effect to this educational building is considered **Negligible to Minor Adverse (Not Significant)**.

*Carradale House*

**14.279** Ten storeys of this residential building, which is located west of the Site with the west elevation facing towards the Proposed Development, are considered for assessment. Windows and rooms on the western and southern façade are considered for assessment. The southern façade is defined by recessed balconies.

**14.280** A total of 77 windows serving 44 rooms were assessed for daylight within this building. Of these 44 rooms, 19 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.281** For VSC, 37 of the 77 (48.1%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.282** Of the 40 affected windows, 10 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and 22 would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining eight windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.283** A total of 32 bedroom windows see VSC impacts, however, may be considered less sensitive to daylight alterations. Each of these retain 17-26% VSC and are therefore not considered to be significantly affected.

**14.284** The remaining eight windows affected are east facing kitchen windows, each situated beneath recessed balconies on the southern façade. Despite seeing minor to major reduction, the absolute change in VSC would be only 1.9-3.5% which may not be noticeable. Furthermore, each of these kitchens has a mitigating south facing window retaining VSC levels in excess of BRE Guidelines recommendation and are therefore well daylit overall.

**14.285** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.286** Overall, the bedrooms seeing reductions are not considered to be significantly impacted owing to the retained levels of VSC and the eight kitchen windows impacted are located beneath recessed balconies which have well daylit mitigating windows. Therefore, the effect is considered **Minor Adverse (Not Significant)**.

*Culloden Primary School*

**14.287** This educational building is located south of the Site, with offices, staff and teacher rooms, the main hall, nursery and reception rooms facing towards the Proposed Development

**14.288** A total of 90 windows serving 21 rooms were assessed for daylight within this building.

**14.289** For VSC, 33 of the 90 (36.7%) windows assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.290** Of the 57 affected windows, five would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst 21 would experience an alteration between 30-39.9% which is considered a Moderate Adverse effect. The remaining 31 experience alterations greater than 40% which is considered a Major Adverse Effect.

**14.291** Whist significant reductions occur, the sensitivity of the room uses may be considered lower. Furthermore, a total of 16 affected windows would retain above 15% VSC.

**14.292** For NSL, 18 of the 21 (85.7%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.293** Of the three affected rooms, all would experience an alteration in NSL greater than 40% which is considered a Major Adverse effect.

**14.294** Each of the affected rooms have low levels of existing sky visibility and therefore the alteration may not be noticeable.

**14.295** Overall, taking into considered the room uses which are of lower sensitivity, the effect is considered **Minor to Moderate Adverse (Significant)**.

**14.296** It should be noted that the impacts of the Proposed Development are similar to those which would occur as a result of the Consented Masterplan, with isolated instances of additional impacts.

*Dewberry Street 16-46*

**14.297** This apartment block is located west of the Site, with three storeys considered relevant for assessment. It was not possible to obtain layouts for this building and therefore room uses have been assumed. The south east elevation overlooking the Site is defined by set back banks of windows in the centre façade. Windows facing south west, north east and north west have also been assessed, which serve rooms impacted by the Proposed Development.

**14.298** A total of 72 windows serving 44 rooms were assessed for daylight within this building. Of these 44 rooms, 21 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.299** For VSC, 42 of the 72 (58.3%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.300** Of the 30 affected windows, 24 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst six would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect.

**14.301** A total of 11 assumed bedroom windows see VSC impacts, however, may be considered less sensitive to daylight alterations. Each of these retain 18-24% VSC and are therefore not considered to be significantly affected.

**14.302** A further 15 impacted windows serve assumed living rooms. Seven of these retain 25-27% VSC and are therefore not considered to be significantly affected. The remaining 13 LKD windows are located on the setback elevations, thereby inherently obstructed by the design of the building itself. It should be noted that each of the LKDs are served by mitigating windows not affected by the Proposed Development and are therefore well daylit overall.

**14.303** The remaining four windows serve rooms of unknown use, retaining 18.7-22% VSC and are therefore not considered to be significantly affected.

**14.304** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.305** Overall, no significant daylight alterations are considered to occur to the bedrooms and rooms of unknown use and each of the impacted living room windows are already obstructed, with the rooms receiving good levels of daylight by virtue of mitigating windows. The effect is therefore considered **Minor Adverse (Not Significant)**.

*Dewberry Street 2-14*

**14.306** This apartment block is located west of the Site behind 16-46 Dewberry Street, with two storeys considered relevant for assessment. It was not possible to obtain layouts for this building and therefore room uses have been assumed. Windows and rooms on the south west east and north west elevations also been assessed.

**14.307** A total of 44 windows serving 25 rooms were assessed for daylight within this building. Of these 25 rooms, 24 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.308** For VSC, 42 of the 44 (95.5%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.309** Of the two affected windows, one would experience an alteration in VSC between 30-39.9% which is considered a Moderate Adverse effect whilst one would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.310** Both windows serve an LKD, with baseline VSC levels of 2.4-3.4%. Despite the magnitude of impact, the absolute alteration equates to 1-1.3% VSC, which is unlikely to be noticeable. This LKD is serve by a third window which is not affected and retains very good levels of VSC,

**14.311** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.312** Overall, owing to the small number of impacts, with the occupants of the affected room unlikely to noticeable the change owing to the good retained levels of daylight, the effect is considered **Negligible (Not Significant)**.

*Devons Wharf*

**14.313** This residential apartment building is located east of the Site, with four storeys considered for assessment. Windows on the north west and south west elevations overlooking the Proposed Development are considered for assessment. Additionally, windows on the north east and south eastern elevations are considered, as they serve rooms with the potential to be impacted by the Proposed Development. The façade is defined by balconies and inset portions of the elevations.

**14.314** A total of 169 windows serving 91 rooms were assessed for daylight within this building. Of these 91 rooms, 49 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.315** For VSC, 104 of the 169 (61.5%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.316** Of the 65 affected windows, 52 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and five would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining eight windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.317** A total of 20 impacted windows serve bedrooms which are considered less sensitive to daylight alterations. Half of these bedroom windows would retain VSC levels in the mid teen range and are therefore not considered to be significantly impacted. The remaining 10 bedroom windows are located beneath balconies and are therefore inherently obstructed, retaining levels of VSC below 10%. Three of these have very low baseline levels of VSC (below 0.5% VSC) and therefore the absolute alteration, equating to 0.1-0.4% VSC, is unlikely to be noticeable by the occupants.

**14.318** Of the 45 affected LKD windows, primarily minor adverse impacts would occur, with isolated instances of moderate to major impacts occurring, which are located beneath balconies and therefore inherently obstructed. A total of 26 affected LKDs windows would retain 15-20% VSC. The final 18 windows retaining lower levels of VSC retained (5-15%) occur on the lowest storeys. These windows are inherently obstructed owing to their being set back from the building line, beneath overhangs (for those at ground level) or beneath balconies. However, it should be noted that these windows serve LKDs which receive daylight through a mitigating window (which sees at least 15% VSC) and therefore may be considered to remain adequately daylit overall.

**14.319** For NSL, 86 of the 91 (94.5%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.320** Of the five affected rooms, one would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and two would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining two rooms would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.321** One bedroom is impacted, which may be considered less sensitive to daylight alterations. Five LKDs would see alterations in daylight distribution, retaining sky visibility in 55-70% of the room.

**14.322** Overall, the majority of bedrooms would retain mid-teen levels of VSC, or the reduction would not be noticeable owing to low baseline levels of daylight and minimal absolute reductions. A portion of bedrooms would experience noticeable changes, however, may be considered less sensitive to changes in daylight. A number of LKDs would be affected, with the majority retaining good levels of daylight. Those LKDs with windows falling short, are obstructed in the baseline condition, however, receive daylight which may be considered adequate through mitigating windows. Therefore, owing to the significant impacts, the overall effect is considered **Minor to Moderate (Significant)**.

**14.323** When considering the impacts of the Proposed Development and retained levels of daylight within a no balconies scenario, the number of reductions beyond BRE Guidelines significantly lowers, with only seven windows seeing alteration in VSC. Therefore, the reductions can be attributed to the presence of balconies in the majority of instances.

*Joshua Street 1-15*

**14.324** These eight two-storey residential terraced houses are located west of the Site. Windows and rooms on the front and rear (north and south facing) and east facing flank was are considered for assessment. Each house is fronted by a vestibule, with the first storey windows sitting beneath overhanging eaves. It was not possible to obtain layouts for this building, which have therefore been assumed.

**14.325** A total of 77 windows serving 31 rooms were assessed for daylight within this building. Of these 31 rooms, 16 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.326** For VSC, 62 of the 77 (80.5%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.327** Of the 15 affected windows, three would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and six would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining six windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.328** A total of seven assumed bedrooms on the first storey would be impacted, retaining levels of VSC from 5-13%, however, bedrooms may be considered less sensitive to daylight alterations.

**14.329** The remaining six windows serve assumed living rooms or LKDs, each located at ground level. These are all the narrow east facing windows of a bay window, where the main south facing window is unaffected by the Proposed Development and continue to receive very good levels of daylight overall.

**14.330** Two rooms of unknown use are impacted, however, retain 19% VSC.

**14.331** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.332** Overall, approximately half of the impacts would occur to assumed bedrooms which are less sensitive to daylight alteration. The remaining LKDs or living rooms affected are served by mitigating windows therefore continue to receive good levels of daylight overall. As such, the effect is considered **Minor Adverse (Not Significant)**.

*Joshua Street 17-33*

**14.333** These nine two-storey residential terraced houses are located west of the Site. Windows and rooms on the front and rear (north and south facing) and east facing flank was are considered for assessment. Each house is fronted by a vestibule, with the first storey windows sitting beneath overhanging eaves. It was not possible to obtain layouts for this building, which have therefore been assumed.

**14.334** A total of 55 windows serving 36 rooms were assessed for daylight within this building. Of these 36 rooms, 30 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.335** For VSC, 48 of the 55 (87.3%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.336** Of the seven affected windows, two would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and four would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining window would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.337** Two assumed bedroom windows on the first storey are impacted, which would retain 19% VSC. Bedrooms may be considered less sensitive to daylight alterations. Two assumed living rooms are affected, served by a window retaining 16% and two windows retaining 11 and 18% VSC respectively. Each LKD is served by additional windows which receive very good levels of daylight.

**14.338** Two rooms of unknown use are impacted, however, retain 21% VSC.

**14.339** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.340** Overall, the two assumed bedrooms which are less sensitive to daylight alteration are not considered to be significantly impacted owing to their retained levels of daylight. The affected living rooms affected are served by mitigating windows therefore continue to receive good levels of daylight overall. As such, the effect is considered **Negligible to Minor Adverse (Not Significant)**.

*Joshua Street 35-41*

**14.341** These four two-storey (plus roof extension) residential terraced houses are located west of the Site. Windows and rooms on the front and rear (north and south facing) and east facing flank was are considered for assessment. Each house is fronted by a vestibule, with the first storey windows sitting beneath overhanging eaves. It was not possible to obtain layouts for this building, which have therefore been assumed.

**14.342** A total of 30 windows serving 17 rooms were assessed for daylight within this building. Of these 17 rooms, nine would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.343** For VSC, 21 of the 30 (70%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.344** Of the nine affected windows, five would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and three would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining window would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.345** Four assumed bedroom windows on the first storey are impacted, which would retain 7-14% VSC. Bedrooms may be considered less sensitive to daylight alterations. The remaining five affected windows serve four assumed living rooms. Three of these retain 22% VSC and are therefore not considered to be significantly impacted. The remaining two retain 9-18% VSC, serving a living room served by two additional windows and remains well daylit overall.

**14.346** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.347** Overall, the four assumed bedrooms would experience impacts, however, may be considered less sensitive to daylight alteration. The affected living rooms affected are served by mitigating windows therefore continue to receive good levels of daylight overall. As such, the effect is considered **Minor Adverse (Not Significant).**

*Joshua Street 4*

**14.348** This two-storey residential terraced house is located west of the Site. Windows and rooms on the front, east facing flank was has been considered for assessment. This house is fronted by a vestibule, with the first storey windows sitting beneath overhanging eaves. It was not possible to obtain layouts for this building, which have therefore been assumed.

**14.349** A total of four windows serving two rooms were assessed for daylight within this building. Of these two rooms, one would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.350** For VSC, three of the four (75%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.351** The affected window would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect. This window serves a bedroom retaining 15% VSC and is therefore not considered to be significantly impacted.

**14.352** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.353** Overall, the only impact occurs to an assumed bedroom window, which may be considered less sensitive to daylight alteration, however, retains 15% VSC. As such, the effect is considered **Negligible (Not Significant).**

*Joshua Street 6-14*

**14.354** These four two-storey residential terraced houses are located west of the Site. Windows and rooms on the front and rear (north and south facing) and east facing flank was are considered for assessment. Each house is fronted by a vestibule, with the first storey windows sitting beneath overhanging eaves. It was not possible to obtain layouts for this building, which have therefore been assumed.

**14.355** A total of 27 windows serving 17 rooms were assessed for daylight within this building. Of these 17 rooms, 14 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.356** For VSC, 24 of the 27 (88.9%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.357** Of the three affected windows, one would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst two would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect.

**14.358** Two of the windows affected serve bedrooms, retaining 12.4% VSC, which is a similar level of VSC occurring at the neighbouring bedrooms windows, which are not affected by the Proposed Development. The remaining effect occurs to a narrow east facing pane of an assumed living room bay window, where the main south facing window is unaffected and the rooms retains good levels of daylight overall.

**14.359** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.360** Overall, two assumed bedroom window would see reductions, however, may be considered less sensitive to daylight alterations. One assumed living room would see a reduction at the east facing pane, however, is not considered to be significantly affected overall. As such, the effect is considered **Negligible to Minor Adverse (Not Significant)**.

*Lansbury Gardens 2-12*

**14.361** This row of six two-storey terraced houses is located east of the Site. The front, west (Site) facing and rear east facing windows have been considered, as there are rooms with windows spanning the breadth of these properties.

**14.362** A total of 43 windows serving 18 rooms were assessed for daylight within this building.

**14.363** For VSC, 25 of the 43 (58.1%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.364** Of the 18 affected windows, one would experience an alteration in VSC between 30-39.9% which is considered a Moderate Adverse effect whilst 17 would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.365** A total of 12 affected windows serve bedrooms, which may be considered less sensitive to daylight alterations, however, retain 13-18% VSC. The remaining six windows serve living rooms, each retaining 11-14% VSC. However, each of these LKDs is served by multiple mitigating windows and thereby retains good daylight levels overall.

**14.366** For NSL, seven of the 18 (38.9%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.367** Of the 11 affected rooms, one would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect whilst 10 would experience an alteration greater than 40% which is considered a Major Adverse Effect. These are all bedrooms situated underneath overhanging eaves, thereby inherently limited visibility of the sky.

**14.368** Overall, the majority of impacts occur to bedrooms, which may be considered less sensitive to daylight alterations. Whilst impacts to LKD windows would occur, given that each of the LKDs is served by multiple mitigating windows, the reductions may not be noticeable overall. As such, the effect is considered **Moderate to Major Adverse (Significant)**.

**14.369** The impacts of the Proposed Development are no worse than those which would occur as a result of the Consented Masterplan.

*Leven Road Phase Three*

**14.370** Five storeys of this residential apartment block located east of the Site are considered for assessment. Windows and rooms on the west and south west elevations are considered for assessment. The building is an irregular form with the west facing elevations defined by inset façades and overhangs on the first and second storey. The south west facing façade is defined by balconies. It should be noted that this building overlooks low rise existing massing in the baseline condition, receiving uncharacteristically high levels of daylight. Significant reductions can therefore be expected to occur as a result of massing coming forward.

**14.371** A total of 73 windows serving 62 rooms were assessed for daylight within this building. Of these 62 rooms, 18 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.372** For VSC, 26 of the 73 (35.6%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.373** Of the 47 affected windows, four would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and two would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 41 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.374** A total of 30 bedroom window would be affected, which may be considered less sensitive to daylight alterations. These windows receive uncharacteristically high levels of VSC in the baseline condition, particularly those on the upper storeys, and therefore changes of moderate to major significance can be anticipated. Approximately half of the bedroom windows would continue to receive VSC levels in the mid teen range. Those retaining lower levels of VSC are located on the lowest storeys and are already obstructed by the form of this building itself.

**14.375** One kitchen window is affected, which is located at ground level on the inset façade. This window sees a minor adverse impact, retaining 11.5% VSC.

**14.376** The remaining 16 windows serve living rooms and one LKD. Five of these windows on the upper storeys would retain levels of VSC in the mid teen range, with one window achieving 21% VSC. The remaining 11 living rooms / LKD windows. These are all situated beneath overhangs or balconies, which inherently obstruct daylight availability.

**14.377** For NSL, 28 of the 62 (45.2%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.378** Of the 34 affected rooms, two would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and three would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 29 rooms would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.379** A total of 25 bedrooms and nine living rooms / LKD would be affected. The living rooms / LKD affected are all situated beneath overhangs or balconies on the ground to second storey, which inherently limit visibility of the sky.

**14.380** Overall, the majority of daylight impacts occur to bedrooms, which may be considered less important in relation to daylight alterations. Whilst living rooms and an LKD would be affected, those on the upper storeys retain levels of VSC in the mid-teen range and experience on NSL impacts. Those on the lower storeys which are impacted are located beneath balconies or overhangs which inherently limit daylight availability. Therefore, the effect is considered **Major Adverse (Significant)**.

**14.381** When considering the impacts of the Proposed Development and retained levels of daylight within a no balconies scenario, whilst reductions would still occur, the lower retained levels can primarily be attributed to the presence of balconies. This is discussed in further detail within the Standalone Daylight and Sunlight Impacts Upon Neighbours Report, where the Illustrative Masterplan is assessed using the no balconies approach. The Report concludes that in the no balconies configuration, the majority of windows serving living areas or bedrooms would retain VSC levels in excess of 13% from the ground floor up.

*Loren Apartments*

**14.382** Three storeys of this residential apartment located south east of the Site are considered for assessment. Windows and rooms on the west and southern façade are assessed for impacts.

**14.383** A total of 26 windows serving 18 rooms were assessed for daylight within this building.

**14.384** For VSC, four of the 26 (15.4%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.385** Of the 22 affected windows, three would experience an alteration in VSC between 30-39.9% which is considered a Moderate Adverse effect whilst 19 would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.386** Half of the windows affected serve bedrooms, which may be considered less sensitive to daylight alterations. These retain VSC values ranging from 10.3-19.7% VSC.

**14.387** The remaining 11 windows serve seven LKDs, which retain levels of VSC ranging from 7.1-17.3%. With the exception of two ground floor and one first storey single aspect LKDs which retain 7, 8 and 13% VSC the remaining four LKDs each have additional windows which are either unaffected by the Proposed Development or retain at least 15% VSC and therefore may be considered to remain adequately daylit.

**14.388** For NSL, four of the 18 (22.2%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.389** Of the 14 affected rooms, two would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and one would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 11 rooms would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.390** Nine bedrooms would be affected, however, may be considered less important in relation to daylight distribution. Of the remaining five LKDs affected, three are the single aspect LKDs on the ground and first storey. The final two, located on the second and third storey would retain 54-56% NSL.

**14.391** Overall, the majority of impacts occur to bedrooms, which may be considered less sensitive to daylight alterations. Three LKDs on the ground and first storey would experience reductions in daylight, however, this is partially a result of their design as single aspect, deep recessed rooms. The LKDs on the upper storeys retain levels VSC and NSL which may be considered adequate. Therefore, the effect is considered **Moderate** to **Major Adverse (Significant)**.

**14.392** The impacts of the Proposed Development are no worse than those which would occur as a result of the Consented Masterplan.

*Mills Grove 1-9*

**14.393** These five two-storey terraced houses are located west of the Site. The front of these buildings is defined by vestibules, partially obstructed the ground floor windows in the baseline condition. The rear of these building has also been considered, as there are rooms which span the breadth of these properties and are therefore assessed. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.394** A total of 25 windows serving 17 rooms were assessed for daylight within this building. Of these 17 rooms, 14 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.395** For VSC, 24 of the 25 (96%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.396** This LKD window has a very low baseline level of VSC (4.8%) and would therefore experience a marginal absolute loss of only 1.7% VSC, which is unlikely to be noticeable. This LKD is served by a second window to the rear of the building which remains very well daylit and is unaffected by the Proposed Development.

**14.397** The affected window would experience an alteration in VSC between 30-39.9% which is considered a Moderate Adverse effect.

**14.398** For NSL, 15 of the 17 (88.2%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.399** Of the two affected rooms, one would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect whilst one would experience an alteration greater than 40% which is considered a Major Adverse Effect.

**14.400** Both rooms are of unknown use. Of the rooms has a very low baseline level of NSL (11.4%) and therefore the absolute loss may not be noticeable, despite the significant reduction. The second room experiencing an alteration only marginally beyond BRE Guidelines criteria retaining 59% and is therefore not considered to be significantly affected.

**14.401** Overall, owing to the impacts occurring to windows/rooms with very low baseline levels of daylight, where the alteration is unlikely to be noticeable, or impacts only marginally beyond BRE Guidelines occurring, the effect is considered **Negligible** to **Minor Adverse (Not Significant)**.

*Mills Grove 12-20*

**14.402** These five two-storey terraced houses are located west of the Site. The front of these buildings is defined by vestibules, partially obstructed the ground floor windows in the baseline condition. The rear of these building has also been considered, as there are rooms which span the breadth of these properties and are therefore assessed. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.403** A total of 25 windows serving 15 rooms were assessed for daylight within this building. Of these 15 rooms, 10 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.404** For VSC, 20 of the 25 (80%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.405** Of the five affected windows, four would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst one would experience an alteration greater than 40% which is considered a Major Adverse Effect.

**14.406** Four of the windows serve assumed bedroom which retain 17-19% VSC and may be considered less sensitive to daylight alterations and are therefore not considered to be significantly affected.

**14.407** One LKD window is affected, which has a very low baseline level of VSC (3.6%) and would therefore experience a marginal absolute loss of only 1.7% VSC, which is unlikely to be noticeable. This LKD is served by a second

window to the rear of the building which remains very well daylit and is unaffected by the Proposed Development.

**14.408** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.409** Overall, owing to the majority of impacts occurring to bedrooms, which are not considered to be significantly affected, with one LKD impacted where the alteration is unlikely to be noticeable, the effect is considered **Negligible** to **Minor Adverse (Not Significant)**.

*Mills Grove 17-25*

**14.410** These five two-storey terraced houses are located west of the Site. The rear of these buildings, facing towards the Site are considered for assessment, as well as the front, as there are rooms which span the breadth of these properties and are therefore relevant. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.411** A total of 27 windows serving 15 rooms were assessed for daylight within this building. Of these 15 rooms, six would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.412** For VSC, 18 of the 27 (66.7%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.413** Of the nine affected windows, all would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect.

**14.414** Five of the windows serve assumed bedroom which retain 18-20% VSC and may be considered less sensitive to daylight alterations and are therefore not considered to be significantly affected. Both LKDs are served by at least one additional window not affected by the Proposed Development and would remain well daylit overall.

**14.415** Two windows serving rooms of unknown use would see reductions, however each retain 15-17% VSC.

**14.416** Two living room windows would be impacted, however, retain 22-23% VSC, experiencing alterations only marginally beyond BRE Guidelines criteria and are therefore not considered to be significantly affected.

**14.417** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.418** Overall, the majority of impacts occur to bedrooms, which are not considered to be significantly affected. Two LKD windows experience a reduction in VSC however, retain good levels of daylight. Two rooms of unknown use would also see reductions, however, retain levels of daylight which may be considered adequate. The effect is therefore considered **Negligible** to **Minor Adverse (Not Significant)**.

*Mills Grove 2-10*

**14.419** These five two-storey terraced houses are located west of the Site. The rear of these buildings, facing towards the Site are considered for assessment, as well as the front, as there are rooms which span the breadth of these properties and are therefore relevant. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.420** A total of 25 windows serving 15 rooms were assessed for daylight within this building. Of these 15 rooms, 14 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.421** For VSC, 24 of the 25 (96%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.422** The affected window would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect.

**14.423** This LKD window has a very low baseline level of VSC (4.2%) and would therefore experience a marginal absolute loss of only 1.2% VSC, which is unlikely to be noticeable. This LKD is served by a second window to the rear of the building which remains very well daylit and is unaffected by the Proposed Development.

**14.424** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.425** Overall, owing to the impacts occurring to one LKD windows with very low baseline levels of daylight, where the alteration is unlikely to be noticeable, and the room remains well daylit by virtue of a mitigating window, the effect is considered **Negligible (Not Significant)**.

*Mills Grove 9-15*

**14.426** These five two-storey terraced houses are located west of the Site. The rear of these buildings, facing towards the Site are considered for assessment, as well as the front, as there are rooms which span the breadth of these properties and are therefore relevant. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.427** A total of 22 windows serving 12 rooms were assessed for daylight within this building. Of these 12 rooms, five would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.428** For VSC, 15 of the 22 (68.2%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.429** Of the seven affected windows, six would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst one would experience an alteration greater than 40% which is considered a Major Adverse Effect.

**14.430** Four of the windows serve assumed bedroom which retain 21% VSC and may be considered less sensitive to daylight alterations and are therefore not considered to be significantly affected.

**14.431** One LKD window has a very low baseline level of VSC (3.3%) and would therefore experience a marginal absolute loss of only 0.9% VSC, which is unlikely to be noticeable. This LKD is served by a second window to the rear of the building which remains very well daylit and is unaffected by the Proposed Development.

**14.432** The final two window serve rooms of unknown. The first retains 21% VSC and the second has a very low baseline level of VSC (3.3.%) and therefore is unlikely to notice the absolute change of 1.5% VSC.

**14.433** For NSL, 11 of the 12 (91.7%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.434** The affected room would experience an alteration in NSL between 30-39.9% which is considered a Moderate Adverse effect. This room is single aspect and of unknown use.

**14.435** Overall, the majority of impacts occur to bedrooms, which are not considered to be significantly affected. One LKD windows experience a reduction in VSC however, retains good levels of daylight by virtue of a second window to the front of the property. Two rooms of unknown use would also see reductions however, the alterations are not considered to be noticeable. The effect is therefore considered **Negligible** to **Minor Adverse (Not Significant)**.

*St Leonards Road 118-132*

**14.436** This two storey apartment block (plus roof extension) is located to the west of the Site. The building has an irregular form, with overhanging eaves across the second storey. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.437** A total of 40 windows serving 23 rooms were assessed for daylight within this building. Of these 23 rooms, 12 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.438** For VSC, 29 of the 40 (72.5%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.439** Of the 11 affected windows, 10 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst one would experience an alteration greater than 40% which is considered a Major Adverse Effect.

**14.440** Nine of the affected windows are located on the second storey and are assumed bedrooms. These windows are obstructed by overhanging eaves, which exacerbate the reductions. However, bedrooms may be considered less sensitive to daylight alterations and retain 19-20% VSC (only window retains 13% VSC), so are therefore not considered to be significantly affected.

**14.441** One assumed living room window is impacted however, this room is served by multiple other windows which are not affected and see good levels of daylight, remaining well daylit overall.

**14.442** One window serving a room of unknown use is impacted however, retains 19% VSC and is therefore not considered to be significantly affected.

**14.443** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.444** Overall, the majority of impacts occur to bedrooms, which are not considered to be significantly affected. One LKD would experience a reduction in VSC however, retains good levels of daylight by virtue of mitigating windows A rooms of unknown use would also see reductions however, the alterations are not considered to be noticeable. The effect is therefore considered **Negligible** to **Minor Adverse (Not Significant)**.

*St Leonards Road 134-146*

**14.445** This two storey apartment block (plus roof extension) is located to the west of the Site. The rear of this building is assessed and has overhanging eaves across the second storey. Window to the front of this building have also been considered as there are impacted rooms which span the breadth of the building. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.446** A total of 43 windows serving 28 rooms were assessed for daylight within this building. Of these 28 rooms, 16 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.447** For VSC, 31 of the 43 (72.1%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.448** Of the 12 affected windows, all would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect.

**14.449** All 12 affected windows are located on the second storey and are assumed bedrooms. These windows are obstructed by overhanging eaves, which exacerbate the reductions. However, bedrooms may be considered less sensitive to daylight alterations and retain 18-19% VSC (only window retains 10% VSC), so are therefore not considered to be significantly affected.

**14.450** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.451** Overall, all impacts occur to bedrooms, which are not considered to be significantly affected and so effect is therefore considered **Negligible** to **Minor Adverse (Not Significant)**.

*St Leonards Road 148-154*

**14.452** This two storey apartment block (plus roof extension) is located to the west of the Site. The rear of this building is assessed and has overhanging eaves across the second storey. Window to the front of this building have also been considered as there are impacted rooms which span the breadth of the building. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.453** A total of 20 windows serving 10 rooms were assessed for daylight within this building. Of these 10 rooms, eight would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.454** For VSC, 18 of the 20 (90%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.455** Of the two affected windows, both would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect.

**14.456** Both affected windows are located on the second storey and are assumed bedrooms. These windows are obstructed by overhanging eaves, which exacerbate the reductions. However, bedrooms may be considered less sensitive to daylight alterations and retain 16% VSC, so are therefore not considered to be significantly affected.

**14.457** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.458** Overall, only two bedrooms would be impacted, however, may be considered less sensitive to daylight alterations and would retain mid-teen levels of VSC.

**14.459** Overall, only two bedrooms windows are impacted, which are not considered to be significantly affected owing to their retained levels and so effect is therefore considered **Negligible** to **Minor Adverse (Not Significant)**.

*Sherman House*

**14.460** Four storeys of this residential apartment block located south east of the Site have been considered. Windows and rooms on all four elevations have been considered for assessment.

**14.461** A total of 69 windows serving 43 rooms were assessed for daylight within this building. Of these 43 rooms, 11 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.462** For VSC, 29 of the 69 (42%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.463** Of the 40 affected windows, one would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and two would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 37 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.464** A total of 16 bedroom windows are affected, which would retain VSC levels from 8-15%. Three windows serving two kitchens at ground level would be impacted, retain 12.2% VSC and 5.4-8.4% VSC respectively. A further three kitchen windows are affected. Two of these windows (retaining 5.4 and 8.4% VSC) serve one kitchen and the third serves a second kitchen retaining 12.2% VSC.

**14.465** The final 21 windows serve living rooms and LKDs, of which twelve would retain 12-20% VSC. Of the remaining six windows, which retain below 12% VSC, all but one serve rooms with multiple aspects and therefore may be considered to remain adequately daylit. The remaining window is a single aspect living room located on the ground floor.

**14.466** For NSL, 23 of the 43 (53.5%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.467** Of the 20 affected rooms, three would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and one would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 16 rooms would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.468** The NSL impacts occur primarily to bedrooms, with the exception of the kitchen and living room discussed above, which inherently would be expected to have less visibility of the sky owing to their ground floor location.

**14.469** Overall, the majority of impacts occur to bedrooms, which may be considered less sensitive to daylight alterations. Whilst LKD windows would be impacted, these rooms are served by mitigating windows. One ground floor LKD and two kitchens would see a reduction in daylight. The effect is therefore considered **Moderate** to **Major (Significant)**.

**14.470** The impacts of the Proposed Development are no worse than those which would occur as a result of the Consented Masterplan.

*St. Nicholas Church*

**14.471** This religious building is located east of the Site. All four elevations have been considered for assessment.

**14.472** A total of 59 windows serving 31 rooms were assessed for daylight within this building. Of these 31 rooms, 23 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.473** For VSC, 36 of the 59 (61%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.474** Of the 23 affected windows, 10 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect whilst 13 would experience an alteration greater than 40% which is considered a Major Adverse Effect.

