Former Holloway Prison

Environmental Statement Volume 1:
Main Text and Figures

Peabody

Environmental Statement Volume 1: Main Text and Figures

Former Holloway Prison, Islington

November 2021

Avison Young

Environmental Statement Volume 1 – Main Text

Contents

1. Introduction

1.1 Background

1.1.1 Peabody Construction Limited (the 'Applicant') is seeking full planning permission to redevelop a 4.16 hectare (ha) area of land located in Islington, north-east London within the administrative boundary of the London Borough of Islington (LBI). The London Borough of Camden is located approximately 0.4 km to the south and east of the Site. The proposals for which full planning permission is sought would provide:

- A total of 985 residential units (Use Class C3) comprising:
  - 392 private units.
  - 415 social rent units (of which 60 units are classified as extra care homes).
  - 178 London shared ownership units.

  As such, 60% of the total residential units will be affordable.
- 1,822 sqm (GIA) of Flexible Commercial Floorspace (Use Class E).
- A Women's Building (Use Class F2) of 1,489 sqm (GIA).
- Approximately 10,480 sqm of public open space, comprising a Public Garden (public park), nature garden and Trecastle Connection with an additional provision of 2,613 sqm private amenity space serving residential units, 6,128 sqm communal amenity space (including rooftop space) serving residential units and 699 sqm garden dedicated to the Women's Building.
- Hard and soft landscaping including the creation of 5,292 sqm of playspace within the Site, all at ground and podium level.
- Plant space.
- Waste storage / collection facilities.
- 30 Car parking spaces (blue badge) and cycle parking.
- Vehicular servicing / access appropriate to all land uses proposed.

1.1.2 The above proposals are known as 'Former Holloway Prison, Islington' (the 'Development').

1.1.3 The description of the Development is as follows:

"Phased comprehensive redevelopment including demolition of existing structures; site preparation and enabling works; and the construction of 985 residential homes including 60 extra care homes (Use Class C3), a Women's Building (Use Class F.2) and flexible commercial floorspace (Use Class E) in buildings of up to 14 storeys in height; highways/access works; landscaping; pedestrian and cycle connections, publicly accessible park; car (blue badge) and cycle parking; and other associated works".

1.1.4 Avison Young was commissioned by the Applicant to carry out an Environmental Impact Assessment (EIA) of the Development. EIA is a formal procedure underpinned by The Town and Country Planning (EIA) Regulations, 2017 (the 'EIA Regulations')[1] as amended[2]. The procedure must be followed for certain types and scales of development. The EIA process systematically identifies and assesses the likely significant environmental effects of a development. The process also offers an opportunity to promote an iterative design process whereby the likely significant adverse and beneficial effects of a project can be avoided or minimised, and encouraged and maximised, respectively.

1.1.5 Where EIA is required, the results are reported in an Environmental Statement (ES). The ES allows the relevant determining authority, in this case the LBI, to consider all likely significant environmental effects arising from a development. The ES is a material consideration to the planning determination process.

1.2 Site Context

1.2.1 As shown in **Figure 1.1** the Site is located in Islington, north-east London within the administrative boundary of the LBI. As shown in **Figure 1.1**, the Site is bound by:

- Residential uses and Parkhurst Road to the north and north-east.
- Parkhurst Road / Camden Road (A503) to the east to south-east.
- Rear of residential properties off Dalmeny Road, Carleton Road and Penderyn Way to the south, west through to the north.

[1] HMSO. The Town and Country Planning (Environmental Impact Assessment) Regulations. 2017.
[2] HMSO. The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018.

Figure 1.1: The Site Location

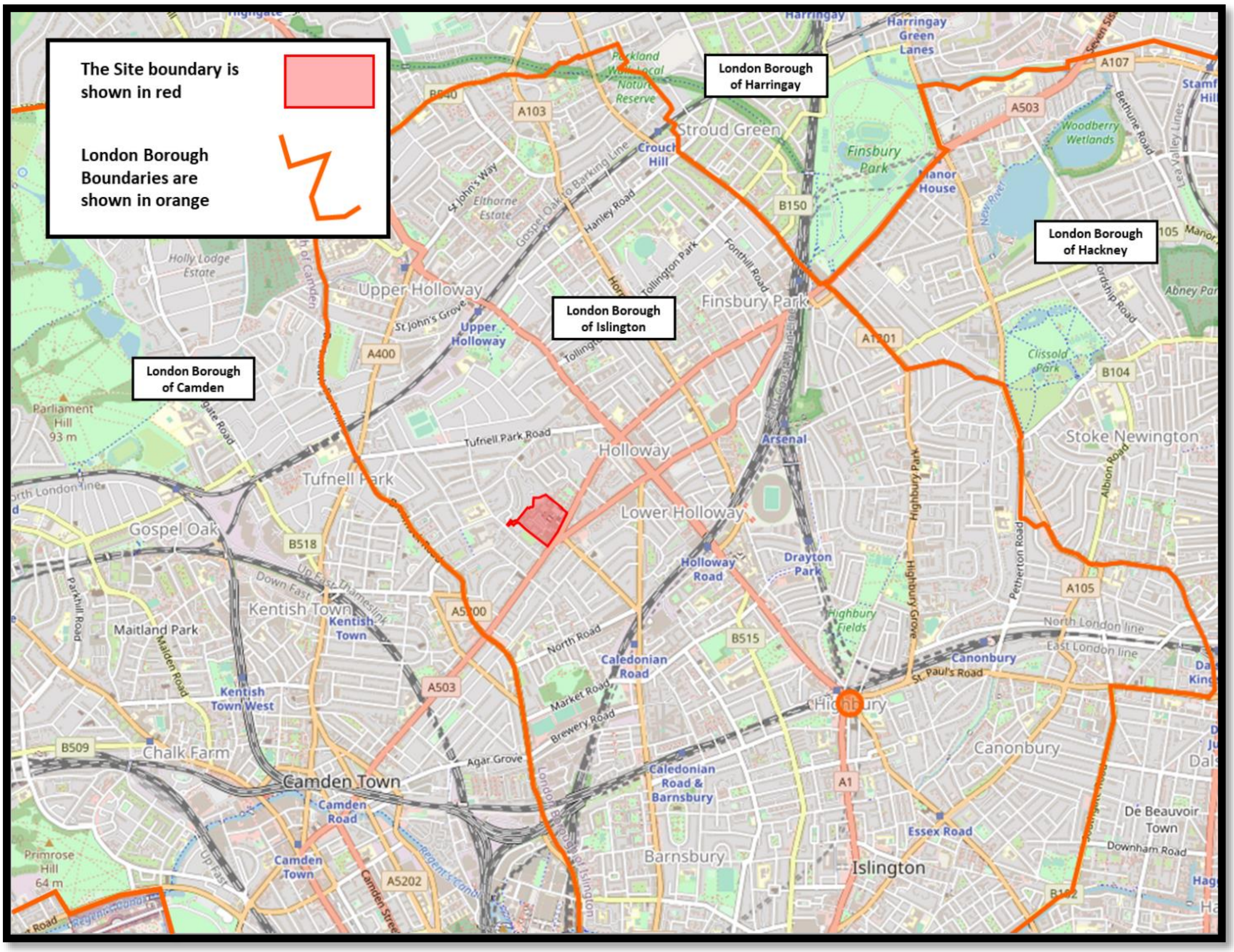
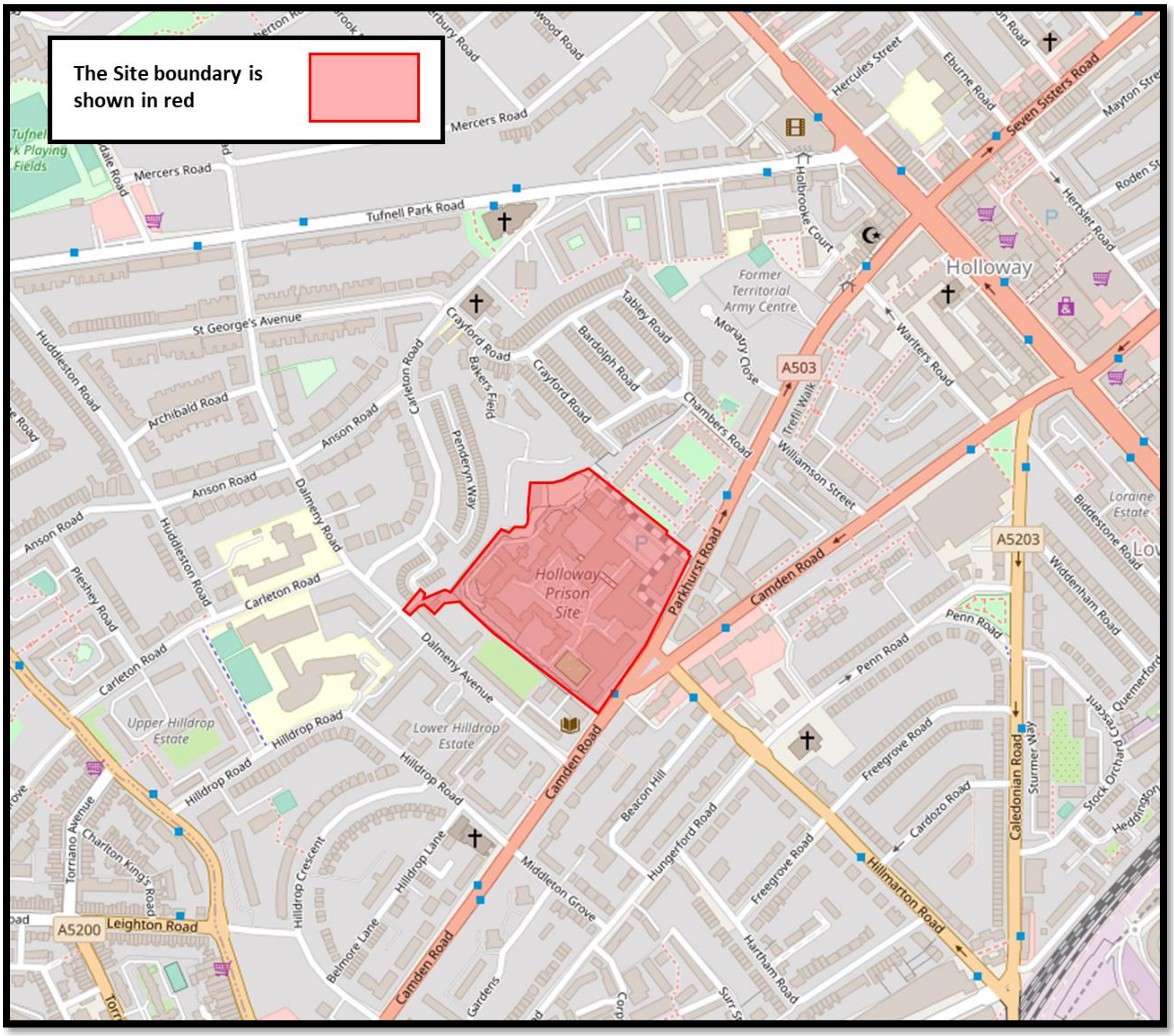


Figure 1.1: The Site



1.2.2 The existing 4.16 ha Site comprises the former Holloway Prison. The prison was first opened in 1852, originally as a mixed-gender facility, however, it became the first female-only prison in the early 1900s. During this period, the prison was the largest women's prison in Western Europe with an operational capacity of 500 inmates. Over the last 100 years, the prison became symbolic in the history of women's rights, with former prisoners being active participants of the Women's Suffragette Movement.

1.2.3 Originally an imposing Victorian structure (referred to as 'The Castle'), the original prison underwent complete renovation between 1971 and 1985, giving rise to its current day built form and configuration. The renovation was reflective of a desire to move away from the Victorian justice system. It was purposely designed not to feel like a prison with accommodation grouped around a number of attractive green spaces, with cells along corridors rather than wings to provide greater privacy.

1.2.4 In 2015, the UK Government announced that the prison would close. This was on account that the design and physical state of the prison did not provide the optimal environment for the rehabilitation of offenders. Consequently, inmates were relocated to other secure facilities and the prison closed in 2016. With the exception of the presence of on-Site security personnel, the Site remains largely disused and vacant although the Site has been used for filming since October 2019 and will continue to be used in such a manner until vacant possession.

1.2.5 The Site fronts Parkhurst Road / Camden Road (A503) to the east and residential uses are located adjacent to the north, south and west of the Site. Although currently largely disused, as noted above, the Site is manned by security. Accordingly, limited access is provided from Parkhurst Road / Camden Road (A503), via two separate access points. An aerial photo of the Site is shown in **Figure 1.2** and the internal Site layout and building uses are shown in **Figure 1.3**.

Figure 1.2: Aerial Photo of the Site

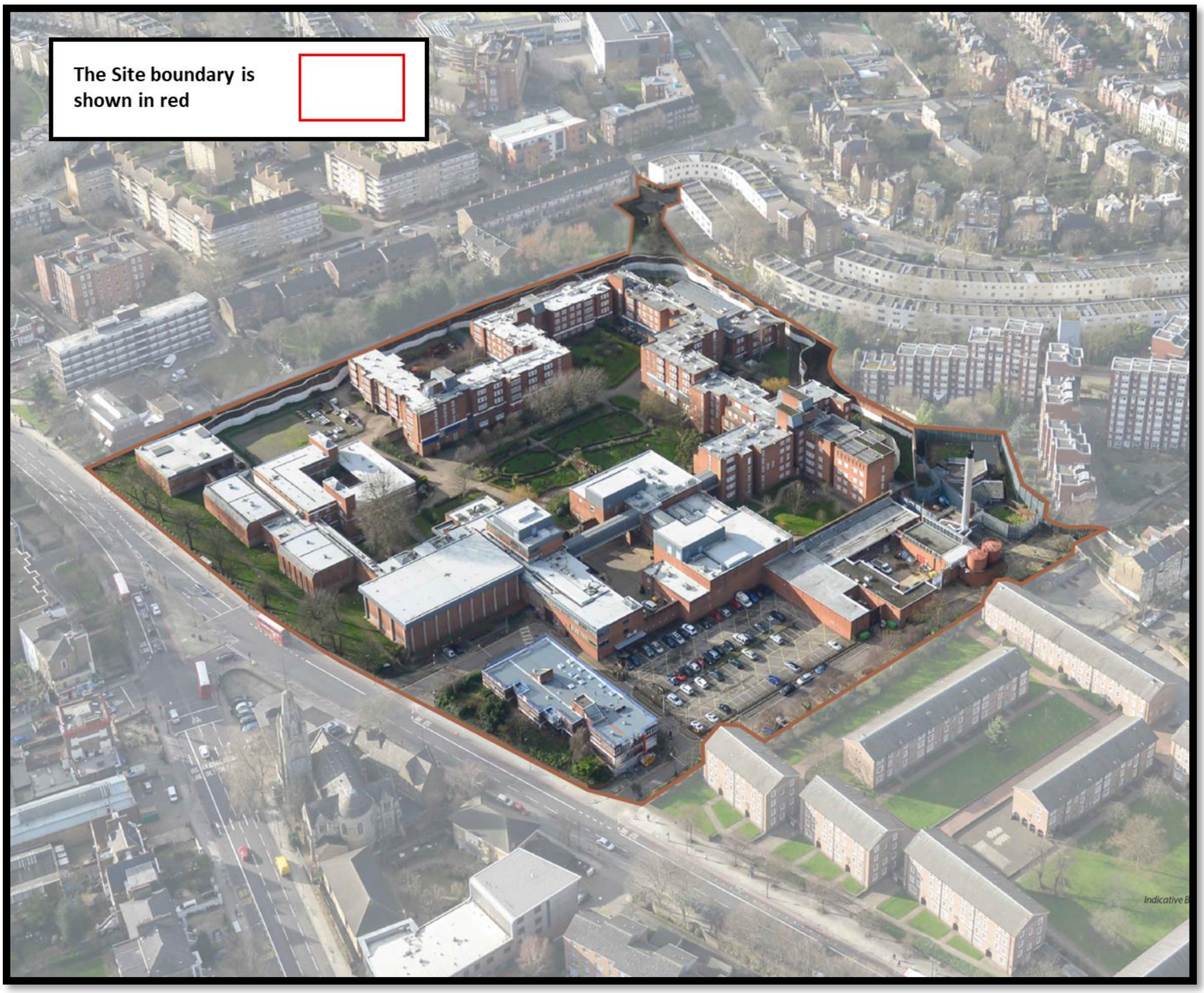
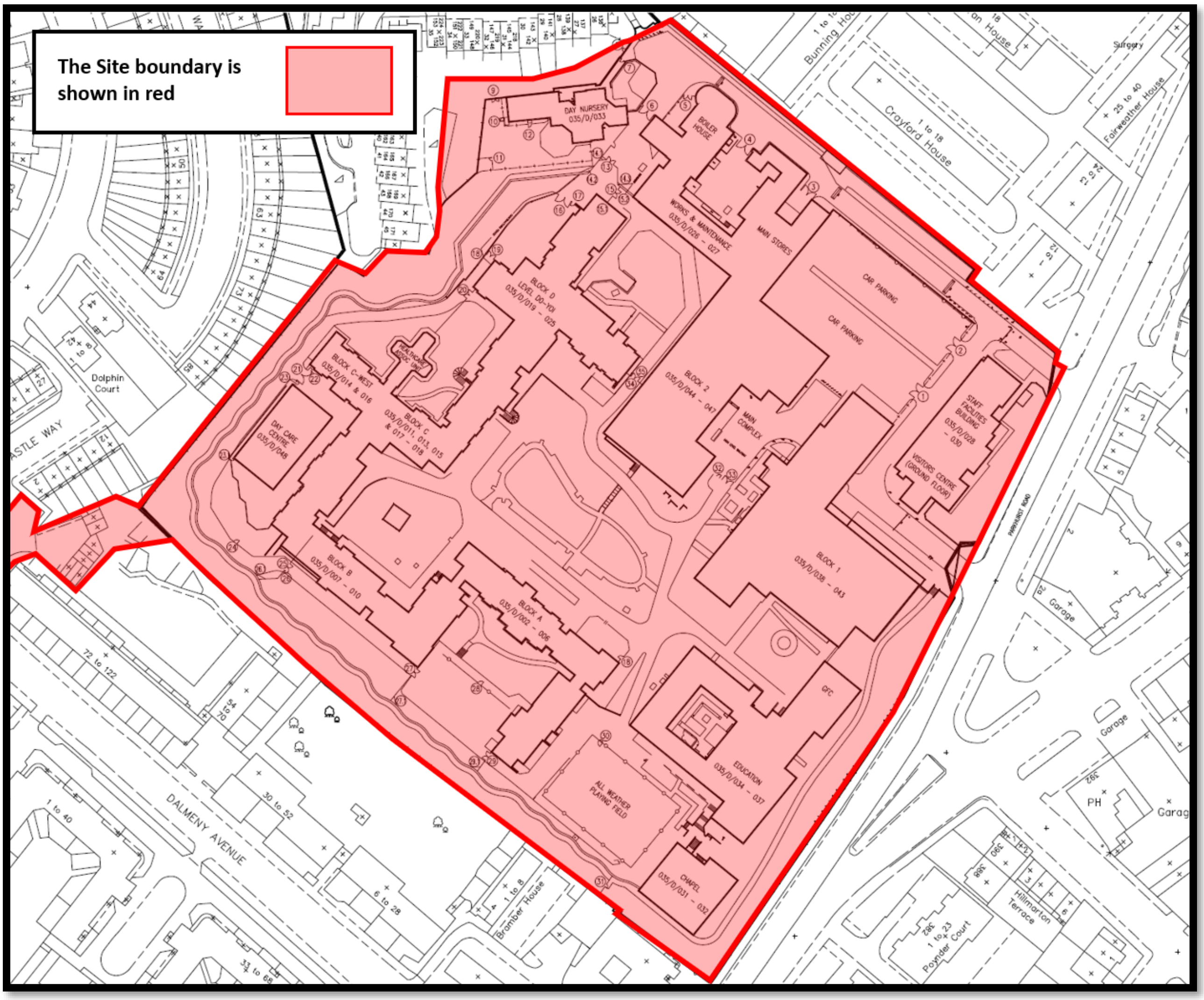


Figure 1.3: Plan of the Existing Internal Layout and Land Uses



1.2.6 Owing to the historic use of the Site, a large perimeter sinusoidal wall surrounds the Site. There is an access gate to Bakersfield on the north-west side of the Site which was operational when the prison was open but since it closed, the gate has been secured shut. There is therefore very limited connectivity to the wider area.