**14.475** Twelve of the impacted windows serve an ancillary space, whereby the windows either have very low baseline levels of VSC and therefore would not experience a noticeable reduction (0.81% VSC) or retain 16-18% VSC and are therefore considered to remain adequately daylit.

**14.476** A further six windows serve two worship areas, which would retain 9.5-18.6% VSC and both rooms are served by additional rooms which are not affected by the Proposed Development and remain well daylit overall.

**14.477** One window serving a room of unknown use would be affected, however, retains 20% VSC.

**14.478** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.479** Overall, owing to mitigating windows, the worship areas of this religious building are not considered to experience a noticeable change in daylight amenity and would remain well daylit. The ancillary space would experience a change in daylight quality, however, may not be considered to be as sensitive to alterations in daylight. Therefore, the effect is considered **Minor** to **Moderate Adverse (Significant)**.

**14.480** The impacts of the Proposed Development are no worse than those which would occur as a result of the Consented Masterplan.

*Wooster Gardens 1-7*

**14.481** These four two-storey terraced houses are located east of the Site. The rear faces the Proposed Development, however, the front facing windows have also been considered as there are rooms which span the breadth of the building.

**14.482** A total of 33 windows serving 16 rooms were assessed for daylight within this building. Of these 16 rooms, 11 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.483** For VSC, 31 of the 33 (93.9%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.484** Of the two affected windows, both would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect. Both windows serve bedrooms retaining 23% VSC and are therefore considered to be significantly affected.

**14.485** For NSL, 13 of the 16 (81.3%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.486** Of the three affected rooms, one would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect whilst two would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect.

**14.487** All three rooms are kitchens on the ground floor, which retain 76, 43 and 39% NSL respectively. These kitchens would retain VSC levels of 19-20% and therefore may be considered to remain adequately daylit.

**14.488** Overall, two bedrooms experiencing changes are not considered to be significantly affected and three ground floor kitchens would see reductions in NSL, however, achieve good VSC levels and as such may be considered to remain adequacy daylit. The effect is therefore considered **Negligible to Minor Adverse (Not Significant)**.

*Wooster Gardens 9-15*

**14.489** These four two-storey terraced houses are located east of the Site. The rear faces the Proposed Development, however, the front facing windows have also been considered as there are rooms which span the breadth of the building.

**14.490** A total of 20 windows serving 16 rooms were assessed for daylight within this building. Of these 16 rooms, 14 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.491** For VSC, 18 of the 20 (90%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.492** Of the two affected windows, both would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect. Both windows serve bedrooms retaining 25% VSC and are therefore considered to be significantly affected.

**14.493** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect.

**14.494** Overall, two bedrooms experiencing changes in VSC are not considered to be significantly affected and therefore considered **Negligible to Minor Adverse (Not Significant)**.

*Sunlight*

**14.495** The full sunlight assessment for the Completed Development can be found within ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 4 is summarised in below in Table 14.10.

**14.496** Of the 42 existing buildings assessed, the 24 buildings highlighted in blue in **Table 14.10** experience little to no impact (less than 20% alteration) or retain values in line with BRE Guidelines criteria and are therefore considered to experience a **Negligible effect (Not Significant)**. These are:

- 128-132 Leven Road;
- 134-144 Leven Road;
- 49-67 Abbott Road;
- Aberfeldy Estate Phase One Block A;
- Aberfeldy Estate Phase Three Block G;
- Aberfeldy Estate Phase Three Block G;
- Aberfeldy Estate Phase Three Block J;
- Aberfeldy Estate Phase Two Block D;
- Balfron Tower;
- Carradale House;
- Culloden Primary School;
- Dewberry Street 16-46;
- Joshua Street 1-15;
- Joshua Street 17-33;
- Joshua Street 4;
- Joshua Street 6-14;
- Mills Grove 1-9;
- Mills Grove 12-20;
- Mills Grove 17-25;
- Mills Grove 9-15;
- St Leonards Road 118-132;
- St Leonards Road 134-146;
- St Leonards Road 148-154Wooster Gardens 1-7; and
- Wooster Gardens 9-15.

**14.497** The results of the remaining 18 buildings are discussed in more detail below.

**Table 14.10 Sunlight Assessment of the Proposed Development at Surrounding Sensitive Receptors (APSH)**

| Address | Total No. Windows | No. Windows that meet BRE criteria | Annual PSH | | | Winter PSH | | |
|---|---|---|---|---|---|---|---|---|
| | | | Below BRE Guidelines | | | Below BRE Guidelines | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction |
| 110-126 Leven Road | 59 | 52 | 0 | 0 | 5 | 0 | 0 | 4 |
| 128-132 Leven Road | 25 | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 134-144 Leven Road | 32 | 32 | 0 | 0 | 0 | 0 | 0 | 0 |
| 177-195 Abbott Road | 42 | 41 | 0 | 0 | 1 | 0 | 0 | 1 |
| 199-225 Abbott Road | 94 | 74 | 0 | 0 | 16 | 0 | 0 | 20 |
| 49-67 Abbott Road | 37 | 37 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase One Block A | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |

| Address | Total No. Windows | No. Windows that meet BRE criteria | Annual PSH | | | Winter PSH | | |
|---|---|---|---|---|---|---|---|---|
| | | | Below BRE Guidelines | | | Below BRE Guidelines | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction |
| Aberfeldy Estate Phase One Block C | 43 | 35 | 1 | 1 | 6 | 0 | 0 | 2 |
| Aberfeldy Estate Phase Three Block G | 22 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase Three Block J | 27 | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase Two Block D | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ailsa Wharf Block A | 42 | 40 | 1 | 1 | 0 | 0 | 0 | 1 |
| Ailsa Wharf Block D | 147 | 127 | 2 | 6 | 12 | 0 | 0 | 4 |
| Ailsa Wharf Blocks K L | 25 | 22 | 1 | 2 | 0 | 0 | 0 | 0 |
| Atelier Court | 110 | 7 | 0 | 0 | 101 | 0 | 0 | 102 |
| Balfron Tower | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bromley Hall | 34 | 25 | 0 | 0 | 3 | 0 | 0 | 9 |
| Carradale House | 22 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| Culloden Primary School | 43 | 43 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dewberry Street 16-46 | 48 | 48 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dewberry Street 2-14 | 37 | 36 | 0 | 0 | 0 | 0 | 1 | 0 |
| Devons Wharf | 69 | 55 | 6 | 6 | 2 | 0 | 0 | 4 |
| Joshua Street 1-15 | 26 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |
| Joshua Street 17-33 | 33 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |
| Joshua Street 35-41 | 19 | 18 | 0 | 1 | 0 | 0 | 0 | 1 |
| Joshua Street 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Joshua Street 6-14 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lansbury Gardens 2-12 | 22 | 5 | 0 | 1 | 16 | 0 | 0 | 7 |
| Leven Road Phase Three | 44 | 10 | 0 | 1 | 33 | 0 | 0 | 27 |
| Loren Apartments | 26 | 5 | 0 | 3 | 16 | 1 | 3 | 13 |
| Mills Grove 1-9 | 11 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mills Grove 12-20 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mills Grove 17-25 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mills Grove 2-10 | 9 | 8 | 0 | 0 | 1 | 0 | 0 | 1 |
| Mills Grove 9-15 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| St Leonards Road 118-132 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| St Leonards Road 134-146 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| St Leonards Road 148-154 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sherman House | 35 | 3 | 0 | 0 | 31 | 0 | 0 | 30 |
| St.Nicholas Church | 37 | 31 | 0 | 0 | 6 | 0 | 0 | 0 |
| Wooster Gardens 1-7 | 29 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wooster Gardens 9-15 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Totals** | **1352** | **1008** | **11** | **22** | **249** | **1** | **4** | **226** |

*110-126 Leven Road*

**14.498** These terraced houses are located east of the Site, with two storeys at each property considered for assessment. The rear of these nine properties face towards the Proposed Development.

**14.499** A total of 59 windows were assessed for sunlight within this building of which 52 (88.1%) would meet the BRE's criteria for both Annual and Winter PSH.

**14.500** For Annual PSH, 54 of the 199 windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.501** All five windows affected annually would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.502** For Winter PSH, 55 of the 59 windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect. The remaining four see losses greater than 40% which is considered a Major Adverse effect.

**14.503** All windows impacted would retain APSH levels above 18% APSH and therefore may be considered to remain adequately sunlit.

**14.504** Overall, owing to the retained levels of APSH, the effect is considered **Minor Adverse (Not Significant)**.

*177-195 Abbott Road*

**14.505** These terraced houses are located east of the Site, with two to three storeys at each property considered for assessment. The front of these ten properties face towards the Proposed Development.

**14.506** A total of 42 windows were assessed for sunlight within this building of which 41 (97.6%) would meet the BRE's criteria for both Annual and Winter PSH and is therefore considered to experience a Negligible effect.

**14.507** The window affected annually would experience an alteration in excess of 40% in both APSH and WPSH which is considered a Major Adverse effect.

**14.508** This window is located on the ground floor of the north west facing flank wall and therefore only just within 90 degrees of due south. This window would retain 13% APSH.

**14.509** Overall, owing the high level of BRE Guidelines compliance and only one living room window affected which would have a low expectation for sunlight, the effect is considered **Negligible** to **Minor Adverse (Not Significant)**.

*199-225 Abbott Road*

**14.510** These terraced houses are located east of the Site, with two storeys at each property considered for assessment. The front of these 16 properties face towards the Proposed Development.

**14.511** A total of 94 windows were assessed for sunlight within this building of which 74 (78.8%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.512** A total of 16 window would be affected annually, of which each would experience an alteration in excess of 40% in APSH, which is considered a Major Adverse effect. A total of 20 windows would be affected in winter, of which each would experience an alteration in excess of 40% in WPSH which is considered a Major Adverse effect.

**14.513** Each of the affected windows serve bedrooms, which may be considered less important in relation to sunlight alterations. These windows would retain 11-25% APSH.

**14.514** Overall, although major adverse impacts would occur given that only bedrooms are affected, which mostly retain good levels of sunlight, the effect is considered **Minor to Moderate Adverse (Significant)**.

**14.515** The impacts to this building are discussed in further detail within the Standalone Daylight and Sunlight Impacts Upon Neighbours Report, providing further contextual considerations.

*Aberfeldy Estate Phase One Block C*

**14.516** These terraced houses are located east of the Site, with two storeys at each property considered for assessment. The front of these 16 properties face towards the Proposed Development.

**14.517** A total of 43 windows were assessed for sunlight within this building of which 35 (81.4%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.518** A total of eight window would be affected annually, of which one would experience an alteration between 20-29.9%, which is considered a Minor Adverse effect and one would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect. The remaining six would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.519** A total of two windows would be affected in winter, of which each would experience an alteration in excess of 40% in WPSH which is considered a Major Adverse effect. Both windows serve bedrooms.

**14.520** Overall, half of the rooms affected annually are bedrooms are affected, and significant reductions would occur to both kitchens and living rooms, and therefore, the effect is considered **Moderate to Major Adverse (Significant)**.

*Ailsa Wharf Block A*

**14.521** This apartment block is located north east of the Site and is currently under construction. Windows and rooms on the south and west facing elevations of the lowest three residential floors looking towards looking towards the Proposed Development are considered. The façades are defined by banks of recessed balconies.

**14.522** A total of 42 windows were assessed for sunlight within this building of which 40 (95.2%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.523** A total of two windows would be affected annually, of which one would experience an alteration between 20-29.9%, which is considered a Minor Adverse effect and one would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect.

**14.524** One of these windows would be affected in winter, which would experience an alteration in excess of 40% in WPSH which is considered a Major Adverse effect.

**14.525** One of the affected rooms is a bedroom, which can be considered less important in relation to sunlight considerations and is served by a second window not affected by the Proposed Developemnt. An LKD window is also affected, however, is served by additional windows which remain very well sunlit.

**14.526** Overall, the bedroom and LKD seeing changes in sunlight are considered to be significantly impacted and therefore the effect is considered **Negligible to Minor Adverse (Not Significant)**.

*Ailsa Wharf Block D*

**14.527** This apartment block is located north of the Site. Windows and rooms on the south, east and west elevations of the lowest six residential floors overlooking the Proposed Development are considered. The north facing windows are also assessed, as there are dual aspect rooms with windows spanning the breadth of the building with north and south facing windows. The façades are defined by banks of recessed balconies.

**14.528** A total of 147 windows were assessed for sunlight within this building of which 127 (86.4%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.529** A total of 20 window would be affected annually, of which two would experience an alteration between 20-29.9%, which is considered a Minor Adverse effect and six would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect. The remaining 12 would experience an alteration in excess of 40% in WPSH which is considered a Major Adverse effect.

**14.530** Four windows of these would be affected in winter, which would experience an alteration in excess of 40% in WPSH which is considered a Major Adverse effect.

**14.531** A total of 16 affected windows serve bedroom, which may be considered less important in relation to sunlight considerations. The remaining four windows serving LKDs are also affected, however, they are served by additional windows which remain very well sunlit.

**14.532** Overall, primarily bedrooms are affected, with any LKD seeing changes in sunlight remaining well sunlit by virtue of mitigating windows. Therefore, the effect is considered **Negligible to Minor Adverse (Not Significant)**.

*Ailsa Wharf Blocks K L*

**14.533** This apartment block is located north of the Site. Windows and rooms on the north and west elevations of the lowest four residential floors overlooking the Proposed Development are considered. These façades are defined by banks of recessed balconies.

**14.534** A total of 25 windows were assessed for sunlight within this building of which 22 (86.4%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.535** A total of three window would be affected annually, of which one would experience an alteration between 20-29.9%, which is considered a Minor Adverse effect and two would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect. No impacts would occur during winter.

**14.536** All three windows affected serve a ground floor LKD, however, retain 13, 16 and 21% APSH respectively.

**14.537** Overall, only one LKD would see changes in sunlight, however, would retain levels of APSH which may be considered adequate. Therefore, the effect is considered **Minor Adverse (Not Significant)**.

*Atelier Court*

**14.538** This block is located east of the Site. The west facing elevation, which reaches seven storeys at the northern portion and three storeys across the southern portion, is defined by recessed balconies. Windows and rooms on the west elevations overlooking the Proposed Development are considered for assessment. Windows on the north facing façade are also considered, as these serve rooms seeing alterations as a result of the Proposed Development. It should be noted that this building overlooks low rise existing massing in the baseline condition, receiving uncharacteristically high levels of daylight. Significant reductions can be expected to occur as a result of massing coming forward.

**14.539** A total of 110 windows were assessed for sunlight within this building of which seven (6.4%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.540** A total of 101 windows would be affected annually, which would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect. A total of 103 windows would be affected in winter and would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.541** The affected windows would retain 1-18% APSH. It should be noted that each of the windows affected is situated beneath a balcony, which inherently limits sunlight availability.

**14.542** Overall, the effect is considered **Major Adverse (Significant)**.

**14.543** The impacts to this building are discussed in further detail within the Standalone Daylight and Sunlight Impacts Upon Neighbours Report, providing further contextual considerations.

*Bromley Hall*

**14.544** This educational building is located to the north of the Proposed Development. All windows and rooms are assessed at this building.

**14.545** A total of 34 windows were assessed for sunlight within this building of which 25 (73.5%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.546** A total of three window would be affected annually, which would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect. A total of nine windows would be affected in winter and would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.547** Each of the affected windows would retain levels of sunlight which may be considered adequate (16-19% APSH) or are served remain well sunlight throughout the year, by virtue of mitigating windows and skylights.

**14.548** Therefore, the effect is considered **Minor Adverse (Not Significant)**.

*Dewberry Street 2-14*

**14.549** This apartment block is located west of the Site behind 16-46 Dewberry Street, with two storeys considered relevant for assessment. It was not possible to obtain layouts for this building and therefore room uses have been assumed. Windows and rooms on the south west east and north west elevations also been assessed.

**14.550** A total of 37 windows were assessed for sunlight within this building of which 36 (97.5%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.551** No windows would be affected annually and one window would be affected in winter, experiencing alterations from 30-39.9% in WPSH, which is considered a Moderate Adverse effect. This window serves a room on unknown use and would retain 4% WPSH, which is only marginally below the BRE Guidelines recommendation.

**14.552** Therefore, the effect is considered **Negligible Adverse (Not Significant)**.

*Devons Wharf*

**14.553** This residential apartment building is located east of the Site, with four storeys considered for assessment. Windows on the north west and south west elevations overlooking the Proposed Development are considered for assessment. Additionally, windows on the north east and south eastern elevations are considered, as they

serve rooms with the potential to be impacted by the Proposed Development. The façade is defined by balconies and inset portions of the elevations.

**14.554** A total of 69 windows were assessed for sunlight within this building of which 55 (79.9%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.555** A total of 14 window would be affected annually, of which six would experience an alteration between 20-29.9%, which is considered a Minor Adverse effect and six would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect The remaining two would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.556** A total of four windows would be affected in winter and would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.557** Two bedrooms windows would retain 10-11% APSH, however, may be considered less important in relation to sunlight considerations. A further window retaining 12% serves an LKD, which has two further windows which are well sunlit. The remaining nine windows retain 23-24% APSH and are therefore not considered to be significantly affected.

**14.558** Overall, the effect is considered **Minor Adverse (Not Significant)**.

*Joshua Street 35-41*

**14.559** These four two-storey (plus roof extension) residential terraced houses are located west of the Site. Windows and rooms on the front and rear (north and south facing) and east facing flank are considered for assessment. Each house is fronted by a vestibule, with the first storey windows sitting beneath overhanging eaves. It was not possible to obtain layouts for this building, which have therefore been assumed.

**14.560** A total of 19 windows were assessed for sunlight within this building of which 18 (79.9%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.561** A total of one window would be affected annually and would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect. This window would be affected in winter and would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.562** Two bedrooms windows would retain 10-11% APSH, however, may be considered less important in relation to sunlight considerations. A further window retaining 12% serves an LKD, which has two further windows which are well sunlit. The remaining nine windows retain 23-24% APSH and are therefore not considered to be significantly affected.

**14.563** This window, serving an LKD, would retain 18% APSH and does not meet the BRE criteria for WPSH in the baseline condition. The LKD is served by two further windows which remain very well sunlit.

**14.564** Overall, the effect is considered Negligible to Minor Adverse (Not Significant).

*Lansbury Gardens 2-12*

**14.565** This row of six two-storey terraced houses is located east of the Site. The front, west (Site) facing and rear east facing windows have been considered, as there are rooms with windows spanning the breadth of these properties.

**14.566** A total of 22 windows were assessed for sunlight within this building of which 5 (22.7%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.567** A total of 17 windows would be affected annually, of which one would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect and 16 would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect. Seven of these windows would be affected in winter and would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.568** Eleven of the affected windows serve bedrooms retaining 17-23% APSH, however, may be considered less important in relation to sunlight considerations.

**14.569** The remaining six windows serve living rooms at ground level, retaining 10-22% APSH. These windows are already shaded by the vestibules in the baseline condition. One of these affected living rooms has additional windows within 90 degrees of due south which remain well sunlit.

**14.570** Overall, the effect is considered **Moderate Adverse (Significant)**.

*Leven Road Phase Three*

**14.571** Five storeys of this residential apartment block located east of the Site are considered for assessment. Windows and rooms on the west and south west elevations are considered for assessment. The building is an irregular form with the west facing elevations defined by inset façades and overhangs on the first and second storey. The south west facing façade is defined by balconies. It should be noted that this building overlooks low rise existing massing in the baseline condition, receiving uncharacteristically high levels of daylight. Significant reductions can therefore be expected to occur as a result of massing coming forward.

**14.572** A total of 44 windows were assessed for sunlight within this building of which 10 (22.7%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.573** A total of 34 windows would be affected annually, of which one would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect and 33 would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect. Twenty seven of these windows would be affected in winter and would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.574** Twenty one of the affected windows serve bedrooms, experiencing significant impacts, however, may be considered less important in relation to sunlight considerations.

**14.575** The remaining 13 windows serve single aspect living rooms, which are significantly affected. These windows are already shaded in the baseline condition.

**14.576** It should be noted that most of these windows face due west and therefore are only just within 90 degrees of due south and would receive evening sun only. Reductions of this magnitude can be expected, given the low rise existing massing and the Proposed Development stepping forward, as well as the presence of balconies which inherently shade these windows.

**14.577** Overall, the effect is considered Moderate to **Major Adverse (Significant)**.

**14.578** The impacts to this building are discussed in further detail within the Standalone Daylight and Sunlight Impacts Upon Neighbours Report, providing further contextual considerations.

*Loren Apartments*

**14.579** Three storeys of this residential apartment is located south east of the Site are considered for assessment. Windows and rooms on the west and southern façade are assessed for impacts.

**14.580** A total of 26 windows were assessed for sunlight within this building of which 5 (19.2%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.581** A total of 19 windows would be affected annually, of which three would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect and 16 would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect. Seventeen windows would be affected in winter, with one experiencing an alteration between 20-29.9% which his considered a Minor Adverse effect and three would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect. The remaining 13 would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.582** Ten of the affected windows serve bedrooms which may be considered less important in relation to sunlight considerations.

**14.583** The remaining nine windows serve three single aspect living rooms, which would retain 3, 12 and 20% APSH and three LKDs which multiple aspects which remain well sunlight.

**14.584** Overall, the effect is considered Moderate to **Major Adverse (Significant)**.

*Mills Grove 2-10*

**14.585** These five two-storey terraced houses are located west of the Site. The rear of these buildings, facing towards the Site are considered for assessment, as well as the front, as there are rooms which span the breadth of these properties and are therefore relevant. It was not possible to obtain layouts for these buildings and therefore room uses have been assumed.

**14.586** A total of nine windows were assessed for sunlight within this building of which eight (88.9%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.587** A total of one window would be affected and would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect in both APSH and WPSH.

**14.588** This window serves a ground floor LKD which is shaded in the baseline condition and served by two further windows which remain very well sunlit.

**14.589** Overall, the effect is considered **Minor Adverse (Not Significant).**

*Sherman House*

**14.590** Four storeys of this residential apartment block located south east of the Site have been considered. Windows and rooms on all four elevations have been considered for assessment.

**14.591** A total of 35 windows were assessed for sunlight within this building of which 3 (8.6%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.592** A total of 31 windows would be affected annually which would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect. Thirty of these windows would also be affected in winter experiencing alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

**14.593** Half of the affected windows serve bedrooms which may be considered less important in relation to sunlight considerations.

**14.594** The remaining windows serve LKDs, living room and kitchens which would retain 13-24% APSH which is considered to be a good level of sunlight, with the exception of two LKD windows which would retain 4-6% APSH.

**14.595** Overall, the effect is considered **Moderate Adverse (Significant)**.

*St.Nicholas Church*

**14.596** This religious building is located east of the Site. All four elevations have been considered for assessment.

**14.597** A total of 37 windows were assessed for sunlight within this building of which 31 (83.9%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.598** A total of six windows would be affected annually which would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect. Each of the impacts would occur to the ancillary space within this building.

**14.599** Overall, the effect is considered **Minor** to **Moderate Adverse (Significant)**.

*Overshadowing*

**14.600** The potential overshadowing impacts of the Proposed Development on surrounding amenity areas have been assessed against the Baseline Scenario. Additionally, in line with the Scoping Opinion, existing and proposed amenity areas within the Site have been considered. Existing amenity areas within the Site have been assessed by reference to Transient Overshadowing and the BRE two hour contour plots provided for all internal amenity areas.

**14.601** The full overshadowing assessment for the Proposed Development can be found within **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 5** and is summarised below.

*Transient Overshadowing*

**14.602** Existing amenity areas have been considered by reference to Transient Overshadowing.

*21st March*

**14.603** On this day, shadows are cast from the Proposed Development from 08:00 GMT in a north westerly direction. At 08:00 GMT the Proposed Development casts shadows across the A12 onto Jolly's Green, a small portion of the rear gardens of the properties along Joshua St, Mills Grove and Brion Place. These shadows clear by 10:00 GMT leaving these spaces unaffected for the rest of the day. At 08:00 GMT, Braithwaite Park is partially overshadowed by the Proposed Development, which reduces in size through morning, the moving towards the south eastern corner and clearing by 15:00 GMT. From 8:00 GMT additional shadows are also cast onto a portion of the eastern courtyard of Culloden Primary School and the westernmost open spaces of Bromley Hall School. The additional shadows on the eastern courtyard of Culloden Primary School clears by 11:00 AM and leave this space unaffected for the rest of the day. The additional overshadowing on the westernmost open spaces of Bromley Hall clears at 1:00 PM GMT, as the shadows move throughout the day and, from 11:00 AM GMT until 5:00 PM GMT these are cast onto the central and easternmost open spaces of the School. From 11:00 AM to 5:00 PM GMT additional shadows are cast on the ground floor private open spaces of Sherman House. From 1:00 PM to 5:00 PM GMT small strips of transient additional shadows are cast on a few rear gardens of the properties at 177-225 Abbott Road and 110-144 Leven Road. From 1:00 PM to 5:00 PM GMT additional shadows are cast on the Aberfeldy Millennium Green. From 2:00 PM to 3:00 PM GMT additional shadows are cast on the rear gardens of 9-15 Wooster Gardens. Leven Road Green would be overshadowed for a short period from 16:00 GMT until the end of the day. Small strips of additional shadows reach the Bow Creek / River Lea from 3:00 PM to 5:00 PM.

**14.604** The significance of effects is provided in the subsequent 'Sun Hours on Ground' section.

**14.605** Owing to the minimal impact to Culloden Primary School Playground, Bow Creek / River Lea shown in the transient overshadowing plots, the effect is considered **Negligible (Not Significant)**.

*21st June*

**14.606** On this day, shadows are cast from the Proposed Development from 06:00 BST in a south westerly direction. From 06:00 BST to 10:00 BST the Proposed Development casts shadows across the A12 onto Jolly's Green, a small portion of the rear gardens of the properties along Joshua St and Mills Grove, and the communal open spaces of Carradale House and Balfron Tower. These spaces remain unaffected for the rest of the day. The western courtyard of Culloden Primary School sees additional shadowing from 6:00 BST to 8:00 AM BST, whilst the eastern courtyard sees additional shadowing from 7:00AM to 10:00 AM, which clears completely by 12:00 AM BST. Braithwaite Park would be overshadowed in the south east corner from 11:00 BST until 14:00 BST. From 12:00 AM to 15:00 BST additional shadows are cast onto the southernmost open spaces of Bromley Hall School. From 15:00 to 20:00 GMT strips of transient additional shadows are cast on the gardens of the properties at 177-225 Abbott Road and 110-144 Leven Road. From 15:00 PM to 20:00 PM GMT additional shadows are cast on the Aberfeldy Millennium Green. From 6:00 PM to 20:00 BST additional shadows are cast on the green space adjacent St Nicholas Church. Leven Road Green begins to become overshadowed from the Proposed Development at 19:00 BST, which is cast in shadow for the remainder of the day. From 19:00 to 20:00 BST small strips of additional shadows are cast on the rear gardens of 9-15 and 1-7 Wooster Gardens. No additional shadows reach the Bow Creek / River Lea on this day of the year.

*21st December*

**14.607** On this day, shadows are cast from the Proposed Development from 09:00 GMT in a north westerly direction. At 09:00 GMT the Proposed Development casts a small strip of additional shadow onto Jolly's Green, which clears by 10 AM GMT. From 10:00 AM to 12:00 AM additional shadows are cast on a few open spaces of Bromley Hall School. From 12:00 AM to 3:00 PM GMT additional shadows are cast on the Aberfeldy Millennium Green, the green space adjacent St Nicholas Church and the rear gardens of 9-15 Wooster Gardens. Leven Road Green would see very small periods of overshadowing at 14:00 GMT and 15:00 GMT. Small strips of additional shadows reach the Bow Creek / River Lea from 1:00 PM to 3:00 PM GMT.

*Sun Hours on Ground*

**14.608** A detailed Sun Hours on Ground assessment has been carried out for the most affected open spaces to understand the scale and nature of the impacts.

**14.609** It was not considered necessary to assess Culloden Primary School Playground using sun hours on ground as the transient overshadowing assessment showed a negligible effect and very high levels of sunlight hours retained at this amenity area, in excess of the two hours on March 21st recommended by BRE Guidelines.

**14.610** Of the amenity areas assessment, those listed below would experience **Negligible (Not Significant)** effects upon the implementation of the Proposed Development. As described in the Transient Overshadowing assessment these areas would either retain at 2 hours on sun on least 50% of their total area or not experience a reduction in the total amount of sunlight by more than 0.8 as a result of the Proposed Development as per BRE Guidelines recommendations. These areas are:

- Rear gardens of properties at 110-144 Leven road (even numbers, 18 properties in total);
- Rear gardens of properties at 177-195 Abbott road (odd numbers, 10 properties in total);
- 199, 203, 207, 211, 215, 219, 223 Abbott Road;
- Aberfeldy Millennium Green;
- St Nicholas Church;
- 1, 3, 5, 7, 11, 13, 15 Wooster Gardens;
- 2, 4, 6, 8, 10, 12 Lansbury Gardens; and

- 8 out of 14 open spaces at Bromley Hall School, identified in appendix as areas n. 65, 66, 67, 68, 69, 70, 71 and 73.

**14.611** Additionally, the existing and proposed open spaces within the Site boundary for the Proposed Development are considered to meet and exceed BRE compliance levels and retain good levels of sunlight in the summer months as demonstrated in the sun exposure diagrams:

- Allotments;
- Highland Place;
- Leven Road Green;
- Braithwaite Park;
- The Square; and
- Culloden Green.

**14.612** The open spaces listed below would experience relative reductions or retained levels of sunlight below BRE's recommendation and are analysed further:

- Rear gardens of the properties at 197, 201, 205, 209, 213, 217, 221 and 225 Abbott Road;
- Private terraces at 3 and 4 Dee Street;
- Rear garden at 9 Wooster Gardens; and
- 6 out of 14 open spaces at Bromley Hall School, identified in appendix as areas n. 72, 74, 75, 76, 77 and 78.

**14.613** The rear gardens of the properties at 197, 201, 205, 209, 213, 217, 221 and 225 Abbott Road all have baseline levels of overshadowing far below BRE's recommendation, ranging from 3% to 18.1%. Upon implementation of the Proposed Development they would see small absolute reductions ranging from 2.1% to 10%, which result in disproportionately high relative reductions ranging from 29% to 100%. The sun exposure diagrams in March and June demonstrate that these areas would effectively retain levels of light that are almost identical to those of the baseline. Therefore, in consideration of the small absolute reductions and the levels of light available in the baseline scenario and retained in the Proposed Development scenario, the effects on these rear gardens is considered **Minor Adverse (Not Significant)**.

**14.614** The Private terraces at 3 and 4 Dee Street see levels of overshadowing above recommendation in the baseline scenario, which are reduced to 0% in the Proposed Development scenario, resulting in a 100% relative loss. The sun exposure diagrams in March and June demonstrate that these areas would retain circa 1 hour of sunlight at the equinox and 3 at the summer solstice. Overall, it is considered that these open spaces would experience major adverse effects (significant). When assessed in the consented scenario, these open spaces would also see **Major Adverse (Significant)** effects, with reductions ranging from 77% to 99% and retained values of 13.1% and 0.9% respectively. The sun exposure diagrams for the consented scenario show levels of sunlight retained at the equinox and summers solstice very similar to those of the Proposed Development. These areas would therefore have similar effects to those of the 2012 OPP.