1.2.7 The Site comprises a number of connected buildings ranging between two to five storeys in height. Such buildings comprised several uses during the operational life of the prison including prison blocks, housing the inmate cells, maintenance areas and stores, healthcare units, staff facilities, an education centre, a day care centre, a chapel and a visitors' centre.

1.2.8 A boiler house is located in the north of the Site, characterised by a single flue rising above the tallest six-storey blocks on-Site.

1.2.9 On-Site car-parking and cycle parking is located in the north-east of the Site.

1.2.10 All buildings on-Site are surrounded by landscaped areas and open green spaces, including pocket courtyards and a central garden.

1.3 Development Context

1.3.1 The statutory development plan relevant to the Site includes the adopted London Plan[3], the LBI Core Strategy[4] and the LBI Development Management Policies Development Planning Document[5] ('DPD').

1.3.2 The LBI is currently updating its adopted Local Plan. A Draft Islington Local Plan Strategic and Development Management Policies[6] document was published in September 2019, with Modifications for Consultation[7] published in March 2021. The LBI has produced several Supplementary Planning Documents (SPD) of relevance to the Site. The most relevant is the Holloway Prison Site SPD[8], dated January 2018.

1.3.3 The area in which the Site is located is experiencing change, evident from the approved and planned developments ('Cumulative Schemes') within the immediate vicinity of the Site (refer to **ES Volume 1, Chapter 2: EIA Methodology**). Such Cumulative Schemes provide the context for redevelopment and regeneration of the area, including the Site. In particular, the Development offers a contribution towards to the housing need of the LBI whilst also providing other facilities together with considerable public realm improvements. A full description of the Development is provided in **ES Volume 1, Chapter 5: The Development**.

1.4 Legal Framework for the Environmental Statement

1.4.1 The need for EIA is determined by the definitions and criteria provided in Schedule 1 or Schedule 2 and Schedule 3 of the EIA Regulations. Where development is of a description within Schedule 1 ('Schedule 1 development') EIA is mandatory. The Development does not meet the requirements of Schedule 1 and, therefore, EIA is not mandatory in this case.

1.4.2 Where development is of a description mentioned in column 1 of the table in Schedule 2 and meets or exceeds one or more of the criteria or thresholds set out in the corresponding Column 2 of the table, or any part of it is located in a sensitive area, it is 'Schedule 2 development'. EIA is required for Schedule 2 development if the development is likely to have significant effects on the environment by virtue of factors such as its nature, size of location, with reference to Schedule 3 'Selection Criteria for Screening Schedule 2 Development'.

1.4.3 The EIA Regulations define a 'sensitive area' as follows:

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3 GLA. The London Plan. 2021.
4 Islington Council. Core Strategy. 2011.
5 Islington Council. Development Management Policies. 2013.
6 Islington Council. Local Plan: Strategic and Development Management Policies. 2019.
7 Islington Council. Strategic and Development Management Policies Modifications for consultation. 2021.
8 Islington Council. Holloway Prison Site Supplementary Planning Document. 2018.

- Land notified under section 28(1) (Sites of Special Scientific Interest (SSSIs)) of the Wildlife and Countryside Act 1981[9].
- A National Park within the meaning of the National Parks and Access to the Countryside Act 1949[10].
- The Broads[11].
- A property appearing on the World Heritage List kept under article 11(2) of the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage[12].
- A Scheduled Monument (SM) within the meaning of the Ancient Monuments and Archaeological Areas Act 1979[13].
- An Area of Outstanding Natural Beauty (AONB) designated as such by an order made by Natural England under section 82(1) (areas of outstanding natural beauty) of the Countryside and Rights of Way Act 2000(f) as confirmed by the Secretary of State.
- A European site.

1.4.4 Whilst the Development does not sit wholly or in part in a sensitive area (and therefore does not constitute EIA Development by virtue of its location in a sensitive area), it does meet criteria to be Schedule 2 development. As such, the Development was considered against the criteria in Schedule 3, which provides guidance as to whether it is development that is likely to have significant environmental effects and therefore require an EIA. In considering Schedule 3, particular emphasis must be placed upon:

- The characteristics of the development.
- The location of the development.
- The types and characteristics of the potential environmental effects.

1.4.5 The Development is of a type described in Schedule 2, 10(b) of the EIA Regulations. That is:

"10. Infrastructure projects…(b) Urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas…"

1.4.6 Furthermore, the Development meets the second of the three applicable thresholds for Schedule 2, 10(b) projects:

"…(i) The development includes more than 1 hectare of urban development which is not dwellinghouse development; or (ii) the development includes more than 150 dwellings; or (iii) the overall area of the development exceeds 5 hectares."

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9 Wildlife and Countryside Act. 1981.
10 National Parks and Access to the Countryside Act. 1949.
11 Norfolk and Suffolk Broads Act. 1988.
12 Ancient Monuments and Archaeological Areas Act. 1979.
13 Countryside and Rights of Way Act. 2000. As amended by the Natural Environment and Rural Communities Act. 2006.

1.4.7 Therefore, the Development is Schedule 2 development, giving due regard to Schedule 3 of the EIA Regulations, and the Applicant recognises the potential for the Development to give rise to significant environmental effects. Accordingly, a formal EIA Screening Opinion (to determine the need (or otherwise) for EIA) was not requested from the LBI and an EIA was undertaken to determine the likely significant environmental effects of the Development and the nature of any mitigation measures required to prevent, reduce, ameliorate and / or offset any significant adverse environmental effects.

1.4.8 The scope of the EIA was agreed with the LBI via a formal EIA Scoping process (refer to **ES Volume 1, Chapter 2: EIA Methodology**).

1.4.9 In accordance with the EIA Regulations, this ES reports the findings of the EIA process. As such, the ES sets out:

- The likely significant environmental effects of the Development during the enabling, demolition and construction works (the 'Works').
- The likely significant environmental effects of the Development following completion of the Works and during the occupation and operation of the Development.
- The likely significant cumulative effects of the Development.
- Mitigation measures required to prevent, reduce, ameliorate and / or offset any likely significant adverse environmental effects.
- The likely significant residual effects of the Development which would occur following implementation of the above mitigation measures.

1.5 Structure of the Environmental Statement

1.5.1 This ES comprises four Volumes:

- **ES Volume 1 - Main Text and Figures** (this document).
- **ES Volume 2 - Townscape, Visual and Above Ground Built Heritage Assessment.**
- **ES Volume 3 - Appendices.**
- **ES Volume 4 - Non-Technical Summary.**

Environmental Statement Volume 1 - Main Text and Figures

1.5.2 **ES Volume 1** (this document) comprises 14 Chapters, which are illustrated throughout by a series of figures.

1.5.3 The 14 Chapters comprise the key findings of the EIA process undertaken in respect of the Development and provide:

- A description of the methodology applied in the EIA (refer to **ES Volume 1, Chapter 2: EIA Methodology**).

- A description of the Site, its environmental context and sensitivity (refer to **ES Volume 1, Chapter 3: Existing Land Uses and Activities**).
- The main alternatives that were reasonably considered by the Applicant and a comparison of their environmental effects (refer to **ES Volume 1, Chapter 4: Alternatives and Design Evolution**).
- The nature and purpose of the Development (refer to **ES Volume 1, Chapter 5: The Development**).
- The enabling, demolition and construction processes and timetable (refer to **ES Volume 1, Chapter 6: The Works**).

1.5.4 **ES Volume 1, Chapters 7** to **14**, present the findings of the EIA for the following environmental topics:

- Socio-economics (refer to **ES Volume 1, Chapter 7: Socio-economics**).
- Air quality (refer to **ES Volume 1, Chapter 8: Air Quality**).
- Noise and vibration (refer to **ES Volume 1, Chapter 9: Noise and Vibration**).
- Ecology (refer to **ES Volume 1, Chapter 10: Ecology**).
- Wind microclimate (refer to **ES Volume 1, Chapter 11: Wind Microclimate**).
- Daylight, sunlight and overshadowing (refer to **ES Volume 1, Chapter 12: Daylight, Sunlight and Overshadowing**).
- Greenhouse Gases (refer to **ES Volume 1, Chapter 13: Greenhouse Gases**).
- Effect interactions (refer to **ES Volume 1, Chapter 14: Effect Interactions**).

1.5.5 **ES Volume 1, Chapters 7** to **13** include:

- An introduction.
- A methodology of assessment.
- A description of the relevant baseline conditions.
- An assessment of the likely environmental effects of the Development and their significance.
- A description of additional mitigation measures and an assessment of the likely residual environmental effects of the Development and their significance.
- An assessment of the likely residual cumulative effects of the Development together with other Cumulative Schemes (refer to **ES Volume 1, Chapter 2: EIA Methodology**).
- Conclusion, summarising the findings of the assessment.

Environmental Statement Volume 2 - Townscape, Visual and Above Ground Built Heritage Assessment

1.5.6 **ES Volume 2** presents the key findings of the townscape, visual and above ground built heritage assessment, including a series of Accurate Visual Representations (AVRs) of the Development. As per **ES Volume 1**, **ES Volume 2** presents:

- An introduction.
- A methodology of assessment.
- A description of the relevant baseline conditions.
- A description of the characteristics of the Development and Embedded Mitigation.
- An assessment of the likely environmental effects of the Development and their significance.
- A description of additional mitigation measures and an assessment of the likely residual environmental effects of the Development and their significance.
- An assessment of the likely residual cumulative effects of the Development together with other Cumulative Schemes (refer to **ES Volume 1, Chapter 2: EIA Methodology**).

Environmental Statement Volume 3 - Appendices

1.5.7 **ES Volume 3** comprises the detailed supporting data, information and the full text of all relevant technical assessments undertaken as part of the EIA process.

Environmental Statement Volume 4 - Non-Technical Summary

1.5.8 The EIA Regulations requires the submission of a summary of the ES in 'non-technical language'. As such, **ES Volume 4** provides a concise summary of the ES without excessive technical detail or scientific language so as to be readily and quickly understood by non-technical experts and members of the public who may not be familiar with EIA. The Non-Technical Summary (NTS) is produced as a separate document to facilitate wider public distribution.

1.6 Project Team and Competency

1.6.1 Regulation 18(5) of the EIA Regulations states:

"In order to ensure the completeness and quality of the ES: (a) the developer must ensure that the ES is prepared by competent experts; and (b) the ES must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts."

1.6.2 The EIA was co-ordinated by Avison Young in conjunction with a team of specialist consultants. The Applicant's EIA Team and relevant credentials are set out within **Table 1.1**: The Applicant's EIA Team.

Table 1.1: The Applicant's EIA Team

Name and Professional Title	Organisation	Project Role	Qualification(s)	Statement of Relevant Experience
Hannah Fiszpan, Director.	Avison Young.	EIA Project Director.	BSc (Hons). Practitioner Member of the Institute of Environmental Assessment and Management (IEMA).	20 years experience managing, co-ordinating and directing EIAs, and preparing ESs for predominantly property and urban regeneration projects.
Jo Dickson, Executive Consultant.	Avison Young.	EIA Project Manager.	BA (Hons). MSc.	20 years experience co-ordinating and preparing ESs for predominantly property and urban regeneration projects.
Jonny Wilks, Environmental Planner.	Avison Young.	EIA Project Assistant.	BSc (Hons). MSc. Associate Member of IEMA.	4 years experience co-ordinating ESs for urban-regeneration, residential-led, mixed-use, commercial and infrastructure projects.
Louise Newman, Director.	Tavenor Consultancy.	Townscape, Visual and Built Heritage Consultant.	BA (Hons), DipArch, Architect.	Louise has nine years experience in the preparation of townscape, visual and built heritage assessments for projects across London including complex masterplans, tall buildings and interventions in sensitive historic environments.

Name and Professional Title	Organisation	Project Role	Qualification(s)	Statement of Relevant Experience
Macarena Plaza, Head of Planning Production,	Cityscape Digital.	Preparation of Accurate Visual Representations (AVRs).	MSc City Design and Social Science.	Macarena joined Cityscape in 2019 after having trained as an architect and studying for an MSc in Urban Studies. She specializes in the preliminary analysis of sites and looks at London View Management Framework (LVMF) and planning frameworks to unlock any possible opportunities for sites.
Martyn Jenkins, Principal Economic Consultant.	WSP UK Ltd.	Socio-economic Consultant.	BSc (Hons). Full Member of the Institute of Economic Development (MIED).	3 years of experience in preparing socio-economic Environmental Statement chapters for complex mixed-use schemes in the UK.
Steve Foxcroft, Associate Director.	Velocity Transport Planning.	Transport Consultant.	BSc (Hons). MSc. Member of the Chartered Institute of Highways and Transportation (CIHT).	13 years experience leading and managing transport consultancy services for the development planning sector predominantly in London and the South-East.
Guido Pellizzaro. Associate Director.	Air Quality Consultants Ltd.	Air quality and Greenhouse Gas Project Manager.	BSc (Hons). Member of the Institution of Environmental Science. Member of the Institute of Air Quality Management (MIAQM).	Guido has over 14 years experience in environmental consultancy and is an Associate Director at AQC. He has managed and delivered air quality and greenhouse gas assessments for major urban regeneration planning applications and EIA developments throughout the UK.

Name and Professional Title	Organisation	Project Role	Qualification(s)	Statement of Relevant Experience
Luke Smith. Senior Engineer, Acoustics.	WSP UK Ltd.	Noise and Vibration Consultant.	BEng (Hons). Member of the Institute of Acoustics (MIOA).	8 years of experience in noise and vibration (acoustic) consultancy, acting as lead acoustic consultant on Environmental Impact Assessments and site suitability assessments for residential-led schemes.
Sacha Rogers, Managing Director.	Penny Anderson Associates.	Ecological Consultant.	BSc (Hons). Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Chartered Environmentalist (CEnv).	25 years experience of undertaking ecology surveys, evaluations, impact assessments and mitigation strategies, including a wide range of EIA projects for major infrastructure, commercial and residential developments.
Stefan Astley, Senior Project Manager.	RWDI.	Wind Microclimate Consultant.	B.Sc. (Hons) Aerospace Technology with Pilot Studies.	Over five years experience in wind microclimate assessments, predominantly throughout the UK, in addition to experience of wind loading projects internationally. Hundreds of projects supported to planning applications, particularly within the Greater London area.
Matt Harris, Director.	Point 2 Surveyors.	Daylight, Sunlight and Overshadowing Consultant.	BSc (Hons).	14 years experience advising on daylight, sunlight and overshadowing related matters associated with development, including extensive experience of large-scale masterplan and regeneration projects across London.
Christina Holloway, Project Manager.	MoLA.	Archaeologist.	BA (Hons). Diploma in Field Archaeology.	17 years professional archaeology experience and has specialised in archaeological assessments and EIAs for 10 years.

Name and Professional Title	Organisation	Project Role	Qualification(s)	Statement of Relevant Experience
Freddie Alcock, Senior Associate.	Waterman IE.	Land Quality Consultant.	BSc (Hons) MSc. Practitioner Member of the Institute of Environmental Assessment and Management (IEMA).	16 years experience assessing and investigating the contamination status of brownfield sites and designing remedial strategies.

1.7 Environmental Statement Availability and Comments

1.7.1 Following the submission of the full planning application, there is an opportunity for any interested parties to comment on the proposals.

1.7.2 The ES is available for viewing by the public on the LBI's website at https://www.islington.gov.uk/planning/applications/comment. A copy of the ES is also available for viewing by the public during normal office hours at the following addresses:

London Borough of Islington
Islington West Library
Thornhill Square
107 Bridgeman Roa,
London
N1 1BD

and

Cat and Mouse Library
277 Camden Road
London
N7 0JN.

1.7.3 Additional electronic copies of the ES can be purchased on request from Avison Young at a cost of £50 per CD. Contact details for Avison Young are as follows:

Avison Young

65 Gresham Street

London

EC2V 7NQ

Tel: 020 7911 2424

2. EIA Methodology

2.1 Introduction

2.1.1 This Chapter sets out the methodology applied in undertaking the Environmental Impact Assessment (EIA), details the process of identifying the environmental issues to be addressed in the EIA, and the methods used to identify likely environmental effects and their significance.

2.1.2 Details pertaining to the assessment methodologies and significance criteria relating to each environmental topic considered in the Environmental Statement (ES) can be found by reference to **ES Volume 1**, **Chapters 7** to **13** and **ES Volume 2**.

2.2 General Approach

2.2.1 This ES was prepared to comply with the EIA Regulations[1] which implement Council Directive No. 2011/92/EU[2] as amended by Council Directive 2014/52/EU[3]. Reference was also made to currently available good practice guidance in EIA including:

- Impact Assessment Guidelines and ES Review Criteria from the Institute of Environmental Management and Assessment (IEMA)4.
- Environmental Impact Assessment: A Guide to Good Practice and Procedures. A Consultation Paper5.
- IEMA Guidance 'Shaping Quality Development'6.
- IEMA Guidance 'Delivering Quality Development'7.
- Topic specific guidance referred to in **ES Volume 1**, **Chapters 7** to **13** and **ES Volume 2**, where appropriate.

2.2.2 The assessment of likely significant environmental effects was based on current knowledge of the Site and its surrounding environment. The assessments addressed both the likely beneficial and adverse effects of the Development during the Site preparation, demolition and construction works required to facilitate the Development (the 'Works') and of the Development once completed and operational.

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[1] The Town and Country Planning (Environmental Impact Assessment) Regulations. 2017.
[2] Directive 2011/92/EU of the European Parliament and of the Council. December 2011.
[3] Directive 2014/52/EU of the European Parliament and of the Council. April 2014.
[4] Institute of Environmental Management (IEMA). Guidelines for Environmental Impact Assessment. 2004.
[5] Department for Local Communities and Local Government. Environmental Impact Assessment: A guide to good practice and procedures. A Consultation Paper. June 2006.
[6] IEMA. Environmental Impact Assessment Guide to Shaping Quality Development. 2015.
[7] IEMA. Environmental Impact Assessment Guide to Delivering Quality Development. July 2016.

2.2.3 In line with legislative requirements, direct, indirect, cumulative, short-, medium-, long-term, permanent, temporary, beneficial and adverse effects are addressed where applicable. The approach taken in the assessment of cumulative effects and effect interactions is set out later in this Chapter and within **ES Volume 1, Chapter 14: Effect Interactions**.

2.2.4 As part of the iterative EIA and design process, the design of the Development has evolved to take account of various environmental constraints and opportunities. In this respect, environmental desktop reviews, interim assessments of the emerging Development and relevant knowledge gained from environmental baseline surveys all worked to influence the evolution of the Development (refer to **ES Volume 1, Chapter 4: Alternatives and Design Evolution**). Consequently, a number of potentially significant adverse environmental effects were 'designed out' or reduced in severity as part of the overall EIA and design process. Similarly, where feasible, potentially significant beneficial environmental effects were encouraged. In undertaking the assessment of likely significant environmental effects, such design measures (commonly referred to as 'Primary Mitigation') were considered as inherent components of the Development (refer to **ES Volume 1, Chapter 5: The Development**).

2.2.5 Similarly, and in accordance with the Institute of Environmental Management and Assessment (IEMA) best practice guidance[8], when identifying likely significant environmental effects, any methods of environmental management or protection that *"…will be required regardless of any EIA assessment, as is imposed, for example, as a result of legislative requirements and / or standard sectorial practices…"* (commonly known as 'Tertiary Mitigation') were reasonably assumed to be implemented. Examples include (not exhaustive):

- Implementation of a Construction Environmental Management Plan (CEMP).
- Considerate Contractor practices.
- Implementation of a Construction Logistics Plan (CLP).
- Remediation of contaminated land, appropriate to the end-use of the land.

2.2.6 Following the assessment of the Development's likely significant environmental effects (inherently accounting for Primary and Tertiary Mitigation), any remaining likely significant adverse effects were identified. Furthermore, additional methods to prevent, reduce, ameliorate and / or offset any remaining significant adverse environmental effects were formulated (commonly referred to as 'Secondary Mitigation'). Such additional mitigation and any monitoring requirements necessary to ensure the efficacy of the mitigation measures are set out in **ES Volume 1, Chapters 7** to **13** and **ES Volume 2**.

8 IEMA Environmental Impact Assessment Guide to Shaping Quality Development. 2015.

2.2.7 Following the identification of 'additional' Secondary Mitigation, the remaining likely significant residual effects of the Development were identified. The 'additional' Secondary Mitigation was reasonably assumed to be implemented.