**14.615** The rear garden at 9 Wooster Gardens has a baseline levels of overshadowing below BRE's recommendation (25.4%), and would see an absolute reduction of 16.6%, generating a relative reduction of 65%. The sun exposure diagrams however demonstrate that the levels of sunlight in the baseline and Proposed Development scenario are very similar, and the high percentage reduction is give by a portion of this open space that sees just marginally below the two hours recommended by BRE in the Proposed Development scenario, where in the baseline conditions this portion sees just marginally above the two hours threshold. It is considered therefore that, despite a 65% relative reduction, this area would have a **Minor Adverse (Not Significant)** effect. When assessed in the consented scenario, this open space would see an absolute reduction of 11.3% resulting in a relative loss of 44%. The Proposed Development would result in similar effects to those of the 2012 OPP.

**14.616** The 6 open spaces of Bromley Hall School seeing reductions beyond BRE's recommendation have baseline levels of overshadowing above recommendation. Upon implementation of the Proposed Development, one would see a reduction of 28%, which is considered a minor adverse effect, one would see a reduction of 31% which is considered a moderate adverse effect, and four would see reductions beyond 40% ranging from 46% to 100% which is considered a major adverse effect. Overall, in consideration of the 8 open spaces of this building seeing negligible effects, and the adverse effects above, it is considered that Bromley Hall School would see a **Minor to Moderate (Significant)** effect upon implementation of the Proposed Development.

*Solar Glare*

**14.617** The full solar glare assessment is provided in ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 6, with the sensitive locations assessed shown in Figure 14.5.

**14.618** The technical assessment has been undertaken from 15 nearby locations which are considered sensitive in terms of solar glare (noted by the reference viewpoint 1, viewpoint 2 etc.). The technical assessment considers the potential occurrence, proximity and duration of solar reflections from the Plots H1-2, H3, F, I and J of the Proposed Development.

**14.619** Plots H1-2, H3, F, I and J are not visible from three out of all 15 viewpoints assessed (namely viewpoints 3, 4 and 6). As such there is no potential for any solar glare effects from these locations.

**14.620** Of the remaining 12 viewpoints assessed, eight would see negligible effects due to the distance from the centre of the field of view, the broken-up nature of the small glazing elements of the facades, and the limited amount of time any small reflection would be visible. Therefore, viewpoints n. 1, 2, 7, 10, 11, 13, 14 and 15 would have **Negligible (Not Significant)** effects.

**14.621** The remaining four viewpoints are discussed in detail below.

*Viewpoint 5*

**14.622** At this location, one viewpoint is assessed. Potential reflections are visible between 10º and 20º at 5:00 PM GMT to 7:00 PM GMT from mid-March to mid-April and mid-August to mid-September. The reflections occur on a portion of the façade with large solid non-reflective elements and broken-up glazing, which would limit the extents of any potential reflections. As such, the effect for this viewpoint is considered **Minor Adverse (Not Significant)**.

*Viewpoint 8*

**14.623** At this location, one viewpoint is assessed. Potential reflections are visible between 10º and 30º at different times of the year: from 5:00 PM GMT to 6:00 PM GMT from mid-March to mid-May and mid-July to mid-September, and from 3:00 PM to 5:00 PM from mid-January to mid-March and from mid-September to mid-November. The reflections occur on a portion of the façade with large solid non-reflective elements and broken-up glazing, which would limit the extents of any potential reflections. As such, the effect for this viewpoint is considered **Minor Adverse (Not Significant)**.

*Viewpoint 9*

**14.624** At this location, one viewpoint is assessed. Potential reflections are visible between 10º and 30º at 5:00 AM GMT to 7:00 AM GMT from mid-April to mid-August. The reflections occur on a portion of the façade with large solid non-reflective elements and broken-up glazing, which would limit the extents of any potential reflections. As such, the effect for this viewpoint is considered **Minor Adverse (Not Significant)**.

*Viewpoint 12*

**14.625** At this location, one viewpoint is assessed. Potential reflections are visible between 5º and 25º at 4:00 PM GMT to 6:00 PM GMT from mid-February to mid-April from mid-August to mid-October. The reflections occur on a portion of the façade with large solid non-reflective elements and broken-up glazing, which would limit the extents of any potential reflections. As such, the effect for this viewpoint is considered **Minor Adverse (Not Significant)**.

*Qualitative Consideration of Solar Glare from Plots A-E*

**14.626** It is considered that there is the potential for significant solar glare effects arising from the future detailed design of Plots A-E, which are currently proposed in outline. The outline proposals for Plots A-E are for residential, commercial uses and new means of access. The residential uses are likely to be comprised of brickwork and punched windows, and therefore unlikely to result in significant reflections, whilst the commercial uses propose workspaces and retail provision, which may comprise large areas of glazing and therefore would potentially cause significant reflections. The Proposed Development would introduce new means of access with the introduction of new junctions along the A12.

**14.627** A technical assessment cannot be undertaken at this stage for the new buildings; however, qualitative consideration has been given to existing viewpoints with the potential to be affected in relation to solar glare from buildings within Plots A-E.

**14.628** The most sensitive viewpoints are those along the A12, these are considered most sensitive given the speed of travelling vehicles and proximity to potentially reflective façades of future development within Plots A-E.

**14.629** Viewpoints 1, 4, 5 and 6 travelling south along the A12 would have a view of buildings within Plots A-E, which would potentially be within 10º of a road user's line of sight. Depending on the final uses, orientation and materiality of the future detailed design, the effects at these viewpoints would range from **Negligible (Not Significant)** to **Major Adverse (Significant)**. Should significant effects be considered likely, additional viewpoints travelling south along A12 will be assessed and mitigating design strategies will be implemented to reduce the effects to not significant.

**14.630** Viewpoints 3 and 7, travelling north along the A12 would also have view of buildings within Plots A-E, which would potentially be within 10º of a road user's line of sight. Depending on the final uses, orientation and materiality of the future detailed design, the effects at these viewpoints would range from **Negligible (Not Significant)** to **Major Adverse (Significant).** Should significant effects be considered likely, additional viewpoints travelling north along A12 will be assessed and mitigating design strategies will be implemented to reduce the effects to not significant.

**14.631** Therefore, given the potential for effects outlined in paragraph 14.629 and paragraph 14.630 relating to these viewpoints located along the A12 will be further assessed at RMA stage, once the final uses orientation and materiality is known.

**14.632** The location of any introduced junctions, merging from Plots A-E and the A12, are yet to be determined. However, owing to the sensitivity of these locations, these will be assessed at RMA stage. Furthermore, any additional viewpoints along surrounding roads and junctions sensitive to solar glare from future buildings within Plots A-E will be assessed once the detail design comes forwards.

## Internal Daylight and Sunlight Amenity Summary

**14.633** The full Daylight and Sunlight Amenity within the Site Report is submitted alongside the Application, which is summarised below.

**14.634** The purpose of the Daylight and Sunlight Amenity within the Site is to ascertain whether the proposed detailed proposals design for Phase A Blocks F, H, I and J within the Proposed Development will provide residential accommodation considered acceptable in terms of daylight, sunlight and overshadowing. In addition, this document presents the results of the overshadowing within all proposed spaces of the Outline Proposals, assessed via the Illustrative Masterplan.

**14.635** Overall, 689 (78.1%) out of all 882 habitable rooms meet or exceed the BRE recommendation for daylight quantum (ADF) and 685 (77.7%) achieve the recommended level for sky visibility (NSL). All rooms have been designed in accordance with BRE's RDC, where applicable. It is worth noting that many rooms far exceed BRE's minimum recommendations providing excellent daylit spaces. If marginal shortfalls are considered in the figure above for ADF, a total of 785 (89.0%) of 882 habitable rooms will offer good daylight levels given the urban location.

**14.636** In terms of sunlight, 109 (73.6%) out of 148 living areas suitable for assessment meet or exceed the recommended levels for APSH, and 117 (79.1%) exceed the suggested levels of WPSH. The occurrence of sunlight levels lower than recommendation in a few units is typical of an urban environment, especially for rooms on the lowest floors which are provided with balconies.

**14.637** With regard to overshadowing within Phase A, all but one of the proposed communal spaces far exceed the recommendation by BRE, providing excellent sunlight amenity. The only area falling short of recommendation is the northern rooftop terrace of Block H3, which however sees good levels of sunlit throughout all summer months and can still be considered well sunlit. In addition, Braithwaite Park and Leven Road Green also far exceed BRE's recommendation and will be well sunlit throughout the year.

**14.638** All outdoor spaces within the Outline Proposals have also been tested. The ground floor public realm would see very good levels of sunlight, exceeding BRE's recommendation and being well sunlit throughout the year. The four proposed courtyards would fall short of recommendation on 21st March. The vast majority of these areas would see in excess of three hours of sunlight in June. Three of the four courtyard blocks are provided with rooftop amenity spaces, all of which far exceed recommendation and will be excellently sunlit throughout the year.

## MITIGATION, MONITORING AND RESIDUAL EFFECTS

### *Demolition and Construction Mitigation*

**14.639** No technical analysis of the likely significant effects on the surrounding properties and amenity spaces during the demolition and construction phases were carried out. However, general comments on the likely effects are discussed below. These are based on professional judgement and are set out as follows.

**14.640** The effects during demolition and construction would gradually increase and vary until they reach the effects reported in the Proposed Development scenario. Therefore, once complete and operational, the Proposed Development scenario would represent the worst-case scenario for daylight, sunlight, overshadowing and solar glare.

**14.641** Given that any effects during the demolition and construction are not anticipated to be worse than when the buildings are complete and operational, no mitigation measures are required.

### *Completed Development Mitigation*

**14.642** Owing to the hybrid nature of this Application, those elements proposed and assessed in outline represent a worst case scenario, extruding the extents of the maximum parameters, including buffer space for balconies, rooftop maintenance areas and HVAC systems. Therefore, once the detailed design of these blocks comes forward at RMA stage, the proposed massing is likely to be smaller than the maximum parameter envelope assessed within this ES Chapter. The illustrative masterplan, submitted alongside this Application provides an example of how the Proposed Development could be articulated, including measures which would aid in the mitigation of significant daylight and sunlight effects. These measures include:

- Stepping back from the maximum parameter envelope;
- Introduction of gaps between blocks;
- Rooftop setbacks;
- Chamfered edges; and
- Rooftop elements reducing in size.

**14.643** In relation to solar glare, viewpoints from which the facades of the detailed elements of the Proposed Development have been assessed. No significant effects have been identified and therefore the mitigation is embedded within the design.

**14.644** For Plots A-E, during the detailed design stage, sensitive viewpoints along the A12 and wider surroundings, as well as any introduced viewpoints will be reviewed to mitigate significant solar glare effects as far as is practically viable. Any future RMAs for the detailed design of Plots A-E will be accompanied with technical solar glare assessments.

### *Residual Effects*

**14.645** All of the residual effects resulting from the Proposed Development, are presented in **Table 14.11**, identifying whether the effect is significant or not.

**Table 14.11 Residual Effects**

| Receptor | Description of the Residual Effect | Scale and Nature | Significant / Not Significant | Geo | D<br>I | P<br>T | St<br>Mt<br>Lt |
|---|---|---|---|---|---|---|---|
| **Demolition and Construction** | | | | | | | |
| *Refer 'Impact Assessment Methodology – Demolition and Construction' – It is considered that the completed Proposed Development represents the worst-case assessment in terms of likely daylight, sunlight, overshadowing and solar glare.*<br>*Refer Residual Effects for the Completed Development (see below).* | | | | | | | |

| **Completed Development** | | | | | | | |
|---|---|---|---|---|---|---|---|
| 134-144 Leven Road<br>Ailsa Wharf Block A<br>Ailsa Wharf Blocks K L<br>Dewberry Street 2-14<br>Joshua Street 4<br>Mills Grove 2-10<br>49-67 Abbott Road<br>Aberfeldy Estate Phase One Block A | Daylight | Negligible | Not Significant | L | D | P | Lt |
| 128-132 Leven Road<br>Mills Grove 1-9<br>Mills Grove 12-20<br>Mills Grove 17-25<br>Mills Grove 9-15<br>St Leonards Road 118-132<br>St Leonards Road 134-146<br>Wooster Gardens 1-7<br>Wooster Gardens 9-15<br>Balfron Tower<br>Bromley Hall<br>Joshua Street 6-14<br>Joshua Street 17-33<br>St Leonards Road 148-154 | | Negligible to Minor Adverse | Not Significant | L | D | P | Lt |
| Ailsa Wharf Block D<br>Carradale House<br>Dewberry Street 16-46<br>Devons Wharf<br>Joshua Street 1-15<br>Joshua Street 35-41<br>Aberfeldy Estate Phase Three Block G | | Minor Adverse | Not Significant | L | D | P | Lt |
| 177-195 Abbott Road<br>Aberfeldy Estate Phase One Block C<br>Aberfeldy Estate Phase Three Block J<br>Aberfeldy Estate Phase Two Block D<br>St. Nicholas Church<br>Culloden Primary School | | Minor to Moderate Adverse | **Significant** | L | D | P | Lt |
| 110-126 Leven Road | | Moderate Adverse | **Significant** | L | D | P | Lt |
| 199-225 Abbott Road<br>Lansbury Gardens 2-12<br>Loren Apartments<br>Sherman House | | Moderate to Major Adverse | **Significant** | L | D | P | Lt |
| Atelier Court<br>Leven Road Phase Three | | Major Adverse | **Significant** | L | D | P | Lt |
| 49-67 Abbott Road<br>Aberfeldy Estate Phase One Block A<br>Aberfeldy Estate Phase Three Block G<br>Aberfeldy Estate Phase Three Block J<br>Aberfeldy Estate Phase Two Block D | Sunlight | Negligible | Not Significant | L | D | P | Lt |
| Balfron Tower<br>Carradale House<br>Culloden Primary School<br>Dewberry Street 16-46<br>Dewberry Street 2-14<br>Joshua Street 1-15<br>Joshua Street 17-33<br>Joshua Street 4<br>Joshua Street 6-14<br>Mills Grove 1-9<br>Mills Grove 12-20<br>Mills Grove 17-25<br>Mills Grove 9-15<br>St Leonards Road 118-132<br>St Leonards Road 134-146<br>St Leonards Road 148-154<br>Wooster Gardens 1-7<br>Wooster Gardens 9-15 | | | | | | | |
| 128-132 Leven Road<br>177-195 Abbott Road<br>Ailsa Wharf Block A<br>Ailsa Wharf Blocks K L<br>Joshua Street 35-41 | | Negligible to Minor Adverse | Not Significant | L | D | P | Lt |
| Ailsa Wharf Block D<br>110-126 Leven Road<br>Bromley Hall<br>Devon's Wharf<br>Mills Grove 2-10 | | Minor Adverse | Not Significant | L | D | P | Lt |
| Aberfeldy Estate Phase One Block C<br>St. Nicholas Church | | Minor to Moderate Adverse | **Significant** | L | D | P | Lt |
| Lansbury Gardens 2-12<br>Sherman House | | Moderate Adverse | **Significant** | L | D | P | Lt |
| Leven Road Phase Three<br>Loren Apartments<br>199-225 Abbott Road | | Moderate to Major Adverse | **Significant** | L | D | P | Lt |
| Atelier Court | | Major Adverse | **Significant** | L | D | P | Lt |
| Rear gardens of properties at 110-144 Leven road (even numbers, 18 properties in total)<br>Rear gardens of properties at 177-195 Abbott road (odd numbers, 10 properties in total)<br>199, 203, 207, 211, 215, 219, 223 Abbott Road<br>Aberfeldy Millennium Green<br>St Nicholas Church<br>1, 3, 5, 7, 11, 13, 15 Wooster Gardens<br>2, 4, 6, 8, 10, 12 Lansbury Gardens<br>8 out of 14 open spaces at Bromley Hall School, identified in appendix as areas n. 65, 66, 67, 68, 69, 70, 71 and 73<br>Bow Creek / River Lea | Overshadowing | Negligible | Not Significant | L | D | P | Lt |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Culloden Primary School | | | | | | | |
| Rear gardens of the properties at 197, 201, 205, 209, 213, 217, 221 and 225 Abbott Road | | Minor Adverse | Not Significant | L | D | P | Lt |
| Rear garden at 9 Wooster Gardens | | Minor Adverse | Not Significant | L | D | P | Lt |
| 6 out of 14 open spaces at Bromley Hall School, identified in appendix as areas n. 72, 74, 75, 76, 77 and 78 | | Minor to Moderate Adverse | **Significant** | L | D | P | Lt |
| Private terraces at 3 and 4 Dee Street | | Major Adverse | **Significant** | L | D | P | Lt |
| Viewpoints 1-14 | Solar Glare | Negligible to Minor Adverse | Not Significant | L | D | P | Lt |

**Notes:**

Residual Effect

- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Geo (Geographic Extent) = Local (L), Borough (B), Regional (R), National (N)

D = Direct / I = Indirect

P = Permanent / T = Temporary

St = Short Term / Mt = Medium Term / Lt = Long Term

N/A = not applicable / not assessed

## ASSESSMENT OF THE FUTURE ENVIRONMENT

### *Evolution of the Baseline Scenario*

**14.646** The conditions in an evolved baseline scenario would be similar to those presented in the existing baseline conditions of this ES Chapter, with the potential for cumulative schemes to lower the baseline levels of light received at surrounding sensitive receptors.

**14.647** A future baseline scenario has also been assessed, to consider the effects of the Proposed Development upon residential cumulative schemes, which would be future sensitive receptors. These include 45-47 Abbott Road, Islay Wharf and Former Poplar Bus Depot. The future baseline results of these buildings is presented in **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 2.**

### *Cumulative Effects Assessment*

**14.648** This section of the chapter assesses the potential effects of the Proposed Development in combination with the potential effects of other cumulative schemes within the surrounding area, as listed within **ES Volume 1, Chapter 2: EIA Methodology**. From this list, the following cumulative schemes has been included within the assessment due to its close proximity the Site:

- Former Poplar Bus Depot (PA/19/02148/A1); and
- Islay Wharf (PA/19/01760).

**14.649** All other cumulative schemes are considered too far from the Proposed Development to cause cumulative effects for this discipline.

#### *Demolition and Construction*

**14.650** There is no change in the effects during demolition and construction as reported in the Proposed Development Effects scenario. Therefore, refer to the previous section.

#### *Completed Development*

**14.651** The full daylight assessment for the Cumulative Scenario can be found within **ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 4** and is summarised in **Table 14.12**.

##### *Daylight*

**14.652** The full cumulative daylight results are presented within ES Volume 3, Appendix: Daylight, Sunlight, Overshadowing and Solar Glare – Annex 5.

**14.653** Of the 42 existing and under construction buildings assessed, the following 26 shown in blue in **Table 14.12** will experience no alteration greater from the effects reported in the Proposed Development Scenario and therefore please refer to the previous section.

**14.654** Commentary on the remaining 16 buildings is provided below.

**Table 14.12 Cumulative Daylight Assessment of the Proposed Development at Surrounding Sensitive Receptors (VSC and NSL)**

| Address | VSC | | | | | | NSL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total No. of Windows | No. Windows that meet BRE criteria | Below BRE Guidelines criteria | | | | Total No. of Rooms | No. Rooms that meet the 0.8 times former value criteria | Below BRE Guidelines criteria | | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total |
| 110-126 Leven Road | 95 | 8 | 32 | 42 | 13 | 87 | 36 | 36 | 0 | 0 | 0 | 0 |
| 128-132 Leven Road | 35 | 24 | 11 | 0 | 0 | 11 | 24 | 22 | 2 | 0 | 0 | 2 |
| 134-144 Leven Road | 56 | 56 | 0 | 0 | 0 | 0 | 24 | 24 | 0 | 0 | 0 | 0 |
| 177-195 Abbott Road | 85 | 54 | 15 | 12 | 4 | 31 | 48 | 43 | 2 | 2 | 1 | 5 |
| 199-225 Abbott Road | 179 | 97 | 6 | 12 | 64 | 82 | 90 | 87 | 1 | 2 | 0 | 3 |
| 49-67 Abbott Road | 70 | 70 | 0 | 0 | 0 | 0 | 41 | 41 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase One Block A | 57 | 57 | 0 | 0 | 0 | 0 | 45 | 45 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase One Block C | 98 | 51 | 13 | 5 | 29 | 47 | 61 | 46 | 8 | 4 | 3 | 15 |
| Aberfeldy Estate Phase Three Block G | 47 | 36 | 3 | 2 | 6 | 11 | 25 | 24 | 1 | 0 | 0 | 1 |
| Aberfeldy Estate Phase Three Block J | 111 | 74 | 11 | 10 | 16 | 37 | 56 | 56 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase Two Block D | 57 | 35 | 14 | 4 | 4 | 22 | 35 | 34 | 0 | 1 | 0 | 1 |

| Address | VSC | | | | | | NSL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total No. of Windows | No. Windows that meet BRE criteria | Below BRE Guidelines criteria | | | | Total No. of Rooms | No. Rooms that meet the 0.8 times former value criteria | Below BRE Guidelines criteria | | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total |
| Ailsa Wharf Block A | 45 | 21 | 0 | 1 | 23 | 24 | 21 | 12 | 0 | 0 | 9 | 9 |
| Ailsa Wharf Block D | 228 | 93 | 20 | 28 | 87 | 135 | 88 | 81 | 6 | 1 | 0 | 7 |
| Ailsa Wharf Blocks K L | 62 | 48 | 9 | 4 | 1 | 14 | 27 | 20 | 6 | 1 | 0 | 7 |
| Atelier Court | 117 | 12 | 5 | 5 | 95 | 105 | 97 | 26 | 11 | 9 | 51 | 71 |
| Balfron Tower | 62 | 48 | 6 | 0 | 8 | 14 | 54 | 53 | 0 | 1 | 0 | 1 |
| Bromley Hall | 100 | 73 | 10 | 11 | 6 | 27 | 31 | 28 | 2 | 0 | 1 | 3 |
| Carradale House | 77 | 37 | 10 | 22 | 8 | 40 | 44 | 44 | 0 | 0 | 0 | 0 |
| Culloden Primary School | 90 | 33 | 5 | 21 | 31 | 57 | 21 | 18 | 0 | 0 | 3 | 3 |
| Dewberry Street 16-46 | 72 | 39 | 27 | 6 | 0 | 33 | 44 | 44 | 0 | 0 | 0 | 0 |
| Dewberry Street 2-14 | 44 | 42 | 0 | 1 | 1 | 2 | 25 | 25 | 0 | 0 | 0 | 0 |
| Devons Wharf | 169 | 40 | 32 | 18 | 79 | 129 | 91 | 64 | 9 | 6 | 12 | 27 |
| Joshua Street 1-15 | 77 | 62 | 3 | 6 | 6 | 15 | 31 | 31 | 0 | 0 | 0 | 0 |
| Joshua Street 17-33 | 55 | 48 | 2 | 4 | 1 | 7 | 36 | 36 | 0 | 0 | 0 | 0 |
| Joshua Street 35-41 | 30 | 21 | 5 | 3 | 1 | 9 | 17 | 17 | 0 | 0 | 0 | 0 |
| Joshua Street 4 | 4 | 3 | 1 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 |
| Joshua Street 6-14 | 27 | 24 | 1 | 2 | 0 | 3 | 17 | 17 | 0 | 0 | 0 | 0 |
| Lansbury Gardens 2-12 | 43 | 25 | 0 | 1 | 17 | 18 | 18 | 7 | 1 | 0 | 10 | 11 |
| Leven Road Phase Three | 73 | 8 | 9 | 8 | 48 | 65 | 62 | 21 | 5 | 5 | 31 | 41 |
| Loren Apartments | 26 | 4 | 0 | 3 | 19 | 22 | 18 | 4 | 2 | 1 | 11 | 14 |
| Mills Grove 1-9 | 25 | 24 | 0 | 1 | 0 | 1 | 17 | 15 | 1 | 0 | 1 | 2 |
| Mills Grove 12-20 | 25 | 20 | 4 | 0 | 1 | 5 | 15 | 15 | 0 | 0 | 0 | 0 |
| Mills Grove 17-25 | 27 | 18 | 9 | 0 | 0 | 9 | 15 | 15 | 0 | 0 | 0 | 0 |
| Mills Grove 2-10 | 25 | 24 | 1 | 0 | 0 | 1 | 15 | 15 | 0 | 0 | 0 | 0 |
| Mills Grove 9-15 | 22 | 15 | 6 | 0 | 1 | 7 | 12 | 11 | 0 | 1 | 0 | 1 |
| St Leonards Road 118-132 | 40 | 28 | 11 | 0 | 1 | 12 | 23 | 23 | 0 | 0 | 0 | 0 |
| St Leonards Road 134-146 | 43 | 31 | 12 | 0 | 0 | 12 | 28 | 28 | 0 | 0 | 0 | 0 |
| St Leonards Road 148-154 | 20 | 17 | 3 | 0 | 0 | 3 | 10 | 10 | 0 | 0 | 0 | 0 |
| Sherman House | 69 | 29 | 1 | 2 | 37 | 40 | 43 | 23 | 3 | 1 | 16 | 20 |
| St.Nicholas Church | 59 | 36 | 5 | 5 | 13 | 23 | 31 | 31 | 0 | 0 | 0 | 0 |
| Wooster Gardens 1-7 | 33 | 31 | 2 | 0 | 0 | 2 | 16 | 13 | 1 | 2 | 0 | 3 |
| Wooster Gardens 9-15 | 20 | 18 | 2 | 0 | 0 | 2 | 16 | 16 | 0 | 0 | 0 | 0 |
| **Totals** | **2699** | **1534** | **306** | **239** | **620** | **1165** | **1470** | **1223** | **61** | **37** | **149** | **247** |

- **110-126 Leven Road** – a total of 24 additional windows would experience impacts ranging from Minor to Major Adverse for VSC, however, no additional NSL impacts would occur. Therefore, the effect is considered to increase to **Moderate to Major Adverse (Significant)** as a result of cumulative schemes coming forward.
- **128-132 Leven Road** – only one additional window would experience a Minor Adverse impact and therefore the overall effect does not change from **Negligible (Not Significant).**
- **177-195 Abbott Road** – three additional windows would experience a Minor Adverse VSC impact and therefore the overall effect does not change from **Minor** to **Moderate Adverse (Significant).**
- **199-225 Abbott Road** – a total of three additional windows would experience a Minor Adverse VSC impact and one additional room would experience a NSL impact and therefore the overall effect does not change from **Minor** to **Moderate Adverse (Significant).**

- **Ailsa Wharf Block A** – a total of 23 additional windows would experience impacts ranging from Minor to Major Adverse for VSC and nine additional Major Adverse NSL impacts would occur. Therefore, the effect is considered **Moderate** to **Major Adverse (Significant)**, which is increased as a result of cumulative schemes coming forward.
- **Ailsa Wharf Block D** – a total of 71 additional windows would experience of Minor to Major Adverse significance for VSC and five additional Minor Adverse NSL impacts would occur. Therefore, the effect is considered to increase to **Moderate** to **Major Adverse (Significant).** The effect was considered **Minor Adverse (Not Significant)** as a result of the Proposed Development and therefore the additional effects occur as a result of cumulative schemes.
- **Ailsa Wharf Blocks K L** – a total of 10 additional windows would experience of Major Adverse significance for VSC and seven additional Minor to Moderate Adverse NSL impacts would occur. Therefore, the effect is considered to increase to **Minor to Moderate Adverse (Significant)**. The effect was considered **Minor (Not Significant)** as a result of the Proposed Development and therefore the additional effects occur as a result of cumulative schemes.
- **Atelier Court** – two additional windows would see Minor Adverse VSC impacts and therefore the overall effect does not change from **Major Adverse (Significant).**
- **Bromley Hall** – a total of 16 addition windows would see VSC impacts ranging from Minor to Major Adverse and three additional rooms would see Minor or Major Adverse NSL impacts. Therefore, the effect is considered to increase to **Moderate Adverse (Significant)**. The effect was considered **Minor Adverse (Not Significant)** as a result of the Proposed Development and therefore the additional effects occur as a result of cumulative schemes.
- **Culloden Primary School** - a total of 57 additional windows would see VSC impacts ranging from Minor to Major Adverse and three additional rooms would see Major Adverse NSL impacts. Therefore, the effect is considered to increase to **Moderate to Major Adverse (Significant)**. The effect was considered **Negligible (Not Significant)** as a result of the Proposed Development and therefore the additional effects occur as a result of cumulative schemes.
- **Dewberry Street 16-46** - three additional windows would see Minor Adverse VSC impacts and therefore the overall effect does not change from **Minor Adverse (Not Significant)**.
- **Devon's Wharf** - a total of 64 additional windows would see VSC impacts ranging from Minor to Major Adverse and 22 additional rooms would see Minor to Major Adverse NSL impacts. Therefore, the effect is considered to increase to **Moderate** to **Major Adverse (Significant)**. The effect was considered **Minor Adverse (Not Significant)** as a result of the Proposed Development and therefore the additional effects occur as a result of cumulative schemes.
- **Leven Road Phase Three –** a total of 18 additional windows would see VSC impacts ranging from Minor to Major Adverse and seven additional rooms would see Minor to Major Adverse NSL impacts. Therefore, the effect is considered to increase to **Major Adverse (Significant).** The effect was considered **Moderate to Major Adverse (Significant)** as a result of the Proposed Development and therefore the additional effects occur as a result of cumulative schemes.
- **St Leonard's Road 118-132 –** only one additional window would experience a Minor Adverse impact and therefore the overall effect does not change from **Negligible to Minor Adverse (Not Significant).**
- **St Leonard's Road 148-154 –** only one additional window would experience a Minor Adverse impact and therefore the overall effect does not change from **Negligible (Not Significant)**.
- **St. Nicholas Church** – only one additional window would experience a Moderate Adverse impact and therefore the overall effect does not change from **Minor to Moderate Adverse (Not Significant)**.

*Sunlight*

**14.655** The full cumulative sunlight results are presented within ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 5.

**14.656** Of the 42 existing and under construction buildings assessed, the following 37 shown in blue in **Table 14.13** and will experience no alteration greater than the effects reported in the Proposed Development Scenario and therefore please refer to the previous section.