2.3 Scoping the EIA

2.3.1 'Scoping' is a voluntary, albeit helpful, component of the EIA process. It involves focussing the EIA (and hence the resultant ES) on the significant environmental effects that are likely to arise as a result of the development, as opposed to every single environmental effect that 'might' result from the development. This focussed and proportionate approach to EIA is encouraged within the online Planning Practice Guidance (PPG)[9] which states:

"Whilst every ES should provide a full factual description of the development, the emphasis should be on the 'main' or 'significant, environmental effects to which a development is likely to give rise. The ES should be proportionate and not be any longer than is necessary to assess properly those effects. Where, for example, only one environmental factor is likely to be significantly affected, the assessment should focus on that issue only. Impacts which have little or no significance for the particular development in question will need only very brief treatment to indicate that their possible relevance has been considered."

2.3.2 The EIA Regulations provide an opportunity for applicants of planning applications to ask the relevant Local Planning Authority (LPA) to state in writing the information that ought to be provided in an ES. The result is a 'Scoping Opinion'. The Applicant recognised the value of seeking a Scoping Opinion from the London Borough of Islington (LBI) and so commissioned Avison Young to undertake an EIA Scoping Study.

2.3.3 The purpose of the EIA Scoping Study was to ensure that all relevant environmental issues in respect of the Development were identified from the outset and to confirm that the EIA process would conform to the requirements of the EIA Regulations.

2.3.4 The key issues to be addressed by the EIA were identified through liaison with statutory consultees, consideration of available environmental baseline information, together with professional judgement and relevant experience. The findings were presented in an EIA Scoping Report. The EIA Scoping Report was submitted to the London Borough of Islington (LBI) in May 2020 to provide the LBI and the statutory consultees the opportunity to comment on the methodology proposed to be used for the EIA and the scope and content of the ES. A copy of the EIA Scoping Report is provided in **ES Volume 3, Appendix 2.1**.

2.3.5 Following receipt of the EIA Scoping Report, the LBI consulted a number of statutory and non-statutory consultees prior to providing its Scoping Opinion. In addition, the LBI engaged AECOM to undertake an independent review

9 https://www.gov.uk/guidance/environmental-impact-assessment#Preparing-an-Environmental-Statement1.

of the EIA Scoping Report and to provide advice to LBI with regards to EIA Scoping matters. As a result, a draft EIA Scoping Opinion was issued on 19th June 2020. Following this, discussions were held between the Applicant, Avison Young, AECOM and the LBI to further discuss the intended scope of the ES. Such discussions afforded an opportunity for the provision of further information and clarification, culminating in a final EIA Scoping Opinion being issued by the LBI on the 20th July 2020. A record of EIA Scoping discussions and a copy of the EIA Scoping Opinion is provided within **ES Volume 3, Appendix 2.2**.

2.3.6 Following a project hiatus, it was recognised that several months had passed since receipt of the EIA Scoping Opinion. During this time, the Development had evolved to respond to various factors (refer to **ES Volume 1, Chapter 4: Alternatives and Design Evolution**). Accordingly, Avison Young prepared and issued correspondence to the LBI on 1st September 2021 to give an update on the key changes to the Development and other relevant EIA matters since the EIA Scoping Opinion was issued by the LBI on 20th July 2020. The correspondence concluded that the EIA Scoping Opinion remained applicable and valid. A copy of the correspondence is provided within **ES Volume 3, Appendix 2.3.** Discussions were held between the Applicant, Avison Young, AECOM and the LBI on 7th October 2021 to further discuss the information submitted to the LBI in September 2021. The LBI confirmed that they were content with the information and provided no further comments on the scope of the ES.

2.3.7 Via the EIA scoping process, it was identified that the Development would likely give rise to a number of significant environmental effects that would, therefore, warrant full assessments as part of the EIA process. These were categorised within the key environmental topics listed below:

- Socio-economics (refer to **ES Volume 1, Chapter 7: Socio-economics**).
- Air quality (refer to **ES Volume 1, Chapter 8: Air Quality**).
- Noise and vibration (refer to **ES Volume 1, Chapter 9: Noise and Vibration**).
- Ecology (refer to **ES Volume 1, Chapter 10: Ecology**).
- Wind microclimate (refer to **ES Volume 1, Chapter 11: Wind Microclimate**).
- Daylight, sunlight and overshadowing (refer to **ES Volume 1, Chapter 12: Daylight, Sunlight and Overshadowing**).
- Greenhouse gases (refer to **ES Volume 1, Chapter 13: Greenhouse Gases**).
- Effect interactions (refer to **ES Volume 1, Chapter 14: Effect Interactions**).
- Townscape, visual and above ground built heritage (refer to **ES Volume 2 - Townscape, Visual and Above Ground Built Heritage Assessment**).

2.3.8 It should be noted that during the EIA Scoping process it was agreed with the LBI that Greenhouse Gases (GHG) would be scoped into the ES but that if the GHG assessment concluded "…*the GHG impact is 'minor adverse' and therefore 'not significant', it would be appropriate to include the GHG assessment in an Appendix*". However due to the timescales required to undertake the necessary calculations to feed in to the GHG assessment and the lack of an established methodology to assess the impact of GHGs, Avison Young and the GHG technical consultant (Air Quality

Consultants) voluntarily elected to produce a GHG ES Chapter from the outset. A GHG ES chapter is therefore included as **ES Volume 1, Chapter 13: Greenhouse Gases**.

2.3.9 In addition to the above, it was agreed within the EIA Scoping Opinion that as there is no widely accepted methodology for the assessment of health and wellbeing, the topic could be assessed by undertaking a Health Impact Assessment (HIA) using the London Healthy Urban Development Unit (HUDU) Rapid HIA assessment tool kit[10] and that the HIA would be appended to the ES. The HIA is included in **ES Volume 3, Appendix 5.2.** In addition, **ES Volume 1, Chapter 5: The Development** includes a section detailing the measures which will be taken to implement the recommendations of the HIA.

2.3.10 The EIA scoping process also identified that the Development would be unlikely to significantly affect a number of other environmental topics. This being the case, such environmental topics did not require full assessment and could be scoped out of the full EIA process and the ES. Further information regarding insignificant effects to be scoped out of the ES can be found by reference to **ES Volume 3, Appendix 2.1** and **Appendix 2.2**.

2.4 Consultation

2.4.1 Consultation was carried out throughout the EIA process. The following statutory and non-statutory organisations were consulted either directly by the Applicant's EIA Team or through the LBI as part of its own consultations:

- The LBI.
- The Greater London Authority (GLA).
- Transport for London (TfL).
- The Environment Agency (EA).
- Historic England (Greater London Archaeology Advisory Service).
- Historic England (Historic Buildings and Places).
- Natural England.
- Thames Water Utilities
- National Grid.
- Cadent.
- St Luke's West Holloway and St George's Tufnell Park.

[10] NHS London Healthy Urban Development Unit. Rapid Health Impact Assessment Tool. 2019.

- Metropolitan Police Design Out Crime Officer.
- London Fire Brigade.
- Local residents, neighbours, amenity societies and stakeholders.

2.4.2 All relevant comments from the consultees relating to the EIA, whether made directly to the Applicant's EIA Team or via the EIA Scoping Opinion are addressed in **ES Volume 1, Chapters 7** to **13** and **ES Volume 2**.

2.5 Nature of the Planning Application and EIA Compliance

2.5.1 As noted in **ES Volume 1, Chapter 1: Introduction**, the Development is subject to a full planning application. Where an EIA is required, the description of the Development within the ES must be sufficient to enable the requirements of the EIA Regulations to be fulfilled, and in particular, to enable the likely significant environmental effects of the Development to be identified.

2.5.2 The Development is defined by the quantum of Development and the schedule of accommodation, together with the massing, layout, landscaping, articulation and architectural details shown in the full planning application drawings submitted for approval. The schedule of accommodation, the full planning application drawings, together with the detailed description of the Development and its implementation are presented in **ES Volume 1, Chapter 5: The Development** and **ES Volume 1, Chapter 6: The Works**, respectively. The information contained therein was used for the purposes of undertaking the EIA and the preparation of this ES (**ES Volumes 1** to **4**).

2.6 Means of Assessment

2.6.1 The content and extent of the ES is based on the following:

- Review of the current situation through existing information, data and reports.
- Desk-top studies.
- Site surveys.
- Consideration of planning policies (national, regional and local), where relevant.
- Identification of likely environmental effects and an evaluation of their likely duration, magnitude, spatial extent and significance.
- Consideration of potential sensitive receptors.
- Professional judgement and expert opinion.
- Use of technical guidance and best practice.
- Specific consultations with appropriate statutory and non-statutory consultees.

2.7 Evaluation of Significance

2.7.1 As previously noted, the EIA process as underpinned by the EIA Regulations aims to provide the determining authority with sufficient information regarding the *"…likely significant environmental effects…"* of a development to enable it to lawfully determine a planning application.

2.7.2 Likely environmental effects reported in this ES (**ES Volumes 1** to **4**) were predicted with reference to definitive standards and legislation, where available. Where it has not been possible to precisely quantify effects, qualitative assessments have been undertaken, based on available knowledge and professional judgement. Where uncertainty exists, this has been set out within **ES Volume 1, Chapter 7** to **13** and **ES Volume 2**.

2.7.3 The significance of predicted likely environmental effects was determined by reference to assessment criteria for each environmental topic considered and these are set out in **ES Volume 1, Chapter 7** to **13** and **ES Volume 2**. These criteria apply a common EIA approach of classifying effects (either beneficial or adverse) according to whether they are of minor significance, moderate significance, major significance or insignificant.

2.7.4 Specific criteria for each environmental topic scoped into this ES (**ES Volume 1, Chapter 7** to **13** and **ES Volume 2**) were developed, giving due regard to some or all of the following:

- Extent, magnitude and reversibility of the effect.
- Duration of the effect (whether short-, medium- or long-term).
- Nature of the effect (whether direct or indirect, reversible or irreversible).
- Likelihood for the effect to occur.
- Whether the effect occurs in isolation is cumulative or interactive.
- Performance against environmental quality standards or other relevant pollution control thresholds.
- Sensitivity of the receptor.
- Compatibility with environmental policies, where applicable.

2.7.5 In order to provide a consistent approach to expressing the outcomes of the various assessments undertaken as part of the full EIA process the following terminology has been used throughout the ES. Effects have been expressed as either:

- **Adverse:** Detrimental or negative effects to an environmental resource or receptor; Or
- **Beneficial:** Advantageous or positive effect to an environmental resource or receptor.

2.7.6 The Townscape, Visual and Above Ground Built Heritage Assessment (TVAGBHA) uses a further term, Neutral, whereby for neutral effects the quality of the environment is preserved or sustained or there is a balance of adverse and beneficial effects. A neutral effect is one where, regardless of the scale of the effect, the nature of the change has no qualitative effect on the receiving environment. This could mean, for example, that there is a change to the character or composition of the view, but that the quality of the visual experience is neither better nor worse than the existing condition or that there is a balance of adverse and beneficial effects. This equates to the heritage significance or appreciation of heritage significance of a heritage asset being 'sustained' in the National Planning Policy Framework (NPPF)[11] terms.

2.7.7 Although there is no recognised definition of what constitutes a 'significant' effect, it is good practice to identify the degree of significance. In this ES (**ES Volumes 1** to **4**), where adverse or beneficial effects (or neutral in the case of the TVAGBHA) are identified 'significance' was assessed as follows:

- **Insignificant:** No significant effect (either adverse or beneficial) to an environmental resource or receptor.
- **Minor significance:** Slight, very short or highly localised effect of low significance.
- **Moderate significance:** Noticeable effect (by extent, duration or magnitude) which may be considered significant**.**
- **Major significance:** Considerable effect (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards.

2.7.8 **ES Volume 1, Chapters 7** to **13** and **ES Volume 2** provide specific significance criteria for all environmental topics scoped into the full EIA process and ES. Where possible such significance criteria were based upon quantitative, quantitative and accepted criteria, together with the use of value judgements and expert interpretations.

2.7.9 For the purposes of the assessment reported in **ES Volume 1, Chapters 7** to **13** and **ES Volume 2**, **'short-'** / **'medium-term'** effects were considered to be those associated with the Works, and **'long-term'** effects were those associated with the completed, occupied and operational Development. **'Local'** effects were those affecting neighbouring receptors of the Development within St George's Ward, whilst effects upon receptors within the wider borough of Islington were considered to be at a **'District'** level. **'Sub-Regional'** effects were those affecting adjoining boroughs, whilst effects upon Greater London were considered to be at a **'Regional'** level. Effects upon different parts of the country, or England as a whole, were considered to be **'National'**. Finally, effects across national boundaries were considered at an **'International / global'** level.

2.7.10 The methodology for the assessment of effect interactions is set out within **ES Volume 1, Chapter 14: Effect Interactions**.

[11] HMSO. National Planning Policy Framework. 2021.

2.8 Cumulative Effects

2.8.1 In line with the EIA Regulations, an ES must provide a description of the likely significant effects of a development on the environment resulting from:

"…The culmination of effects with other existing and / or approved projects…"

2.8.2 Given that existing development is considered in the environmental baseline conditions relevant to the Site and the Development and an assessment of likely significant environmental effects of the Development are judged against the relevant environmental baseline conditions, the potential for cumulative effects focuses predominantly on *"…approved projects…"*.

2.8.3 Approved Projects are defined as those with:

- A resolution to grant planning permission.
- A valid planning permission and yet to start on-site.
- A valid planning permission and under construction.

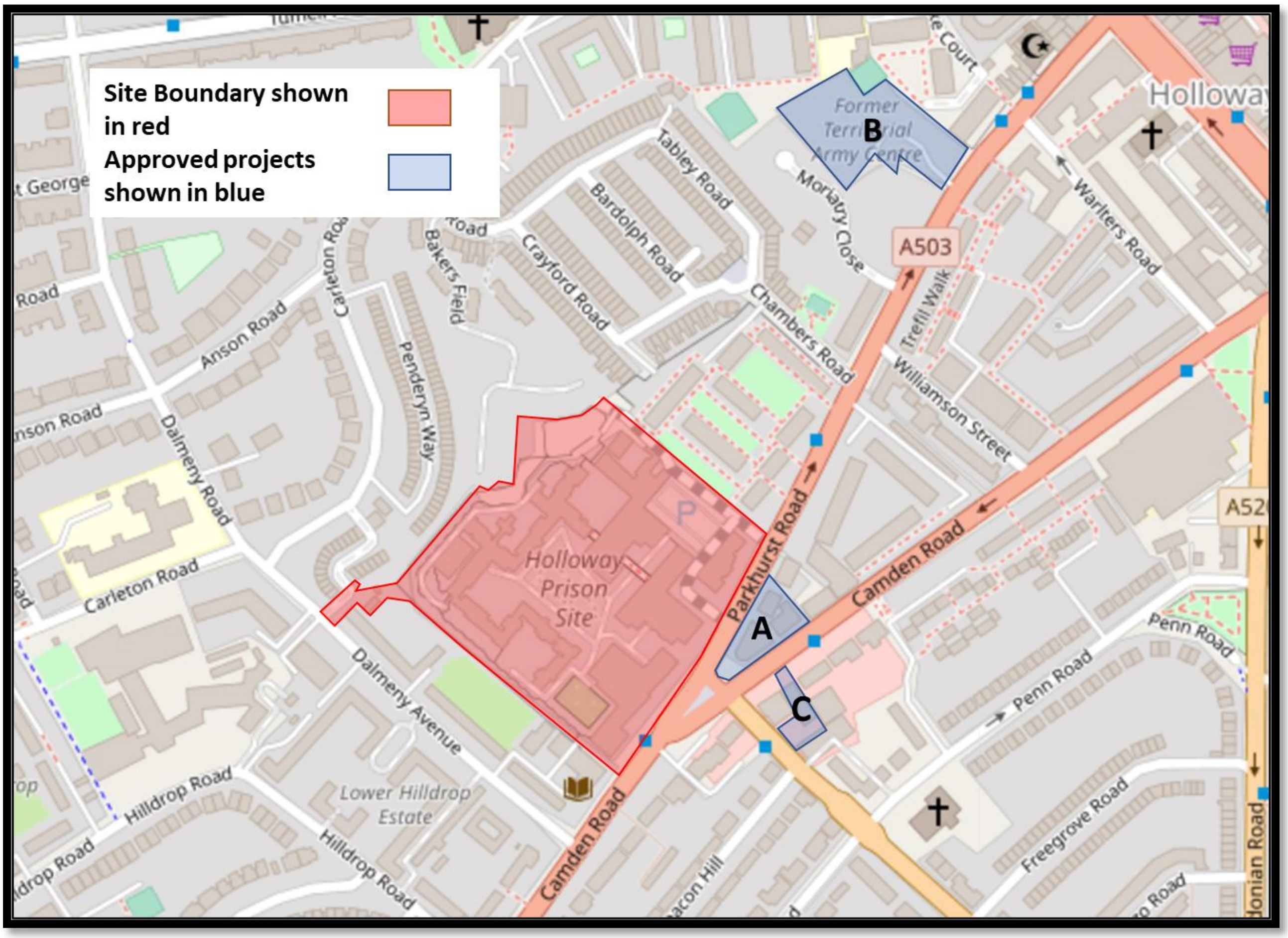
2.8.4 In general terms, and as agreed within the EIA Scoping Opinion (refer to **ES Volume 3, Appendix 2.2**), owing to the fragmented urban nature of the Site's environmental context, Approved Projects were considered up to approximately 1 km from the Site boundary.

2.8.5 Such Approved Projects are identified in **Table 2.1** which should be read in conjunction with **Figure 2.1**. However, it is important to note that each environmental topic assessed as part of the EIA process, and reported within **ES Volume 1, Chapters 7** to **13** and **ES Volume 2** may not necessarily need to consider all Approved Projects within the given 1 km distance from the Site boundary. For example, wind microclimate effects are typically highly localised, so that only those Approved Projects located in proximity to the Site and the Development would need to be considered. Conversely, it is recognised that the assessment of long-distance views may necessitate the consideration of relevant Approved Projects which may be located in excess of 1 km from the Site boundary. Accordingly, the approach to the assessment of cumulative effects was tailored to the particular environmental topic being considered. Full justification is provided within **ES Volume 1, Chapters 7** to **13** and **ES Volume 2**.

Table 2.1: Approved Projects within 1 km of the Site

Planning Application Reference	Location Relative to the Site and Label within Figure 2.1	Description	Status
P2015/0330/FUL and P2016/5054/LBC (Listed building Consent (LBC). 2 Parkhurst Road & 2A Parkhurst Road, London N7 0SF. Islington Arts Factory Site.	30 m east (LBI). Labelled as 'A' in **Figure 2.1.**	Demolition of the existing garage structure, refurbishment of the Grade II listed former Verger's Cottage and former Sunday School building to provide 413 sqm GIA of office floorspace (Use Class B1), refurbishment and conversion of the Church building to provide 7 private residential units (2 x 1-bed, 4 x 2-bed and 1 x 3-bed) and construction of a new 5-storey building with basement below to provide 792sqm GIA of community floorspace (Use Class D1) and ancillary cafe,132 sqm of office floorspace (Use Class B1) and 18 affordable residential units (7 x 1 bed, 9 x 2 bed and 2 x 3 bed), resulting in a total of 25 residential units (9 x 1-bed, 13 x 2-bed and 3 x 3-bed), along with associated landscaping, access, parking and public realm works.	Resolution to grant at Committee but S106 never been issued. Construction not yet started.
P2020/0648/FUL Former Territorial Army Centre, 65-69 Parkhurst Road London N7 0LR.	245 m north-east (LBI). Labelled as 'B' in **Figure 2.1.**	Redevelopment of site to provide 118 residential units in buildings ranging from 3 to 6 storeys in height, accessible car parking, cycle parking, landscaping and other associated development.	Construction commenced October 2020.
P121287, as amended by P2015/4073/s73 392A Camden Road & 1 Hillmarton Road.	50m east (LBI). Labelled as 'C' in **Figure 2.1.**	The part demolition, refurbishment and redevelopment of the existing coachworks and the erection of a four-storey building to accommodate a new workshop space and ancillary office/administration facilities plus nine residential units.	Construction underway.

Figure 2.1: Approved Projects within 1 km of the Site



2.8.6 In addition to the consideration of Approved Projects, the EIA Scoping Opinion (**refer to ES Volume 3, Appendix 2.2**) requested that a secondary assessment of *"[developments] that have a planning status within the development plan process…due to their potential to influence cumulative effects*" be included in the ES. As there is limited information for these schemes, a broad, qualitative, and necessarily high-level secondary assessment of potential cumulative effects arising from developments with a planning status in the development plan process was also undertaken. Such assessments are reported within **ES Volume 1, Chapters 7 to 13** and **ES Volume 2**.

2.8.7 A review was undertaken of developments within 1km of the Site that have a planning status within the following documents produced by the LBI:

- Adopted Site Allocations (2013)12.
- Emerging Site Allocations (2019)13.

[12] Islington Council. Islington's Local Plan: Site Allocations. 2013.
[13] Islington Councill. Islington Local Plan Site Allocations. 2019.

- Proposed Modifications to Site Allocations (2021)[14].

2.8.8 Following this review the developments included with the secondary assessment of potential cumulative effects are set out in **Table 2.2**.

Table 2.2: Developments that have a Planning Status in the Development Plan Process within 1 km of the Site

Site Allocation Document and Site Reference	Site Name
Proposed Modifications (2021) **OIS18**, Emerging Site Allocations (2019) SPD, **OIS18.**	Wedmore Estate Car Park, N19 4NU.
Proposed Modifications (2021) **OIS5**, Emerging Site Allocations (2019) SPD, **OIS5.**	Bush Industrial Estate, Station Road, N19 5UN.
Emerging Site Allocations (2019) SPD, **NH13.**	166-220 Holloway Road, N7.
Emerging Site Allocations (2019) SPD, **NH14.**	236-250 Holloway Road, N7 6PP and 29 Hornsey Road, N7 7DD.
Proposed Modifications (2921) **NH10**, Emerging Site Allocations (2019) SPD, **NH10.**	45 Hornsey Road (including land and railway arches 1-21 to rear), N7 7DD and 252 Holloway Road, N7 6NE.
Proposed Modifications (2021) **OIS6**, Emerging Site Allocations (2019) SPD, **OIS6.**	Site of Harvist Under Fives, 100 Hornsey Road, N7 7NG.
Proposed Modifications (2021) **NH1**, Emerging Site Allocations (2019) SPD, **NH1** (Adopted Site Allocations (2013) SPD, **NH1**).	Morrison's supermarket and adjacent car park, 10 Hertslet Road, and 8-32 Seven Sisters Road, N7 6AG. Modifications propose a mixed use scheme with a significant amount of residential on the site and retention and improvement of retail, plus some office.
Emerging Site Allocations (2019) SPD, **NH2** (Adopted Site Allocations (2013) SPD, **NH2**).	368-376 Holloway Road (Argos and adjoining shops), N7 6PN.
Emerging Site Allocations (2019) SPD, **NH11.**	Mamma Roma, 377 Holloway Road, N7 0RN.
Proposed Modifications (2021) **NH12**, Emerging Site Allocations (2019) SPD, **NH12.**	379-391 Camden Road and 341-345 Holloway Road.

[14] Islington Council. Site Allocations, Modifications for Consultation. 2021.

Site Allocation Document and Site Reference	Site Name
Proposed Modifications (2021), **NH3** Emerging Site Allocations (2019) SPD, **NH3** (Adopted Site Allocations (2013) SPD, **NH4**).	443-453 Holloway Road, N7 6LJ.
Proposed Modification (2021) **NH8**, Emerging Site Allocations (2019) SPD, **NH8.**	457-463 Holloway Road, N7 6LJ.
Proposed Modifications (2021) **ARCH7**, Emerging Site Allocations (2019) SPD, **ARCH7.**	207A Junction Road, N19 5QA.
Emerging Site Allocations (2019) SPD, **OIS21.**	Former railway sidings adjacent to and potentially including Caledonian Road Station.
Adopted Site Allocations (2013) SPD, **NH3.**	Retail, office and disused railway viaduct at 254-268 Holloway Road, N7 6NE.
Adopted Site Allocations (2013) SPD, **NH6.**	2, 4 & 4A, Tufnell Park Road and rear of Odeon Cinema, 419 Holloway Road, Islington, London, N7.
Adopted Site Allocations (2013) SPD, **NH7.**	Islington Scout Hut Centre, 319 Holloway Road N7 9SU (Planning application P/12/1054 was submitted for the demolition of the scout hut and replacement with community facilities (D1 and D2 use) at ground floor and 34 residential units).
Adopted Site Allocations (2013) SPD, **NH8**, Proposed Modifications (2021) **NH8**	Pollard Close Allotments, Pollard Close, N7.
Adopted Site Allocations (2013) SPD, **NH11.**	Heywood House Hotel, 261 Camden Road, Islington, London, N7 0HS (Planning application P/09/1509 was submitted for the demolition of the existing fire damaged hotel (C1 use) and the erection of a new five storey (plus basement) building to provide 27 residential units (C3 use) but was withdrawn).
Proposed Modifications (2021), **OIS27.**	York Way Estate, N7 9QA. Currently residential estate. Additional genuinely affordable housing can be accommodated on new blocks within the estate, improved play space provision, improvements to communal facilities and enhanced landscaping.

2.8.9 Both the Approved Projects and developments that a planning status within the development plan process listed in **Table 2.1** and **Table 2.2** are considered as 'Cumulative Schemes' for the purposes of this ES.

2.8.10 The assessment of all cumulative effects reasonably assumes that all mitigation relevant to the Development and Cumulative Schemes (Primary, Secondary and Tertiary) would be implemented. For this reason, only the likely residual cumulative effects and their significance are identified. Such effects are considered for the Works and for the completed, occupied and operational Development.

2.8.11 The extent to which likely significant cumulative effects can be quantified and / or qualified is dependent upon the information available for each of the Cumulative Schemes. However, where possible, the determination of likely significant cumulative effects was informed by professional and expert judgement, calculations and / or detailed, scientific modelling with the significance of the likely cumulative effect(s) being defined as previously noted.

2.9 Effect Interactions

2.9.1 It is common practice for an ES to acknowledge effect interactions; that is, the combination of different environmental effects resulting from one project upon individual sensitive receptors, or a set of sensitive receptors.

2.9.2 The likely significant effect interactions arising from the Development are considered for the Works and for the completed and operational Development. The assessment of effect interactions as presented in **ES Volume 1, Chapter 14: Effect Interactions** draws from the results of the assessments presented in **ES Volume 1, Chapters 7** to **13** and **ES Volume 2 - Townscape, Visual and Above Ground Built Heritage Assessment.**

2.10 Structure of ES Volume 1 Technical Chapters and ES Volume 2

2.10.1 Each key environmental topic considered within the full EIA process is assigned a separate technical Chapter in **ES Volume 1, Chapters 7** to **13** with the full text and images of the Townscape, Visual and Above Ground Built Heritage Assessment presented within **ES Volume 2.** Within each of these Chapters the assessment is structured as follows. **ES Volume 2** is broadly structured as below with the addition of a section entitled ‘Characteristics of the Development and Embedded Mitigation’ after Relevant Baseline Conditions.

Introduction

2.10.2 The introduction provides a brief summary of what is considered in the Chapter and states the Chapter’s author.

Assessment Methodology and Significance Criteria

2.10.3 The methods used in undertaking the technical study are outlined in this section with reference to published standards, guidelines and best practice. The significance criteria used in the assessment are also explained and defined as well as any assumptions made for the assessment or limitations to the assessment methodology.

Relevant Baseline Conditions

2.10.4 In order to assess the likely significant environmental effects of the Development, it is necessary to determine the environmental conditions that exist at and around the Site. These are known as the baseline conditions and are typically used to provide a datum against which environmental change attributable to the Development is measured or judged so that the likely effect of the Development and their significance can be established.

2.10.5 It should be noted that the EIA Regulations require the ES to include a description of the future baseline; the baseline conditions without implementation of the Development as far as natural changes from the baseline scenario can be assessed with reasonable effort, on the basis of available environmental information and scientific knowledge. Future baseline conditions are considered within **Chapter 4: Alternatives and Design Evolution**.

Likely Effects of the Development and their Significance

2.10.6 This section identifies the likely significant effects resulting from the Development (as defined in **ES Volume 1, Chapter 5: The Development**) and considers effects during the Works, and once the Development is completed, occupied and operational. As previously noted, all likely effects reasonably assume the implementation of Primary Mitigation and Tertiary Mitigation and reflect the Development for which detailed planning approval is sought.

Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance

2.10.7 Should the assessment of likely effects (accounting for Primary and Tertiary Mitigation) give rise to significant adverse environmental effects, this section sets out any additional mitigation (Secondary Mitigation) required to prevent, reduce, ameliorate and / or offset such significant adverse environmental effects, together with any monitoring requirements necessary to ensure the efficacy of the mitigation measures. Similarly, should there be an opportunity to further enhance any likely beneficial effects (accounting for Primary and Tertiary Mitigation), these are also set out.

2.10.8 This section also identifies the likely residual effects for the Development, assuming implementation of the proposed 'additional' (Secondary) Mitigation Measures and / or enhancements, and includes an assessment of the significance of those residual effects in accordance with the relevant significance criteria.

Likely Residual Cumulative Effects and their Significance

2.10.9 The likely residual effects of the Development with other Cumulative Schemes are identified, together with their significance.

Conclusions

2.10.10 A summary of the key findings of the assessment are provided at the end of each Chapter.

2.11 Assumptions and Limitations

2.11.1 The principal assumptions and limitations associated with undertaking the EIA for the Development are set out as follows:

- Information received from third parties is accurate, complete and up to date.
- The assessment of the Works is based on the assumed enabling, demolition and construction programme and methodologies as provided by the Applicant (refer to **ES Volume 1, Chapter 6: The Works**).
- The design, construction and operation of the Development would satisfy environmental standards consistent with contemporary legislation, practice and knowledge as a minimum, but would also strive to achieve best practice at the time of the Works, where reasonable.

2.11.2 Assumptions specifically relevant to each environmental topic are described where applicable in each Chapter of **ES Volume 1** (this document) and **ES Volume 2**.

3. Existing Land Uses and Activities

3.1 Introduction

3.1.1 This Chapter presents a summary of the predominant existing land uses and activities currently occurring on, and around the Site. This Chapter also describes the key environmental characteristics of the Site and its adjacent areas, thereby identifying potentially sensitive receptors which may be affected by the Development.

3.1.2 A full description of the baseline conditions relevant to each environmental topic considered within the Environmental Impact Assessment (EIA) is provided within each technical Chapter of this Environmental Statement (ES) (**ES Volume 1, Chapters 7** to **13**) and **ES Volume 2**.

3.2 Location and Setting

3.2.1 As described in **ES Volume 1, Chapter 1: Introduction**, the Site is located in north-east London within the administrative boundary of the London Borough of Islington (LBI). The extent of the Site is illustrated in **Figure 1.2** and is broadly bound by:

- Residential uses and Parkhurst Road (A503) to the north.
- Parkhurst Road / Camden Road (A503) to the east to south-east.
- Rear of residential properties off Dalmeny Road, Carleton Road and Penderyn Way to the south, west and through to the north.

3.3 Topography

3.3.1 The Site rises to a height of approximately 42 m Above Ordnance Survey (AOD) at the south-west of the Site and 34 m AOD at the north-eastern boundary.

3.4 Predominant Land Uses and Activities

Within the Site

3.4.1 The existing 4.16 ha Site comprises the former and disused Holloway Prison. The prison was first opened in 1852, originally as a mixed-gender facility, however, it became the first female-only prison in the early 1900s. Originally an imposing Victorian structure (referred to as 'The Castle'), the original prison underwent complete renovation between 1971 and 1985, giving rise to its current day built form and configuration. The renovation was reflective of a desire to move away from the Victorian justice system. It was purposely designed not to feel like a prison with accommodation grouped around a number of attractive green spaces, with cells along corridors rather than wings to provide greater privacy.

3.4.2 In 2015, the UK Government announced that the prison would close. This was on account that the design and physical state of the prison did not provide the optimal environment for the rehabilitation of offenders. Consequently, inmates were relocated to other secure facilities and the prison closed in 2016. With the exception of the presence of on-Site security personnel and use of the Site for filming, the Site remains largely disused and vacant.

3.4.3 Filming has been taking place on the Site since October 2019. On days when filming takes place, there are approximately fifty people on Site.

3.4.4 The Site fronts Parkhurst Road / Camden Road (A503) to the east; Camden Road and Parkhurst Road both form part of the Transport for London Road Network (TLRN) and are red routes. Accordingly, limited access is provided from Parkhurst Road / Camden Road (A503), via two separate access points, both located north of the junction with Hillmarton Road. The Site has 84 car parking spaces and 10 cycle parking spaces located in the north of the Site.

3.4.5 An aerial photo of the Site is shown in **Figure 3.1** and the internal Site layout and building uses are shown in **Figure 3.2**.

Figure 3.1: Aerial Photo of the Site

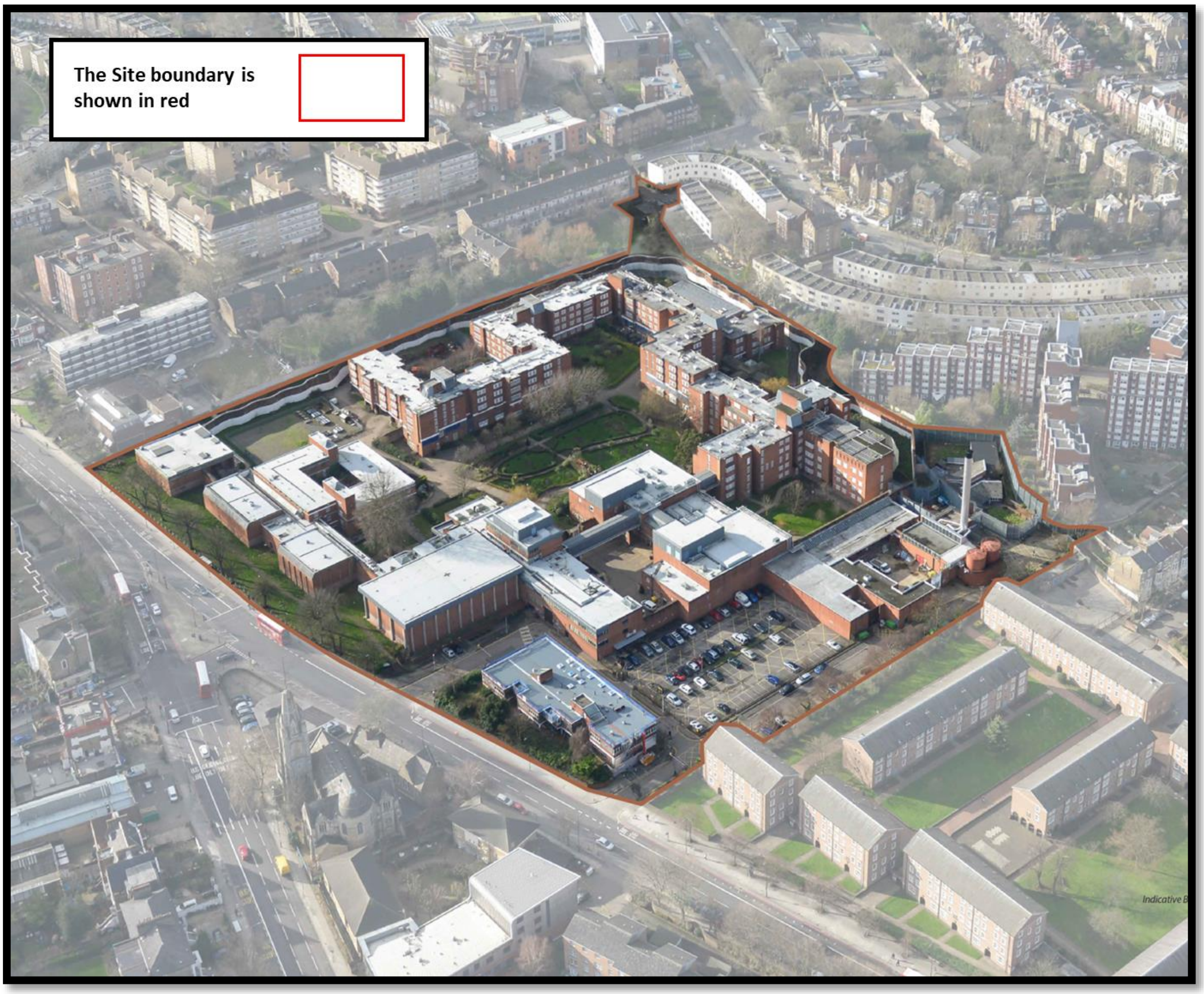
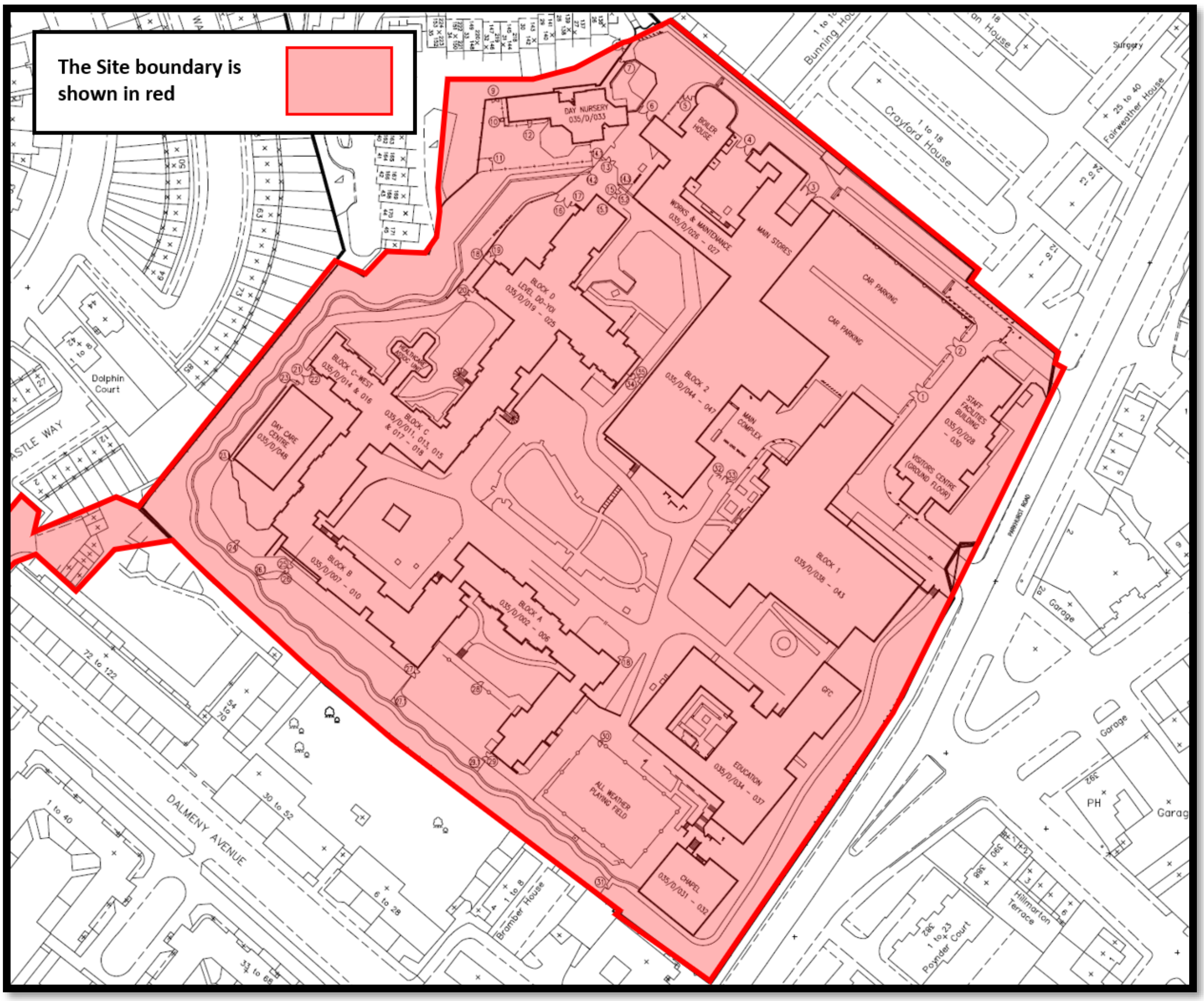


Figure 3.2: Plan of the Existing Internal Layout and Land Uses



3.4.6 Owing to the historic use of the Site, a large perimeter sinusoidal wall surrounds the Site. There is an access gate to Bakersfield on the north-west side of the Site which was operational when the prison was open but since it closed, the gate has been secured shut. There is therefore very limited connectivity to the wider area.

3.4.7 The existing Site comprises a number of connected buildings ranging between two to five storeys in height. Such buildings comprised several uses during the operational life of the prison including prison blocks housing the inmate cells, maintenance areas and stores, healthcare units, staff facilities, an education centre, a day care centre, a chapel and a visitors' centre.