**14.657** Commentary on the remaining five buildings is provided below.

**Table 14.13 Cumulative Sunlight Assessment of the Proposed Development at Surrounding Sensitive Receptors (APSH and WPSH)**

| Address | Total No. Windows | No. Windows that meet BRE criteria | Annual PSH | | | Winter PSH | | |
|---|---|---|---|---|---|---|---|---|
| | | | Below BRE Guidelines | | | Below BRE Guidelines | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction |
| 110-126 Leven Road | 59 | 52 | 0 | 0 | 5 | 0 | 0 | 4 |
| 128-132 Leven Road | 25 | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 134-144 Leven Road | 32 | 32 | 0 | 0 | 0 | 0 | 0 | 0 |
| 177-195 Abbott Road | 42 | 41 | 0 | 0 | 1 | 0 | 0 | 1 |
| 199-225 Abbott Road | 94 | 74 | 0 | 0 | 16 | 0 | 0 | 20 |
| 49-67 Abbott Road | 37 | 37 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase One Block A | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase One Block C | 43 | 35 | 1 | 1 | 6 | 0 | 0 | 2 |
| Aberfeldy Estate Phase Three Block G | 22 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase Three Block J | 27 | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aberfeldy Estate Phase Two Block D | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ailsa Wharf Block A | 42 | 21 | 1 | 0 | 20 | 0 | 0 | 14 |
| Ailsa Wharf Block D | 147 | 111 | 1 | 3 | 32 | 0 | 0 | 16 |
| Ailsa Wharf Blocks K L | 25 | 22 | 0 | 2 | 1 | 0 | 0 | 0 |
| Atelier Court | 110 | 7 | 0 | 0 | 101 | 0 | 0 | 102 |
| Balfron Tower | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bromley Hall | 34 | 23 | 0 | 0 | 5 | 0 | 0 | 11 |
| Carradale House | 22 | 22 | 0 | 0 | 0 | 0 | 0 | 0 |
| Culloden Primary School | 43 | 43 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dewberry Street 16-46 | 48 | 48 | 0 | 0 | 0 | 0 | 0 | 0 |
| Dewberry Street 2-14 | 37 | 36 | 0 | 0 | 0 | 0 | 1 | 0 |
| Devons Wharf | 69 | 48 | 8 | 11 | 2 | 0 | 4 | 7 |
| Joshua Street 1-15 | 26 | 26 | 0 | 0 | 0 | 0 | 0 | 0 |
| Joshua Street 17-33 | 33 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |
| Joshua Street 35-41 | 19 | 18 | 0 | 1 | 0 | 0 | 0 | 1 |
| Joshua Street 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Joshua Street 6-14 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lansbury Gardens 2-12 | 22 | 5 | 0 | 1 | 16 | 0 | 0 | 7 |
| Leven Road Phase Three | 44 | 10 | 0 | 1 | 33 | 0 | 0 | 27 |
| Loren Appartments | 26 | 5 | 0 | 3 | 16 | 1 | 3 | 13 |
| Mills Grove 1-9 | 11 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mills Grove 12-20 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |

| Address | Total No. Windows | No. Windows that meet BRE criteria | Annual PSH | | | Winter PSH | | |
|---|---|---|---|---|---|---|---|---|
| | | | Below BRE Guidelines | | | Below BRE Guidelines | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction |
| Mills Grove 17-25 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mills Grove 2-10 | 9 | 8 | 0 | 0 | 1 | 0 | 0 | 1 |
| Mills Grove 9-15 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| St Leonards Road 118-132 | 9 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| St Leonards Road 134-146 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| St Leonards Road 148-154 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sherman House | 35 | 3 | 0 | 0 | 31 | 0 | 0 | 30 |
| St.Nicholas Church | 37 | 31 | 0 | 0 | 6 | 0 | 0 | 0 |
| Wooster Gardens 1-7 | 29 | 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wooster Gardens 9-15 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Totals** | 1352 | 1008 | 11 | 23 | 292 | 1 | 8 | 256 |

- **Ailsa Wharf Block A** – a total of 19 additional windows would experience Major Adverse APSH impacts and 13 additional windows would experience Major Adverse WPSH impacts as a result of cumulative schemes coming forward. Therefore, the effect is considered to increase to Moderate to Major Adverse (Significant). The effect was considered Minor Adverse (Not Significant) as a result of the Proposed Development and therefore the additional effects occur as a result of cumulative schemes.
- **Ailsa Wharf Block D** – a total of 16 additional windows would experience Moderate to Major Adverse APSH impacts and 12 additional windows would experience Major Adverse WPSH impacts as a result of cumulative schemes coming forward. Therefore, the effect is considered to increase to **Moderate to Major Adverse (Significant)**. The effect was considered **Minor Adverse (Not Significant)** as a result of the Proposed Development and therefore the additional effects occur as a result of cumulative schemes.
- **Ailsa Wharf Blocks K L** – no additional windows would be impacted for APSH in the cumulative scenario however, the effect would increase from Moderate to Major Adverse for the three windows experiencing changes in sunlight, which is unlikely to be noticeable. Therefore, the effect is considered to remain **Negligible** to **Minor Adverse (Not Significant)**.
- **Bromley Hall** - a total of two additional windows would experience Major Adverse APSH and WPSH impacts as a result of cumulative schemes coming forward. Therefore, the effect is considered to remain **Minor Adverse (Not Significant)**.
- **Devons Wharf** – a total of 11 additional windows would experience Minor to Major Adverse APSH impacts and seven additional windows WPSH impacts as a result of cumulative schemes coming forward. Therefore, the effect is considered to remain **Minor Adverse (Not Significant)**.

*Overshadowing*

**14.658** The potential overshadowing impacts of the Proposed Development in the cumulative scenario on surrounding amenity areas have been assessed against the Baseline Scenario. The full overshadowing assessment for the Cumulative scenario can be found within **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 5** and is summarised below.

**14.659** The emerging consented schemes are located to the north-east of the Proposed Development and, as such, they have only potential to affect a limited number of receptors to the north of the Proposed Development.

*Transient Overshadowing*

*21st March*

**14.660** On this day, additional shadows are cast from the cumulative schemes from 08:00 to 12:00 AM GMT upon Bromley Hall School. From 12:00 AM to 5:00 PM GMT strips of additional shadows are cast onto Bow Creek / River Lea by the cumulative schemes. All other receptors discussed in the Proposed Development scenario remain unaffected in the cumulative scenario.

**14.661** The significance of effects is provided in the subsequent 'Sun Hours on Ground' section.

*21st June*

**14.662** On this day, additional shadows are cast from the cumulative schemes for one hour from 06:00 to 7:00 AM BST upon a small portion of the rear gardens of the properties along Joshua St and Mills Grove. These spaces remain unaffected for the rest of the day. From 7:00 AM to 12:AM BST additional shadows are cast by the cumulative schemes onto the easternmost open spaces of Bromley Hall School. From 2:00 PM to 8:00 PM BST strips of additional shadows are cast onto the Bow Creek / River Lea by the cumulative schemes. All other receptors discussed in the Proposed Development scenario remain unaffected in the cumulative scenario.

*21st December*

**14.663** On this day, additional shadows are cast from the cumulative schemes onto the Bow Creek / River Lea from 11:00 AM to 3:00 PM GMT. All other receptors discussed in the Proposed Development scenario remain unaffected in the cumulative scenario.

*Sun Hours on Ground*

**14.664** A detailed Sun Hours on Ground assessment has been carried out for the most affected open spaces to understand the scale and nature of the impacts.

**14.665** With the exception of Bromley Hall School, in the cumulative scenario there are no additional cumulative effects to all other receptors assessed and reported on in the Proposed Development scenario section.

**14.666** For Bromley Hall school, in the cumulative scenario seven open spaces would remain BRE compliant. The 6 open spaces affected in the Proposed Development scenario would still be affected, one of which would have a reduction of 34% which is considered a moderate adverse effect whilst the other five would all see reductions ranging from 46% to 100% which is considered a major adverse effect. There is one open space that would meet BRE's recommendation in the Proposed Development scenario that would fall short of recommendation in the cumulative scenario, seeing a 46% reduction and therefore having a major adverse effect. Overall, in consideration of the 7 open spaces of this building seeing negligible effects, and the adverse effects above, it is considered that Bromley Hall School would see a **Moderate (Significant)** effect upon implementation of the Proposed Development and therefore increased from the Proposed Development scenario in isolation.

### *Impacts to Sensitive Cumulative Scheme (Future Receptors)*

**14.667** This section of the ES chapter assesses the potential effects of the Proposed Development onto cumulative schemes which are future sensitive receptors to daylight and sunlight. A total of three sensitive consented buildings have been considered:

- Former Bus Depot;
- Islay Wharf; and
- 45-47 Abbott Road.

*Daylight*

**14.668** The full daylight results are presented for the impacts of the Proposed Development future sensitive receptors is provided in **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing and Solar Glare – Annex 4** and summarised below in **Table 14.14.**

**14.669** For 45-47 Abbott Road, all 44 windows serving 23 rooms were assessed for daylight within this building. They would meet BRE's criteria for both VSC and NSL and as such experience a **Negligible (Not Significant)** effect.

**14.670** The remaining two buildings are discussed in further detail below.

**Table 14.14 Daylight Assessment of the Proposed Development at Future Sensitive Receptors (VSC, NSL and ADF)**

| Address | VSC | | | | | | NSL | | | | | | ADF | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total No. of Windows | No. Windows that meet BRE criteria | Below BRE Guidelines criteria | | | | Total No. of Rooms | No. Rooms that meet the 0.8 times former value criteria | Below BRE Guidelines criteria | | | | Total | Pass | Compliance (%) |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | Total | | | |
| Former Bus Depot | 470 | 357 | 32 | 49 | 32 | 113 | 271 | 265 | 5 | 1 | 0 | 6 | 271 | 236 | 87.1 |
| Islay Wharf | 42 | 37 | 5 | 0 | 0 | 5 | 18 | 18 | 0 | 0 | 0 | 0 | 18 | 17 | 94.4 |
| 45-47 Abbott Road | 44 | 44 | 0 | 0 | 0 | 0 | 23 | 23 | 0 | 0 | 0 | 0 | 23 | 22 | 95.7 |
| **Total** | 556 | 438 | 37 | 49 | 32 | 118 | 312 | 306 | 5 | 1 | 0 | 6 | 312 | 275 | 88.1 |

*Islay Wharf*

**14.671** A total of 42 windows serving 18 rooms on the lowest residential floors were assessed for daylight within this building. Of these 18 rooms, 15 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.672** For VSC, 37 of the 42 (88.1%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.673** Of the five affected windows, all would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect.

**14.674** For NSL, all rooms assessed would meet BRE's criteria and so are considered to experience a Negligible effect. Due to this building being consented, there are no residents there to experience a reduction and the assessment of Average Daylight Factor (ADF) in the rooms considered above has also been undertaken to gauge what the alterations and retained internal levels of daylight would be upon implementation of the Proposed Development.

**14.675** Of the 18 rooms assessed for ADF, four would experience no ADF alterations, eight would see marginal reductions of 0.1% ADF and six would see reductions ranging from 0.5% to 0.7% ADF. When looking at the retained ADF levels, all rooms would retain ADF levels in line with or above BRE's recommendation.

**14.676** Overall, the effect on this building is considered **Negligible (Not Significant).**

*Former Poplar Bus Depot*

**14.677** A total of 470 windows serving 271 rooms were assessed for daylight within this building. Of these 271 rooms, 179 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

**14.678** For VSC, 357 of the 470 (76%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.679** Of the 113 affected windows, 32 would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and 49 would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 32 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

**14.680** The affected windows serve a total of 78 rooms, 65 of which are bedrooms which may be considered less sensitive to daylight alterations, one is a kitchen, 4 are LKDs and 8 are living rooms.

**14.681** For NSL, 265 of the 271 (97.8%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

**14.682** Of the six affected rooms, five would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect whilst one would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect.

**14.683** Due to this building being consented, there are no residents there to experience a reduction and the assessment of Average Daylight Factor (ADF) in the rooms considered above has also been undertaken to gauge what the alterations and retained internal levels of daylight would be upon implementation of the Proposed Development.

**14.684** Of the 271 rooms assessed for ADF, 225 rooms would meet BRE's recommendation in the baseline scenario whilst 212 would meet BRE's recommendation in the Proposed Development scenario. Of the 13 rooms meeting guidelines in the baseline scenario seeing retained ADF levels below recommendation in the Proposed Development scenario, four are bedrooms, one is kitchen, three are living rooms and five are LDKS. 10 of these rooms would see marginal reductions of 0.1%-0.2% ADF, whilst three would see a small ADF reduction of 0.3%.

**14.685** Of the 46 rooms not meeting BRE's recommendation in the baseline scenario, 24 would experience no ADF alterations, 17 would see marginal reductions of 0.1%-0.2% ADF and five would see small reductions ranging from 0.3% to 0.4% ADF.

**14.686** Overall, the vast majority of rooms within this building will see small alterations in their levels of light whilst retaining internal ADF levels above BRE's recommendation. Less than half of the few rooms not meeting recommendation in the baseline scenario would see only marginal or small ADF reductions. Therefore, overall the effect upon this building is considered **Minor Adverse (Not Significant)**.

*Sunlight*

**14.687** The full sunlight results are presented for the impacts of the Proposed Development future sensitive receptors is provided in Appendix **ES Volume 3, Appendix Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare – Annex 4** and summarised below in **Table 14.15.**

**Table 14.15 Sunlight Assessment of the Proposed Development at Future Sensitive Receptors (APSH and WPSH)**

| Address | Total No. Windows | No. Windows that meet BRE criteria | Annual PSH | | | Winter PSH | | |
|---|---|---|---|---|---|---|---|---|
| | | | Below BRE Guidelines | | | Below BRE Guidelines | | |
| | | | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction | 20-29.9% Reduction | 30-39.9% Reduction | >40% Reduction |
| Former Bus Depot | 367 | 263 | 5 | 7 | 66 | 0 | 0 | 94 |
| Islay Wharf | 30 | 24 | 2 | 3 | 1 | 0 | 0 | 3 |
| 45-47 Abbott Road | 23 | 22 | 0 | 0 | 0 | 0 | 0 | 1 |
| **Total** | **420** | **309** | **7** | **10** | **67** | **0** | **0** | **98** |

*Islay Wharf*

**14.688** A total of 30 windows were assessed for sunlight within this building of which 24 (80%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.689** A total of six windows would be affected annually, of which two would experience an alteration between 20-29.9% which is considered a Minor Adverse effect, three would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect and one would experience an alteration greater than 40% which is considered a major adverse effect. These windows all serve dual aspect LKDs which have at least another window receiving sunlight levels far above recommendation and that is not affected by the Proposed Development.

**14.690** Three of the six windows above would also be affected in winter, which would experience an alteration in excess of 40% in WPSH which is considered a Major Adverse effect.

**14.691** Overall, considering the small number of shortfall and the presence of mitigating unaffected and well sunlit windows in the rooms seeing reductions, the effect on this property is considered **Negligible (Not Significant)**.

*Former Poplar Bus Depot*

**14.692** A total of 367 windows were assessed for sunlight within this building of which 263 (71.7%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.693** A total of 78 windows would be affected annually, of which five would experience an alteration between 20-29.9% which is considered a Minor Adverse effect, seven would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect and 66 would experience an alteration greater than 40% which is considered a major adverse effect. Despite the moderate to major adverse effects, the vast majority of windows retains levels of APSH in excess of 15%, which is considered appropriate in this area of regeneration.

**14.694** A total of 94 windows would also be affected in winter, which would experience an alteration in excess of 40% in WPSH which is considered a Major Adverse effect.

**14.695** Overall, considering the small number of shortfall, the presence of mitigating unaffected and well sunlit windows in the rooms seeing reductions, and the retained levels of sunlight, the effect on this property is considered **Minor** to **Moderate (Significant)**.

*45-47 Abbott Road*

**14.696** A total of 23 windows were assessed for sunlight within this building, of which 22 (95.7%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

**14.697** Only one window serving a bedroom would see a 55.6% reduction in WPSH whilst remaining above recommendation for APSH.

**14.698** Overall, considering the only shortfall for a bedroom which is less sensitive in relation to sunlight, the effect on this property is considered **Negligible (Not Significant)**.

## LIKELY SIGNIFICANT EFFECTS

**14.699** For daylight and sunlight, a total of 42 buildings are assessed. For daylight, a total of 29 buildings would experience Negligible to Minor Adverse effects, which are not considered significant. A further six would experience effects ranging from Minor to Moderate Adverse, which may result in a perceptible alteration in daylight conditions. The remaining seven, 110-126 Leven Road, 199-225 Abbott Road, Lansbury Gardens 2-12, Loren Apartments, Sherman House, Atelier Court, Leven Road Phase Three and would experience significant Moderate to Major daylight effects. In terms of sunlight, the majority, 33 sensitive buildings, would not be significantly affected and would experience effects ranging from Negligible to Minor Adverse. A further two would experience effects ranging from Minor to Moderate Adverse, which may result in a perceptible alteration in sunlight conditions. The remaining six, Atelier Court, Lansbury Gardens 2-12, 199-225 Abbott Road, Leven Road Phase Three, Loren Apartments and Sherman House would experience significant Moderate to Major sunlight effects.

**14.700** Whilst significant effects have been identified, the Standalone Daylight and Sunlight Impacts Upon Neighbours Report provides further consideration of the Illustrative Masterplan, outlining that acceptable levels of natural light are retained for the most affected buildings upon testing of an articulated massing.

**14.701** For overshadowing, six of 14 of the open spaces at Bromley Hall School and private terraces at 3 and 4 Dee Street would experience significant effects.

**14.702** No significant solar glare effects are identified at the 14 viewpoints assessed.

**14.703** Additional cumulative overall effect is identified for eight sensitive buildings in relation to daylight and two in relation to sunlight.

**14.704** For overshadowing, only Bromley Hall School would experience additional cumulative effects.

**14.705** No significant daylight effects have been identified to future sensitive receptors in relation to daylight. For sunlight, only Former Poplar Bus Depot would experience a Minor to Moderate Adverse effect.

# Chapter 15: Effect Interactions

## INTRODUCTION

**15.1** This chapter of the Environmental Statement (ES) summarises the likelihood for in-combination effects or 'effect interactions'. Effect interactions occur because of interactions between multiple individual effects associated with just one project on a receptor i.e. the combination of individual effects, for example effects in relation to noise, air quality and traffic on a receptor. Note that effects arising from the Proposed Development in combination with other developments or 'cumulative schemes' have been discussed separately throughout this ES (in **Volume 1, Chapters 6-14** and **ES Volume 2, Townscape, Visual Impact and Heritage Assessment**), as appropriate, and have not been re-iterated within this ES chapter to avoid repetition.

**15.2** There is no established EIA methodology for assessing the nature and scale of effect interactions on a receptor. However, the European Commission (EC)[1] has produced guidelines to assist EIA practitioners in developing an approach which is appropriate to a project. These guidelines have been used to develop an approach which uses the defined *residual effects* of the Proposed Development (as presented throughout this ES (in **ES Volume 1, Chapters 6-14, Volume 2, Townscape, Visual Impact and Heritage Assessment**) to determine the potential for effect interactions. These residual effects are reliant on mitigation measures (as identified throughout this ES and presented in **ES Volume 1, Chapter 17: Mitigation and Monitoring Schedule**); the mitigation measures have been assumed to be secured / implemented through the discharge of relevant planning conditions and Section 106 Obligations.

**15.3** The approach to defining effect interactions, involves tabulating the residual effects of the Proposed Development against receptors or, where more appropriate, receptor groups to identify the potential for in-combination effects or effect interactions. Residual effects that are beneficial, adverse or neutral in nature and that are minor, moderate or major in scale have been considered. Residual effects that are negligible in scale have been omitted, as these effects are, by definition, unnoticeable and insignificant. It is not considered that there would be a scenario where multiple negligible effects could lead to significant effect interactions. Based on the definitions of what negligible effects comprise for each of the technical assessments, these do not warrant further consideration therefore have not been pulled through into the assessment of effect interactions within this ES chapter. Only residual effects described as minor and above will therefore be considered in the assessment of effect interactions.

**15.4** The effects highlighted in **green** within the tables presented in this chapter reflect beneficial effects, those in **blue**, neutral effects and those in **orange**, adverse effects.

**15.5** The potential for in-combination effects is identified, and professional judgement is used to determine if the potential in-combination effects could lead to an effect interaction. Where a resultant effect interaction is identified, this is further discussed qualitatively.

**15.6** The scale of an effect interaction is not assigned as part of this assessment; however, whether the effect interaction is considered to be significant or not is identified. For example, when one or more residual significant effects from different EIA topics (i.e. air quality, noise and vibration, highways and transport or visual) coincide on a receptor or receptor group, the effect interaction has been identified[2] as significant. If none of the individual effects are significant, consideration will be given as to whether or not the combination of many not significant effects could result in a combined significant effect, based on professional opinion.

**15.7** The majority of technical chapters have assessed several scenarios for the demolition and construction works, and once the Proposed Development is complete and operational, in order to assess the worst-case scenario. This chapter is based on the residual effects of each technical chapter of this ES (**ES Volume 1, Chapters 6-14**) from the scenario that tested both the detailed and outline proposals. The effects presented in this ES chapter are representative of a realistic worst case, as assessed throughout the ES, of the residual effects associated with the outline and detailed proposals in combination.

**15.8** In-combination effects or effect interactions arising from the demolition and construction works, and the completed and operational Proposed Development are discussed below. As such, the remainder of this chapter has been divided into two parts:

- Table 15.1 addresses the potential for in-combination effects and effect interactions to relevant receptors / receptor groups arising from the demolition and construction works; and
- Table 15.2 addresses the potential for in-combination effects and effect interactions to relevant receptors/ receptor groups arising from the completed and operational Proposed Development.

## DEMOLITION AND CONSTRUCTION

**15.9** **Table 15.1** presents the in-combination effects assessment and identifies the potential for effect interactions throughout the demolition and construction works. Where the potential for an effect interaction is identified, this is discussed in more detail below the table.

**Table 15.1 Demolition and Construction**

| Sensitive Receptor Group | Technical Topic Area & Residual Effects | Scale and Nature of Residual Effect | Significant Effect | Potential for In-Combination Effects / Effect Interactions |
|---|---|---|---|---|
| **Loss of existing, on-site residential** | **Socio-Economics:** Displacement of existing, on-Site residential as a result of demolition and construction activity. | Minor Adverse | Not Significant | **NO** No other residual effects to interact with. |
| **Local economy** | **Socio-Economics:** Temporary employment opportunities at the regional level as a result of demolition and construction activity. | Minor Beneficial | Not Significant | **NO** No other residual effects to interact with. |
| **Pedestrians and cyclists** | **Traffic and Transport:** Adverse effect on pedestrian and cyclist severance due to construction activities and construction traffic | Minor Adverse | Not Significant | **NO** No other residual effects to interact with. |
| **Road users (vehicle passengers)** | **Traffic and Transport:** Increased vehicle severance as a result of construction traffic | Minor Adverse | Not Significant | **NO** No other residual effects to interact with. |
| **Existing and Introduced Residential Receptors** | **Noise and Vibration:** Demolition and construction noise and vibration on residential receptors immediately adjacent to activities (short term) | Negligible to Major Adverse | **Significant** | **YES** **Potential for in-combination effects in relation to:** Noise and vibration (short and long term) **With** Flood risk to local residents and new site occupants **On Residential Receptors** |
| | **Noise and Vibration:** Demolition and construction noise and vibration on residential receptors immediately adjacent to activities (medium term) | Minor Adverse | Not Significant | |
| | **Water Resources, Flood Risk and Drainage** Temporary flood risk on local residents of the surrounding area | Minor Adverse | Not Significant | |
| | **Water Resources, Flood Risk and Drainage** Temporary flood risk on new site occupants of the surrounding area | Minor Adverse | Not Significant | |
| **Listed Buildings Not in a Conservation Area** | **Built Heritage:** Bromley Hall Road: former Bromley Hall School (GII) | Minor Adverse | Not Significant | **NO** No other residual effects to interact with. |
| **Construction workers** | **Water Resources, Flood Risk and Drainage** Flood risk on construction workers | Minor Adverse | Not Significant | **NO** No other residual effects to interact with. |
| **Thames Water Drainage Network** | **Flood Risk:** Drainage quantity and quality on the drainage network capacity | Negligible/Minor Adverse | Not Significant | **NO** No other residual effects to interact with. |

[1] *European Community (1999); Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.*

[2] *The methodology for determining a significant in-combination effect has been defined by the HS2 Phase 2a: West Midlands – Crewe Scoping and Methodology Report (July 2017) and the published HS2 Phase 2a Environmental Statement Volume 1 Introduction and Methodology and Volume 2 Community Area Reports (July 2017). The methodology for assigning significance to in combination effects has been specifically included in this ES to assess if there are any combination effects would result in a significant effect.*

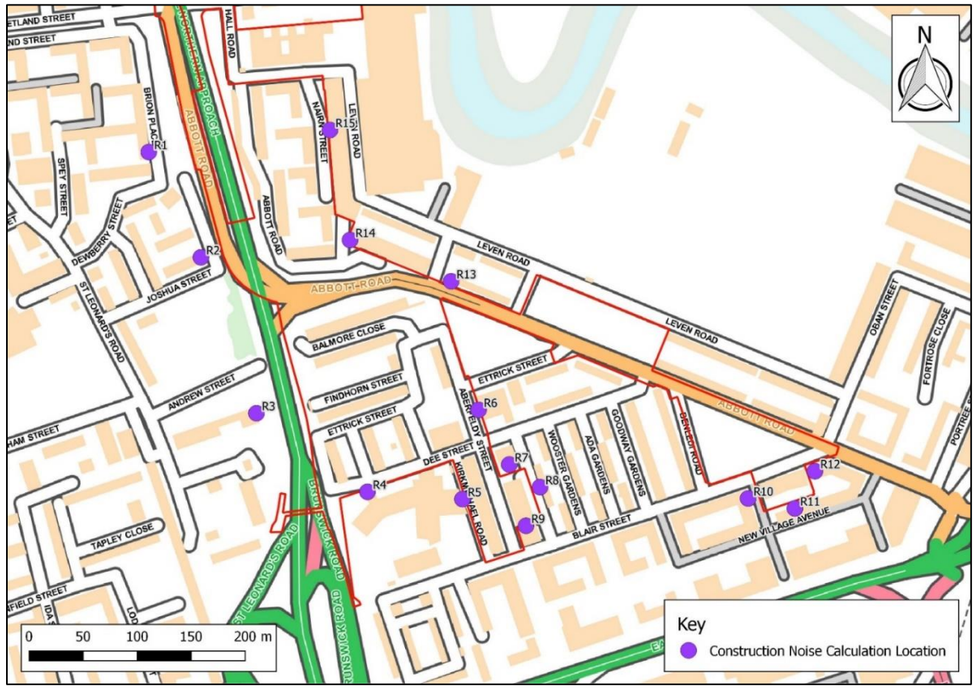
| | | | | |
|---|---|---|---|---|
| **Climate Systems** | **Climate Change**<br>Adverse effects to climate systems as a result of construction emissions | Minor Adverse | **Significant** | **NO**<br>No other residual effects to interact with. |
| **Groundwater** | **Water Resources, Flood Risk and Drainage**<br>Adverse effects to the quality of groundwater | Negligible/Minor Adverse | Not Significant | **NO**<br>No other residual effects to interact with. |

### *Residential Receptors*

**15.10** Potential in combination effects and effect interactions as a result of noise and vibration effects to local residents immediately adjacent to construction activities with new site occupants in terms of flood risk are not anticipated to interact. These residual effects would occur at different periods of the construction programme to various residential receptors both surrounding the Site as well as new site occupants. Residual flood risk effects refer to a potential temporary increase in flood risk to local and new site occupations whereas noise and vibration effects are to be experienced by residential receptors during the majority of the construction phase (when considering a worst-case scenario). As such, there is no potential effect interaction between noise and vibration and flood risk residual effects.

**15.11** However, there is a potential for an in-combination effect and effect interaction in relation to noise and vibration effects to residential receptors during demolition and construction works. Throughout the construction phase, when considering a worst-case scenario, receptors immediately adjacent to construction activities will exceed the significant observed adverse effect level threshold for noise, as well as vibration. Residential receptors which are expected to experience significant effects as a result of construction noise include receptors at locations R3 – R15 (see **Figure 15.1** below) during all demolition and construction activities, with the exception of R13 (which would experience a minor adverse effect during sub structure construction activities and roadwork activities and moderate adverse effects during all other activities). All other receptors would experience negligible to minor adverse effects throughout the entire demolition and construction phase. Receptors R5 – R12 and R14 and R15 would also experience between moderate and major adverse effects as a result of construction vibration. These effects would be expected throughout the majority duration of the construction programme. This in-combination effect and effect interaction is considered **significant** as receptors would experience significant adverse noise as well as significant adverse vibration effects.

**Figure 15.1 Existing Residential Receptors (Noise Construction Assessment)**




**15.12** However, it is recognised that these effects are based on a worst case scenario in which construction activities occur simultaneously and assumed to be conducted at the closest distance to residential receptors. In reality, this would be unlikely (of short term only) and when taking into consideration the separation distance between these activities and residential receptors, the relocation of noisy activities as the construction programme progresses away from the site boundary as well as the adoption of recommended best practicable means (see **ES Volume 1, Chapter 9: Noise and Vibration** and **ES Volume 1, Chapter 17: Mitigation and Monitoring Schedule**) construction noise levels can typically be reduced by 10 dB(A) and individual effects to residential receptors would be expected to reduce to negligible.

**15.13** Notwithstanding this, procedures will be implemented to control the potential impact of noise and vibration for residential receptors in which consideration will be given to the use of quieter techniques or targeted and specific noise mitigation measures (such as reduced duration of operation, enclosure of equipment etc.) to ensure continued compliance with the criterion limit.

**15.14** Whilst the noise and vibration effects have the potential to interact, the interaction of these effects is not unusual for construction works and would be managed as far as reasonably possible through measures such as the Construction Environmental Management Plan (CEMP). It is not uncommon for construction works to be undertaken near sensitive uses and the potential for temporary or short-term adverse effects on local residences and residential amenity is expected. This is an inevitable consequence of living within an urban environment, particularly within an area undergoing rapid regeneration in accordance with a local development plan.

## COMPLETED DEVELOPMENT

**15.15** **Table 15.2** presents the in-combination effects and effect interactions to relevant receptors / receptor groups arising from the completed and operational Proposed Development. Where the potential for an in-combination effect and an effect interaction is identified, this is discussed in more detail below.