3.4.8 A boiler house is located in the north of the Site, characterised by a single flue rising above the tallest six-storey blocks on-Site.

3.4.9 On-Site car-parking is located in the north-east of the Site; the Site had 84 car parking spaces when it was operational as a prison. There were 10 cycle parking spaces on the Site.

3.4.10 A row of garages is located in the west of the Site off Trecastle Way.

3.4.11 All buildings on-Site, with the exception of the garages, are surrounded by landscaped areas and open green spaces, including pocket courtyards and a central garden.

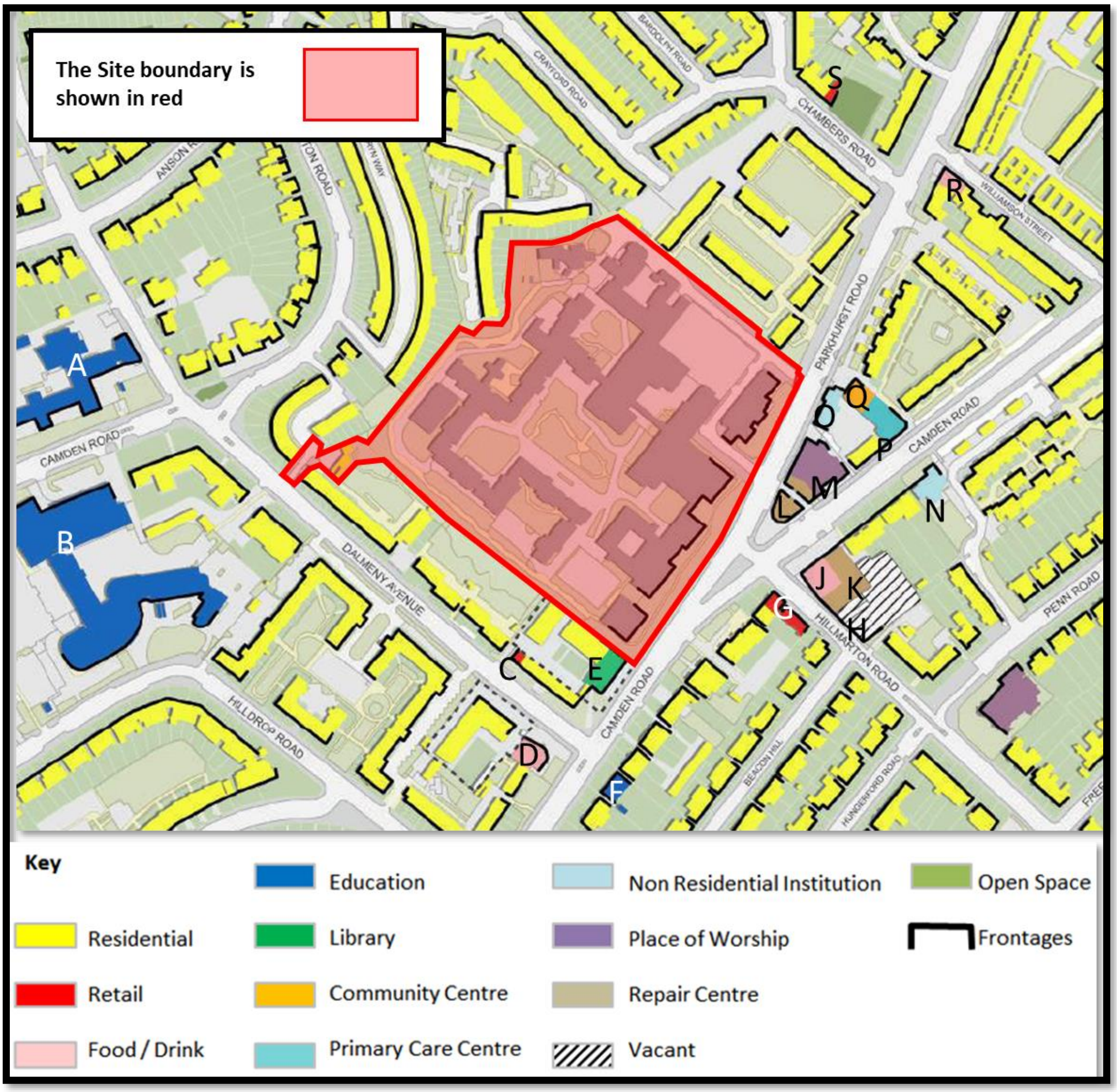
3.4.12 The Thames Lea Tunnel (a potable water asset transporting potable water across the area) passes beneath the Site in an approximate east-west orientation at a depth of approximately 40m beneath the existing ground level. Thames Water state that, with regards to the Thames Lea Tunnel, development is permitted above this asset as long as it can demonstrated that the proposed works will have negligible impact on both the structural integrity of the tunnel and Thames Water's ability to access the tunnel for future maintenance works.

3.4.13 Piling in the vicinity of the tunnel will be restricted to a maximum depth of 20m to avoid entering the exclusion zone. In addition, Ground Movement Analysis will be undertaken to demonstrate that there are no adverse effects on the tunnel. Ongoing consultation will be held with Thames Water.

Surrounding the Site

3.4.14 The immediate surrounding land uses are shown in **Figure 3.3** and **Table 3.1.** Land uses across the wider area are shown in **Figure 3.4** and **Table 3.2.**

Figure 3.3: Land Uses Immediately Surrounding the Site (Modified from Holloway Prison Site Supplementary Planning Document (SPD)[1]



1 Islington Council. Holloway Prison Site Supplementary Planning Document: A Plan from the Future of Holloway Prison Site. 2017.

Table 3.1: Land Uses Immediately Surrounding the Site as Shown on Figure 3.3

Label on Figure 3.3	Land Use (with reference to Figure 3.3)	Detail
A	Education.	Tufnell Park Primary School.
B	Education.	The Bridge Secondary School.
C	Retail.	Camden Superstore (Convenience Store).
D	Food / Drink.	Not applicable (now in residential use following redevelopment of the site).
E	Library.	Cat and Mouse Library.
F	Education.	Not applicable (land use changed since SPD completed).
G	Retail.	Smart Save Supermarket (Convenience Store).
H	Vacant.	Not applicable.
I	Place of Worship.	St. Luke's Church.
J	Food / Drink.	The Castle Bar Bed and Breakfast (no longer operational).
K	Repair Centre.	Exan Car Body Shop.
L	Repair Centre.	Exan Car Body Shop (forecourt).
M	Place of Worship.	Camden Road New Church (no longer operational as a place of worship, now operating as Islington Arts Factory).
N	Non Residential Institution.	Centre 404 (learning difficulties or autism support centre).
O	Non Residential Institution.	Community Uses.
P	Primary Care Centre.	Camhurst House Specialist Support Housing.
Q	Community Centre.	Holloway Estate Community Centre.
R	Food / Drink.	Prince Edward Public House.

Label on Figure 3.3	Land Use (with reference to Figure 3.3)	Detail
S	Retail.	Not applicable (land use changed since SPD completed).

Figure 3.4: Land Uses Within the Wider Areas Surrounding the Site (Modified from Allford Hall Monaghan Morris)

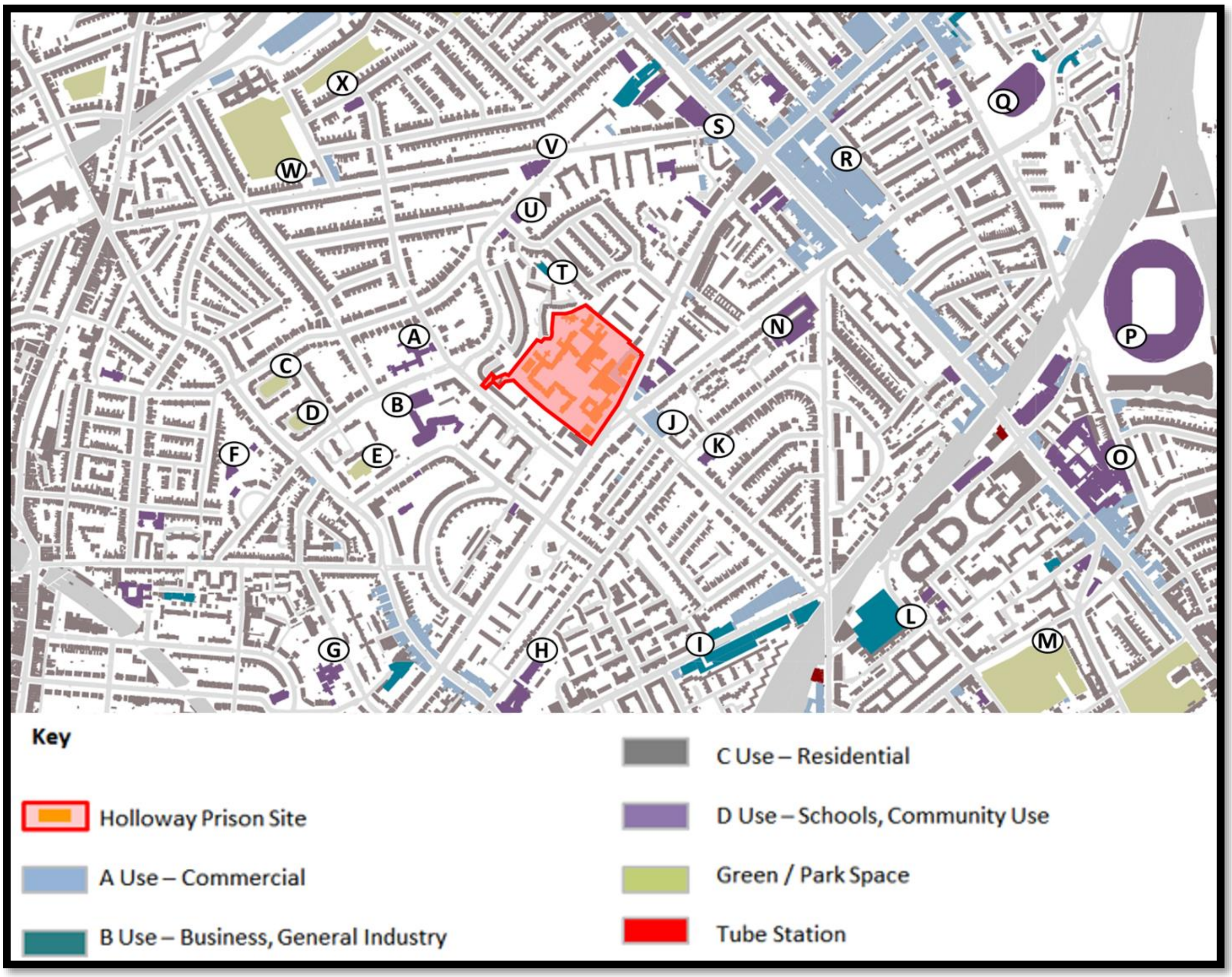


Table 3.2: Land Uses Within the Wider Area as Shown on Figure 3.4

Label on Figure 3.4	Land Use (with reference to Figure 3.4)	Detail
A	Schools, Community Use.	Tufnelll Park Primary School.
B	Schools, Community Use.	The Bridge Secondary School.
C	Green / Park Space.	Residential Courtyard.
D	Green / Park Space.	Residential Courtyard.
E	Green / Park Space.	Residential Courtyard.
F	Schools, Community Use.	Luther Tyndale Memorial Church.
G	Schools, Community Use.	Torriano Primary School.
H	Schools, Community Use.	Hungerford Primary School.
I	Business, General Industry.	Industrial / Retail Estate.
J	Commercial.	Exan Car Body Shop.
K	Schools, Community Use.	St. Luke's Church.
L	Business, General Industry.	Islington Household Reuse and Recycling.
M	Green / Park Space.	Paradise Park.
N	Schools, Community Use.	City and Islington College - Centre for Business, Arts and Technology.
O	Schools, Community Use.	Multiple Retail and Community Uses and London Metropolitan University.
P	Schools, Community Use.	Emirates Stadium.
Q	Schools, Community Use.	Sobell Leisure Centre.
R	Business, General Industry.	Retail park and High Street.
S	Schools, Community Use.	National Youth Theatre, Islington Islamic Centre and retail / social uses.
T	Business, General Industry.	Synergy Property Partners.
U	Schools, Community Use.	St George and All Saints.

Label on Figure 3.4	Land Use (with reference to Figure 3.4)	Detail
V	Schools, Community Use.	Lagoinha London Church.
W	Green / Park Space.	Tufnell Park Playing Fields.
X	Green / Park Space.	Foxham Gardens.

3.4.15 **To the north** - Residential land-uses (Holloway Estate, owned by the Corporation of London) and a small number of local business retail and commercial uses.

3.4.16 **To the north-east** - Residential land-uses, Holloway Estate Community Centre and commercial uses. Beyond the immediate surrounds, further areas of residential uses, Emirates Football stadium, the centre of Holloway and Finsbury Park overground / London Underground Limited (LUL) station (Piccadilly Line and Victoria Line) are located.

3.4.17 **To the east** - Residential land-uses, commercial uses and transport infrastructure (including Parkhurst Road) / Camden Road (A503), Caledonian Road and local residential streets), Holloway Road LUL Station (Piccadilly Line) and overground rail line infrastructure.

3.4.18 **To the south-east** - Residential land-uses, light industrial and retail land-uses (including a superstore), transport infrastructure (including Parkhurst Road / Camden Road (A503), Caledonian Road, local residential streets and Caledonian Road LUL station.

3.4.19 **To the south** - Residential land-uses (including the Market Estate), light industrial land-uses, transport infrastructure (including Parkhurst Road / Camden Road (A503), Caledonian Park and Market Gardens with associated sports and social infrastructure (including Islington Tennis Centre, Market Road Football Pitches and the clock tower and playground area). A number of primary schools area also located to the south, including The Bridge Primary School, Hungerford Primary School and the Gower School.

3.4.20 **To the south-west** - Residential land-uses (including estates of Dalmeny Avenue and Hilldrop Estate), light industrial land-uses, commercial uses and transport infrastructure (including over-ground rail lines, Kentish Town and Camden Road overground stations, and local residential streets). Beyond the immediate surrounds, further areas of residential uses and the centre of Kentish Town are located.

3.4.21 **To the west** - Residential land-uses (including Hilldrop Estate), social infrastructure (including The Bridge Secondary School and Holloway School) and transport infrastructure (including over-ground rail lines, Kentish Town and Camden Road overground stations and Tufnell Park LUL station (Northern Line) and local residential streets). Beyond the immediate surrounds, further areas of residential, the centre of Gospel Oak and Tufnell Park and a large open area comprising Hampstead Heath.

3.4.22 **To the north-west** - Residential land-uses (including the Bakersfield Estate, owned by Peabody with a 999 year lease granted to Notting Hill Genesis), social infrastructure, areas of open / green spaces (including Tufnell Park

Playing Fields and Foxham Gardens) and light industrial uses (including Orient Industrial Park) and transport infrastructure (including local residential streets, Junction Road (A400) and Archway LUL Station (Northern Line)).

3.5 Key Environmental Characteristics

3.5.1 Details regarding the key environmental characteristics of the Site and its surrounds are provided in **ES Volume 1, Chapters 7** to **13, ES Volume 2** and **ES Volume 3**. However, a summary of key characteristics is set out below.

3.5.2 The Site does not comprise any statutory or non-statutory sites of nature conservation. However, there are ten non-statutory Sites of Importance for Nature Conservation (SINCs) within 1 km of the Site, the closest of which is the Tufnell Park Primary School Gardens, located approximately 160 m west of the Site.

3.5.3 The Site predominantly comprises hardstanding, buildings, introduced trees, shrubs, amenity grassland and ephemeral short perennials. The majority of floral species on-Site comprise urban landscape planting. Consequently, a number of the species are exotic or ornamental. Japanese Knotweed (Reynoutria japonica), an invasive and strictly controlled species, was recorded in the south-western area of the Site. Due to a lack of management since the closure of the prison, much of the Site has remained unmanaged, with areas becoming overgrown and vegetation growing in areas of previous hardstanding. In addition, wall cotoneaster was also recorded during the update survey in 2021. This species is also listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

3.5.4 The Extended Phase 1 Habitat Survey undertaken in 2019, the update survey in 2021 and subsequent bat surveys undertaken and reported in **ES Volume 1, Chapter 10: Ecology** revealed the Site to yield potential for notable and legally protected species, including nesting birds and bats.

3.5.5 The Site is not within a designated Archaeological Priority Area (APA) as defined by the LBI. However, APAs within proximity to the Site include Islington Tier II APA 2.7 Barnsbury moated manor house[2], located approximately 0.33 km to the north of the Site boundary and Islington Tier II APA 2.3 Tollington Settlement and manor house[3], located approximately 0.8 km to the north-east of the Site boundary.

3.5.6 There are no World Heritage Sites (WHSs) or Scheduled Monuments within 0.5 km of the Site. The nearest Scheduled Monument to the Site is located more than 2.5 km from the Site.

3.5.7 There are no listed buildings within the Site. However, there are ten within 0.5 km of the Site, the closest of which is 30 m to the east. This is the Grade II listed Verger's Cottage and remodelled entrance, part of the former Camden

2 Historic England 2018 London Borough of Islington Archaeological Priority Areas Appraisal.
3 Ibid.

Road New Church complex. Additionally, the John Barnes Library, directly to the south-west of the Site, built in 1972, is included as a non-designated asset in the Greater London Historic Environment Record data.

3.5.8 Although the Site is not within a Conservation Area, the southern extent of Tufnell Park Conservation Area lies approximately 50 m west and north-west of the Site. Hillmarton Conservation Area lies approximately 20 m to the east, south and south-east of the Site. The Hillmarton Conservation Area is characterised by two and three storey Victorian semi-detached and terraced houses. The Tufnell Park Conservation Area is characterised by Edwardian and Victorian three storey housing.

3.5.9 The Site lies within the viewing corridor of two LBI protected views:

- Local View 4 (LV4), Archway Road to St. Paul's Cathedral,
- Local View 5 (LV5), Archway Bridge to St. Paul's Cathedral.

3.5.10 The Site is classified as being in Flood Zone 1 ('low risk of flooding') from fluvial and tidal sources and is within an area benefiting from flood defences. The Site is categorised as at 'very low' to 'low' risk of surface water flooding aside from two discrete areas in the centre and western part of the Site which are considered to be at 'high risk' of surface water flooding [4].

3.5.11 The borough of Islington, in which the Site is located, is designated as an Air Quality Management Area (AQMA) for nitrogen dioxide (NO_2) and fine particulate matter (PM_{10}) attributed to vehicle emissions. In addition to the above, the neighbouring London Borough of Camden (LBC) also declared the Borough-wide levels of NO_2 and PM_{10} are not meeting the Air Quality Strategy Objectives. Accordingly, the entire Borough of Camden was declared an AQMA[5], attributed to road traffic emissions.

4 https://flood-warning-information.service.gov.uk/long-term-flood-risk.
5 Camden, Air Quality Annual Status Report for 2018. July 2019.

4. Alternatives and Design Evolution

4.1 Introduction

4.1.1 Schedule 4, Paragraph 3 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1] (the 'EIA Regulations'), states that an Environmental Statement (ES) is required to include an outline of the evolution of a site in the absence 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.*"

4.1.2 Schedule 4, Paragraph 2 of the EIA Regulations also requires an ES to include:

"A description of the reasonable alternatives…studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."

4.1.3 As identified above, the EIA Regulations do not require the identification of all possible alternatives, only those reasonable alternatives that were studied by the Applicant. In addition, the EIA Regulations require the ES to set out the main reasons for selecting the chosen option and also to include a comparison of the chosen option against the reasonable alternatives. This has been interpreted to mean that justification should be provided that the Development is appropriate and acceptable in comparison to other potential options and that an appropriate balance between environmental effects and commercial / economic implications was reached.

4.1.4 Accordingly, this Chapter focusses on the following:

- The 'Do Nothing' / No Development alternative.
- Key Design Drivers and Design Strategy.
- Alternative Approaches to Design – Design Evolution.
- Design and Consultation.
- A Comparison of Environmental Effects.

4.2 The 'Do-Nothing / No Development' Alternative

4.2.1 This scenario covers the consequences of no development taking place on the Site and *"…an outline of the likely evolution thereof* [of the Site] *without implementation of the development as far as natural changes from the baseline*

[1] The Town and Country Planning (Environmental Impact Assessment) Regulations. 2017.

scenario can be assessed…" Although not strictly a 'reasonable alternative' considered by the Applicant, the EIA Regulations state that the ES must set this information out.

4.2.2 Details regarding the existing baseline conditions of the Site and its surrounds for all environmental topics scoped into this ES (**ES Volumes 1 to 4**), are provided within **ES Volume 1, Chapters 3, 7** to **13** inclusive and **ES Volume 2.**

4.2.3 Should the Development not be implemented, it would be expected that the existing on-Site buildings and activities would remain for the foreseeable future. As such, a review was undertaken of the environmental topic areas scoped into this ES, to determine the implications in terms of evolution of the environmental baseline conditions if the Development were not to come forward:

Socio-economics

4.2.4 In the no development scenario, the Site would remain in its current condition, vacant and without a permanent residential population. It is likely some temporary activity would continue to occur on Site, such as ad-hoc filming for television programmes and films, providing relatively little economic value for the London Borough of Islington (LBI). Nevertheless, the evolution of the baseline conditions at the wider local, district and regional level could be expected to continue to evolve, as other Cumulative Schemes (refer to **ES Volume 1, Chapter 2: EIA Methodology**) are completed, in line with relevant policy. As such, over the long-term and beyond the Site, opportunities would exist for the provision of new residential land uses and other economic benefits.

4.2.5 A socio-economic assessment of the Development, including an appraisal of relevant existing socio-economic conditions is provided in **ES Volume 1, Chapter 7: Socio-economics**.

Air Quality

4.2.6 Should redevelopment not occur at the Site, it is expected that the limited existing Site activities and operations would continue to contribute to ambient air quality as per the current situation. That said, due to the limited use and operation of the Site, the Site's existing contribution to air quality is not considered to be material.

4.2.7 As demonstrated by recent research, transport related emissions to air and associated air quality effects are improving with time. Consequently, over the long-term and when considered together with improvements in 'clean technology' and a Governmental and social drive towards improving air quality, it is expected that, in the absence of the Development, air quality within the Site, in the locality of the Site, and beyond the Site would improve.

4.2.8 An air quality assessment of the Development, including an appraisal of relevant existing air quality conditions is provided in **ES Volume 1, Chapter 8: Air Quality**.

Noise and Vibration

4.2.9 Similar to the consideration of air quality, should redevelopment not occur at the Site, it is expected that the limited existing Site activities and operations would continue to contribute to ambient noise environment as per the current situation. That said, due to the limited use and operation of the Site, the Site's existing contribution to ambient noise is minimal.

4.2.10 Over the longer term, it is conceivable that the advancement of 'quiet technologies' could lead to reduced road traffic noise, reduced aircraft noise and reduced noise from the operation of building plant and machinery. Noting that the main source of noise within the Site is attributable to road traffic noise, in the absence of the Development, there could well be a reduction in ambient noise within and in the locality of the Site, and beyond.

4.2.11 A noise and vibration assessment of the Development, including an appraisal of relevant existing noise sources and conditions is provided in **ES Volume 1, Chapter 9: Noise and Vibration**.

Ecology

4.2.12 There are no statutory designated sites either within the Site boundary or within 1km of the Site. The on-Site buildings, hardstanding and ornamental planting comprising areas of grassland, trees and shrubs have limited intrinsic ecological and botanical value. As noted in **ES Volume 1, Chapter 1: Introduction** and **ES Volume 1, Chapter 3: Existing Land Uses and Activities**, the former Holloway Prison closed in 2016. As a result, areas of planting have been unmanaged for some time and have become overgrown in places.

4.2.13 In the absence of Site redevelopment, the Site would likely remain in its current condition with areas of existing planting remaining of limited ecological value. These would likely grow and remain unmanaged.

4.2.14 The Site is known to support three bat roosts used by low numbers of common pipistrelle during the summer months and has potential to support hibernating bats associated with cavity walls in some of the existing on-Site buildings. Further details are provided in **ES Volume 1, Chapter 10: Ecology**. The overall status of the roosts and the value of the Site for bats is unlikely to change significantly in the absence of redevelopment. Similarly, the Site has potential to support some nesting bird species associated with areas of ornamental shrub and tree planting and this is unlikely to change significantly in the absence of the Development.

4.2.15 An ecological assessment of the Development, including an appraisal of relevant existing ecological conditions is provided in **ES Volume 1, Chapter 10: Ecology**.

Wind Microclimate

4.2.16 In the no development situation, the existing built form, massing and vegetation of the Site would remain. Accordingly, the wind microclimate of the Site and its surrounds would also remain as per the present day. Details of wind tunnel testing for the existing Site situation are provided in **ES Volume 1**, **Chapter 11: Wind Microclimate**.

4.2.17 Again, with reference to **ES Volume 1, Chapter 11: Wind Microclimate**, the presence of relevant Cumulative Schemes did not give rise to any significant changes to wind microclimate conditions in and around the Site. It is therefore judged that even accounting for relevant Cumulative Schemes, existing wind conditions in and around the Site would, in the no development situation, exist over the long-term.

4.2.18 A wind microclimate assessment of the Development, including the identification of existing wind microclimate conditions is provided in **ES Volume 1, Chapter 11: Wind Microclimate.**

Daylight, Sunlight and Overshadowing

4.2.19 Similar to the consideration of wind microclimate, in the no development situation, the existing built form, massing and vegetation of the Site would remain. Accordingly, level of daylight and sunlight to surrounding residential properties would remain as per the present day, as would levels of overshadowing to amenity spaces surrounding the Site. Details of existing daylight, sunlight and overshadowing levels for the existing Site situation are provided in **ES Volume 1**, **Chapter 12: Daylight, Sunlight and Overshadowing.**

4.2.20 Again, with reference to **ES Volume 1, Chapter 12: Daylight, Sunlight and Overshadowing**, the presence of relevant Cumulative Schemes did not give rise to any significant changes to daylight, sunlight and overshadowing conditions around the Site. It is therefore judged that even accounting for relevant Cumulative Schemes, existing levels of daylight, sunlight and overshadowing to properties and amenity spaces surrounding the Site would, in the no development situation, exist over the long-term.

4.2.21 A daylight, sunlight and overshadowing assessment of the Development, including the identification of existing daylight, sunlight and overshadowing conditions is provided in **ES Volume 1, Chapter 12: Daylight, Sunlight and Overshadowing.**

Greenhouse Gases

4.2.22 If the Development were not to come forward, and the Site remained in its current state, greenhouse gas emissions from the Site would remain as per the existing situation and attributable to the use of the existing Site for ad-hoc filming. Over the longer term it could be expected that that technological advances to reduce greenhouse gas emissions and a strong behavioural / social agenda to reduce greenhouse gas emissions, it is conceivable that over the long-term greenhouse gas emissions in the wider area could well reduce.

4.2.23 A greenhouse gas assessment of the Development is provided in **ES Volume 1, Chapter 13: Greenhouse Gases**.

Townscape, Visual and Above Ground Built Heritage

4.2.24 In the no development situation, the existing built form, massing and vegetation of the Site would remain. Accordingly, the existing townscape, visual and above ground heritage conditions would remain as per the present day. Details of existing townscape, visual and above ground built heritage conditions and attributes relevant to the Site are provided in **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**.

4.2.25 Again, with reference to **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**, the presence of relevant Cumulative Schemes gives rise to some significant changes to townscape, visual and above ground built heritage conditions around the Site. It is therefore judged that, accounting for relevant Cumulative

Schemes, existing townscape, visual and above ground built heritage conditions surrounding the Site would, in the no development situation, change over the long-term.

4.2.26 A townscape, visual and built heritage assessment of the Development, including the identification of existing townscape, visual and built heritage conditions is provided in **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment.**

Summary

4.2.27 In the no development scenario, the Site would remain in its current state although due to the Cumulative Schemes there would inevitably be changes to the wider surroundings.

4.2.28 The existing Site provides minimal connectivity to the surrounding area due to its former use as a prison; the presence of a wall around the Site provides a physical barrier to accessing the Site. The redevelopment of the Site therefore offers the opportunity to provide new connections across the Site and to the surroundings and provide an active frontage on Parkhurst Road and Camden Road.

4.2.29 The Prison closed in 2016 and the Site has been largely vacant since that time. The Site is identified as being suitable for redevelopment for a residential led scheme, providing a large number of residential units including 60% affordable housing.

4.2.30 In summary, the no development scenario greatly limits the potential of the Site, especially with regards the relationship with its surrounds, existing and future users. The no development situation would result in the lost opportunity for the following key benefits within the Site and its surrounds:

- **Loss of social benefits including:**
  - Provision of a diversity of housing through a mix of affordable including extra care, and open market homes proposed.
  - Provision of a Women's Building, providing services and safe spaces for women.
  - Introduction of new commercial uses on the Site.
  - Improved public spaces on the Site linking to the surroundings.
  - New dedicated play space within the Site.
- **Loss of economic benefits including:**
  - Additional local spend of up £17.4 million per annum to LBI per year (refer to **ES Volume 1, ES Chapter 7: Socio-economics**).
  - Between 53 - 308 net additional jobs on Site once the Development is complete and operational (refer to **ES Volume 1, ES Chapter 7: Socio-economics**).

    - Approximately 1,446 person years of temporary employment during the Works (refer to **ES Volume 1, ES Chapter 7: Socio-economics**).

- **Loss of environmental benefits including:**
    - Improved streetscape and visual connectivity between the Site and surrounds including restoring the connection to Hillmarton Road with pedestrian access and visual connections and providing a new link to Trecastle Way.
    - Improved pedestrian and cyclist permeability across the Site.
    - Provision of high-quality open spaces and amenity spaces for residents and users of, and visitors to the Site.
    - The provision of a comprehensive Site-wide landscape strategy which retains existing high-quality on-Site trees, provides new additional trees, a variety of green spaces, green roofs and further ecological enhancements for breeding birds, bats and invertebrates.

4.3 Key Design Drivers and Design Strategy

4.3.1 The Applicant did not consider alternative Sites or fundamentally different alternative land uses for the Site. This was because relevant planning guidance, namely, the Holloway Prison Site Supplementary Planning Document (SPD)[2], identified housing as an appropriate use for the Site. As such, residential-led development at the Site was a unique Site-specific opportunity.

Key Design Drivers

4.3.2 The aforementioned Holloway Prison Site SPD, set out a framework to guide appropriate redevelopment of the Site. Key planning and development objectives for the Site stated within the Holloway Prison Site SPD were as follows:

- *"The provision of housing and in particular maximising affordable housing to meet identified housing needs in the borough.*
- *The provision of a women's building / centre that incorporates safe space to support women in the criminal justice system and services for women as part of a wider building that could also include affordable workspace to support local organisations and employment opportunities.*
- *Active uses along Parkhurst Road and Camden Road, which could include, for example, a small amount of retail provision.*

[2] Islington Council. Holloway Prison Site Supplementary Planning Document, 2018.

- *Improvements to local infrastructure to support population growth, for example, health facilities and public transport.*
- *The provision of publicly accessible open green space including play space as part of a design that protects and enhances biodiversity, retains existing trees and provides high quality landscaping.*
- *High quality design that responds to the Site's context and constraints and makes a positive contribution to the local character of the area.*
- *The connection of the Site to the surrounding neighbourhood, increasing the Site's permeability, promoting walking and cycling.*
- *The provision of an inclusive environment which is accessible, invites people into the Site, and facilitates community cohesion.*
- *The achievement of best practice sustainability standards."*

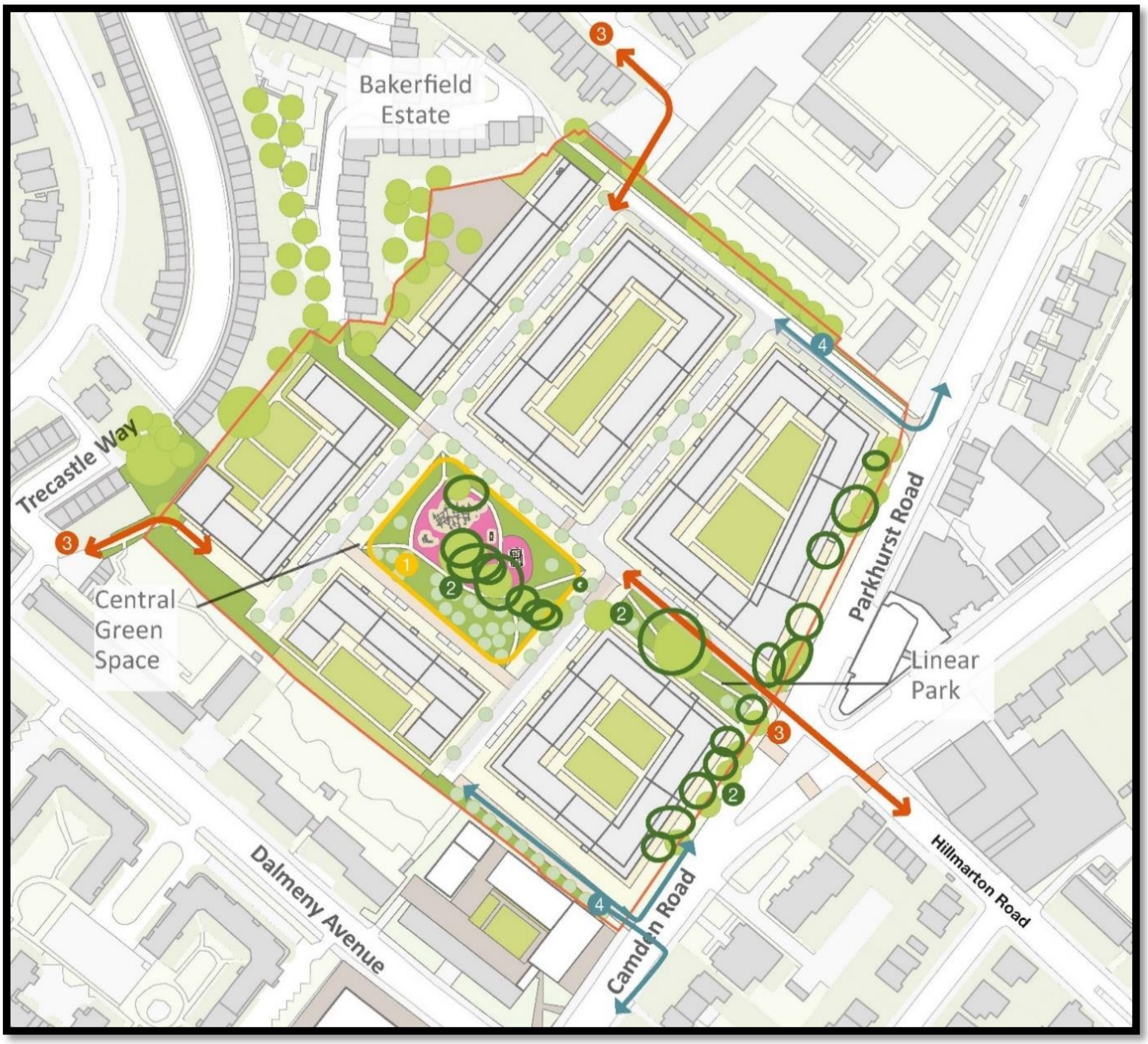
4.3.3 From the outset of the design process, the key planning and development objectives noted above were considered by the Applicant as key design drivers. Such design drivers were further refined via more detailed analysis of the Site's opportunities and constraints. In summary, the key refined design drivers which influenced the layout and massing of built form on the Site are summarised as follows:

- The opportunity to provide clear desire lines through the Site, relating to the location of nearby public transport facilities and local services which influenced the siting, location and arrangement of the Development's built form within the Site.
- The need to appropriately respond to existing townscape and visual considerations, particularly in relation to local views towards St Paul's Cathedral (Local View 4: Archway Road to St Paul's Cathedral and Local View 5: Archway Bridge to St Paul's Cathedral).
- Consideration of the LBI Capacity Study of 2017[3] which informed the following principles of design:
  - The provision of high quality open spaces and centrally located green space (label 1 in **Figure 4.1**).
  - Celebrating existing high-quality trees on-Site and maintaining the Camden / Parkhurst Road tree line (label 2 in **Figure 4.1**).
  - Restoring the axial relation to Hillmarton Road with pedestrian access and visual connection (label 3 in **Figure 4.1**).
  - Facilitating new connections to integrate the Site with the wider community (label 3 in **Figure 4.1**).

[3] Islington Council. Holloway Prison Site Capacity Study. 2017.

- Utilising existing vehicle access points and adding new access at the southern tip of the Site along Camden Road (label 4 in **Figure 4.1**). Furthermore, the complexity of the junction of Hillmarton Road and Camden Road makes it desirable to push connections into the north-east and south-east corners of the Site.
- The need to respond to level changes across the Site.
- Proximity of existing buildings to the Site, particularly in respect of potential daylight, sunlight and overshadowing issues to neighbouring residential properties and amenity spaces.
- The provision of quality accommodation which meets minimum space standards, provides an opportunity for dual aspect accommodation and has dedicated private amenity spaces which meet, or exceed minimum size standards.

Figure 4.1: Key Drivers Relating to the LBI SPD Capacity Study (Source: AHMM Design and Access Statement (DAS))



Key:

1 **Open space**
Draw community into the site with high quality public open spaces and centrally located green public open space.

2 **Trees**
Celebrate existing trees
Maintain Camden/Parkhurst road tree line, the Category A tree and others.

3 **Connections**
Restore the axial relationship to Hillmarton road with pedestrian access and visual connection. Facilitate new connections to integrate the site with wider community.

4 **Vehicles & Servicing**
Utilise existing vehicle access points and add new access point at southern tip of site along Camden road.

Design Strategy

4.3.4 Working together with the design drivers and the refined design drivers, several key design strategies also guided the overall design process. These are summarised as follows:

- Learning from many homes built and managed by the Applicant to create:
  - Excellent opportunities for public realm by positioning clear simple buildings around shared public space.
  - Permeability and views through sites by creating gaps between clear simple blocks.
  - Homes with direct access from courtyards to create activation and a sense of community.
  - Articulation of façades to create varied silhouettes and streetscapes.
- Providing an appropriate typological response given the key aspiration for a significant proportion of on-Site affordable homes.
- Being inspired by the best mansion blocks in London, which:
  - Provide buildings facing onto streets and a clear demarcation of public and private spaces.
  - Provides the opportunity for good quality shared internal amenity space.
  - Allows a relatively dense occupation without the buildings becoming very tall.
- Reconnecting the city through the Site and stitching the Site back into the surrounding fabric (as opposed to the presence of the former Holloway prison which 'turned its back' on its surroundings).

4.4 Alternatives Approaches to Design - Design Evolution

4.4.1 In discussion with key stakeholders the design proposals evolved through many various iterations. These iterations / alternative approaches were appraised and evaluated to understand their beneficial and adverse aspects, so as to generate a clear set of parameters to move the design proposals forward, culminating in the Development. Key points in this process, and how environmental factors influenced the process, are outlined as follows.

The Design Review Panel (DRP) - July 2019 Design (Option 1)

4.4.2 In the very early stages of the design process (November 2017), the key concept of a central park surrounded by smaller grain plots with communal buildings and buildings proposed close to the Site boundaries was established.

4.4.3 In July 2019 the masterplan for the Site was presented to the LBI's Design Review Panel[4] (DRP) and encompassed the following features (refer to **Figure 4.2**):

- Long central park spaces positioned as an extension to Hillmarton Conservation Area.
- Focal point building with additional height on the axis to the central park space.
- Two large courtyards creating communal space for residents of the Site.
- Smaller point blocks forming the edge to the ring road that connected the access points at all corners.

Figure 4.2: Ground Plan Presented to DRP July 2019 (Source: AHMM's DAS)

[4] A DRP is a meeting of independent professionals with architectural and design expertise who assess pre-application schemes within the borough and occasionally post-application schemes.

The LBI Members Briefing - September 2019 Design (Option 2)

4.4.4 A further iteration of the design was presented to the LBI Members in September 2019. As shown in **Figure 4.3**, the important features remain similar to the DRP July 2019 Scheme. The long central park was maintained as were the two large courtyards creating communal space for residents. Additional height was added to the building at the north-west end of the central park. Smaller point blocks were replaced by linear blocks to form clear routes to the main connections of Trecastle Way and Crayford Road. The frontage along Camden Road and Parkhurst Road was lowered in height to reduce the perceived height of the proposals as seen from the Hillmarton Conservation Area and concentrate the bulk of the mass internally within the Site.

Figure 4.3: Ground Plan Presented to Members September 2019 (Source: AHMM DAS)

4.4.5 Key feedback from the LBI Members centred around:

- Daylight and sunlight performance not meeting the required standards, thereby suggesting there was too much mass proposed for the arrangement of spaces and buildings.