**Table 15.2 Completed Proposed Development**

| Sensitive Receptor Group | Technical Topic Area & Residual Effects | Scale and Nature of Residual Effect | Significant Effect | Potential for In-Combination Effects / Effect Interactions |
|---|---|---|---|---|
| **Housing targets** | **Socio-Economics:**<br>The delivery of new homes to support housing need at the LIA and LBTH levels as set out within the New London Plan. | Moderate to Major Beneficial | **Significant** | **NO**<br>No other residual effects to interact with. |
| **Population and labour market** | **Socio-Economics:**<br>Population, and labour market growth enabled as a result of the new homes delivered as part of the Proposed Development. | Minor Beneficial | Not Significant | **NO**<br>No other residual effects to interact with. |
| **On-site employment** | **Socio-Economics:**<br>On-site employment supported by the non-residential uses delivered as part of the Proposed Development. | Minor Beneficial | Not Significant | **NO**<br>No other residual effects to interact with. |
| **Local economy (local expenditure)** | **Socio-Economics:**<br>Increased expenditure on convenience and comparison goods and services by the families living within the new dwellings delivered as part of the Proposed Development. | Minor Beneficial | Not Significant | **NO**<br>No other residual effects to interact with. |
| **Play space** | **Socio-Economics:**<br>Increased requirement for play space for children under the age of 18 living within the new homes in the Proposed Development. | Minor Beneficial | Not Significant | **NO**<br>No other residual effects to interact with. |
| **Community centres** | **Socio-Economics:** | Minor Beneficial | Not Significant | **NO** |

| Sensitive Receptor Group | Technical Topic Area & Residual Effects | Scale and Nature of Residual Effect | Significant Effect | Potential for In-Combination Effects / Effect Interactions |
|---|---|---|---|---|
| | Increased requirement for community centres. | | | No other residual effects to interact with. |
| **Deprivation** | **Socio-Economics:** Improvements to the public realm, increased labour market participation, and the delivery of new affordable units. | Moderate Beneficial | **Significant** | **NO** No other residual effects to interact with. |
| **Crime and social cohesion** | **Socio-Economics:** Overall reduction in crime and improved feeling of social cohesion. | Minor Beneficial | Not Significant | **NO** No other residual effects to interact with. |
| **Pedestrians and cyclists** | **Traffic and Transport** Beneficial effect on pedestrian and cyclist severance due to the improved landscaping added priority crossing facilities provided for pedestrians. | Major Beneficial | **Significant** | **YES** **Potential for in-combination effects in relation to:** Pedestrian and cyclist severance **With** Pedestrian and cyclist delay **With** pedestrian and cyclist amenity, fear and intimidation **With** Pedestrians and cyclists traffic safety **With** Wind conditions at pedestrian crossings **With** Strong Winds **On** **Pedestrians and cyclists** |
| | **Traffic and Transport** Beneficial effect on pedestrian and cyclist delay as a result of reduction in traffic flows | Minor Beneficial | Not Significant | |
| | **Traffic and Transport** Beneficial effect on pedestrian and cyclist amenity, fear and intimidation due to provision of a high-quality public realm | Major Beneficial | **Significant** | |
| | **Traffic and Transport** Beneficial effect on pedestrians and cyclists in terms of traffic safety (accidents and safety) as a result of traffic calming measures | Moderate Beneficial | **Significant** | |
| | **Wind Microclimate** Wind conditions at pedestrian crossings (windiest season) | Moderate Beneficial | Not Significant | |
| | **Wind Microclimate** Strong winds within or around the Proposed Development including roads and car parks (Outline Proposals only) | Adverse* | **Significant** | |
| **Public transport users (bus passengers** | **Traffic and Transport** Beneficial effects to the bus passenger severance due to additional bus trips and bus network infrastructure generated by the Proposed Development | Moderate Beneficial | **Significant** | **YES** **Potential for in-combination effects in relation to:** |
| | **Traffic and Transport** Adverse effects to bus passenger delay. | Negligible - Minor Adverse | Not Significant | Bus passenger severance **With** Bus passenger delay **With** Wind conditions at existing and proposed bus stops **On** **Public transport users (bus passengers)** |
| | **Wind Microclimate** Wind conditions at bus stops (existing and proposed) | Minor Adverse to Minor Beneficial | **Significant** | |
| **Road users (vehicle passengers)** | **Traffic and Transport** Adverse and beneficial effects to the vehicle passenger severance due to the new highway improvement works. | Minor Adverse to Minor Beneficial | Not Significant | **YES** **Potential for in-combination effects in relation to:** Vehicle severance **With** Vehicle passenger delay **With** Instances of solar glare **On** **Road users (vehicle passengers)** |
| | **Traffic and Transport** Adverse effects to vehicle passenger delay. | Negligible - Minor Adverse | Not Significant | |
| | **Solar Glare** Instances of solar glare at Viewpoint 5 | Minor Adverse | Not Significant | |
| | **Solar Glare** Instances of solar glare at Viewpoint 8 | Minor Adverse | Not Significant | |
| | **Solar Glare** Instances of solar glare at Viewpoint 9 | Minor Adverse | Not Significant | |
| | **Solar Glare** Instances of solar glare at Viewpoint 12 | Minor Adverse | Not Significant | |
| **Views** | **Visual Impact** Improvements and enhancements to:<br>• View 2 Junction of Robin Hood Lane and Poplar High Street,<br>• View 4 Portree Street, junction with Abbott Road;<br>• View 11 A12, junction with Teviot Street<br>• View 16 Pedestrian path from A102 / St Leonards Road<br>• View 22 Bartlett Park. | Minor to Moderate Beneficial | Not Significant | **NO** No other residual effects to interact with |
| | **Visual Impact** Improvements and enhancements to:<br>• View 1 South of East India Dock Road; | Moderate Beneficial | **Significant** | **NO** No other residual effects to interact with |

| Sensitive Receptor Group | Technical Topic Area & Residual Effects | Scale and Nature of Residual Effect | Significant Effect | Potential for In-Combination Effects / Effect Interactions |
|---|---|---|---|---|
| | • View 5 LBTH borough designated view 6: View from East India Dock Road to Balfron Tower & Canary Wharf in the background,<br>• View 6 A12, junction with Zetland Street;<br>• View 7 Riverside footpath north of River Lea / Bow Creek, View 12 Uamvar Street;<br>• View 13 LBTH borough designated view 5: View from Langdon Park to Balfron Tower & Canary Wharf in the background;<br>• View 15 St Leonards Road Principally experienced by a mix of local residents and workers;<br>• View 30 A12, junction with East India Dock Road, looking north;<br>• View 31 Dee Street / Abbott Road. | | | |
| | **Visual Impact**<br>Improvements and enhancements to:<br>• View 3 Abbott Road / Ettrick Street<br>• View 8 Bow Creek / River Lea Bridge<br>• View 14 Jolly's Green;<br>• View 32 Dee Street, midway | Moderate to Major Beneficial | **Significant** | **NO**<br>No other residual effects to interact with |
| | **Visual Impact**<br>Impact to view:<br>• View 10 Star Lane Park<br>• View 17 All Saints Churchyard, inside west entrance gates<br>• View 18 Poplar High Street, bridge over railway tracks<br>• View 19 Poplar Recreation Ground<br>• View 21 Cordelia Street<br>• View 24 Greenwich Park: the General Wolfe statue – at the orientation board<br>• View 29. Chrisp Street, looking along Willis Street<br>• View 34 Memorial Recreation Ground | (Negligible to) Minor Neutral | Not Significant | **NO**<br>No other residual effects to interact with |
| | **Visual Impact**<br>Impact to the view:<br>• View 23 Twelvetrees Crescent, bridge over River Lea and Bow Creek<br>• View 28 South side of Bow Creek | Minor to Moderate Neutral | Not Significant | **NO**<br>No other residual effects to interact with |

| Sensitive Receptor Group | | Technical Topic Area & Residual Effects | Scale and Nature of Residual Effect | Significant Effect | Potential for In-Combination Effects / Effect Interactions |
|---|---|---|---|---|---|
| **Townscape Character Areas** | | **Townscape:**<br>TCA 1: Poplar | Moderate to Major Beneficial | **Significant** | **NO**<br>No other residual effects to interact with |
| | | **Townscape:**<br>TCA 2: Poplar Riverside | Moderate Significant | **Significant** | |
| | | **Townscape:**<br>TCA 4: East of the River Lea | Minor to Moderate Beneficial | Not Significant | |
| | | **Townscape:**<br>TCA 5: Limehouse Cut | Minor to Moderate Neutral | Not Significant | |
| **Existing and Introduced Residential Receptors** | **Onsite Introduced Residential Receptors** | **Wind Microclimate**<br>Wind conditions at thoroughfares (on site) – windiest season | Minor Adverse to Moderate Beneficial | **Significant** | **YES**<br>**Potential for in-combination effects in relation to:**<br>Wind conditions at thoroughfares, entrances, ground level amenity (mixed use and on-site seating), roof terraces<br>**With**<br>Reduced flood risk for new site occupants<br>**With**<br>Overheating effects<br>**On**<br>**Onsite Introduced Residential Receptors** |
| | | **Wind Microclimate**<br>Wind conditions at entrances (on site – windiest season | Moderate Adverse to Minor Beneficial | **Significant** | |
| | | **Wind Microclimate**<br>Wind conditions at ground level amenity (on site mixed used) – summer season | Negligible to Minor Adverse | **Significant** | |
| | | **Wind Microclimate**<br>Wind conditions at ground level amenity (on site seating) – summer season | Negligible to Moderate Adverse | **Significant** | |
| | | **Wind Microclimate**<br>Wind conditions at roof terrace amenity – summer season | Negligible to Minor Adverse | **Significant** | |
| | | **Water Resources, Flood Risk and Drainage**<br>Beneficial effects of reduced flood risk on new site occupants | Moderate Beneficial | Not Significant | |
| | | **Climate Change**<br>Adverse overheating effect to future users / occupants by the 2030s, 2060s and 2090s | Minor Adverse | **Significant** | |
| | **Offsite Residential Receptors** | **Water Resources, Flood Risk and Drainage**<br>Beneficial effects of reduced flood risk on local residents of the surrounding area | Moderate Beneficial | Not Significant | **YES**<br>Potential for in-combination effects in relation to:<br>**With**<br>Reduced flood risk for new site occupants<br>**With**<br>Reduced daylight levels<br>**With** |
| | | **Daylight**:<br>Daylight availability:<br>– 128-132 Leven Road<br>– Mills Grove 1-9<br>– Mills Grove 12-20<br>– Mills Grove 17-25<br>– Mills Grove 9-15<br>– St Leonards Road 118-132<br>– St Leonards Road 134-146<br>– Wooster Gardens 1-7 | Negligible to Minor Adverse | Not Significant | |

| Sensitive Receptor Group | | Technical Topic Area & Residual Effects | Scale and Nature of Residual Effect | Significant Effect | Potential for In-Combination Effects / Effect Interactions |
|---|---|---|---|---|---|
| | | – Wooster Gardens 9-15<br>– Balfron Tower<br>– Joshua Street 6-14<br>– Joshua Street 17-33<br>– St Leonards Road 148-154 | | | Reduced sunlight levels<br>**With**<br>Overshadowing<br>**With**<br>Changes in road traffic<br>**On**<br>**Existing Residential Receptors** |
| | | **Daylight:**<br>Daylight availability:<br>– Ailsa Wharf Block D<br>– Carradale House<br>– Dewberry Street 16-46<br>– Devons Wharf<br>– Joshua Street 1-15<br>– Joshua Street 35-41<br>– Aberfeldy Estate Phase Three Block G | Minor Adverse | Not Significant | |
| | | **Daylight:**<br>Daylight Availability:<br>– 177-195 Abbott Road<br>– Aberfeldy Estate Phase One Block C<br>– Aberfeldy Estate Phase Three Block J<br>– Aberfeldy Estate Phase Two Block D | Minor to Moderate Adverse | **Significant** | |
| | | **Daylight**:<br>Daylight availability:<br>– 110-126 Leven Road | Moderate Adverse | **Significant** | |
| | | **Daylight:**<br>Daylight availability:<br>– 199-225 Abbott Road<br>– Lansbury Gardens 2-12<br>– Loren Apartments<br>– Sherman House | Moderate to Major Adverse | **Significant** | |
| | | **Daylight**:<br>Daylight availability:<br>– Atelier Court<br>– Leven Road Phase Three | Major Adverse | **Significant** | |
| | | **Sunlight**:<br>Sunlight availability:<br>– 128-132 Leven Road<br>– 177-195 Abbott Road<br>– Ailsa Wharf Block A<br>– Ailsa Wharf Blocks K L<br>– Joshua Street 35-41 | Negligible to Minor Adverse | Not Significant | |
| | | **Sunlight**:<br>Sunlight availability:<br>– Ailsa Wharf Block D<br>– 110-126 Leven Road<br>– Devon's Wharf<br>– Mills Grove 2-10 | Minor Adverse | Not Significant | |
| | | **Sunlight**:<br>Sunlight availability:<br>– Aberfeldy Estate Phase One Block C | Minor to Moderate Adverse | **Significant** | |
| | | **Sunlight**:<br>Sunlight availability:<br>– Lansbury Gardens 2-12<br>– Sherman House | Moderate Adverse | **Significant** | |
| | | **Sunlight**:<br>Sunlight availability:<br>– Leven Road Phase Three<br>– Loren Apartments<br>– 199-225 Abbott Road | Moderate to Major Adverse | **Significant** | |
| | | **Sunlight**:<br>Sunlight availability:<br>– Atelier Court | Major Adverse | **Significant** | |
| | | **Overshadowing:**<br>Rear garden at 9 Wooster Garden | Minor Adverse | Not Significant | |
| | | **Overshadowing:**<br>Private terraces at 3 and 4 Dee Street | Major Adverse | **Significant** | |
| | | **Overshadowing:**<br>Rear gardens of the properties at 197, 201, 205, 209, 213, 217, 221 and 225 Abbott Road | Minor Adverse | Not Significant | |
| | **Residential Dwellings on Abbot Road** | **Noise and Vibration**<br>Changes in road traffic flows | Major Beneficial | **Significant** | |
| **Climate Systems** | | **Climate Change**<br>Adverse effects to climate systems as a result of operational energy emissions. | Moderate Adverse | **Significant** | **NO**<br>No other residual effects to interact with |
| **Climate Systems** | | **Climate Change**<br>Beneficial effects to climate systems as a result of improvements from transport emissions | Minor Beneficial | **Significant** | **NO**<br>No other residual effects to interact with |
| **Existing Educational Properties** | | **Daylight:**<br>Daylight Availability:<br>– Bromley Hall | Negligible to Minor Adverse | Not Significant | **YES**<br>**Potential for in-combination effects in relation to:**<br>Reduced daylight levels<br>**With**<br>Reduced sunlight levels<br>**With** |
| **Existing Educational Properties** | | **Daylight:**<br>Daylight Availability:<br>– Culloden Primary School | Minor to Moderate Adverse | **Significant** | |
| **Existing Educational Properties** | | **Sunlight:**<br>Sunlight Availability:<br>– Bromley Hall | Minor Adverse | Not Significant | |

| Sensitive Receptor Group | Technical Topic Area & Residual Effects | Scale and Nature of Residual Effect | Significant Effect | Potential for In-Combination Effects / Effect Interactions |
|---|---|---|---|---|
| | **Overshadowing:** 6 out of 14 open spaces at Bromley Hall School | Minor to Moderate Adverse | **Significant** | Overshadowing **On** **Existing Educational Properties** |
| **Existing Religious Properties** | **Daylight:** Daylight Availability: – St Nicholas Church | Minor to Moderate Adverse | **Significant** | **YES** **Potential for in-combination effects in relation to:** Reduced daylight **With** Reduced sunlight **On** **St Nicholas Church** |
| | **Sunlight:** Sunlight Availability: – St Nicholas Church | Minor to Moderate Adverse | **Significant** | |
| **Thames Water Drainage Network** | **Water Resources, Flood Risk and Drainage** Improved drainage quality on the drainage network capacity | Minor Beneficial | Not Significant | **NO** No other residual effects to interact with. |
| **Listed Buildings Not in a Conservation Area** | **Built Heritage** Bromley Hall Road: former Bromley Hall School (GII) | Minor Beneficial | Not Significant | **NO** No other residual effects to interact with. |
| ** for 'strong winds' the residual effect is defined as being significant or not significant. The scale of effect criteria are not applicable to 'strong winds'.* | | | | |

**15.16** Table 15.2 has identified the potential in-combination effect and effect interactions once the Proposed Development is completed and operational to the following sensitive receptors groups:

- Pedestrians and cyclists;
- Public transport users (bus passengers);
- Road users (vehicles passengers);
- Onsite introduced residential receptors;
- Existing residential receptors;
- Existing Educations Receptors; and
- St Nicholas Church.

**15.17** The potential for in-combination effects and effect interactions are considered in further detail below.

### *Pedestrians and Cyclists*

**15.18** The traffic and transport assessment (**ES Volume 1, Chapter 7: Traffic and Transport**) has considered the potential impacts on local transport links and their users, as a result of the Proposed Development. Minor beneficial (not significant) effects are anticipated to pedestrian and cyclist delay as a result of reductions in traffic flows when the Proposed Development is completed and operational. In addition to this, pedestrians and cyclists are expected to experience major beneficial (significant) effects to pedestrian and cyclist severance, amenity and reductions in fear and intimidation due to the improved landscaping and added priority crossing facilities provided for pedestrians. These effects are considered major beneficial (significant). Pedestrians and cyclists are also anticipated to experience a moderate benefit (significant) effect in terms of traffic safety as a result of traffic calming measures.

**15.19** The wind microclimate assessment (See **ES Volume 1, Chapter 13: Wind Microclimate**) determined that pedestrians crossings around the site (probe locations 237 and 238) would experience improved wind conditions (moderate beneficial) suitable for standing use during the windiest season which would not be considered significant. In addition to this, locations within or around the Proposed Development would experience strong winds which would exceed the safety threshold. This would be considered significant; however these significant residual effects are as a result of the Outline Proposals (Configuration 3). These exceedances would be addressed through further detailed design (informed by further wind assessment and incorporation of wind mitigation design measures, as appropriate) and the associated reserved matters applications.

**15.20** The potential for in-combination effects relating to Traffic and Transport and Wind Microclimate has been identified as pedestrians and cyclists would experience a range of effects once completed and operational. The effect interaction is considered significant as severance, amenity, fear and intimidation and traffic safety effects are each considered significant individually. Pedestrians and cyclists would also experience changes to wind microclimate conditions around the site. As such, this potential effect interaction on pedestrians and cyclists between Traffic and Transport and Wind Microclimate effects is considered a **significant effect**.

### *Public Transport Users (Bus Passengers)*

**15.21** Public transport users (bus passengers) are anticipated to experience a moderate beneficial (significant) effect due to additional bus trips and bus network infrastructure as a result of the Proposed Development. However, bus passengers may also experience negligible - minor adverse (not significant) effects as a result of delay to particular services once the Proposed Development is operational. See **ES Volume 1, Chapter 7: Traffic and Transport** for further details.

**15.22** Bus passengers may also experience minor adverse (significant) to minor beneficial (not significant) wind microclimate conditions at bus stops around the Site (See **ES Volume 1, Chapter 13: Wind Microclimate**). However, it should be noted as described above that these exceedances are as a result of the Outline Proposals. Where bus passengers would experience significant adverse wind effects, these would be expected to be addressed through further detailed design (informed by further wind assessment and incorporation of wind mitigation design measures, as appropriate) and the associated reserved matters applications.

**15.23** The potential for in-combination effects relating to Traffic and Transport and Wind Microclimate has been identified as public transport users would experience both beneficial and adverse effects as a result of the Proposed Development. This effect interaction is considered **significant** as both passenger severance effects and wind microclimate effects are considered significant in isolation. However, it is reasonable to assume that the not all bus passengers that would be expected to interact with the Proposed Development would experience both passenger severance effects in combination with unsuitable / suitable wind conditions at the same time. These effects would vary depending on the time of day and year the bus services are being used.

### *Road Users (Vehicle Passengers)*

**15.24** Road users (vehicle passengers) are anticipated to experience minor adverse to minor beneficial (not significant) vehicle severance effects due to the new highway improvement works of the Proposed Development. However, in combination with this, these receptors may also experience adverse effects (negligible – minor adverse) to vehicle passenger delay. This will depend on road user journey routes and when journeys are undertaken by these receptors, as delay will be more likely during peak AM and PM travel times. Therefore, there is the potential for an in-combination effect and effect interaction between these two effects to road users. This effect interaction is considered **not significant**.

**15.25** Solar glare effects (Refer to **ES Volume 1, Chapter 14: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare**) are not considered to interact with the above-mentioned Traffic and Transport effects as they each will be limited to specific viewpoints surrounding the Site and specific times throughout the day and year. In addition to this, the individual solar glare effects, which are each considered to be minor adverse (not significant), would not interact with each other as they relate to different viewpoints surrounding the Site in which road users (vehicle passengers) are likely to only encounter individually. As such, it is considered that there would not be an in-combination or effect interaction between both vehicle passenger severance, vehicle passenger delay and instances of solar glare as defined by the Traffic and Transport and Solar Glare assessments.

### *On-site Introduced Residential Receptors*

**15.26** The Wind Microclimate assessment (see **ES Volume 1, Chapter 13: Wind Microclimate**) determined that on-site introduced residential receptors are likely to experience a range of wind microclimate conditions a various locations around the site. Wind conditions at thoroughfares, entrances, ground level amenity (mixed use and on-site seating) and roof terraces are anticipated to range from negligible to minor adverse (significant) to moderate beneficial (not significant). On-site introduced residential receptors may experience in-combination effects when moving around the Site, however effects are likely to be experienced across either the summer and windiest season at different locations and as such may not be experienced at the same time or by the same introduced residential receptors. Adverse Wind Microclimate effects, as reported within **ES Volume 1, Chapter 13: Wind Microclimate**), are as a result of the Outline Proposals and as such will be subject to further detailed design (informed by further wind assessment and incorporation of wind mitigation design measures, as appropriate) and the associated reserved matters applications. However, based on the Proposed Development there is the potential for an in-combination effect and effect interaction between these effects which would be considered **significant** as each of these effects are considered significant individually.

**15.27** The Climate Change assessment and the Water Resources, Flood Risk and Drainage assessment have determined that on-site introduced residential receptors would experience both beneficial effects in terms of reduced flood risk, and adverse overheating effects by the 2030s, 2060s and the 2090s. It is not considered likely that these effects would interact with wind microclimate effects described above as these effects relate to comfort whereas flood risk and overheating effects relate to future climate reliance and adaptation to future conditions. Both the Water Resources, Flood Risk and Drainage assessment and the Climate Change assessment presented within **ES Volume 1, Chapter 9: Climate Change** and **ES Volume 1, Chapter 12 Water Resources, Drainage and Flood Risk** are based on future climate change projections which would be subject to ongoing climate change modelling and assumptions. In addition, reduced flood risk effects and potentially adverse overheating effects do not interact with one another as they relate to different components of the Proposed Development operation and as such would be addressed separately in the future as climate change projections are further investigated.

### *Existing Residential Receptors*

**15.28** Existing residential receptors are anticipated to experience both beneficial effects as a result of reduced flood risk as well as reduced availability (adverse effects) of daylight and sunlight as well as changes to overshadowing as a result of the Proposed Development. In addition to this, residential receptors along Abbott Road are expected to experience beneficial noise effects as a result of the reduction in traffic flows on the surrounding road network.

**15.29** The Daylight, Sunlight and Overshadowing assessment (see **ES Volume 1, Chapter 14: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare**) determined that existing residential receptors would experience adverse effects ranging from minor adverse (not significant) to major adverse (significant) to individual residential receptors. Some receptors would also experience reductions in sunlight availability which range from minor adverse (not significant) to major adverse (significant). As such, there is the potential for an in-combination effect and effect interaction to some existing residential receptors which would be considered **significant**. The following existing residential receptors are anticipated to experience an adverse daylight effect in combination with an adverse sunlight effect in which one or both effects are considered significant individually:

- Atelier Court;
- 199-225 Abbott Road;
- Loren Apartments;
- Leven Road Phase Three;
- Sherman House;
- Lansbury Gardens 2-12;
- Aberfeldy Estate Phase One Block C;
- 110-126 Leven Road; and
- 177-195 Abbott Road.

**15.30** Overshadowing effects to existing residential receptors are not anticipated to interact with the daylight and sunlight effects defined above as these effects would be experienced by different individual residential receptors. As such there is no additional in-combination effect or effect interaction between daylight, sunlight, and overshadowing effects as defined by **ES Volume 1, Chapter 14: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare**.

**15.31** Residential dwellings on Abbott Road are also expected to experience a major beneficial (significant) effect as a result of reduced road traffic noise when the Proposed Development is complete and operational. However, this effect is not considered to interact with overshadowing effects (minor adverse) to the rear gardens of properties at 197, 201, 205, 209, 213, 217, 221 and 225 Abbott Road as a reduction of road traffic noise would occur at different periods of the day to overshadowing effects to rear gardens. As such, there is not potential for an in-combination effect or effect interaction to these existing residential receptors.

### *Existing Educational Properties*

**15.32** The Daylight, Sunlight and Overshadowing assessment determined that Culloden Primary School and the former Bromley Hall School building would each experience adverse effects in regard to reduced levels of daylight and sunlight and changes to overshadowing levels. The former Bromley Hall School building is anticipated to experience a negligible to minor adverse (not significant) effects as a result of reduced daylight and sunlight levels. This in-combination effect and effect interaction is considered **not significant**.

**15.33** Culloden Primary School is anticipated to experience moderate to major adverse effect (significant) as a result of construction noise and major adverse effect (significant) as a result of construction vibration. This existing education receptors

**15.34** No other effects are anticipated to Culloden Primary School apart from the reduction in daylight availability which is considered minor to moderate adverse (significant) in isolation. Therefore, there are no in-combination effects or effect interactions to this existing education property. The former Bromley Hall School building is also only anticipated to experience changes to overshadowing levels to 6 out of 14 open space areas within the grounds of the property. As such, there are no in-combination effects or effect interactions to this property.

### *St Nicholas Church*

**15.35** St Nicholas Church is anticipated to experience a minor to moderate adverse (significant) effect as a result of reductions in daylight availability and a minor to moderate adverse (significant) effect as a result of a reduction in sunlight availability. As such, there is the potential for an in-combination effect and effect interaction to this existing religious receptor which would be considered **significant** as both effects are considered significant in isolation.

## SUMMARY

**15.36** The above assessment presented within this chapter has identified the following:

- Potential for **significant** in combination effects relating to Traffic and Transport and Wind Microclimate as pedestrians and cyclists would experience a range of beneficial effects once completed and operational. The effect interaction is considered significant as severance, amenity, fear and intimidation and traffic safety effects are each considered significant individually. Pedestrians and cyclists would also experience a change to wind microclimate conditions around the Site;
- Potential for **significant** in combination effects relating to Traffic and Transport and Wind Microclimate as public transport users would experience both beneficial and adverse effects as a result of the Proposed Development in regard to wind conditions in combination with improvements to passenger bus severance. However, it is reasonable to assume that the not all bus passengers that would be expected to interact with the Proposed Development would experience both passenger severance effects in combination with unsuitable / suitable wind conditions at the same time;
- Potential for **significant** in combination effects relating to Wind Microclimate conditions at thoroughfares, entrances, ground level amenity (mixed use and on-site seating) and roof terraces on onsite introduced residential receptors. These receptors may experience these effects when moving around the site, however effects are likely to be experienced across either the summer and windiest season at different locations and as such may not be experienced at the same time or by the same introduced residential receptors;
- Potential for **significant** in combination effects relating to reductions in daylight and sunlight conditions at the following existing residential receptors: Atelier Court, 199-225 Abbott Road, Loren Apartments, Leven Road Phase Three, Sherman House, Lansbury Gardens 2-12, Aberfeldy Estate Phase One Block C, 110-126 Leven Road and 177-195 Abbott Road; and

- Potential for **significant** in combination effects relating to reductions in daylight and sunlight availability to St Nicholas Church.

**15.37** In conclusion, it is not uncommon for a range of in-combination effects and effect interactions to be defined for a project and given the complexity, scale and nature of the Proposed Development, the identification of five potentially significant adverse in-combination effect and effect interaction is not unreasonable and expected as a result of redevelopment within urban environments.

# Chapter 16: Likely Significant Effects

## INTRODUCTION

**16.1** This chapter of the Environmental Statement (ES) presents a summary of the likely significant residual effects pertaining to the Proposed Development during the demolition and construction works, and once completed and operational.

**16.2** It should be noted, that for all topics apart from Wind Microclimate (see below), residual effects that are identified as 'moderate' or 'major' in scale are considered to be a likely significant effect (with effects that are 'negligible' or 'minor' in scale being 'not significant'). It should be noted that professional judgement in addition to published assessment guidance is used in concluding whether a residual effect is significant.

**16.3** For the wind microclimate assessment, as explained within **ES Volume 1, Chapter 13: Wind Microclimate**, adverse effects that are minor, moderate and major in scale are considered a 'significant' effect; and beneficial effects (at all scales) are considered 'not significant'. It is pertinent to note that the wind microclimate results presented in this chapter are those associated with the assessment of the maximum parameters of the outline element of the Proposed Development without any proposed mitigation or landscaping in place. The effects arising from the assessment of the Outline Proposals are not considered representative of the likely significant effects that will come forward as a result of the completed and operational Proposed Development, which will be subject to further detailed design (and wind assessment) at the reserved matters stage.

**16.4** The wind assessment of the Illustrative Scheme, with the proposed mitigation and landscaping (as presented in **ES Volume 1, Chapter 13: Wind Microclimate**) is considered to provide a more realistic representation of the likely wind microclimate effects as a result of the complete and operational Proposed Development. Almost all adverse effects have been mitigated and addressed through the assessment of the Illustrative Scheme. For context, the results of the Illustrative Scheme testing have also been included within this chapter. The Applicant is committed to further wind tunnel testing as the detailed design of the scheme comes forward and is committed to resolving all significant wind microclimate effects during subsequent RMA stage(s).

**16.5** The purpose of this chapter is to not re-present the residual effects associated with each of the technical topic assessments. All residual effects, including their associated nature and scale, are presented and summarised as relevant within each technical chapter of the ES, and reference should be made to **ES Volume 1, Chapters: 6 to 14** and **ES Volume 2**. Instead, this chapter focuses on the *likely significant effects* that are expected to arise as a result of the Proposed Development, in line with the EIA Regulations[1]. Significant adverse effects are shaded in 'orange' and significant beneficial effects are shaded in 'green'.

## LIKELY SIGNIFICANT EFFECTS

### *Demolition and Construction*

**16.6** Error! Reference source not found. summarises the likely significant effects arising as a result of the Proposed Development during demolition and construction.

**16.7** No significant demolition and construction effects arising as a result of the Proposed Development have been identified in respect of the following environmental topic areas which have been the subject of this EIA or any additional effects identified within the standalone HIA document accompanying the planning application:

- Socio-Economics;
- Traffic and Transport;
- Air Quality
- Wind Microclimate;
- Daylight ,Sunlight Overshadowing, Solar Glare and Light Pollution
- Health;
- Water Resources and Flood Risk.
- Townscape, Heritage and Visual Impact Assessment;

[1] *Her Majesty's Stationery Office (HMSO) 2017. The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2017 (amended in 2018 and 2020).*

**16.8** Significant demolition and construction effects arising as a result of the Proposed Development have been identified in respect of the following environmental topic areas which have been the subject of this EIA and are discussed further in Error! Reference source not found.**:**

- Noise and Vibration
- Climate Change; and
- Townscape Visual Impact Assessment.

**Table 16.1 Likely Significant Effects – Demolition and Construction**

| ES Chapter | Receptor | Description of Residual Effect | Classification of Residual Effect | | | | |
|---|---|---|---|---|---|---|---|
| | | | Scale and Nature | +ve -ve | D I | P T | St Mt Lt |
| **NOISE AND VIBRATION** | Residential Receptors | Demolition and Construction noise and vibration on residential receptors immediately adjacent to activities (short term). | Negligible to Major Adverse | -ve | D | T | St |
| **CLIMATE CHANGE** | Climate System | Greenhouse gas emissions during construction | Minor Adverse | -ve | D | T | Lt |
| **TOWNSCAPE AND VISUAL IMPACT ASSESSMENT** | Townscape Character Areas and Views* | Changes to the townscape setting and visual impact | (Negligible to) Minor,) Moderate and Major Adverse | -ve | D | T | St/Mt |

**Due to the complexity of accurately predicting the full range of potential visual effect resulting from the construction process, and due to the temporary status of all works, the assessment of demolition and construction effects on Townscape Character Areas and Views has been undertaken qualitatively and on a general basis for all receptor locations, rather than detailed assessment for each receptor.*

### *Noise and Vibration*

**16.9** The noise and vibration effects will be experienced by residential receptors immediately adjacent to the demolition and construction works. These effects will be temporary by nature, lasting only the time it takes to complete these works on Site. The effects will range from **minor adverse (not significant)**, to **major adverse (significant)**. These effects are only experienced during specific demolition and construction activities and are classed as short-term significant effects. It should be noted that the predicted noise levels are based on reasonable worst-case assumptions and there will be additional mitigation options available to the contractor to reduce noise associated with demolition and construction activities.

**16.10** During the detailed working up of the construction programme and preparation of the Construction Environmental Management Plan (CEMP), the best practice measures to mitigate potential noise and vibration impacts on nearby noise sensitive premises will be defined and agreed with the London Borough of Tower Hamlets (LBTH).

**16.11** To reduce potential vibration impacts due to piling, the contractor shall use a piling technique that is least likely to cause adverse vibration impacts (e.g. auger piling), to ensure that the likely effect of vibration is reduced or avoided at nearby receptors. Vibration limits will be set in accordance with BS5228-2 to minimise the risk of complaints or building damage. These limits will be controlled through implementation of the CEMP and vibration monitoring. During detailed construction programme stage and preparation of the CEMP, measures to mitigate potential noise and vibration effects on nearby noise sensitive premises will be defined and agreed with LBTH.

### *Climate Change*

**16.12** The effects on climate change during the demolition and construction works are a result of the greenhouse gas emissions associated with the construction works. Although this effect has been assessed as **Minor Adverse** in the ES chapter (**ES Volume 1, Chapter 9: Climate Change**), any greenhouse gas emissions are considered

a significant effect on the climate system. Whilst significant, the emissions will be emitted during the short-term, whilst the demolition and construction works are carried out.