- Significant height towards the rear of the Site created townscape concerns when comparing the proposed scale of built form to the existing scale of built form.

4.4.6 It was evident that there were issues in relation to the overshadowing of gardens and windows to Bakersfield and Penderyn Way (north-west of the Site) which required spaces towards the south to be opened up, reducing the height of proposals on the southern edge of spaces and creating multiple routes for light into the Site to ensure good sun coverage throughout the day.

The DRP - March 2020 Design (Option 3)

4.4.7 In response to the commentary from the LBI Members and the LBI officers, a new approach to design was taken in early 2020. This new approach was further informed by a more detailed understanding of Site constraints and opportunities. As such, the design evolution at this stage sought to address the following:

- Site characteristics including topography and trees.
- Key potential pedestrian routes and connections.
- Road access arrangements.
- Integration of the Site into its broader context.
- Opportunities to create high quality open space and public realm, retaining trees where possible and putting the landscape strategy at the heart of the design.
- A comprehensive review of the design approach previously taken, giving due regard to the Holloway Prison Site SPD.
- The approach to scale and massing giving due regard to the constraints and opportunities of the Site and its relationship with its surroundings; a particular emphasis was placed upon establishing acceptable levels of daylight, sunlight and overshadowing within the Site and minimising daylight, sunlight and overshadowing effects upon neighbours.

4.4.8 The revised design for the Site was presented to the DRP again in March 2020. It included the following important features which are also illustrated in **Figure 4.4** and **Figure 4.5**:

- A central park space based around the existing trees and mature landscape.
- Two courtyard plots with tall corners and reduced height linking blocks to the south-west for light.
- Town houses lining the south-west boundary to create a street condition.
- Reduced bulk and massing towards the edges of the Site and a concentration of massing in the centre of the Site, away from the Site boundaries.

4.4.9 Key feedback from the DRP centred around the following aspects:

- Whilst there were some concerns about density and massing, it was accepted that the suggested approach on a central urban site was appropriate. The urban form had developed well in terms of breaking up the previously big volumes into smaller ones.
- The proposal to retain many existing and mature trees was welcomed.
- Positive feedback was provided with regards the introduction of commercial space on Camden Road and along the Parkhurst frontage.
- Concern was still expressed around daylight and sunlight issues both internally, within the Site and to surrounding neighbours.

Figure 4.4: Ground Plan Presented to the DRP in March 2020 (Source: AHMM DAS)

Figure 4.5: Plan Showing the Design in March 2020 (Source: AHMM DAS)

4.4.10 This design was considered to result in proposals which were more beneficial in terms of the number of existing trees that could be retained, the creation of more believable connections, and a more sensitive approach to how the individual blocks were arranged on the Site. In addition, this design benefitted from improved sun-on-ground results with between 40% - 80% of relevant spaces receiving two hours of sunlight or more on the 21st of March. The number of units which were dual aspect increased to 65% which resulted in improved daylight and sunlight levels. Overall, the massing was more evenly distributed without a taller building towards the west boundary which reduced levels of overshadowing to neighbours.

The October 2020 Design (Option 4)

4.4.11 The October 2020 design was, essentially, a refinement of the March 2020 design. As such, it incorporated more detail and minor amendments as discussed with the LBI Officers. As a result, the design included the following new and improved features (refer to **Figure 4.6**):

- A strong focal point taller building to the top of the park, within the north of the Site.
- Corner balconies creating generous open corners to residential units at those locations.
- A stepped façade line along Camden Road and Parkhurst Road.
- Generous long elevations holding the edge of the central public space.
- Improved sun-on-ground results with between 50% - 80% of relevant spaces receiving two hours of sunlight or more on the 21st of March.

Figure 4.6: The October 2020 Design (Source: AHMM DAS)

The DRP - July 2021 Design (Option 5)

4.4.12 A wind assessment was carried out by the Applicant's wind microclimate consultant (RWDI) in October / November 2020. This comprised full wind tunnel testing. The results of the wind tunnel testing concluded that the majority of areas in and around the Site would be suitable for the intended pedestrian use during the windiest season. Some entrance points located at the tightest point between Plot C and Plot D (within the south and south-western parts of the Site) were identified as requiring mitigation.

4.4.13 Responding to the results of the October / November 2020 wind tunnel testing, the July 2021 design increased the gap between Plots C and Plot D to ensure a suitable and comfortable wind microclimate in this area.

4.4.14 Community and stakeholder feedback on the October 2020 design (including feedback from the Public Consultation events as outlined later in this Chapter) led to a further change in approach to design, with changes largely driven by an effort to improve aspect, the availability of daylight and sunlight to both existing surrounding neighbouring residential properties and proposed residential units, views through the Site, and permeability through the Site. Consequently, as shown in **Figure 4.7**:

- Plot F was removed to increase the distance from the built form to surrounding neighbours.
- Plot D was reduced in height and gaps were opened up within it, increasing sun-on-ground in the central park.
- A separate 'pavilion' for the Women's Building was created within Plot C increasing sun-on-ground to the Women's Garden.
- Plot E was reduced in height to improve its relationship with the surrounding neighbours, a gap created through the Plot and its position in relation to the Site boundary reassessed.
- Plots A and B had mass removed and gaps opened up, and the buildings split, to improve the relationship with the surrounding neighbours and to improve light to the public open spaces.
- The pavilions to Plots A and B were removed to improve the availability of light to the public open spaces.

Figure 4.7: The July 2021 Design (Source: AHMM DAS)

4.4.15 The design presented to the DRP in July 2021 reflected these changes and was considered to result in a design that was more beneficial in terms of views through the Development, overall permeability, and the availability of daylight and sunlight to neighbours. As a result, the percentage of dual aspect homes improved from 65% to 95%, which had the combined benefits of increasing internal daylight, improving views and helping to mitigate overheating by provide additional openings for ventilation.

4.4.16 Key feedback from the DRP in relation to the July 2021 design, together with the Applicant's subsequent design responses are summarised in **Table 4.1**.

Table 4.1: Design Responses to Comments Made During July 2021 DRP

Feedback from the DRP	Design Response
More could still be made of the connections. More emphasis is needed as to how these connections lead out and into their neighbourhoods. The DRP advised that the connections need to be as well integrated as possible into the overall form of the scheme.	The massing of the scheme was amended to improve the visibility of the connections.
Suggested a less solid form to Block E1.	The massing was amended to reduce height more significantly on the corner of Block E1 as it meets the Trecastle Connection.
Block D concierge facility – concern this only serves market units. Recommends some such facilities be included to other blocks with a mix of tenures. Shared workspace, included in the communal facilities, and potentially elsewhere on the Site, would benefit residents and the scheme in general.	The concierge facility was made available to all on-Site residents.
Ground floor interface – The DRP queried how the buildings met the edges of the internal street pavements and considered that some appeared to be uncomfortably tight to pavement edges. Key design consideration is how the base of Block D meets and addresses park.	The setting out of the buildings was considered further and the interface detail was developed, in particular for Plots A, B and D.
Block B2 – The DRP recommended that the Parkhurst Road frontage elevation in particular be 'broken down' and more strongly articulated in order to mitigate the height, bulk and mass.	The Parkhurst Road frontage was broken down into two separate elements which afforded views and an increased availability of light.
Landscape – would have been keen for further detail.	Further landscaping detail was provided setting out the proposals for a number of public and communal spaces.
Encouraged to pursue inventive ways of introducing daylight to the common circulation areas, stairwells and corridors, to create attractive and sustainable routes to individual front doors.	Internal corridors were extended to the façade to improve light and ventilation for buildings in Plot A and Building E1.

4.5 Design and Consultation

4.5.1 As outlined in **Section 4.4** of this Chapter extensive pre-application consultation occurred with the LBI and the DRP. Moreover, such consultation was a fundamental factor that heavily influenced the design evolution process. However, consultation was also undertaken with a range of other key stakeholders, including:

- The Greater London Authority (GLA).
- Transport for London (TfL).
- London Underground Limited (LUL).
- The Environment Agency (EA).
- Historic England.
- Metropolitan Police Design Out Crime Officer.
- London Fire Brigade.
- Local residents, neighbours, amenity societies and other key stakeholders.

4.5.2 With regards public consultation, three public consultation events were held in June 2019, June 2020 and July 2021. A public exhibition was also held in October 2021.

4.5.3 Full details of the public consultation undertaken are included in the Statement of Community Involvement which is submitted as a stand-alone document in support of the detailed planning application. The Design and Access Statement also submitted as a stand-alone document in support of the detailed planning application outlines the responses made to the design following the public consultation process.

Response to feedback from July 2021 Consultation (Option 6)

4.5.4 In summary, following the presentation to the DRP in July 2021 and the public consultation even in July 2021, further refinements were made to the design, including:

- A further reduction of the massing and height of Plot E (located in the north-west of the Site), pushing back the ridge line from views of the Penderyn Way properties.
- A revision to the size and position of the roof terrace on Plot E to omit the terrace facing the Penderyn Way, thereby illuminating overlooking issues.
- A stepping down of the massing at the south end of Plot A (in the north of the Site) to further improve levels of daylight and sunlight to neighbouring residential properties and amenity areas.

4.6 A Comparison of Environmental Effects

4.6.1 With reference to **Section 4.5** of this Chapter, it is clear that a number of key design alternatives evolved with time in response to a thorough pre-application process which was influenced by consultation with the LBI, other statutory consultees, public consultation and various constraints and opportunities associated with the Site.

4.6.2 Giving due consideration to the environmental topics scoped into this ES, **Table 4.2** provides a qualitative comparative assessment of environmental effects between the six Options described in **Section 4.5** of this Chapter. It should be noted that this comparison is based on professional judgement only and is undertaken on a broad 'traffic light' system to allow for a clear visual representation of how the six Options compare to each other.

In this respect, the use of the colours red, amber and green demonstrate a gradual comparative improvement in environmental performance for the environmental topic considered in **Table 4.2**. In addition, the colour red represents an unacceptable environmental effect, the colour orange represents a neutral environmental effect and the colour green represents an acceptable environmental effect. For example, with reference to townscape, visual and built heritage matters, Option 2 (coloured red) was the worst performing Option compared to Options 1, 3, 4, 5 and 6. However, Options 5 and 6 (coloured green) were the best performing Options for townscape, visual and built heritage matters when compared to Options 1, 2, 3 and 4. In contrast, with reference to air quality and noise and vibration matters, Options 1 to 6 inclusive (coloured amber) are not considered to be materially better or worse.

Table 4.2: A Comparison of the Environmental Effects

Environmental Parameter / Design Options	Socio-economics	Air Quality	Noise and Vibration	Ecology	Wind Microclimate	Daylight, Sunlight and Overshadowing	Greenhouse Gases	Townscape, Visual and Above Ground Built Heritage
DRP, July 2019 (Option 1)								
LBI Members Briefing, Sept 2019 (Option 2)								
DRP, March 2020 (Option 3)								
Oct 2020 Design (Option 4)								
DRP, July 2021 (Option 5)								
Response to Consultation (Option 6)								

4.7 The Development

4.7.1 As a result of the iterative design process 15 buildings within five Plots were carefully positioned across the Site, accommodating residential and flexible commercial land uses together with a Women's Building, in addition to providing extensive public and communal spaces for all residents. The design of the final Development, as described in **ES Volume 1, Chapter 5: The Development** responded to feedback from a comprehensive consultation process and was influenced by various environmental factors, as outlined above.

5. The Development

5.1 Introduction

5.1.1 This Chapter provides a description of the Development, as defined by the detailed planning application, and is supported by **ES Volume 3, Appendix 5.1: Detailed Planning Application Drawings**.

5.1.2 The Development is described as:

"Phased comprehensive redevelopment including demolition of existing structures; site preparation and enabling works; and the construction of 985 residential homes including 60 extra care homes (Use Class C3), a Women's Building (Use Class F2) and flexible commercial floorspace (Use Class E) in buildings of up to 14 storeys in height; highways/access works; landscaping; pedestrian and cycle connections, publicly accessible park; car (blue badge) and cycle parking; and other associated works."

5.1.3 The description of the Development in this Chapter together with **ES Volume 3, Appendix 5.1** form the basis for the assessments presented in **ES Volume 1, Chapters 7 to 14** and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**.

5.2 Quantum of Development

5.2.1 The Development would comprise five Plots (A, B, C, D, and E) and would include a total of 15 separate Buildings (with 17 cores). A breakdown of the proposed floorspace and residential unit numbers per Plot is provided in **Table 5.1** below.

Table 5.1: Proposed Floorspace and Residential Unit Numbers

Plot	Land Use and Classes	Gross External Area (GEA**) (Sqm)	Gross Internal Area (GIA*) (Sqm)	Net Internal Area (NIA***) (Sqm)	Number of Residential Units
A	Residential (C3)	-	22,990	17,006	235
B	Residential (C3)	-	29,496	21,517	321
	Commercial (E)	1,819	1,667	1,152	
C	Residential (C3)	-	15,158	11,346	155
	Women's Building (F2)	1,610	1,489	1,409	
	Commercial (E)	168	155	142	

Plot	Land Use and Classes	Gross External Area (GEA**) (Sqm)	Gross Internal Area (GIA*) (Sqm)	Net Internal Area (NIA***) (Sqm)	Number of Residential Units
D	Residential (C3)	-	18,234	13,677	183
	Shared Residential Facilities (C3)	1,412	1,334	1,156	
E	Residential (C3)	-	8,997	69,493	91
Total					**985**

5.3 Detailed Planning Application Drawings

5.3.1 A series of Detailed Planning Application Drawings were submitted to the London Borough of Islington (LBI) for approval. For ease of reference, a selection of Detailed Planning Application Drawings, as presented in **ES Volume 3, Appendix 5.1**, are listed within **Table 5.2**.

Table 5.2: Detailed Planning Application Drawings Included within ES Volume 3, Appendix 5.1

Detailed Planning Application Drawing Title	Drawing Reference Number
Demolition Plan	
Existing Site: Buildings to be Demolished	17105_0_(01)_P110
Site Layout and Massing Plans	
Masterplan: Proposed Site Plan	17105_0_(00)_P100
Masterplan: Proposed Northeast Elevation	17105_0_(00)_P200
Masterplan: Proposed Southeast Elevation	17105_0_(00)_P201
Masterplan: Proposed Southwest Elevation	17105_0_(00)_P202
Masterplan: Proposed Northwest Elevation	17105_0_(00)_P203
Land Use Plans	
Masterplan: Lower Ground Floor	17105_0_(00)_P117
Masterplan: Upper Ground Floor Plan	17105_0_(00)_P118
Masterplan: First Floor Plan	17105_0_(00)_P119

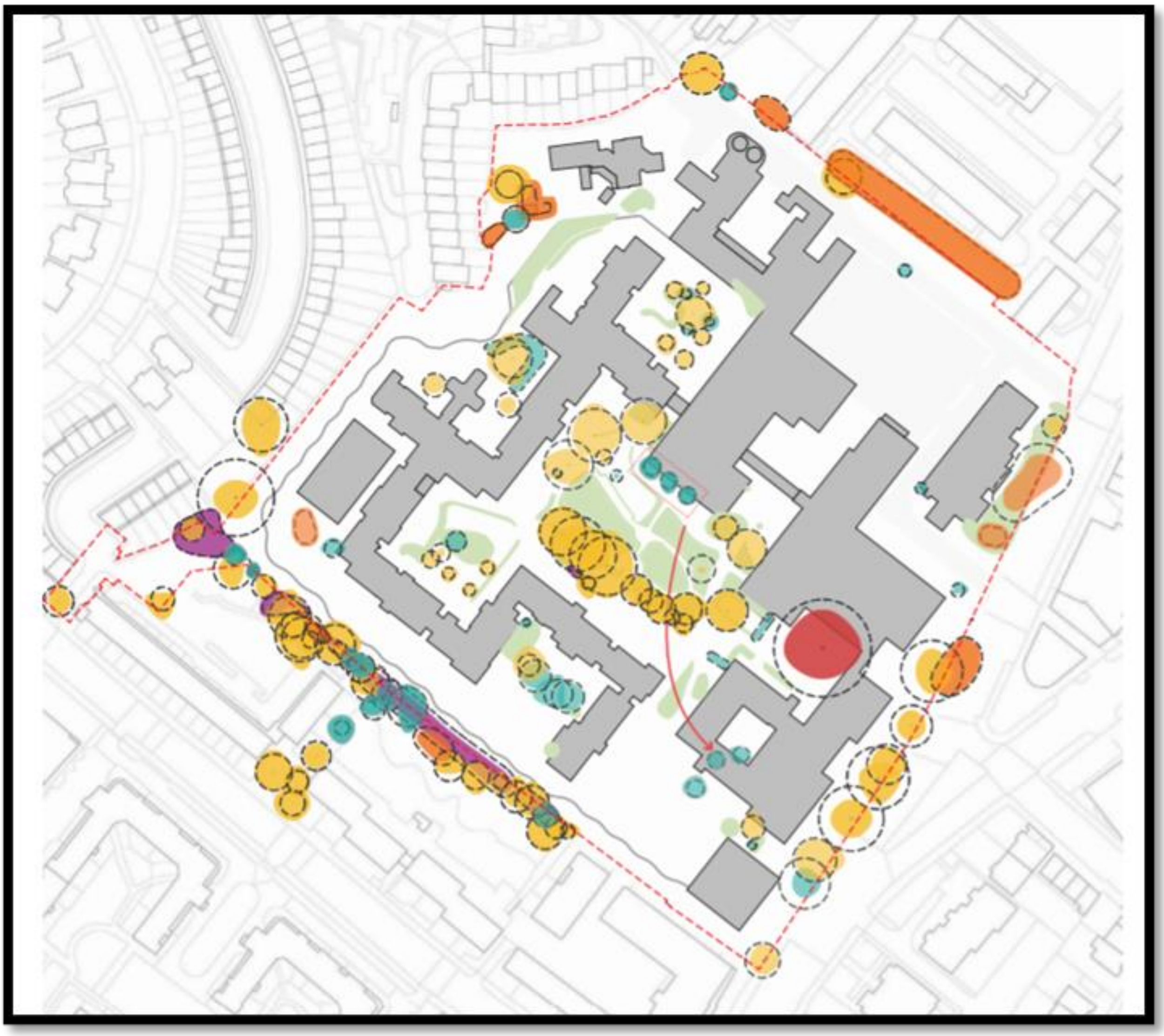
Detailed Planning Application Drawing Title	Drawing Reference Number
Masterplan: Typical Floor Plan	17105_0_(00)_P121
Masterplan: Roof Plan	17105_0_(00)_P122
Masterplan: Bird and Bat Box Scope	17105_0_(00)_P150
Landscape Plans	
Landscape General Arrangement Plan – Ground Floor	1947-EXA-ZZ-ZZ-DR-L-00100
Landscape General Arrangement Plan – Roof	1947-EXA-ZZ-ZZ-DR-L-00110

5.4 Structures to be Demolished and Elements of the Existing Site to be Retained

5.4.1 All existing buildings and structures on-Site would be demolished. There are a total of 73 individual trees, 13 groups of trees and three hedgerows on the Site. This includes one Category A (high quality) tree, 49 individual and four groups of Category B (moderate quality) trees, 22 individual, nine groups of trees and three hedges classified as Category C (low quality), and one category U (very low quality) tree. 44 individual trees (25 Category B, 18 Category C and one Category U), 10 tree groups (three Category B and seven category C) and three hedgerows (Category C) would be removed to facilitate the Development. The single Category A tree on-Site would be retained together with 24 individual and one group of Category B trees, and four individual and two groups of Category C trees. Three cherry trees (T20, T21 and T22 currently located to the west of Main Complex Block 2 would be retained and relocated as part of the Development; it is proposed that they would be relocated within the Women's Garden adjacent to Plot C.

5.4.2 A demolition plan is included within **ES Volume 3, Appendix 5.1. Figure 5.1** shows the locations of the trees to be retained and relocated within the Development.

Figure 5.1: Trees to be Retained and Relocated Within the Development



5.5 Development Layout and Massing

5.5.1 The Development would comprise the construction of 15 buildings across five Plots referred to as Plots A, B, C, D, and E. The five Plots would be subdivided as follows:

- Plot A: Buildings A1 / A2 (2 cores within 1 building), A3 and A4.
- Plot B: Buildings B1, B2, B3, B4 / B5 (2 cores within 1 building) and B6.
- Plot C: Buildings C1 and C2.
- Plot D: Buildings D1, D2 and D3.
- Plot E: Buildings E1 and E2.