### *Townscape and Visual Impact Assessment*

**16.13** The townscape and visual impact effects will be temporary in nature, lasting only for the time it takes to complete these works on Site. The effects range from Negligible (not significant) to Minor Adverse (not significant), **Moderate Adverse** (significant) and **Major Adverse** (significant). Other than the use of hoarding where appropriate during construction, no further mitigation is recommended as the visual effects of construction activity are unavoidable, commonplace in urban areas, and temporary.

## *Completed Development*

**16.14** Error! Reference source not found. summarises the likely significant effects arising as a result of the Proposed Development once completed and operational.

**16.15** No significant effects have been identified as being likely as a result of the completed and operational Proposed Development in respect of the following environmental topic areas which have been the subject of this EIA:

- Health;
- Water Resources and Flood Risk;
- Vibration;
- Solar Glare; and
- Archaeology (Buried Heritage).

**16.16** Significant effects have been identified as being likely as a result of the completed and operational Proposed Development in respect of the following topic areas, and are therefore discussed further:

- Socio-Economics:
- Traffic and Transport;
- Noise;
- Townscape, Heritage and Visual Impact Assessment;
- Wind Microclimate;
- Daylight;
- Sunlight;
- Overshadowing; and
- Climate Change.

**Table 16.2 Likely Significant Effects – Completed and Operational**

| ES Chapter | Receptor | Description of Residual Effect | Classification of Residual Effect | | | | |
|---|---|---|---|---|---|---|---|
| | | | Scale and Nature | +ve -ve | D I | P T | St Mt Lt |
| **SOCIO-ECONOMICS** | Contribution to housing targets | The delivery of new homes to support housing need at the LIA and LBTH levels as set out within the New London Plan | Moderate to Major Beneficial | +ve | D | P | Lt |
| | Deprivation | Improvements to the public realm, increased labour market participation, and the delivery of new affordable units | Moderate Beneficial | +ve | D | P | Lt |
| **TRAFFIC AND TRANSPORT** | Pedestrians and Road Users (Cyclists, Motorists) | Improvements to pedestrian and cyclist severance | Major Beneficial | +ve | D | P | Lt |
| | | Improvements to pedestrian and cyclist amenity, fear and intimidation | Major Beneficial | +ve | D | P | Lt |
| | | Improvements to pedestrian and cyclist accidents and safety | Moderate Beneficial | +ve | D | P | Lt |
| | | Improvements to bus passenger severance | Moderate Beneficial | +ve | D | P | Lt |
| **CLIMATE CHANGE** | Future site users | Overheating | Minor Adverse for 2030s, 2060s and 2090s | -ve | D | P | Lt |
| | | Flooding | Negligible for 2030s and 2060s, Minor Adverse for 2090s | -ve | D | P | Lt |
| | | Water Shortages | Negligible for 2030s 2060s, and 2090s | -ve | D | P | Lt |
| | Landscaping | Landscaping failure | Negligible for 2030s, Minor Adverse for 2060s and 2090s | -ve | D | P | Lt |
| | Climate System | Operational Energy Emissions | Moderate Adverse | -ve | D | P | Lt |
| | | Operational Transport Emissions | Negligible to Minor Beneficial | +ve | D | P | Lt |
| **WIND MICROCLIMATE** | On-site - Thoroughfares | Conditions one category windier than intended use at probe locations 158, 177, 274, 275, 277, 284 and 305. | Minor Adverse | -ve | D | P | Lt |
| | Bus Stop | Conditions one category windier than intended use at probe location 105. | Minor Adverse | -ve | D | P | Lt |
| | On-site - Ground Level Amenity (seating) | Conditions one category windier than intended use at probe locations 312 and 316. | Minor Adverse | -ve | D | P | Lt |
| | | Conditions two categories windier than intended use | Moderate Adverse | -ve | D | P | Lt |

| ES Chapter | Receptor | Description of Residual Effect | Classification of Residual Effect | | | | |
|---|---|---|---|---|---|---|---|
| | | | Scale and Nature | +ve -ve | D I | P T | St Mt Lt |
| | | at probe location 265. | | | | | |
| | On-site - Ground Level Amenity (mixed-use) | Conditions one category windier than intended use at probe location 259. | Minor Adverse | -ve | D | P | Lt |
| | On-site - Roof Terrace Amenity | Conditions one category windier than intended use at probe locations 416, 417, 426, 427 and 434. | Minor Adverse | -ve | D | P | Lt |
| | On-site - Entrances | Conditions one category windier than intended use at probe locations 116, 139, 142, 145, 162, 195, 255, 276, 278 and 280. | Minor Adverse | -ve | D | P | Lt |
| | | Conditions two categories windier than intended use at probe locations 141, 313 and 339. | Moderate Adverse | -ve | D | P | Lt |
| | Strong Winds | Instances of strong winds exceeding the safety threshold at probe locations 137, 140, 141, 143, 158, 177, 195, 265, 274, 277, 281, 286, 290, 305, 337, 338, 339, 340, 416, 426, 427 and 434 | *Significant | -ve | D | P | Lt |
| **NOISE AND VIBRATION** | Residential Properties | Improvements in road traffic flows along Abbot Road | Major Beneficial | +ve | D | P | Lt |
| **DAYLIGHT** | 177-195 Abbott Road<br>Aberfeldy Estate Phase One Block C<br>Aberfeldy Estate Phase Three Block J<br>Aberfeldy Estate Phase Two Block D<br>St. Nicholas Church<br>Culloden Primary School | Daylight availability | Minor to Moderate Adverse | -ve | D | P | Lt |
| | 110-126 Leven Road | Daylight availability | Moderate Adverse | -ve | D | P | Lt |
| | 199-225 Abbott Road<br>Lansbury Gardens 2-12 | Daylight Availability | Moderate to Major Adverse | -ve | D | P | Lt |
| | Loren Apartments<br>Sherman House | | | | | | |
| | Atelier Court<br>Leven Road Phase Three | Daylight Availability | Major Adverse | -ve | D | P | Lt |
| **SUNLIGHT** | Aberfeldy Estate Phase One Block C<br>St. Nicholas Church | Sunlight availability | Minor to Moderate Adverse | -ve | D | P | Lt |
| | Lansbury Gardens 2-12<br>Sherman House | Sunlight availability | Moderate Adverse | -ve | D | P | Lt |
| | Leven Road Phase Three<br>Loren Apartments<br>199-225 Abbott Road | Sunlight availability | Moderate to Major Adverse | -ve | D | P | Lt |
| | Atelier Court | Sunlight availability | Major Adverse | -ve | D | P | Lt |
| **OVERSHADOWING** | 6 out of 14 open spaces at Bromley Hall School, identified in appendix as areas n. 72, 74, 75, 76, 77 and 78 | Increases in overshadowing | Minor to Moderate Adverse | -ve | D | P | Lt |
| | Private terraces at 3 and 4 Dee Street | Increases in overshadowing | Major Adverse | -ve | D | P | Lt |
| **TOWNSCAPE, VISUAL IMPACT AND HERITAGE ASSESSMENT** | Townscape Character Areas | TCA 1: Poplar | Moderate to Major Beneficial | +ve | D | P | Lt |
| | | TCA 2: Poplar Riverside | Moderate Beneficial | +ve | D | P | Lt |
| | Short, Medium and Long Distance Views:<br>• Road Users (Cyclists, Motorists)<br>• Residents<br>• Pedestrians | View 1<br>South of East India Dock Road<br>Principally experienced by a mix of local residents and workers, the majority in moving vehicles(and so not focussed on the view). | Moderate Beneficial | +ve | D | P | Lt |
| | | View 3<br>Abbott Road / Ettrick Street<br>Principally experienced by a mix of local residents and workers, some in their leisure time. | Moderate to Major Beneficial | +ve | D | P | Lt |

| ES Chapter | Receptor | Description of Residual Effect | Classification of Residual Effect | | | | |
|---|---|---|---|---|---|---|---|
| | | | Scale and Nature | +ve -ve | D I | P T | St Mt Lt |
| | | View 5<br>LBTH borough designated view 6: View from East India Dock Road to Balfron Tower & Canary Wharf in the background<br>Principally experienced by a mix of local residents and workers, the majority in moving vehicles (and so not focussed on the view). | Moderate Beneficial | +ve | D | P | Lt |
| | | View 6<br>A12, junction with Zetland Street<br>Principally experienced by a mix of local residents and workers, the majority in moving vehicles (and so not focussed on the view). | Moderate Beneficial | +ve | D | P | Lt |
| | | View 7<br>Riverside footpath north of River Lea / Bow Creek<br>Principally experienced by a mix of local workers, residents, and visitors, at least some in their leisure time. | Moderate Beneficial | +ve | D | P | Lt |
| | | View 8<br>Bow Creek / River Lea Bridge<br>Principally experienced by a mix of local workers, residents, and visitors, at least some there in their leisure time. | Moderate to Major Beneficial | +ve | D | P | Lt |
| | | View 12<br>Uamvar Street<br>Principally experienced by a mix of local residents and workers, the majority in moving vehicles heading northbound (and so not focussed on the view). | Moderate Beneficial | +ve | D | P | Lt |
| | | View 13<br>LBTH borough designated view 5: View from Langdon Park to Balfron Tower & Canary Wharf in the background<br>Principally experienced by residents of the surrounding area, making use of the park's facilities. | Moderate Beneficial | +ve | D | P | Lt |
| | | View 14<br>Jolly's Green<br>Principally experienced by residents of the surrounding area, making use of the park's facilities. | Moderate to Major Beneficial | +ve | D | P | Lt |
| | | View 15<br>St Leonards Road<br>Principally experienced by a mix of local residents and workers. | Moderate Beneficial | +ve | D | P | Lt |
| | | View 30<br>A12, junction with East India Dock Road, looking north<br>Principally a mix of local residents and workers, the majority in moving vehicles (and so not focussed on the view). | Moderate Beneficial | +ve | D | P | Lt |
| | | View 31<br>Dee Street / Abbott Road<br>Principally experienced by a mix of local residents and workers. | Moderate Beneficial | +ve | D | P | Lt |
| | | View 32<br>Dee Street, midway<br>Principally experienced by a mix of local residents and workers. | Moderate to Major Beneficial | +ve | D | P | Lt |

** for 'strong winds' the residual effect is defined as being significant or not significant. The scale and nature of effect criteria are not applicable to 'strong winds'*

### *Completed Development*

#### *Socioeconomics*

**16.17** The London Plan 2021 sets LBTH a target of 34,730 new homes to be delivered by 2028/29. The Proposed Development would make a positive contribution towards these targets by delivering new homes, equating to approximately 4% of the London Plan target. The effect upon housing delivery would be direct, permanent, **moderate to major beneficial** (**significant**) at the Borough level.

**16.18** The Site has good access to local parks, but the Proposed Development includes a range of new open spaces; some of these spaces are publicly accessible to all, and will include improvements to existing public spaces. This provision will improve open space within the area, the Proposed Development would also deliver new affordable housing and increased labour market participation leading to a reduction in deprivation. The effect of the Proposed Development on the provision of and access to open space is considered to be direct, permanent, **moderate beneficial** (**significant**) at the local level.

#### *Transport*

**16.19** In terms of Traffic and Transport, the Proposed Development will significantly improve the permeability and connectivity to and through the Site through the provision of new pedestrian, vehicular and cycle connections. This will result in a **major beneficial** effect in relation to pedestrian and cyclist severance and 'Amenity, Fear and Intimidation'.

**16.20** The Proposed Development will significantly improve the quality of road junction to and through the Site through the provision of cycle routes, bus gates and pedestrian route connections. This will result in a **moderate beneficial** effect in relation to pedestrian and cyclist accidents and safety and improvements to bus passenger severance.

#### *Noise and Vibration*

**16.21** Due to the improvements in the road network that are proposed as part of the completed Proposed Development, traffic flows on Abbott Road will be greatly improved. As a result, some of the residential properties along Abbott Road will experience vast improvements to the noise and vibration levels from passing traffic that they currently experience. This effect will be direct, permanent and long term, classified as **major beneficial (significant)**.

#### *Townscape Visual Impact*

**16.22** Once the Proposed Development is complete there will be a number of significant beneficial effects in relation to townscape and views. The Proposed Development would result in a **moderate to major beneficial** effect to TCA 1: Poplar and a **moderate beneficial** effect to TCA 2: Poplar Riverside.

**16.23** 7 views will experience a **moderate beneficial** effect whilst 4 will experience a **moderate to major beneficial** effect. The Proposed Development would contribute to the improvement of each view experience for a mix of local residents and workers, moving vehicles and those during their leisure time and, together with existing buildings to the south of the Site. This would contribute to an overall improvement to each view and create cohesion over short, medium and long-distance views.

#### *Wind Microclimate*

**16.24** In terms of Wind Microclimate, a number of receptor locations (presented within Table 16.2) experience strong winds which are **minor to moderate adverse** effects. However, further potential mitigation measures to reduce wind speeds and provide acceptable wind conditions at these locations have been discussed with **ES Volume 1, Chapter 13: Wind Microclimate** and the wind mitigation strategy for the Outline Proposals will be developed in detail (through further wind testing) for the final proposals which will be sought for approval during the reserved matters application stages.

#### *Daylight and Sunlight*

**16.25** With regards to daylight, of the 42 buildings surrounding the site assessed, 6 of these buildings will experience a **minor to moderate adverse** impact, 1 of these buildings will experience a **moderate adverse** impact, 4 of these buildings will experience a **moderate to major adverse** impact, and 2 will experience a **major adverse** impact on daylight. The properties are summarised in 0 and more information about the daylight assessment can be found in **ES Volume 1, Chapter 14: Daylight Sunlight, Overshadowing, Light Pollution and Solar Glare**.

**16.26** With regards to sunlight, of the 42 buildings surrounding the site assessed, 2 buildings will experience a **minor to moderate adverse** impact, 2 of these buildings will experience a **moderate adverse** impact, 3 of these buildings will experience a **moderate to major adverse** impact, and 1 will experience a **major adverse** (significant) impact on sunlight. The properties are summarised in 0 and more information about the sunlight assessment can be found in **ES Volume 1, Chapter 14: Daylight Sunlight, Overshadowing, Light Pollution and Solar Glare**.

#### *Climate Change*

**16.27** Significant effects were identified in the climate change assessment. Future site users will experience overheating, flooding and water shortages as a result of the impacts of climate change on the Proposed Development. The overheating effects are considered **minor adverse** for 2030s, 2060s and 2090s, the flooding effects are considered **negligible** for the 2030s and 2060s, and **minor adverse** for the 2090s, whilst the water shortages effects are considered **negligible** for the 2030s, 2060s and 2090s.

**16.28** The Proposed Development's landscaping has been assessed as likely to experience significant effects due to landscaping failure as a result of the impact of climate change on the Proposed Development. This effect has been assessed as **negligible** for the 2030s and **minor adverse** for the 2060s and 2090s.

**16.29** The effect of the Proposed Development on the global climate system has been assessed for the operational emissions as well as the transport associated emissions. The operational energy emissions have been assessed as a **moderate adverse** effect on the global climate system. Due to the traffic mitigation measures implemented into the Proposed Development, the impact on the climate system has been assessed as a **negligible** to **minor beneficial** effect.

### *Cumulative Effects*

**16.30** The EIA process has identified some additional likely significant cumulative effects which, are additional effects that are considered 'Likely' to arise as a result of the Proposed Development coming forward in conjunction with the other surrounding development schemes.

**16.31** Note that only those significant effects that have *increased* as a result of the Cumulative Effects Assessment have been reported on below. Technical topics and cumulative effects that have not significantly increased are not reported in this summary of the Likely Significant Cumulative Effects. The significant cumulative effects are detailed in the following sections.

#### *Socio-Economics*

**16.32** The Cumulative Schemes in combination with the Proposed Development will lead to an increase in the overall number of residents and employees within the local area. Cumulatively, these developments are anticipated to deliver:

- Over 222,700m$^2$ of flexible retail floorspace (E(a) to E(c) uses);
- Over 355,000m$^2$ of flexible workspace floorspace (E(g) uses);
- Over 32,500m$^2$ of flexible community, education and leisure floorspace;
- 1,200 beds in hotel use;
- Over 50,00m$^2$ of student accommodation; and
- A little over 17,200 new residential units.

**16.33** The approximately 17,200 new residential units that are anticipated to come forward as a result of the Proposed Development and Cumulative Schemes represent a significant impact on the contribution to housing targets within the LBTH. The cumulative impact on contribution to housing targets has been assessed as a **major beneficial** effect at the borough (LBTH) level.

**16.34** In regard to population and labour market, the 17,200 new residential units have been estimated to provide approximately 40,500 additional residents, as a result of the Proposed Development and Cumulative Schemes. Within the local area, the effect of the additional residents on the population and labour market has been assessed as **major beneficial**, and at the borough (LBTH) level the effect has been assessed as **moderate beneficial**.

**16.35** Collectively, the Proposed Development and Cumulative Schemes have the potential to support around 40,00 to 43,000 (gross) Full Time Equivalent (FTE) jobs on-Site. This has been assessed to have a high impact on

on-Site employment in the local area, with the effect assessed as being **major beneficial**. At the borough level (LBTH), the effect has been assessed as **moderate beneficial**.

**16.36** The additional residential units that are anticipated to come forward as a result of the Proposed Development and Cumulative Schemes have been estimated to generate an annual expenditure totalling around £411million. A proportion of this expenditure will likely be captured by businesses located within the borough (LBTH). The level of this effect on the local economy through increased local expenditure has been assessed as **major beneficial** within the LBTH.

**16.37** The increase in on-Site employment delivered as part of the Proposed Development and Cumulative Schemes will help to grow the local economy and London's recovery following the impact of the COVID-19 pandemic. The Proposed Development and Cumulative Schemes considered has potential to add up to 40,000-43,000 gross FTE jobs, with the potential to generate around £5b in Gross Value Added (GVA). The effect on the local economy through the GVA from the Proposed Development and Cumulative Schemes at the borough level (LBTH) has been assessed as being **major beneficial**. At the regional level (London), the effect has been assessed as **moderate beneficial**.

**16.38** The Proposed Development and Cumulative Schemes will continue to contribute towards improving the LBTH's performance against several of the domains within the Index of Multiple Deprivation where it currently under-performs. As a result, the effect on overall deprivation within the LBTH has been assessed as **moderate/major beneficial**.

**16.39** Improvements to the public realm and living environment enabled by the Proposed Development and Cumulative Schemes will promote a secure environment, encourage crime reduction and improve social cohesion. These improvements have been assessed to have a **moderate beneficial** effect on the LBTH in regard to crime and social cohesion.

### *Daylight, Sunlight and Overshadowing*

**16.40** Due to the nature of daylight, sunlight and overshadowing effects, only those Cumulative Schemes that were in close proximity to the Proposed Development were considered in the Cumulative Effects Assessment. From the list of cumulative schemes (see **ES Volume 1, Chapter 2: EIA Methodology**); Former Poplar Bus Depot (PA/19/02148/A1) and Islay Wharf (PA/19/01760) where considered to result in potential daylight, sunlight and overshadowing cumulative effects. All other Cumulative Schemes were considered too far from the Proposed Development to cause cumulative effects for daylight, sunlight and overshadowing.

*Daylight*

**16.41** For 110-126 Leven Road, a total of 24 additional windows would experience impacts ranging from Minor to Major Adverse for the Vertical Skyline Component (VSC) assessment. Therefore the cumulative effect is considered to increase to **moderate to major adverse**.

**16.42** For Ailsa Wharf Block A, a total of 23 additional windows would experience impacts ranging from minor to major adverse for VSC and nine additional major adverse No Sky Line impacts would occur. Therefore, the effect is considered to increase to **moderate to major adverse**.

**16.43** For Ailsa Wharf Block D, a total of 23 additional windows would experience impacts ranging from minor to major adverse for VSC and nine additional major adverse NSL impacts would occur. Therefore, the effect is considered **moderate to major adverse**.

**16.44** For Ailsa Wharf Blocks K and L, a total of 10 additional windows would experience of major adverse significance for VSC and seven additional minor to moderate adverse NSL impacts would occur. Therefore, the effect is considered to increase to **minor to moderate adverse**.

**16.45** For Bromley Hall, a total of 16 addition windows would see VSC impacts ranging from minor to major adverse and three additional rooms would see minor or major adverse NSL impacts. Therefore, the effect is considered to increase to **moderate adverse**.

**16.46** For Culloden Primary School, a total of 57 additional windows would see VSC impacts ranging from minor to major adverse and three additional rooms would see major adverse NSL impacts. Therefore, the effect is considered to increase to **moderate to major adverse**.

**16.47** For Devon's Wharf, a total of 64 additional windows would see VSC impacts ranging from minor to major adverse and 22 additional rooms would see minor to major adverse NSL impacts. Therefore, the effect is considered to increase to **moderate to major adverse**.

**16.48** For Leven Road Phase 3, a total of 18 additional windows would see VSC impacts ranging from minor to major adverse and seven additional rooms would see minor to major adverse NSL impacts. Therefore, the effect is considered to increase to **major adverse**.

*Sunlight*

**16.49** For Ailsa Wharf Block A, a total of 19 additional windows would experience major adverse Annual Probable Sunlight Hours (APSH) impacts and 13 additional windows would experience major adverse Winter Probable Sunlight Hours (WPSH) impacts as a result of the Cumulative Schemes coming forward. Therefore, the effect is considered to increase to **moderate to major adverse**.

**16.50** For Ailsa Wharf Block D, a total of 16 additional windows would experience moderate to major adverse APSH impacts and 12 additional windows would experience major adverse WPSH impacts as a result of the Cumulative Schemes coming forward. Therefore, the effect is considered to increase to **moderate to major adverse**.

*Overshadowing*

**16.51** For Bromley Hall school, in the cumulative scenario, 7 open spaces would remain BRE compliant. The 6 open spaces affected in the Proposed Development scenario would still be affected, one of which would have a reduction of 34% which is considered a **moderate adverse** effect whilst the other 5 would all see reductions ranging from 46% to 100% which is considered a **major adverse** effect. Overall, in considering the 7 open spaces of this building it is considered that the former Bromley Hall School building would see a **moderate adverse** effect upon implementation of the Proposed Development and Cumulative Schemes.

### *Climate Change*

**16.52** Overall, the Proposed Development contributes a small amount to greenhouse gas (GHG) emissions and will employ commensurate mitigation measures to ensure policy compliance and minimise its contribution to climate change where possible to ensure that likely significant effects associated with the Proposed Development itself are avoided. The IEMA guidance is clear that any GHG emissions might be considered significant, but it is important to acknowledge that significant effects from climate change relate to cumulative global GHG emissions from all sources driving up atmospheric temperatures and do not relate to a direct effect resulting from a small additional GHG contribution associated with the Proposed Development.

## CONCLUSIONS

**16.53** The Proposed Development offers the opportunity to redevelop a site with several planning designations, including Ailsa Street Site Allocation, as designated under the new Local Plan 2031, Site: LS-A within the Draft Leaside Area Action Plan (2021), the Poplar Riverside Opportunity area, and the Lower Lea Valley Opportunity Area. The Site will provide significant regeneration to the surrounding area.

**16.54** The Proposed Development will provide significant beneficial effects in terms of contribution to housing targets and overall deprivation, as well as several significant beneficial effects on pedestrians, cyclists, road users and residential properties. The Proposed Development will also lead to significant beneficial townscape and visual effects.

**16.55** Whilst significant adverse effects will be experienced once the Proposed Development is complete and operational, they are limited to wind microclimate (which can be mitigated through the detailed design and reserved matters process), sunlight and daylight and climate change. In the case of daylight and sunlight, significant alterations of the magnitude identified in the assessment are an expected consequence of an intensification of the urban area. In accordance with the UK planning policy, where applications are for housing, local authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site. These adverse effects need to be considered in the context of the wider regeneration to the Site and surrounding area and its associated regeneration benefits.

# Chapter 17: Mitigation and Monitoring

## INTRODUCTION

**17.1** Mitigation refers to 'measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment'. Throughout the masterplanning process, environmental mitigation measures have been incorporated into the Proposed Development to prevent, reduce and offset potentially adverse effects. These include modifications to the design of the Proposed Development (known as 'primary' mitigation measures), which are described within **ES Volume 1, Chapter 3: Alternatives and Design Evolution** and **ES Volume 1, Chapter 4: Proposed Development**. As these specific measures have already been inherently incorporated within the Proposed Development for which planning permission is sought, and do not require additional action to be taken, they are not included within this chapter.

**17.2** Due to the 'hybrid' (part detailed, part outline) nature of the planning application for the Proposed Development, principles for the primary mitigation (design related) relating to the outline component of the planning application have been established within the Development Specification, Design Code and Parameter Plans which accompany the planning application. However, the delivery of the mitigation for the outline component, and specific design details for the established principles, are to be recognised through the submission of detailed designs at the Reserved Matters Application (RMA) stage in the planning process.

**17.3** There are a number of 'secondary mitigation measures' recommended for the outline component of the planning application that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent. Examples include mitigation to be the subject of planning conditions or planning obligations or other commitments made but not included within the plans and proposals submitted with the planning applications. For example, Management Plans that have been prepared to support the planning application are categorised as secondary mitigation measures and are identified in **Table 17.1**. It is anticipated that the Principal Contractor will refine, complete and implement the required plans during the phased demolition and construction works. Once the Proposed Development is built out and operational, the implementation of the Management Plans outlined in **Table 17.1** is anticipated to be undertaken by the Building / Estate Management Services.

**Table 17.1 Management Plans**

| MANAGEMENT PLAN | ES / PLANNING DOCUMENT REFERENCE |
|---|---|
| **DEMOLITION AND CONSTRUCTION** | |
| Site Waste Management Plan (SWMP) | **ES Volume 1, Chapter 5: Demolition and Construction**<br>**ES Volume 1, Chapter 7: Traffic and Transport**<br>**ES Volume 1, Chapter 8: Air Quality**<br>**ES Volume 1, Chapter 9: Climate Change**<br>**ES Volume 3, Appendix Demolition and Construction – Annex 1**<br>**ES Volume 3, Appendix EIA Methodology – Annex 1**<br>**ES Volume 3: Appendix Climate Change** |
| Resource Management Plan (RMP) | |
| Construction Environmental Management Plan (CEMP)<br>• Dust Management Plan (DMP)<br>• Noise and Vibration Controls | |
| Construction Logistics Plan (CLP) | |
| Health and Safety Plans (H&SP) | |
| Emergency Response Plan (ERP) | |
| Stakeholder Communication Plan | |
| **OPERATION** | |
| Waste Management Strategy | **ES Volume 1: Chapter 4 The Proposed Development** |
| Delivery and Servicing Plan | **ES Volume 1, Chapter 7: Traffic and Transport** |
| Detailed Travel Plan | **ES Volume 1, Chapter 7: Traffic and Transport**<br>**ES Volume 1, Chapter 8: Air Quality** |
| Parking Management Plan | **ES Volume 1, Chapter 7: Traffic and Transport** |

**17.4** The content and measures that will be implemented throughout each development stage as required by each Management Plan are described within the **Table 17.2** and **Table 17.3**.

**17.5** **Table 17.2** and **Table 17.3** present the environmental mitigation and monitoring measures required for the Proposed Development as identified as a result of the Environmental Impact Assessment (EIA) process and described within this ES. The measures presented include any additional, project bespoke mitigation and monitoring measures that have been identified as being required by the EIA ('secondary' mitigation measures).

**17.6** The environmental mitigation and monitoring measures also include those which are standard measures / commitments that would be adopted as a matter of course to meet best practice guidance in relation to the demolition and construction works. They may also include actions that would occur with or without input from the EIA feeding into the design process, such as actions that will be undertaken to meet other existing legislative or planning requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects ('tertiary' mitigation measures).

**17.7** The environmental mitigation and monitoring measures presented in **Table 17.2** and **Table 17.3** are measures that the London Borough of Tower Hamlets (LBTH) will need to secure for the project, either using Planning Conditions or through Planning Obligations as part of a Section 106 Agreement in accordance with the phased delivery of the Proposed Development.

**17.8** It is noted that a number of other documents have been prepared to support the planning application which have been referenced in the preparation of the schedules set out in this Chapter, including, but not limited to: a Planning Statement; A Masterplan Design and Access Statement (Masterplan DAS); Design Code; Detailed Proposals Design and Access Statement (Detailed DAS); Transport Assessment; Circular Economy Statement; Waste Management Plan; Arboricultural Impact Assessment; Statement of Community Involvement; Sustainability Statement and Energy Statement.

**17.9** Where relevant to the EIA, measures from these documents are presented in **Table 17.2** and **Table 17.3**.

**Table 17.2 Mitigation and Monitoring Schedule – Demolition and Construction**

| TIMING | ENVIRONMENTAL MITIGATION | ES / PLANNING DOCUMENT REFERENCE |
|---|---|---|
| PRE-COMMENCEMENT | **REGISTRATIONS / CONSENTS** | |
| | All statutory, Local Planning Authority (LPA) consents and licences required to commence any on site activity will also be obtained ahead of the works commencing and give the appropriate notice period. These will include but not necessarily be limited to:<br>• The works contractor will register with the Considerate Constructors Scheme (CCS)<br>• Notices for works on the highway in accordance with the Highways Act 1980 and Road Traffic Act 1998;<br>• Hoarding, scaffold and crane licenses for works on the perimeter boundary;<br>• Construction Phase Plan under CDM Regulations;<br>• Health and Safety Executive (HSE) F10 Notification;<br>• Demolition Method Statements (DMS) and Risk Assessments;<br>• Construction Method Statement (CMS) and Risk Assessments;<br>• Section 80 (Demolition Notice) Application;<br>• Section 61 (Noise Control) Application;<br>• Construction notices;<br>• Connections to existing statutory services and main sewers;<br>• License for discharge of water from the site into the public sewer; and<br>• Party wall act notices and agreements. | **ES Volume 1, Chapter 5: Demolition and Construction** |
| | **SITE INVESTIGATIONS (LAND CONTAMINATION, UXO and ASBESTOS)** | |
| | The Geo-environmental and Geotechnical Phase 1 Desk Study (Phase 1) report recommends a site / ground investigation to quantify the geoenvironmental risks associated with the construction of the Proposed Development and the contamination profile. Several procedures will be undertaken to ensure the protection of human health and the environment. These procedures will be undertaken in accordance with relevant legislation and good practice guidance and will be secured through appropriately worded planning conditions relevant to:<br>• An intrusive Site Investigation (i.e. involving laboratory testing) subsequent to planning determination/consent, followed by further stages of investigation and site remediation agreed through planning conditions. Following agreement on the written programme, an investigation shall be carried out in accordance with the approved programme and the results. necessary, a written scheme of remediation measures shall be submitted to and approved by the LBTH;<br>• The ground investigations will be undertaken prior to the commencement of works on-site and will further inform the geotechnical design / foundation / piling works, which will confirm the appropriate piling methods and foundation design to mitigate geotechnical risk;<br>• The intrusive investigation will include a risk assessment of the contamination at the site, which would be undertaken by comparing measured levels of soil contamination with generic assessment criteria established through industry guidance and best practice;<br>• Should significant areas of contamination be identified during the further site survey / investigation work, a Remedial Strategy (including options appraisal) will be undertaken. Remediation strategies for soil include:<br>– The remediation of soils on-site;<br>– A strategy for ensuring separation between source and receptors via structural slabs;<br>– Off-site treatment (where practicable); and/or<br>– The disposal of soil off-site.<br>• The appropriate Remedial Strategy will be agreed as appropriate in advance of any remediation work. The remediation framework will identify remediation requirements for protection of human health and controlled waters as well as identifying any areas that require remediation to be undertaken.<br>• Should a Remedial Strategy be implemented, a verification process (verification plans and reporting to the local authority) will be undertaken to confirm that the strategy has remediated the soils to a level acceptable for the intended end use of the site (based on site specific criteria);<br>• Off-site disposal of soils will include segregation of soil types (contaminated or otherwise) into stockpiles and removed via an approved waste contractor and in accordance with the regulatory requirements, including the Hazardous Waste Regulations and Landfill Regulations (i.e. any contaminated soil would be disposed of off-site at a location appropriate to the level of contamination present and the waste classification determined from chemical analysis);<br>• An assessment for the potential for ground gas will be completed during further intrusive site investigation work;<br>• Condition survey of boundary walls and fences;<br>• Condition survey of roads and pavements;<br>• Condition survey of adjoining buildings; | **ES Volume 1, Chapter 5: Demolition and Construction**<br>**ES Volume 3, Appendix EIA Methodology – Annex 1** |

| TIMING | ENVIRONMENTAL MITIGATION | ES / PLANNING DOCUMENT REFERENCE |
|---|---|---|
| | • Existing utilities tracing;<br>• CCTV drain surveys;<br>• Party Wall surveys;<br>• Unexploded ordnance; and<br>• Asbestos surveys of the buildings to be demolished (after full vacant possession).<br>A detailed unexploded ordnance (UXO) assessment was undertaken for the site in February 2021, which identified that the site has a high risk of UXO potential. This assessment recommended that a UXO Emergency Response Plan, UXO safety awareness briefing, and intrusive magnetometer survey are undertaken for 'blind' intrusive works (such as borehole drilling). Additionally, non-intrusive surveys and a UXO Watching brief should be undertaken for 'open' intrusive works (such as excavations and trenching).<br>A pre-demolition audit will be undertaken to audit the likely materials that will result from the demolition. | |
| | **ARCHAEOLOGICAL INVESTIGATIONS** | |
| | Prior to any works on-site, archaeological mitigation measures will need be secured, as are detailed below.<br>Any work would need to be undertaken in accordance with an approved Written Scheme of Investigation (WSI), approved by the Greater London Archaeology Advisory Service (GLAAS) compliant with the relevant 'Standards and Guidance' issued by the Chartered Institute for Archaeologists. Such fieldwork should also be monitored by GLAAS. | **ES Volume 1, Chapter 11: Archaeology** |
| **DURING DEMOLITION AND CONSTRUCTION** | **CONSTRUCTION MANAGEMENT PLAN (CEMP)** | |
| | Implementation and compliance with an approved CEMP, in accordance with the LBTH Code of Construction Practice[1], adhering to the following *minimum* requirements:<br>• Noise and vibration control proposals and methodology (see below **CEMP - NOISE AND VIBRATION CONTROL** for more detail);<br>• Vibration limits will be set in accordance with BS5228-2 to minimise the risk of complaints or building damage. These limits will be controlled through implementation of the CEMP and vibration monitoring. The statement will also include vibration and noise monitoring and action levels;<br>• Noise, dust and vibration will be monitored throughout the demolition and construction works from various locations around the site;<br>• Measures to control and monitor air pollution, considering the Mayor of London and London Council's guidance document 'The Control of Dust and Emissions from Construction and Demolition' (see below **CEMP – AIR QUALITY** for more detail);<br>• Pedestrian access points for operatives will generally be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided;<br>• Public access to neighbouring buildings will be safeguarded and will be entirely separate from construction areas;<br>• Site offices and associated welfare facilities for the workforce will be provided for each site;<br>• Perimeter scaffolding with Monarflex sheeting will be designed to ensure that safe access for both pedestrians and vehicles accessing the retained neighbouring buildings and surrounding streets;<br>• Measures to reduce waste and encourage reuse / recycling (see below **CEMP – WASTE MANAGEMENT** for more detail);<br>• Use of 2.4m high solid construction hoardings;<br>• Implementation of wheel cleaning facilities at all site access and egress locations;<br>• Use of Continuous Flight Auger piling techniques;<br>• Re-use and re-cycling of demolition materials; and<br>• A temporary drainage strategy . | **ES Volume 1, Chapter 5: Demolition and Construction**<br>**ES Volume 1, Chapter 7: Traffic and Transport**<br>**ES Volume 1, Chapter 8: Air Quality**<br>**ES Volume 1, Chapter 9: Climate Change**<br>**ES Volume 1, Chapter 11: Archaeology**<br>**ES Volume 3, Appendix EIA Methodology – Annex 1** |
| | **CEMP - WASTE MANAGEMENT** | |
| | The disposal of all waste or other materials removed from the Site will be in accordance with the requirements of the Environment Agency, Control of Pollution Act (COPA), 1974, Environment Act 1995, Special Waste Regulations 1996, Duty of Care Regulations 1991 and the Waste Management Regulations 2011.<br>In general, and in accordance with the principles of the UK Government's 'Waste Strategy 2010', a principal aim during enabling works and construction will be to reduce the amount of waste generated and exported from the Development site.<br>This approach complies with the waste hierarchy whereby the intention is first to minimise, then to treat at source or compact and, finally, to dispose of off-site as necessary. All relevant Contractors will be required to investigate opportunities to minimise and reduce waste generation, such as:<br>• Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme;<br>• Implementation of a 'just-in-time' material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste;<br>• Attention to material quantity requirements to avoid over-ordering and generation of waste materials;<br>• Re-use of materials wherever feasible (e.g. re-use of crushed concrete from demolition for the piling platform; re-use of excavated soil for landscaping);<br>• The Government has set broad targets for the use of reclaimed aggregate, and in keeping with best practice, Contractors will be required to maximise the proportion of materials recycled; | **ES Volume 1, Chapter 4: The Proposed Development**<br>**ES Volume 1, Chapter 5: Demolition and Construction** |

[1] *LBTH (undated), Code of Construction Practice*

| TIMING | ENVIRONMENTAL MITIGATION | ES / PLANNING DOCUMENT REFERENCE |
|---|---|---|
| | • Segregation of waste at source; and<br>• Re-use and recycling of materials off-site where re-use on-site is not practical (e.g. through use of an off-site waste segregation facility and re-sale for direct re-use or re-processing). | |
| | **CEMP - NOISE AND VIBRATION CONTROL** | |
| | The adoption of Best Practicable Means (BPM), as defined in the Control of Pollution Act 1974, will be a fundamental mitigation measure. The manifestation of BPM will be a series of noise and vibration control measures, which will be incorporated within the final Construction Environmental Management Plan (CEMP).<br>The contractor will ensure that the following measures are adhered to:<br>• Where possible, 'silenced' plant and equipment will be used;<br>• Where vehicles are standing for a significant period of time, engines will be switched off;<br>• Acoustic enclosures will be fitted where possible to suppress noisy equipment;<br>• Plant will operate at low speeds, where possible, and incorporate automatic low speed idling;<br>• Where possible, electrically driven equipment will be selected in preference to internal combustion powered, hydraulic power in preference to pneumatic and wheeled in lieu of tracked plant;<br>• All plant will be properly maintained (greased, blown silencers replaced, saws kept sharpened. Teeth set and blades flat, worn bearings replaced etc);<br>• Consideration will be given to temporary screening or enclosures for static noisy plant to reduce noise emissions and plant will be certified to meet any relevant EC Directives;<br>• All contractors will be made familiar with the guidance in BS 5228 (Parts 1 & 2) which will form a pre-requisite of their appointment; and<br>• Early and good public relations with the adjacent tenants and occupants of buildings will also reduce the likelihood of complaints. | **ES Volume 1, Chapter 5: Demolition and Construction**<br>**ES Volume 1, Chapter 10: Noise and Vibration** |
| | **CEMP – AIR QUALITY** | |
| | The Contractors will, as far as reasonably practical, seek to control and limit emissions to the atmosphere in terms of gaseous and particulate pollutants from tools and equipment used on site and dust from construction activities.<br>It is recommended that the site activities should be assessed in accordance with the Mayor of London's SPG "The Control of Dust & emissions during Construction & Demolition" and adherer to the LBTH Code of Construction Practice. The contractors must submit a statement to the London Borough of Tower Hamlets for approval identifying proposed dust control measures before work starts. Special precautions must be taken when materials containing asbestos are encountered.<br>Throughout the project, the Contractors will ensure the following:<br>• Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;<br>• Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary;<br>• Display the head or regional office contact information;<br>• Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the LBTH;<br>• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;<br>• Make the complaints log available to the LBTH when asked;<br>• Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook;<br>• Hold regular liaison meetings with other high-risk construction sites within 500m of the Site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised;<br>• Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the LBTH when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary;<br>• Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked;<br>• Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;<br>• Agree dust deposition, dust flux, or real-time $PM_{10}$ continuous monitoring locations with the LBTH.<br>• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;<br>• Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site;<br>• Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period;<br>• Avoid site runoff of water or mud;<br>• Keep site hoarding, barriers and scaffolding clean using wet methods;<br>• Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site;<br>• Cover, seed or fence stockpiles to prevent wind whipping;<br>• Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards; | **ES Volume 1, Chapter 5: Demolition and Construction**<br>**ES Volume 1, Chapter 8: Air Quality** |

| TIMING | ENVIRONMENTAL MITIGATION | ES / PLANNING DOCUMENT REFERENCE |
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| | • Ensure all vehicles switch off engines when stationary - no idling vehicles;<br>• Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable;<br>• Impose and signpost a maximum-speed-limit of 10 mph on unsurfaced haul roads and work areas;<br>• Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials;<br>• Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;<br>• Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;<br>• Use enclosed chutes and conveyors and covered skips;<br>• Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment;<br>• Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;<br>• Reuse and recycle waste to reduce dust from waste materials;<br>• Avoid bonfires and burning of waste materials;<br>• Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust);<br>• Ensure water suppression is used during demolition operations;<br>• Avoid explosive blasting, using appropriate manual or mechanical alternatives;<br>• Bag and remove any biological debris or damp down such material before demolition;<br>• Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;<br>• Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable;<br>• Only remove the cover in small areas during work and not all at once;<br>• Avoid scabbling (roughening of concrete surfaces) if possible;<br>• Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;<br>• Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;<br>• For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust;<br>• Use water-assisted dust sweeper(s) on the access and local roads, if required;<br>• Avoid dry sweeping of large areas;<br>• Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;<br>• Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;<br>• Record all inspections of haul routes and any subsequent action in a site logbook;<br>• Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;<br>• Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); and<br>• Apply dust suppressants to locations where a large volume of vehicles enter and exit the construction site. | |
| | **CIRCULAR ECONOMY – DEMOLITION AND CONSTRUCTION WASTE** | |
| | Reducing construction, demolition, excavation and municipal waste arising:<br>• Building elements will be standardised, prefabricated and designed with disassembly/ adaptability in mind as discussed in previous sections;<br>• A Site Waste Management Plan (SWMP) will be produced to manage the resultant waste on-site;<br>• To ensure the use of low-waste materials, contractor tender documents will encourage low waste materials. In addition, recycled content within the Proposed Development materials has been specified at 20%; and<br>• Recycling facilities will be provided as a means of reducing municipal waste and minimising the waste to landfill.<br>Managing demolition waste:<br>• Measures will be implemented that contribute to the target of achieving ≥95% recycling rate of the uncontaminated demolition waste<br>• As part of its role, the contractor will provide the following upon appointment: | **ES Volume 1, Chapter 5: Demolition and Construction**<br>**ES Volume 1, Chapter 9: Climate Change** |

| TIMING | ENVIRONMENTAL MITIGATION | ES / PLANNING DOCUMENT REFERENCE |
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| | – The likely destination of all waste streams beyond the materials recycling facility.<br>– Provide written evidence that the destination landfill(s) have the capacity to receive waste.<br>– During construction, the Applicant will record the source of all waste arising and monitor using SmartWaste or a similar waste management tool.<br>• A Resource Management Plan will be produced during the construction process to set out ways to minimise the amount of waste generated on site, set targets and monitor the amount of waste generated.<br>• A designated area will be provided for the segregation of demolition waste.<br>Managing excavation waste:<br>• Maximise re-use of excavated materials on-site.<br>• Aim to divert 95% of uncontaminated excavation waste from landfill.<br>Managing construction waste:<br>• A designated area will be provided for the segregation of construction waste. This will contain skips of different material streams; and<br>• The target construction waste diversion of ≥95% will be enforced within the contractor's package requirements.<br>Throughout the further stages of the Proposed Development the following monitoring procedures will be in place:<br>• Monitoring of construction waste, including reuse and recycling rates;<br>• Regular site inspections to ensure construction plans and targets are being fulfilled;<br>• Site managers or supervisors will ensure those under their control follow the SWMP, applying the best practice environmental options. Site managers or supervisors will complete a SWMP check list and data sheet at relevant stages of site operations;<br>• To ensure smooth implementation of the plans listed above, the relevant team will report back regularly on any potential improvements or justification for deviation from the plans to the contracts manager. The contracts manager will then take on bord the concerns or recommendations, putting them to the managing director where necessary. | |
| | **GREENHOUSE GASES** | |
| | The following measures will be implemented (through the CEMP) during the construction phase to reduce GHG emissions from the construction works:<br>• All construction vehicles are required to switch off their engines when stationary, as well as equipment being switched off when not in use, to prevent exhaust emissions;<br>• Regular maintenance and servicing of vehicles, equipment and plant; and<br>• Through the implementation of a Travel Plan construction workers will be encouraged to use public transport through the site induction and information on site noticeboards.<br>Additionally, to reduce GHG emissions from construction materials:<br>• Material procurement will be undertaken with sustainable principles in mind including use of products with low embodied energy, high recycled content and the use of local materials wherever possible to reduce emissions associated with their transport;<br>• The Proposed Development will incorporate recycled content within all rebar steel as well as GGBS (Ground Granulated Blast-furnace Slag) within the cement to reduce the embodied carbon of the scheme; and<br>• The strategic Circular Economy approach for the new build elements of the scheme is to design for longevity, a high degree of standardisation and to ensure that material use is responsible and low impact. | **ES Volume 1, Chapter 9: Climate Change** |
| | **TRAFFIC AND TRANSPORT (CLP)** | |
| | Based on the Framework CLP provided in the Transport Assessment, the detailed CLP will provide information setting out measures relating to the following:<br>• Lower vehicle emissions and noise levels;<br>• Improving the safety of road users;<br>• Reduced vehicle trips, particularly in peak periods, and<br>• Efficient working practices and reduced deliveries.<br>The key measures identified to manage and control the impacts of construction traffic are expected to be:<br>• Commitment to meet the Construction Logistics and Community Safety (CLOCS) / Fleet Operator Recognition Scheme (FORS) accreditation;<br>• Use of delivery scheduling system;<br>• Designated construction traffic routes ensuring all HGVs use appropriate strategic roads, and<br>• Staff Travel Plan. | **ES Volume 1, Chapter 7: Traffic and Transport** |
| | **ECOLOGY AND ARBORICULTURE** | |

| TIMING | ENVIRONMENTAL MITIGATION | ES / PLANNING DOCUMENT REFERENCE |
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| | The following measures will be incorporated into the Detailed CEMP:<br>• Works to Jura House to be undertaken outside of the summer months (1st May – 31st August) to avoid disturbance to bat roosts;<br>• Removal of roof tiles at Jura House to be done by hand, under the supervision of a licensed ecologist;<br>• Retention of Category A and B trees, where possible;<br>• Works to be undertaken in accordance with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009)[2];<br>• Should site clearance be required within the nesting bird season (March to September), it will only be done so after an ecologist conducts a nesting bird check and confirms the likely absence of nesting birds;<br>• Works around/close to any active bird nests to be paused until the nest is no longer in use (no disturbance to active nests); and<br>• Two invasive species currently present on site (Virginia creeper and *Buddleja davidii)* should be removed from the site wherever they are encountered and disposed of responsibly. | **ES Volume 1, Chapter 4: The Proposed Development**<br>**ES Volume 1, Chapter 5: Demolition and Construction**<br>**ES Volume 3, Appendix Demolition and Construction, Annex 1: Outline CEMP** |
| | **FLOOD RISK** | |
| | A number of water resources and drainage mitigation measures shall be implemented throughout the demolition and construction works to protect water resources, particularly relating to groundwater and drainage networks. These mitigation measures can be categorised as 'Pre Commencement' measures, and measures implemented throughout the demolition and construction works themselves. The measures are as follows:<br>• Pre-commencement:<br>– Discharge arrangements into the foul water sewer will be agreed with Thames Water;<br>– All existing utilities will be identified and marked before works commence, with the use of signs to warn of their presence;<br>– Settlement facilities and oil / petrol interceptors will be installed at relevant discharge points into the sewers (for surface water runoff and wastewater discharges); and<br>– An Emergency Response Plan (ERP) will be prepared and which will set out the procedure to be adopted in the event of a leak or spill.<br>• During demolition and construction works:<br>– Any damage to existing infrastructure would be immediately repaired;<br>– Any waste effluent will be tested and any water that may have come into contact with contaminated materials or be identified as being contaminated, will be disposed of appropriately and, to the satisfaction of the EA and/or TW; and where necessary, disposed of at the correctly licensed facility by a licensed specialist contractor/s;<br>– Plant and machinery will be kept away from controlled waters and will have drip trays installed beneath oil tanks/engines/gearboxes/hydraulics, which will be checked and emptied regularly via a licensed waste disposal operator;<br>– Refueling and delivery areas will be located away from the local sewer network drains;<br>– All liquids and solids of a potentially hazardous nature (e.g. diesel fuel, oils and solvents) will be stored in designated locations with specific measures to prevent leakage and release of their contents, include the siting of storage areas away from surface water drains, on an impermeable base with an impermeable bund that has no outflow and is of adequate capacity to contain 110% of the contents in accordance with the EA's requirements. Any tanks storing more than 200 litres of oil on-site, will have secondary bunding;<br>– All storage will be protected from vandalism and kept locked up when not in use;<br>– Wherever possible, plant and machinery will have drip trays beneath oil tanks/engines/gearboxes/hydraulics, which will be checked and emptied regularly via a licensed waste disposal operator;<br>– On-site provisions will be made to contain a serious spill or leak through the use of booms, bunding and absorbent material in accordance with an Emergency Response Plan (ERP);<br>– Implementation of bunding and sediment traps to act as pollution prevention measures;<br>– Agreement of allowable water demand with TW during the construction activities;<br>– Agreement of allowable foul and surface water drainage with TW during the construction activities;<br>– Implementation of a Piling Risk Assessment;<br>– Implementation of a Contamination Remediation Strategy;<br>– All relevant contractors will be required to investigate opportunities to sustainably manage the use of water, such as turning off taps when not in use, both on site and within site offices and the use of recycled water / a rainwater harvesting system for equipment such as wheel washes; and<br>– The water consumption throughout the enabling and construction works will be monitored, either through sub-metering or reading of utility bills, to allow comparison against best practice benchmarks and improvements to be made.<br>The contractor will prepare a detailed Surface Water Management Plan and site-specific Erosion and Sediment Control Plan, which will minimise discharge of potentially polluted site water to nearby drains and overland flow routes:<br>• No polluted water is to be discharged from the site;<br>• Sediment and erosion controls are to be regularly inspected to ensure sufficient capacity; | **ES Volume 1, Chapter 9: Climate Change**<br>**ES Volume 1, Chapter 12: Water Resources, Drainage and Flood Risk**<br>**ES Volume 3, Appendix EIA Methodology – Annex 1** |

[2] *DEFRA (2009), Construction Code of Practice for the Sustainable Use of Soils on Construction Sites*

| TIMING | ENVIRONMENTAL MITIGATION | ES / PLANNING DOCUMENT REFERENCE |
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| | • Wheel washes are to be implemented on site;<br>• Drainage of surface runoff and de-watering effluents to settling tanks to remove suspended solids prior to discharge to sewer or removal by a suitably licenced waste operator;<br>• Storage of chemicals and hazardous materials within bunded areas, with adequate capacity (of 110%);<br>• Bunded areas are to be regularly inspected to ensure that sufficient capacity is available; and<br>• Prevention of spills and leaks. | |

**Table 17.3 Mitigation and Monitoring Schedule – Completed Development**

| ENVIRONMENTAL MITIGATION | ES / PLANNING DOCUMENT REFERENCE |
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| **SOCIO ECONOMICS** | |
| Discussions will be undertaken with the LBTH in relation to the requirement for any financial contributions via Community Infrastructure Levy (CIL) payments or section 106 (s106) agreements to address the demand on health and education facilities. This will need to reflect the over-provision of the health facilities and early years provided within Phase 3B of the 2012 OPP and more detailed calculations will be required at the reserved matters applications stage. | **ES Volume 1: Chapter 5 Socio-Economics** |
| **DETAILED TRAVEL PLAN** | |
| The Framework Travel Plan provided as part of the Transport Assessment sets out the requirements for the Detailed Travel Plans (both Residential and Workplace) which will aim to reduce the use of cars. The measures set out in the Residential Travel Plan will include the following:<br>• The Proposed Development will provide traffic-calmed and pedestrianised streets with high-quality landscaping that will encourage walking/cycling;<br>• The Proposed Development will provide a restricted amount of car parking, up to 80 spaces for returning residents and up to 50 disabled parking spaces;<br>• Cycle parking will be provided in line with London Plan (March 2021) standards to encourage cycle ownership and use. A total of 2,836 residential long-stay cycle spaces are proposed for residents, with 41 residential spaces for the short stay cycle parking in the form of Sheffield stands;<br>• Phase A will provide a minimum of 502 long-stay and seven short-stay cycle parking spaces;<br>• Residential long-stay parking is provided within dedicated sheltered and secure cycle stores located at ground and first-floor levels. Visitor (short stay) cycle parking is to be located in the public realm in the form of Sheffield stands;<br>• Four Car Club spaces;<br>• Residents of new dwellings will be provided with a Travel Pack upon the first occupation. The key role of the Travel Pack is to raise awareness of sustainable travel opportunities and initiatives available to occupants, including:<br>– Promotion of local, sustainable travel networks;<br>– Links to relevant public transport travel information websites (such as the TfL journey planner) will be provided;<br>– Promotion of local amenities: The Travel Pack will include the locations of many of the nearby key amenities and encourage trips by foot;<br>– Promotion of the cycle parking: Making residents aware of the cycle parking which is available to them;<br>– Promotion of membership to the London Cycling Campaign (LCC);<br>– Promotion of health benefits associated with alternative modes of transport;<br>– Details of carbon footprinting; and<br>– Promotion of key services and facilities.<br>• Notice boards providing travel information to residents within the site will be placed in lobbies;<br>• Maps of the immediate local area will be displayed on the notice boards, identifying cycle parking locations, car club bays, and public transport service access points. The notice boards will also be used to inform residents of any new travel initiatives or events organised by the Sustainable Travel Manager (STM) and Travel Plan Coordinators (TPCs);<br>• The Travel Plan will be monitored on a 10-year cycle. The first and second monitoring surveys will be undertaken at Years 1 and 3 (on the first and third anniversary of the initial baseline travel survey) and for up to 10 years every other year. The final monitoring survey will be carried out on the tenth anniversary of the initial baseline survey;<br>The Workplace Travel Plan will includes the following measures:<br>• The Proposed Development is proposed to be car-free with the exception of one blue badge space for commercial uses;<br>• To protect local parking amenities, occupiers would be prohibited from obtaining on-street parking permits;<br>• Safe and secure cycle parking will be within the Proposed Development for staff and visitors to the Site in line with London Plan (March 2021) standards to encourage cycle ownership and use. A total of 62 longstay cycle spaces are proposed for staff, with 136 spaces for the short stay cycle parking in the form of Sheffield stands;<br>• Commercial long-stay parking is proposed to be provided within commercial units, with specific locations to be firmed up to meet prospective tenants' layout requirements; | **ES Volume 1: Chapter 7: Traffic and Transport**<br>**Transport Assessment** |

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| • Visitor (short stay) cycle parking is to be located on the ground floor in the form of Sheffield stands;<br>• The workplace occupiers will provide administration of the Cycle to Work Scheme;<br>• The commercial occupiers would be encouraged to provide and promote the availability of employee interest-free loans to purchase public transport season tickets;<br>• Employees of new workplaces will be provided with a Travel Pack upon the first occupation. The key role of the Travel Pack is to raise awareness of sustainable travel opportunities and initiatives available to occupants, including:<br>– Promotion of local, sustainable travel networks;<br>– Links to relevant public transport travel information websites;<br>– Promotion of local amenities;<br>– Promotion of the cycle parking;<br>– Promotion of membership to the London Cycling Campaign (LCC);<br>– Promotion of health benefits associated with alternative modes of transport;<br>– Details of carbon foot-printing; and<br>– Promotion of key services and facilities.<br>• Notice boards providing travel information to employees within the Site will be placed in prominent locations;<br>• Maps of the immediate local area will be displayed on the notice boards, identifying cycle parking locations, car club bays, and public transport service access points. The notice boards will also inform employees of any new travel initiatives or events organised by the STM; and<br>• The TP will be monitored on a 10-year cycle. The first and second monitoring surveys will be undertaken at Years 1 and 3 (on the first and third anniversary of the initial baseline travel survey) and for up to 10 years every other year. The final monitoring survey will be carried out on the tenth anniversary of the initial baseline survey | |
| **OUTLINE DELIVERY AND SERVICING PLAN** | |
| The following management measures have been outlined in the Outline Delivery and Servicing Plan (DSP) that forms part of the Transport Assessment:<br>• In general, deliveries and servicing will take place from the street, and the strategy has been planned such that active management would not be needed;<br>• The estate management company would have overall responsibility for the day-to-day management of deliveries, servicing, and refuse, including ensuring that vehicles would not park illegally or anti-socially around the site. The estate management staff would deal with complaints in relation to deliveries and servicing issues; and<br>• Occupiers, employees and residents would be made aware of the delivery and servicing arrangements before purchase and occupation.<br>Refuse collections should occur outside of peak network periods, although it is recognised that this would require liaison with LBTH and cannot specifically be controlled by the Site<br>The following measures relating to waste management have been highlighted in the DSP:<br>• Residential waste would be managed in accordance with the relevant LBTH guidance and waste facilities designed to BS5906:2005 standards. Once operational, estimated volumes of residential waste generated at the Proposed Development have been quantified using waste generation metrics extracted from the LBTH Guidance document. Residents would segregate their waste into residual waste, Dry Mixed Recycling (DMR) and food waste and deposit it to appropriately labelled containers at ground floor level;<br>• Residential waste would be handled using various methods, including wheeled bins and portable waste compactors, collected by LBTH weekly; and<br>• Commercial waste would be stored in shared commercial waste stores in 1,100-litre Euro bins, and 240-litre wheeled bins for collection multiple times per week. | **ES Volume 1, Chapter 7: Traffic and Transport Transport Assessment** |
| **WIND MICROCLIMATE** | |
| Detailed Proposals:<br>• Entrance (probe location 116): Recessing the entrance by 1.5m from the façade line or including shrubs on both sides of the entrance extending 2m from the façade line and 1.5m in height.<br>• Bus Stop (probe location 105) The existing bus stop would be equipped with a bus stop shelter that would be expected to provide the adequate protection and therefore no additional mitigation would be required.<br>• Seating at ground level (probe location 115): 3m tall trees with shrubs 1m in height underneath located on two sides of seating areas to provide localised shelter. Alternatively, the use of solid screens or 50% porous 1.5m in height 2m wide placed two sides of the seating areas.<br>• Balcony level (probe location 455): the stack of balconies represented by this receptor would require 1.5m tall solid balustrade or alternatively the use of 50% porous balustrade of similar height.<br>Outline Proposals:<br>Further detailed design and wind tunnel testing at the associated reserved matters applications stages. | **ES Volume 1, Chapter 13: Wind Microclimate** |
| **NOISE AND VIBRATION** | |
| Suitable glazing and ventilation options will be adopted in conjunction with typical façade in order to achieve the BS 8233 and WHO criteria.<br>Mechanical ventilation is proposed across the Proposed Development. Any installed mechanical ventilation system will allow for sufficient airflow whilst maintaining the integrity of the façade with regard to noise insulation. The glazing and ventilation elements will be selected with consideration to the required façade reduction. | **ES Volume 1, Chapter 10: Noise and Vibration** |

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| To ensure the $RW^3$ values take account of possible low frequency noise, the sound reduction index of each element will include a correction for the Ctr (adjustment factor) urban traffic noise spectrum. The ventilation will achieve this value when open/operational, to allow ventilation to the dwelling.<br>For non-habitable rooms, such as kitchens, bathrooms, stairways, halls, landings etc, lower acoustic performance glazing configurations may be considered permissible.<br>Winter gardens are incorporated at dwellings directly overlooking the A12. The remainder comprises protruding balconies and external amenity areas at ground level which are screened by the layout of the Proposed Development. Balconies would benefit from measures such as imperforate balustrades and absorptive linings.<br>The sound from commercial plant and activities will be specified such that sound levels remain below the limits specified in **ES Volume 1, Chapter 10: Noise and Vibration**. | |
| **DAYLIGHT, SUNLIGHT, OVERSHADOWING AND SOLAR GLARE** | |
| Further detailed design and testing of daylight, sunlight and overshadowing to nearby sensitive receptors at the associated reserved matters applications stages.<br>Technical solar glare assessment at the reserved matters application stage. | **ES Volume 1, Chapter 14: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare** |
| **WATER RESOURCES, FLOOD RISK AND DRAINAGE** | |
| Flood Risk Assessment<br>• A short summary of these design measures are listed below, with further details provided within the FRA:<br>• Finished floor levels of the residential units set a minimum of 0.15 m above adjacent ground levels, where possible;<br>• Finished floor levels of the residential units raised above the peak flood levels in the 2100 climate change breach scenario, or sleeping accommodation to be provided at first floor level;<br>• Finished floor levels of the proposed retail units set a minimum of 0.15 m above adjacent ground levels;<br>• The latest best practice flood resistant and resilient construction techniques to be incorporated into the design of the building where appropriate; and<br>• Flood Evacuation Plan to be developed in consultation with London Borough of Tower Hamlets (LBTH).<br>Drainage Strategy<br>• The proposed surface water drainage strategy has been developed to utilise Sustainable Drainage Systems (SuDS) to attenuate surface water at source and reduce the risk of downstream flooding of the Thames Water sewer network in the local area. The Proposed Development utilises blue, green and podium deck/roof attenuation roof structures along with below ground cellular attenuation tanks designed for the 1:100 year plus 40% climate change storm event. Refer to Figure 12.2 below.<br>• The Proposed Development QBAR greenfield runoff rate has been calculated to be 18.8l/s. QBAR is the mean annual flood flow from a rural catchment (m3/s). It is proposed that the entire Site will discharge at this rate as agreed with the LBTH who are the LLFA. Each building and associated hardstanding being proposed to discharge at a proportion of this flow rate, this has been split between 12 separate connections across the Site receiving the total 18.8l/s. Each building's associated storm water drainage is conveyed by a traditional gravity run system to the nearest Thames Water Asset, with all connections discharging into the Thames Water combined water Sewer network.<br>• In line with the IWMP , the Proposed Development aims to utilise SuDS measures and restricts discharge rates to greenfield rate. | **ES Volume 1, Chapter 4: The Proposed Development**<br>**ES Volume 1, Chapter 9: Climate Change**<br>**ES Volume 1, Chapter 12: Water Resources, Drainage and Flood Risk**<br>Flood Risk Assessment and Drainage Strategy submitted in support of the planning application |
| **OPERATIONAL WASTE MANAGEMENT** | |
| Within the Proposed Development, all waste facilities will be designed to BS5906:2005[4] standards. In summary, the waste facilities will include the following:<br>• A suitable water point in close proximity to allow washing down;<br>• All surfaces will be sealed with a suitable wash proof finish (vinyl, tiles etc.);<br>• All surfaces will be easy to clean;<br>• Suitable floor drain; and<br>• Suitable lighting and ventilation.<br>In accordance with the Guidance, within the Proposed Development, the route between any waste storage facilities and the Refuse Collection Vehicle (RCV) will:<br>• be free from steps or kerbs;<br>• have a solid foundation;<br>• have a smooth solid surface; and<br>• be level and have a gradient of no more than 1:12, with a minimum width of 2 metres.<br>Storage and collection of waste will be in accordance with the Operational Waste Management Plan submitted with the planning application. | **Operational Waste Management Strategy** |
| **CIRCULAR ECONOMY – OPERATIONAL WASTE** | |
| Waste arisings during the operational phase of the Proposed Development will be minimised and managed, in accordance with circular economy principles, through the following measures:<br>• To ensure all building users understand the recycling process and to avoid contamination, the space will be clearly labelled to assist with segregation, storage and collection of the recyclable waste streams;<br>• Commercial elements would seek a zero landfill waste contract through a commercial waste contractor;<br>• Residential waste will be disposed of by LBTH in their contracted facilities; and | **ES Volume 1, Chapter 4: The Proposed Development** |

[3] *Weighted sound reduction*
[4] *British Standard BS5906:2005 Waste Management in Plots – Code of Practice*

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| • Implementation of the Operational Waste Management Plan (see above) | |
| **CARBON / GREENHOUSE GAS EMISSIONS** | |
| Measures once the Proposed Development is complete and operational:<br>• Use of highly efficient/LED lighting in the buildings;<br>• The plant species within the proposed landscaping will be selected so that they are resilient to variations in climate and features such as the climber walls will provide natural wind breaks;<br>• Irrigation equipment will be provided on all the roof gardens so that planting does not dry out during the summer months;<br>• Low water use fittings and appliances such as dual flush WCs, aerating washbasin taps and flow regulated showers to limit water consumption to a maximum of 105 litres per person per day for the residential units;<br>• The building fabric u-values will be enhanced and air permeability kept as low as possible to reduce energy consumption from the building fabric; and<br>• In Phase A, Buildings H1-3 and F in Phase A will connect to the existing energy centre delivered as part of the earlier phases of the previous planning application in 2021. Buildings I and J will be provided with their own air source heat pumps (ASHP's) and water-source heat pumps (WSHP's) and will be independent from the wider energy strategy. Phases b, C and D will be serviced by a new energy centre served by ASHPs.<br>Key transport mitigation measures that will reduce GHG emissions include:<br>• Develop a network of permeable walking and cycling routes that connect with surrounding existing and planned neighborhoods;.<br>• Change the nature of Abbott Road with traffic calming and an improved walking and cycling experience;<br>• Provide good access to public transport network;<br>• Design streets that safely provide access and space for servicing the proposed buildings;<br>• Provide cycle parking in line with the current standards in the London Plan, and in accordance with TfL's London Cycling Design Standards;<br>• Low residential parking ratio (0.20 spaces per dwelling);<br>• Provision of electrical vehicle charging points across the site in accordance with London Plan requirements; and<br>• Implementation of the Travel Plan. | **ES Volume 1, Chapter 4: Proposed Development**<br>**ES Volume 1, Chapter 9: Climate Change** |

# Chapter 18: Glossary and Abbreviations

## GLOSSARY OF TERMS

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| Accuracy | A measure of how well a set of data fits the true value. |
| Accurate Visual Representations | A static or moving image which shows the location of a proposed development as accurately as possible; it may also illustrate the degree to which the development will be visible, its detailed form or the proposed use of materials. AVRs are produced by accurately combining images of the proposed building with a representation of its context. |
| Acoustic Screening | Use of a fabric-covered, double-sided screen used in open areas such as offices to absorb noise. |
| ADMS Roads | Atmospheric Dispersion Modelling System Roads is a line-source Gaussian dispersion model with the capability to model 3-point sources. |
| Air Quality Objective | Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard). |
| Air Quality Standard | The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective). |
| Ambient air | Outdoor air in the troposphere, excluding workplace air. |
| Ambient Noise Level | The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($LA_{Feq}$,T). |
| Amenity | A pleasant or advantageous aspect of the environment. |
| Annual mean | The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months. |
| Annual Probable Sunlight Hours | A measure of sunlight that a given window may expect over a year period. |
| Aquifer | A below ground, water-bearing layer of soil or rock. |
| Alluvium | Sediment laid down by a river. Can range from sands and gravels deposited by fast flowing water and clays that settle out of suspension during overbank flooding. Other deposits found on a valley floor are usually included in the term alluvium (e.g. peat). |
| Arisings | Material (often spoil) derived from the ground through excavation. |
| Asbestos | A mineral substance previously used as in insulator but, is highly toxic. |
| A-weighting, dB(A) | The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies. |
| Baseline Studies | Studies of existing environmental conditions which are designed to establish the baseline conditions against which any future changes can be measured or predicted. |
| Biodiversity | The diversity, or variety of plants and animals and other living things in a particular area of region. It encompasses landscape diversity, ecosystem diversity, species diversity and genetic diversity. |
| Borehole | A deep hole bored into the ground as part of intrusive geological investigations. |
| Bunding | A constructed retaining wall around storage 'where potentially polluting substances are handled, processed or stored, for the purposes of containing any unintended escape of material from that area until such time as remedial action can be taken'. |
| Carbon Budget | A tolerable quantity of greenhouse gas emissions that can be emitted in total over a specified time. |
| Carbon Dioxide ($CO_2$) | Carbon dioxide is a naturally occurring gas comprising 0.04% of the atmosphere. The burning of fossil fuels releases carbon dioxide fixed by plants many millions of years ago, and this has increased its concentration in the atmosphere by some 12% over the past century. It contributes about 60 per cent of the potential global warming effect of manmade emissions of greenhouse gases. |
| Combined Heat and Power | A low carbon technology which generates electricity whilst also capturing usable heat that is produced in the process. |
| Completed Development | A development scheme which has been build out. |
| Conservation Area | An area designated by the Local Authority as being of special architectural or historic interest under the provisions of the Planning (Listed Buildings and Conservation Areas 1990) Act, the character or appearance of which it is desirable to preserve or enhance. |
| Considerate Constructors Scheme | A non-profit-making, independent organisation founded in 1997 by the construction industry to improve its image. |
| Construction Environmental Management Plan | A documented management system with environmental procedures to monitor residual impacts of the construction phase of a development. |
| Construction Logistics Plan | A documented travel plan specific for a construction site. |
| Core Strategy | London Borough of Tower Hamlets (2020), 'Local Plan 2031: Managing Growth and Sharing Benefits'. The principal document guiding growth and development within the LBTH. |
| Cumulative Schemes | Developments that have received planning permission and have a signed legal agreement in place. They are assumed to be in place by the time the Development being assessed is completed. |
| Decibel | A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa. |
| Defra Air Information Resource | Webpages providing in-depth information on air quality and air pollution in the UK. |
| Demarcation | The action of fixing the boundary or limits of something. |
| Design Code | A document which provides a series of rules and standards which will guide the future phases of the development. |
| Design Freeze | A method used during design development stage to mitigate the risks associated with change. This organises and complies the design process, control changes, and force the completion of design stages on time. |
| Desk-Top Study | A non-intrusive study and review of all available information pertaining to a site, including historical records, collated and monitored data, and consultation with relevant stakeholders. |
| Directive | European Union (EU) Directives impose legal obligations on European Member States. They are binding as to the results to be achieved but, allow individual states the right to decide the form and methods used to achieve the results. An example of this is the EU Air |

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| | Quality Framework Directive (1996) that is brought into legal effect in the UK by the Air Quality (England) Regulations (2000). |
| Displacement | An estimate of economic factors that may have reasonably been attained by other competitors in the absence of the development. |
| Dust Soiling | The accumulation of particulates that can give rise to human health effects. |
| EIA Scoping | An initial stage in determining the nature and potential scale of the environmental impacts arising from a proposed development and assessing what further studies are required to establish their significance. |
| EIA Scoping Opinion | A written statement of the opinion of the relevant planning authority as to the information to be provided in the Environmental Statement which specifically requires a local planning authority to respond or consult with consultees within a statutory period. |
| EIA Screening | An initial stage in which the need for EIA is considered in respect of a development. Some developments are automatically subject to EIA by means of their inevitable size, nature and effects (Schedule 1 developments). Other projects are made subject to EIA because it is anticipated that they are likely to have significant environmental effects (Schedule 2 developments). |
| Emission | A material that is expelled or released to the environment. Usually applied to gaseous or odorous discharges to the atmosphere. |
| Entran Ltd | An independent air quality and acoustic consultancy |
| Environmental Impact Assessment | A process by which information about the environmental effects of a development is collected and taken into account by the relevant decision-making body before a decision is given on whether the development should go ahead. |
| Environmental Statement | A statement that includes such information that is reasonably required to assess the environmental effects of a development. |
| Exceedance | A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard. |
| Façade | The front or face of a building. |
| Fit-out | Installation of all non-substructure and non-superstructure items such as electrical water services, as well as final internal finishings. |
| Floodplain | Land adjacent to a watercourse over which water flows, or would flow but for defences in place, in times of flood. |
| Flood Resistance and Resilience | Measures put in place to protect a property against flooding. |
| Geotechnical | Ground investigation, typically in the form of boreholes and/or trial/test pits, carried out for engineering purposes to determine the nature of the subsurface deposits. |
| Glare | The uncomfortable brightness of a light source or illuminated area when viewed against a dark background. |
| Grade I Listed Building | A listed building that is of exceptional interest. |
| Grade II Listed Building | A listed building that is of special interest. |
| Grade II* Listed Building | A listed building that is of particular importance and of more than special interest. |
| Greater London Authority's Population Yield Calculator | A tool for estimating population yield from new housing development. |
| Gross External Area | A measure of floor space calculated in accordance with the Royal Institution of Chartered Surveyors (RICS) Code of Measuring Practice. |
| Gross Internal Area | A measure of the area of a building measured to the internal face of the perimeter walls at each floor level. |
| Hardstanding | Ground surfaced with a hard material for parking vehicles on. |
| Heritage Asset | A building, area or scene which makes a positive contribution of special architectural, historic or environmental interest. |
| Hoarding | A temporary board fence set up on the perimeter of a building site. |
| Hydrogeology | The study of geological factors relating to the Earth's water. |
| Indices of Multiple Deprivation | A UK government qualitative study of deprived areas in English local councils. |
| In-situ | In the natural, original or appropriate position. |
| Intrusive Investigation | An in-depth investigation involving further sampling and analysis, such as the gathering of samples from the ground, walls, ceilings for the detection of contamination, asbestos and or archaeological remains. |
| $L_{Amax}$ | The highest time-weighted sound level measured during a period. |
| $L_{AmaxF}$ | A-weighted, maximum, sound level measured with a fast time-constant. |
| $L_{Aeq,T}$ | The A-weighted noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded. |
| $L_{AFmax,T}$ | The A-weighted noise level index defined as the maximum noise level during the period T. $L_{max}$ is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response. |
| $L_{A90}$ | The noise level exceeded for 90% of the measurement period A-weighted and calculated by Statistical Analysis. |
| Lawson Comfort Criteria | The so called 'Lawson' criteria which define whether a space is comfortable for business walking, strolling or sitting by a threshold wind speed i.e. the hourly mean wind speed exceeded 5% of the time. |
| Lawson Safety Criteria | Criteria for the safety of an individual in relation to the wind environment. There are two categories: S1: unsafe for typical use (threshold speed 20m/s) and S2: unsafe for sensitive use (threshold speed 15m/s). |
| Levitt Bernstein | Aberfeldy Architect for the Outline Proposals (Phases B-D) of the Proposed Development. |
| Listed Building | A building or structure of special architectural or historic interest which is included in a list made by the Secretary of State. |
| Local Plan | A series of documents which sets out the vision and framework for development in the borough. |

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| London Plan | The adopted Spatial Development Strategy for London that sets out a vision for London and identifies the means by which this vision might be achieved. Issued in 2021. |
| Made Ground | Soils or other material which has been deposited by man rather than natural processes, for example to make up ground levels. |
| Magnitude of Impact | The degree and extent to which the project changes the environment. |
| Massing | Massing refers to the structure in three dimensions, usually outlining the height and size of a building. |
| Microclimate | The climate of a very small or restricted area, particularly when this is different from the climate of the surrounding area. |
| Mitigation | Any process, activity of thing designed to avoid, reduce or remedy adverse environmental impacts likely to be caused by a development project. |
| Mitigation Measure | Measure aiming at reducing an adverse environmental effect. |
| Morris and Company | Aberfeldy detailed architect for Phase A of the Proposed Development |
| National Planning Policy Framework | Came into force on 27 March 2012. It sets out the Government's economic, environmental and social planning policies for England and summarises, in a single document, all previous national planning policy advice (Planning Policy Statements and Planning Policy Guidance notes). |
| Nitrogen Dioxide | Road transport and the burning of fossil fuels for power are the main sources of Nitrogen dioxide. In addition to being a greenhouse gas it also contributes to photochemical smog formation. It is an irritant to the respiratory system. |
| Non-Technical Summary | A summary of the Environmental Statement in 'non-technical language'. |
| No-sky Line | A measure of the distribution of diffuse daylight within a room. |
| Obtrusive Light | Any light emitted from artificial sources into spaces where this light would be unwanted. |
| Open Space | Includes all open spaces, plus other spaces that provide a break from the densely built-up urban form, such as pedestrianised areas and station concourses; hard-landscaped areas with private access; pedestrian/cycle and wildlife routes; and all the green infrastructure that links open spaces together, including green corridors, private residential gardens, trees, green roofs, and green landscaped areas. |
| Ordnance Datum | Land levels are measured relative to the average sea level at Newlyn, Cornwall. This average level is referred to as 'Ordnance Datum'. |
| Outline Construction Logistics Plan | A documented travel plan specific for a construction site. |
| Oversailing | Something (part of a project) being above or beyond something else (a lower part). |
| Overshadowing | Overshadowing occurs when a structure blocks out sunlight from neighbouring properties mainly on the northern side of that structure. It can affect the amount of daylight let into neighbouring properties when the shadow cast falls across windows or glazed doors, or on amenity spaces. |
| Particulate Matter | Discrete particles in ambient air, sizes ranging between nanometres (nm, billionths of a metre) to tens of micrometres (µm, millionths of a metre). |
| Party Wall | A wall common to two adjoining buildings or rooms. |
| Party Wall Act (1996) | A framework for preventing or resolving disputes in relation to party walls, part structures, boundary walls and excavations near neighbouring buildings. |
| Pathways | The routes by which impacts are transmitted through air, water, soils or plants and organisms to their receptors. |
| Pedestrian Level Wind Speed | Mean or gust wind speed measured at 1.5 m above ground level. |
| Percentile | The percentage of results below a given value. |
| Photomontage | The use of photographs of a site from a certain viewpoint to show both the current base (pre-development) state of the site and the anticipated view of the site once development is complete. |
| Pile | A timber, steel or concrete post which is driven, jacked or cast (bored) into the ground to carry vertical or horizontal loads. |
| Pile Cap | A thick, concrete mat that rests on concrete or timber piles that have been driven into the ground. |
| Planit IE | LDA: Landscape Architects |
| Plant | A building's generator, heating, ventilation, and/or electricity-production system. |
| Planning Application Red Line Boundary | Border that incorporates all land necessary to carry out the proposed development. |
| Planning Inspectorate | An executive agency of the Department for Communities and Local Government with responsibility of determining final outcomes of town planning and enforcement appeals and public examination of local development plans. |
| Planning Practice Guidance | A web-based resource that came into force in 2014. It seeks to consolidate existing technical guidance into a consolidated online format and provides further detail on the policies contained within the NPPF. |
| Planning Statement | Sets out the policy background to the proposal, describes the site and its surroundings, identifies constraints and explores the planning policy framework. |
| Porous | A rock or material having minute holes through which liquid or air can pass. |
| Proposed Development | An area of land that has had a potential scheme put forward to be built on. |
| Public Transport Accessibility Level Assessment | A means of quantifying and comparing accessibility by public transport for a given site. |
| Public Realm | The space between and within buildings that are publicly accessible, including streets, squares, forecourts, parks and open spaces. |
| QBAR | ¬The peak rate of flow from a catchment for the mean annual flood (a return period of approximately 1:2.3 years |
| Ratification (Monitoring) | Involves a critical review of all information relating to a data set, in order to amend or reject the data. When the data have been ratified they represent the final data to be used (see also validation). |
| Receptor (Sensitive) | A component of the natural, created, or built environment such as human being, water, air, a building, or a plant that is affected by an impact. |
| Residual Effects | Those effects of a development following implementation of any relevant mitigation proposals. |
| Risk Assessment | An assessment of the likelihood and severity of an occurrence. |

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| Safeguarding | Protecting from harm or damage with an appropriate measure. |
| Screening (landscaping) | A natural or man-made feature which separates land uses. |
| Secure by Design standards | Initiative combining the principles of 'designing out crime' with physical security. |
| Sensitive Area | According to EIA Regulations is any of the following: land notified under section 28(1) (Sites of Special Scientific Interest) of the Wildlife and Countryside Act 1981 (23); a National Park; the Broads; a property on the World Heritage List; a scheduled monument; AONB or a European site. |
| Setting | The context in which a building or area can be appreciated. |
| Severance | The perceived divisions that can occur within a community when it becomes separated by a traffic route. |
| Site of Importance for Nature Conservation | A non-statutory site identified as being areas of importance for wildlife and geology. |
| Site Suitability Assessment | A comprehensive analysis of both the on-site subsoil characteristics and the local hydrogeological features of the site to determine the most feasible means of treating effluent on-site whilst ensuring full compliance with wastewater treatment requirements. |
| Socio-Economics | The social science that studies how economic activity affects and is shaped by social processes. |
| Solar Glare | A continuous source of excessive brightness from the sun. |
| Sound Power Level | The total sound power emitted by a source in all directions in watts (joules per second). |
| Specific Noise Level | The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source (the noise source under investigation) over a given time interval (LAeq,T) |
| Statement of Community Involvement | Produced by local authorities to explain to the public, their involvement in the preparation of local planning documents. |
| Statutory Consultees | Groups or bodies that, by law, must be consulted as part of the planning application process for EIA development. |
| Strata | Layer of rock or soil. |
| Substructure | Elements of a development below ground level, typically basements and foundations. |
| Superstructure | Elements of a development above ground principally the mega frame, supporting northern core and outer shell cladding. |
| Supplementary Planning Document | Documents which seek to give guidance and support on the Council's planning processes and are one of the material considerations in determining planning applications. |
| Surface Water Drainage Strategy | A report into how surface water, usually caused by rain, affects a site and the surrounding area. |
| The Applicant | The persons or entities making the planning application. |
| The London Clay Formation | A marine geological formation of Ypresian age which crops out in the southeast of England. |
| The Site | The extent of the development site, as defined by the red-line boundary plan. |
| Time slicing | A technique to implement multitasking in operating systems. |
| Topography | The natural and man-made features of an area collectively. |
| Townscape | The visual appearance of a town or urban area. |
| Transport Assessment | Prepared and submitted alongside planning applications for developments likely to have significant transport implications. |
| Travel Plan | A document which puts measures in place that will encourage sustainable travel and reduce reliance on single occupancy cars. |
| Uncertainty | A measure, associated with the result of a measurement, which characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation. |
| Unexploded ordnance | Explosive weapons that did not explode when they were employed and still pose a risk of detonation, sometimes many decades after they were used or discarded. |
| Urban Grain | The combined pattern of blocks and streets, taking into account the character of street blocks and building height and size and how they work together to enable movement and access. |
| Urban Heat Island Effect | An urban area or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities. |
| Validation (modelling) | Refers to the general comparison of modelled results against monitoring data carried out by model developers. |
| Validation (monitoring) | Screening monitoring data by visual examination to check for spurious and unusual measurements (see also ratification). |
| Verification (modelling) | Comparison of modelled results versus any local monitoring data at relevant locations. |
| Verified Image | An outline image of a development on a base photograph to provide projections of key views. |
| Vertical Sky Component | A 'spot' measure of the skylight reaching the mid-point of a window from an overcast sky. It represents the amount of visible sky that can be seen from that reference point, from over and around an obstruction in front of the window. |
| Ward | An administrative division of a city or borough that typically elects and is represented by a councillor or councillors. |
| Waste Arisings | Materials forming the secondary or waste products of industrial operations. |
| Watching Brief (archaeological) | An archaeological watching brief is 'a formal programme of observation and investigation conducted during any operation carried out for non–archaeological reasons.' |
| Wind Tunnel Testing | Assessment used in aerodynamic research to study the effects of air moving past solid objects. |
| Wireline | A single line representing the outline of the building. |

## ABBREVIATIONS

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| $\mu gm^{-3}$ Micrograms per cubic metre | A measure of concentration in terms of mass per unit volume. A concentration of 1µg/$m^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant. |
| µm | Micrometres |
| AADT | Annual Average Daytime Traffic Flows |
| AAWT | Annual Average Weekly Traffic Flows |
| AATC | Aberfeldy Active Travel Connector |
| AD | Anno Domini |
| ADF | Average Daylight Factor |
| ADMS | Atmospheric Dispersion Modelling System |
| AEP | Annual Exceedance Probability |
| AOD | Above Ordnance Datum |
| AONB | Area of Outstanding Natural Beauty |
| APA | Archaeological Priority Area |
| APP | Approach Surface – Aviation (if necessary) |
| APS | Annual Population Survey |
| APSH | Annual Probable Sunlight Hours |
| AQ | Air Quality |
| AQAL | Air Quality Assessment Level |
| AQAP | Air Quality Action Plan |
| AQMA | Air Quality Management Area |
| AQS | Air Quality Standards |
| AQS | Air Quality Strategy |
| AQO | Air Quality Objectives |
| ASHP's | Air Source Heat Pumps |
| ATC | Automatic Traffic Counters |
| ATMs | Air Traffic Management systems |
| AURN | Automatic Urban Rural Network |
| AVRs | Accurate Visual Representations |
| AQAL | Air Quality Assessment Level |
| AQDRA | Air Quality (Dust) Risk Assessment |
| BC | Before Christ |
| BEB | Building Emissions Benchmark |
| bgl | Below Ground Level |
| BH | Built Heritage |
| BPM | Best Practicable Means |
| BRE | Building Research Establishment |
| BREEAM | British Research Establishment Environmental Assessment Method |
| BS | British Standard |
| BSI | British Standard Institute |
| C | Consequence |
| $^oC$ | Centigrade |
| CA | Conservation Area |
| CAA | Civil Aviation Authority |
| CADAP | Conservation and Design Advisory Panel |
| CCRA | Climate Change Risk Assessment Government Report |
| C&D | Construction and Demolition |
| CDE | Construction, Demolition and Excavation |
| CEH | Centre for Ecology and Hydrology |
| CEMP | Construction Environmental Management Plan |
| CERS | Cycle Environment Review System |
| CEMP | Construction Environmental Management Plan |
| CFA | Continuous Flight Auger: A piling method. |
| CHP | Combined Heating and Power |
| CIE | Commission Internationale L'Eclairage |
| CIEEM | Chartered Institute for Ecology and Environmental Management |
| CIfA | Chartered Institute for Archaeologists |
| CIL | Community Infrastructure Levy |
| CLOCS | Construction Logistics and Cycle Safety |
| CLP | Construction Logistics Plan |
| CMS | Construction Method Statement |
| CO | Carbon monoxide |
| $CO_2$ | Carbon dioxide |
| $CO_{2e}$ | Carbon dioxide equivalent |
| CoCP | Code of Construction Practice |
| CoP | Code of Practice |
| CoPA | Control of Pollution Act |
| COSHH | Control of Substances Hazardous to Health |
| CRTN | Calculation of Road Traffic Noise |
| CSA | Childcare Sufficiency Assessment |
| DAS | Design and Access Statement |
| dB | Decibel |
| DBA | Desk Based Assessment |
| DCLG | Department for Communities and Local Government |

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| DEFRA | Department of Environment, Food and Rural Affairs |
| DfE | Department for Education |
| DfT | Department for Transport |
| DLR | Docklands Light Railway |
| DMP | Dust Management Plan |
| DMRB | Design Manual for Roads and Bridges |
| DMS | Demolition Method Statement |
| DPD | Detailed Sites Policies |
| DRA | Dust Risk Assessment |
| DRP | Design Review Panel |
| DSO | Daylight, Sunlight and Overshadowing |
| DSP | Delivery Servicing Plan |
| EA | Environment Agency |
| EC | European Commission |
| EHO | Environmental Health Officer |
| EHV | Extra High Voltage Lines |
| EIA | Environmental Impact Assessment |
| EPA | Environmental Protection Act |
| EPUK | Environmental Protection UK |
| ES | Environmental Statement |
| EV | Electric Vehicle |
| Ev | Vertical Illuminance In Lux |
| FIT | Fields In Trust |
| FRA | Flood Risk Assessment |
| FTE | Full Time Equivalent |
| FTP | Framework Travel Plan |
| FW Drainage | Foul Water Drainage |
| GEA | Gross External Area |
| GEART | Guidelines for the Environmental Assessment of Road Traffic |
| Geoarch | Geoarchaeological Deposit Model |
| GHG | Greenhouse Gas |
| GIA | Gross Internal Area |
| GIA | Gordon Ingram Associates |
| GLA | Greater London Authority |
| GLAAS | Greater London Archaeology Advisory Service |
| GLC | Greater London Council |
| GLHER | Greater London Historic Environment Record |
| GLVIA | Guidelines for Landscape and Visual Impact Assessment |
| GMT | Greenwich Mean Time |
| GP | General Practitioner |
| GVA | Gross Value Added |
| Ha | Hectare |
| HE | Historic England |
| HGV | Heavy Goods Vehicle |
| HSE | Health and Safety Executive |
| HUDU | London Healthy Yrvan Development Unity |
| HVAC | Heating, Ventilation. And Air Conditioning systems |
| IAQM | Institute of Air Quality Management |
| IEMA | Institute of Environmental Management and Assessment |
| IoD | Indices of Deprivation |
| IMD | Indices of Multiple Deprivation |
| INNS | Invasive / Non-Invasive Species |
| IWMP | Integrated Water Management Plan |
| Kg | Kilograms |
| km | Kilometres |
| kWh | Kilowatt hour |
| l/s | Litres per second |
| LAP | Local Areas for Play |
| LAQM | Local Air Quality Management |
| LAQM.TG | Local Air Quality Management Technical Guidance |
| LBTH | London Borough of Tower Hamlets |
| LBTH CCG | London Borough of Tower Hamlets Clinical Commissioning Group |
| LCC | London County Council |
| LDDC | London Docklands Development Corporation |
| LEAPs | Locally Equipped Areas of Play |
| LED | Light-Emitting Diode |
| LEGGI | London Energy and Greenhouse Gas Inventory |
| LGV | Light Goods Vehicle |
| LoHAM | London Highway Assignment Model |
| LIA | Low Impact Area |
| LKD's | Living, Kitchen, Diners |
| LLFA | Lead Local Flood Authority |
| LLSOAs | Lower Layer Super Output Areas |
| LMA | London Metropolitan Archive |
| LPA | Local Planning Authority |

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| LOAEL | Lowest Observed Adverse Effect Level |
| LSOA | Lower Layer Super Output Area |
| LVMF | London View Management Framework |
| LWA | The mean A-weighted sound power level |
| m | Metre |
| $m^2$ | Square metre |
| $m^3$ | Cubic metre |
| M AOD | Metres Above Ordnance Datum |
| MHCLG | Ministry for Housing, Communities and Local Government |
| mm/s | Millimetres per second |
| m/s | Meters per Second |
| MPS | Metropolitan Police Service's |
| MTS | Mayor's Transport Strategy |
| MVHR | Mechanical Ventilation and Heat Recovery |
| NAQO | National Air Quality Objectives |
| N/A | Not applicable |
| NEAP's | Neighbourhood Equipped Areas for Play |
| NGET | National Grid Electrical Transmission |
| NHLE | National Heritage List for England |
| NHS | National Health Service |
| NIA | Net Internal Area |
| NIP | National Infrastructure Planning |
| NMR | National Monuments Record |
| NO | Nitrogen monoxide, a.k.a. nitric oxide |
| $NO_2$ | Nitrogen Dioxide |
| NOx | Nitrogen Oxides |
| NPPF | National Planning Policy Framework |
| NPPG | National Planning Practice Guidance |
| NPSE | Noise Policy Statement for England |
| NRMM | Non-Road Mobile Machinery |
| NSL | No-Sky Line |
| NTS | Non-Technical Summary |
| NVZ | Nitrate Vulnerability Zone |
| $O_3$ | Ozone |
| OD | Ordnance Datum |
| ONS | Office of National Statistics |
| OPP | Outline Planning Permission |
| OS | Ordnance Survey |
| P | Probability |
| PAN | Public Admission Numbers |
| PEA | Preliminary Ecological Appraisal |
| PERS | Pedestrian Environment Review System |
| FRA | Flood Risk Assessment |
| $PM^{2.5}/PM^{10}$ | Particulate Material of a particular size fraction |
| $PM^{2.5}$ | Fine Particulate Matter |
| $PM^{10}$ | Particulate Matter |
| ppb parts per billion | The concentration of a pollutant in the air in terms of volume ratio. A concentration of 1 ppb means that for every billion ($10^9$) units of air, there is one unit of pollutant present. |
| PPE | Personal Protective Equipment |
| PPG | Planning Practice Guidance |
| PPG | Pollution Prevention Guidelines |
| ppm parts per million | The concentration of a pollutant in the air in terms of volume ratio. A concentration of 1 ppm means that for every billion ($10^6$) units of air, there is one unit of pollutant present. |
| PPV | Peak Particle Velocity |
| PRA | Preliminary Risk Assessment |
| ProPG | Professional Practice Guidance on Planning & Noise |
| PSH | Winter Probable Sunlight Hours |
| PTAL | Public Transport Accessibility Level |
| QRP's | Quality Review Panels |
| RBMP | River Basin Management Plan |
| RCP | Representative Concentration Pathways |
| R&D | Refurbishment and Demolition |
| RICS | Royal Institute of Chartered Surveyors |
| RMA | Reserved Matters Application |
| Rs | Receptor sensitivity |
| RSG | Resident's Steering Group |
| SAC | Special Area of Conservation |
| SCI | Statement of Community Involvement |
| SFS | Steel Framing System |
| SI | Site Investigation |
| SINC | Site of Importance for Nature Conservation |
| SOAEL | Significant Observed Effect Level |
| SoP | Standard of Protection |
| SoS | Secretary of State |
| $SO_2$ | Sulphur Dioxide |
| SPD | Supplementary Planning Documents |

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|---|---|
| SPG | Supplementary Planning Guidance |
| SPZ | (Groundwater) Source Protection Zone |
| SSSI | Site of Special Scientific Interest |
| SFRA | Strategic Flood Risk Assessment |
| SuDS | Sustainable Urban Drainage Systems |
| TA | Transport Assessment |
| TEB | Transport Emissions Benchmark |
| TfL | Transport for London |
| TLRN | Transport for London Road Network |
| TOC | Take Off and Climb Surface |
| TOS | Transient Overshadowing |
| TTE | Total Transport Emissions |
| TVIA | Townscape Visual Impact Assessment |
| TW | Thames Water |
| UK | United Kingdom |
| UKAS | United Kingdom Accreditation Service |
| UKCP | United Kingdom Climate Projections |
| UKCIP | United Kingdom Climate Impact Programme |
| VDV | Vibration Dose Values |
| VOA | Valuation Office Agency |
| VOC/SVOCs | Volatile Organic Compounds |
| VSC | Vertical Sky Component |
| WebCAT | Web-based Connectivity Assessment Toolkit |
| WHO | World Health Organization |
| WHS | World Heritage Site |
| WRMP | Water Resources Management Plan |
| WSHP’s | Water Source Heat Pumps |


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