5.5.2 Plot A would be located in the north of the Site adjacent to the adjacent Bakersfield Estate. Plot B would be positioned in the east of the Site adjacent to Parkhurst Road (A503). Plot C would be in the south of the Site adjacent to Camden Road and the rear of properties along Dalmeny Avenue. Plot D would be positioned in the south-west of the Site adjacent to the rear of those properties along Dalmeny Avenue, and Plot E in the west of the Site adjacent to those properties along Dalmeny Avenue, Trecastle Way and Penderyn Way. **Figure 5.2** shows the proposed layout of the Plots on Site.

Figure 5.2: Layout of the Development (Source: AHMM)

5.5.3 A new internal road would be introduced as part of the Development. This would traverse through the Site from the existing Site access on Parkhurst Road (A503) in the eastern corner to a new Site access point in the south of the Site onto Camden Road. In addition, there would be three pedestrian access points from Parkhurst / Camden Road (A503) and a connection from Trecastle Way from the western side of the Site.

5.5.4 The massing of the Development shown in **Figure 5.3** below. Further details can be obtained by reference to **ES Volume 3, Appendix 5.1.**

Figure 5.3: Development Massing (Source: AHMM DAS)

5.5.5 **Table 5.3** provides detail on the massing of the Development.

Table 5.3 Development Massing

Plot	Building / Core (where stated)	Number of Storeys[1]	Height Above Ordnance Datum (AOD)
Plot A	A1 (Core)	7 – 9	+ 66.050 AOD
	A2 (Core)	2 – 9	+ 62.950 AOD
	A3	8 – 9	+ 68.375 AOD

[1] Storey heights include the lower and upper ground floors. i.e., a building with a lower and upper ground floor and seven upper floors is defined as a building comprising nine storeys.

Plot	Building / Core (where stated)	Number of Storeys[1]	Height Above Ordnance Datum (AOD)
	A4	8 – 9	+ 67.645 AOD
Plot B	B1	8 – 9	+ 65.675 AOD
	B2	8	+ 67.00 AOD
	B3	8	+ 66.95 AOD
	B4 (Core)	9	+ 72.425 AOD
	B5 (Core)	11	+ 77.625 AOD
	B6	8	+ 63.75 AOD
Plot C	C1	12 – 14	+ 87.675 AOD
	C2	8 – 10	+ 77.625 AOD
Plot D	D1	10	+ 75.275 AOD
	D2	9	+ 70.1 AOD
	D3	8	+ 68.675 AOD
Plot E	E1	5 – 7	+ 66.125 AOD
	E2	7	+ 65.77 AOD

5.5.6 Each Plot is described below in terms of its location within the Development, height and proposed use.

Plot A

5.5.7 Plot A is located in the northern corner of the Site, adjacent to Bakersfield Estate and the Holloway Estate. Plot A includes four buildings (referred to as Buildings A1/A2, A3 and A4) that are connected at upper ground level. Cores A1 and A2 visually appear as one building, with adjoining party walls. Buildings A3 and A4 are separated to allow for an additional link to the courtyard from the street.

5.5.8 The buildings are proposed to be distributed around a semi-private landscaped courtyard for use by all residents of Plot A which has pedestrian only access. The courtyard is 21m wide.

5.5.9 The courtyard is set above a semi-sunken podium. This accommodates bike storage, bins, plant and other ancillary uses. Each of the buildings has a maximum height of nine storeys.

5.5.10 The massing of Building A1/A2 steps down significantly. Building A1 steps down from nine storeys to four storeys and Building A2 steps down from nine storeys to two storeys. A stepped massing is also proposed on Buildings A3 and A4 from nine storeys to eight and seven storeys respectively. The stepping of the buildings within Plot A allows for the provision of bio-diverse roofs and private terraces on each building for residents. A communal rooftop terrace is provided at the southern extent of Building A3 where the building steps down from nine to seven storeys.

5.5.11 The residential units facing the new road (which would run between Plots A and B) would benefit from individual private entrances and gardens at street level to activate the frontage.

5.5.12 To maximize the number of dual aspect apartments, projecting corners with windows would exist on the façade of each building to increase façade length, improve aspect and maximise internal light.

5.5.13 Further details can be obtained by reference to **ES Volume 3, Appendix 5.1.**

Plot B

5.5.14 Plot B is located in the north-eastern portion of the Site adjacent to Camden Road / Parkhurst Road (A503) and the Holloway Estate. Plot B would be the largest of the Plots, comprising five buildings referred to as Buildings B1, B2, B3, B4 / B5 and B6. Four of the buildings (B1, B2, B4 / B5 and B6) would be connected at the lower ground level beneath a central courtyard. Building B3 is not proposed to be connected to the other buildings in the Plot. The massing of Building B4 / B5 would be connected while the other buildings would be separate identifiable volumes. The buildings would be centred around a pedestrian access, semi-private landscaped communal courtyard which could only be accessed by residents of Plot B. Private amenity spaces are also proposed which are dedicated to individual apartments at the upper ground level.

5.5.15 The central courtyard is proposed to be 22m to 27m wide.

5.5.16 Buildings B1, B2 and B3 are each proposed to be seven storeys in height. The massing of Building B1 steps down to six storeys to protect the local views towards St. Paul's Cathedral. Core B4 would be eight storeys in height, Core B5 10 storeys, and Building B6 six storeys. Building B6's height is set at six storeys to also protect the local views towards St. Paul's Cathedral.

5.5.17 Rooftop terraces would be provided on top of Building B1 and Core 4 of B4 / B5. Residents of these two buildings would have stair and lift access to these.

5.5.18 Projecting corners with windows are proposed to be introduced to the façade of each building in order to increase the number of apartments with dual aspects.

5.5.19 Commercial uses are proposed within Buildings B4 / B5 and B6, with a mix of double and single storeys. These would be accessed from Camden Road / Parkhurst Road (A503).

5.5.20 Further details can be obtained by reference to **ES Volume 3, Appendix 5.1.**

Plot C

5.5.21 Plot C is proposed to be located within the south-west of the Site adjacent to Camden Road / Parkhurst Road (A503) and buildings which front on to Dalmeny Avenue. Plot C would be largely residential and comprises two Buildings: C1 and C2. The two buildings are connected at the lower and upper ground levels by a Women's Building.

5.5.22 Building C1 is proposed to be 14 storeys in height and Building C2 is proposed at 11 storeys in height. The Women's Building would span the lower and upper ground levels of the Plot.

5.5.23 The primary entrance to the Women's Building would be located between the two buildings and approached from an open and elevated terrace facing Camden Road and Parkhurst Road (A503). The Women's Building would have access to a private Women's Garden at the rear of the Plot.

5.5.24 Plot C is located a minimum of 18m away from the Cat & Mouse Library to the south-east.

5.5.25 Projecting corners with windows are proposed to the façade of each building in order to increase the number of apartments with dual aspects.

5.5.26 The top two floors of the south-east elevation of the buildings facing onto Camden Road / Parkhurst Road (A503) would be stepped to create rooftop amenity space for the building residents; this would comprise both private and communal amenity space.

5.5.27 Further details can be obtained by reference to **ES Volume 3, Appendix 5.1.**

Plot D

5.5.28 Plot D would be located in the southern edge of the Site located adjacent to the buildings which front onto Dalmeny Avenue. The Plot would comprise three buildings, D1, D2 and D3 which would all be connected at the lower ground level.

5.5.29 Building D1 is proposed to be 10 storeys in height, D2 is nine storeys and D3 is 8 storeys. The south-west elevation of Buildings D1 and D2 step down to nine and eight storeys respectively. This would create rooftop amenity space for the residents of these buildings. This would also respond to views LV4 and LV5 views from Archway towards St. Pauls Cathedral. Buildings D1 and D2 are also proposed to step down along the park façade. This would also create private terraces to top floor apartments.

5.5.30 Between each building is proposed to be a shared pedestrian access courtyard amenity space comprising communal space and private amenity, for use by building residents only. The buildings would be spaced 18m apart to allow sunlight in the public park and also to break up the length of elevation facing the park.

5.5.31 The Plot is proposed to be largely residential with a number of shared resident facilities. Exact uses would be driven by market demand but indicative uses include a concierge, post rooms, gym, workspace, rentable dining space, screening room as well as associated ancillary uses. The facilities would be available to all residents living in the Development.

5.5.32 To increase the number of dual aspect apartments, parts of the mass (corners) of the buildings would be pushed out to give an outlook towards the new park proposed as part of the Development and towards the amenity spaces set between the buildings.

5.5.33 Communal roof terraces would be provided on Building D1 and D2, accessible by Building D1 and D2 residents only and all three buildings within Plot D would have private amenity space at roof level.

5.5.34 Further details can be obtained by reference to **ES Volume 3, Appendix 5.1.**

Plot E

5.5.35 Plot E is proposed in the western extent of the Site adjacent to Trecastle Way and Penderyn Way. The Plot would comprise two buildings, E1 and E2. The buildings are not proposed to be connected at any level.

5.5.36 Both buildings would be seven storeys in height. The north-east elevation of Building E1 steps down to five storeys to provide a communal roof terrace for residents of this building.

5.5.37 Building E1's south-eastern façade line is proposed to run at an angle to the new street edge in order to open up the view from the new park towards a new connection to Trecastle Way. The stepping of the façade is proposed to provide dual aspect and maximise views towards the new park.

5.5.38 To the rear of Building E1, at ground floor level, is proposed to be a sensory garden and a private amenity space for use by building residents only. To the rear of Building E2, a communal garden is proposed for residents of the building.

5.5.39 Residents' communal spaces set at ground floor level of Building E1 would provide social spaces / ancillary accommodation and other amenities.

5.5.40 Further details can be obtained by reference to **ES Volume 3, Appendix 5.1.**

5.6 Land Uses

5.6.1 As detailed in the above sections, the Development would provide a mix of land uses, the location and composition of which is described as follows. Detailed plans showing the location and distribution of land uses across the Development are provided within **ES Volume 3, Appendix 5.1.**

Residential Land Uses (Use Class C3)

5.6.2 The Development would provide 985 residential units, including extra care homes. **Table 5.4** to **Table 5.8** provide the breakdown of total residential units proposed within each Plot, as well as the breakdown of social rent (affordable), London Shared Ownership, and market accommodation together with the size of unit proposed.

Table 5.4: Residential Unit Mix of the Development

Plot	One-Bed	Two-Bed	Three-Bed	Four-Bed	Total
Plot A	50	150	26	9	**235**
Plot B	123	177	18	3	**321**
Plot C	33	75	46	1	**155**
Plot D	17	142	24	-	**183**
Plot E	66	25	-	-	**91**
Total	**289**	**569**	**114**	**13**	**985**

5.6.3 Affordable housing units would be provided within all Plots. Of the 985 dwellings proposed, 593 would be affordable units comprising social rent and London Shared Ownership tenures. The 593 units would be split 70% social rent and 30% London Shared Ownership. **Table 5.5** provides the breakdown and the mix of unit sizes proposed of affordable residential units.

Table 5.5: Affordable Residential Unit Mix of the Development

Plot	One-Bed	Two-Bed	Three-Bed	Four-Bed	Total
Plot A	33	100	26	9	**168**
Plot B	71	103	15	3	**192**
Plot C	33	75	46	1	**155**
Plot D	5	13	-	-	**18**
Plot E	60	-	-	-	**60**
Total	**202**	**291**	**87**	**13**	**593**

5.6.4 Social rent units would be provided within Plots A, B, C and E. It is proposed that 415 (42%) of the 985 proposed dwellings would be social rent tenure. **Table 5.6** provides the breakdown and the mix of unit sizes proposed of social rent units.

Table 5.6: Social Rent Residential Unit Mix of the Development

Plot	One-Bed	Two-Bed	Three-Bed	Four-Bed	Total
Plot A	13	68	26	9	**116**
Plot B	-	66	15	3	**84**
Plot C	33	75	46	1	**155**
Plot E	60	-	-	-	**60**
Total	**106**	**209**	**87**	**13**	**415**

5.6.5 The social rent units in Plot E (all located in Building E1) are proposed to be wheelchair accessible extra care housing for older people and would include associated facilities for assisted use for the elderly.

5.6.6 London Shared Ownership units would be provided within Plots A, B and D. It is proposed that 178 (18%) of the 985 proposed dwellings would be London Shared Ownership tenure. **Table 5.7** provides the breakdown and the mix of unit sizes proposed of London Shared Ownership units.

Table 5.7: London Shared Ownership Residential Unit Mix of the Development

Plot	One-Bed	Two-Bed	Three-Bed	Four-Bed	Total
Plot A	20	32	-	-	**52**
Plot B	71	37	-	-	**108**
Plot D	5	13	-	-	**18**
Total	**96**	**82**	**0**	**0**	**178**

5.6.7 Market accommodation units would be provided within Plots A, B, D and E. it is proposed that 392 (40%) of the 985 proposed dwellings would be market housing. **Table 5.8** provides the breakdown and the mix of unit sizes proposed of market residential units.

Table 5.8: Market Residential Unit Mix of the Development

Plot	One-Bed	Two-Bed	Three-Bed	Four-Bed	Total
Plot A	17	50	-	-	**67**
Plot B	52	74	3	-	**129**
Plot D	12	129	24	-	**165**
Plot E	6	25	-	-	**31**
Total	**87**	**278**	**27**	**0**	**392**

Women's Building (Use Class F2)

5.6.8 As detailed in **Section 5.5** in the above, a Women's Building would be provided within Plot C on the lower ground and upper ground floors. This is intended to be a women-only space, with separate and secure access and outdoor amenity space. The Women's Building would incorporate a safe space to support women and provide services for women. The provision of women's services would be beneficial in enabling the rehabilitation and integration of hard-to-reach groups of women beyond those in the criminal justice system; including those that are vulnerable, homeless, and those that fall between services and agencies.

5.6.9 The proposed quantum to be provided for the Women's Building is set out within **Table 5.1.**

Commercial (Use Class E)

5.6.10 As noted in **Section 5.5** above, commercial uses will be provided within Plots B and C. The commercial land uses would be provided at the lower ground levels of Building B5 / B6 of Plot B and the lower ground level of Building C1 of Plot C. Commercial uses are currently flexible but the Development has been designed so that these could include range of units that can accommodate uses such as a supermarket, small-scale retail units, small offices, or cafés, bars, or restaurants.

5.6.11 The proposed quantum to be provided for the commercial use is set out within **Table 5.1.** Detailed plans showing the location and distribution of the commercial land uses across the Development are provided within **ES Volume 3, Appendix 5.1.**

Resident's Shared Facilities (Use Class C3)

5.6.12 Plot D of the Development would include the resident's shared facilities, available to all residents living in the Development. The exact uses shared facilities would be led by market demand but the indicative uses include a concierge service, post rooms, gym, workspace, rentable dining space, screening room as well as associated ancillary uses. The concierge service and post rooms would be provided on the upper ground floor of Building D2. The remaining uses would be provided on the lower ground floor of Plot D which spans the three buildings in the Plot.

5.6.13 The proposed quantum to be provided for the resident's shared facilities is set out within **Table 5.1.** Detailed plans showing the location and distribution of the resident's shared facilities across the Plot D are provided within **ES Volume 3, Appendix 5.1.**

5.7 Façade Materials and Design

Plot A

5.7.1 The façade of this Buildings A1/A2 are proposed to be light pink brick with a natural variation in tone and light mortar. Window frames and balustrades for this building would be painted metal. Balconies would also be painted metal.

5.7.2 The remaining two buildings in Plot A (A3 and A4) are proposed to have façades that will be clad with a light buff brick with natural ventilation of tone and light grey mortar to match brick tone. Balconies for these buildings would comprise precast concrete with painted metal balustrades. Window frames for these buildings would also be painted metal.

5.7.3 The communal and private amenity spaces are defined and protected by garden walls using the same brick with a concrete coping.

5.7.4 Entrances to Buildings A3 and A4 are located onto the street and benefit from generous internal headroom, with finished floor levels matching AOD levels across the street. Internal steps and a dual entry lift provide access and a visual link to the landscape courtyard.

5.7.5 Entrances from the communal courtyard to Buildings A1 and A2 would be accessible and covered for residents of each building.

Plot B

5.7.6 Buildings B1 to B3 are proposed to be a collection of similarly detailed buildings with a similar approach to materials, windows and balconies to Buildings A3 and A4. The façades of these buildings would be clad with a light buff brick with natural ventilation of tone and light grey mortar to match brick tone. Balconies for these buildings would comprise precast concrete with painted metal balustrades. Window frames for these buildings would also be painted metal.

5.7.7 Buildings B4 and B5 facades would be clad with a light grey brick with natural variation of tone and light grey mortar to match brick tone. On the long elevations of the buildings the projecting corners would hold brick balconies with painted metal balustrades. On the short façades the balconies are proposed to be pre-cast concrete and painted metal. Window frames for these buildings would also be painted metal.

5.7.8 Building B6 façade is proposed to be a darker tone than those on Buildings B1 to B5. The brickwork would be a darker red brick with natural variation of tone and light grey mortar. Balconies are proposed to be brick with painted metal balustrades on the projecting corners and on the northeast elevation. Remaining balconies would be pre-cast concrete with painted metal balustrades. Window frames would also be painted metal.

5.7.9 Entrances are proposed to be accessible and covered for residents of each building. Ramps would be provided to create accessible access through landscaped areas.

5.7.10 Commercial units would be located along Parkhurst Road and accessed from street. All commercial entrances have been designed ensuring good visibility and comfortable access for disabled and elderly customers.

Plot C

5.7.11 The upper storeys of Buildings C1 and C2 would be clad in patterned brickwork of white, cream and light brown bricks. The ground floor, where the Women's Building is proposed to be located, while connected to the upper floors, would have a special treatment with a darker palette of patterned polychromatic brickwork to contrast those of the upper floors. Glazed brick is proposed for the entrance to the Women's Building, which is characterised by three large arched openings.

5.7.12 Balconies are proposed to be pre-cast concrete with painted metal railings. Pre-cast concrete panels would also form the walls of the roof terraces. Windows within the buildings are also proposed to be painted metal.

5.7.13 The primary entrance to the Women's Building would be located between Buildings C1 and C2 and approached from an open and elevated terrace facing Camden Road and Parkhurst Road. The Women's Building has access to a private Women's Garden at the rear of Plot C. The primary residential entrance to Building C1 would be at upper ground level from the Park and the primary residential entrance to Building C2 would be at ground level on the south-western side of the building.

Plot D

5.7.14 The three residential buildings of Plot D would have a consistent approach to materials and details. Dark red and brown masonry is proposed and to be complemented by red pigmented concrete windowsills, painted metal window frames and balcony railings.

5.7.15 Balconies on the south-west and north-east elevations are proposed to be brick with painted metal railings. Those balconies on the south-east and north-west elevations are proposed to be red pigmented pre-cast concrete with painted metal balustrades.

5.7.16 The main entrance to the residents shared facilities at the north-east elevation of Building D2 would be set back below the building above, behind a brickwork colonnade. This creates a double height sheltered and protected transition zone between the park and the residents shared facilities spaces. Entrance doors with painted metal frames are proposed.

5.7.17 Buildings D1 and D3 residential entrances at the south-west elevations would be set back below a brickwork balcony overhang to provide a sheltered transition space between the street and the entrance. Timber doors and window framing are proposed.

5.7.18 The residential entrance to the southwest of Building D2 is proposed to be set back further from the kerb edge to provide a more generous pavement. A sheltered space would be created by the balcony overhang above which would be supported on brick columns. Building D2 would have a predominantly glazed frontage at ground floor to provide outlook onto the street from the residents' lounge space behind. Timber is proposed for the doors and window frames.

Plot E

5.7.19 A grey brickwork with matching mortar is proposed for Building E1. Painted metal window frames and balcony balustrading is proposed. There are three balcony types proposed. Metal balconies along the street edge, concrete and metal balconies on the side elevations and brick / metal balconies on the rear elevation.

5.7.20 Dark grey masonry is proposed for Building E2 to contrast and complement the light grey masonry of Building E1. High quality finish exposed concrete balconies would wrap around the building corners with painted metal balustrades and windows.

5.7.21 Plot E1 entrance would be clearly marked by an indentation in building massing and pre-cast concrete canopy. A double door entrance would lead residents and visitors to a lobby space.

5.7.22 The entrance to Building E2 would be designed as full height metal double door with a generous lobby glazing. The entrance is set back below corbeled canopy detail with a concrete coping.

5.8 Vehicular Access, Servicing and Car-Parking

Vehicular Access

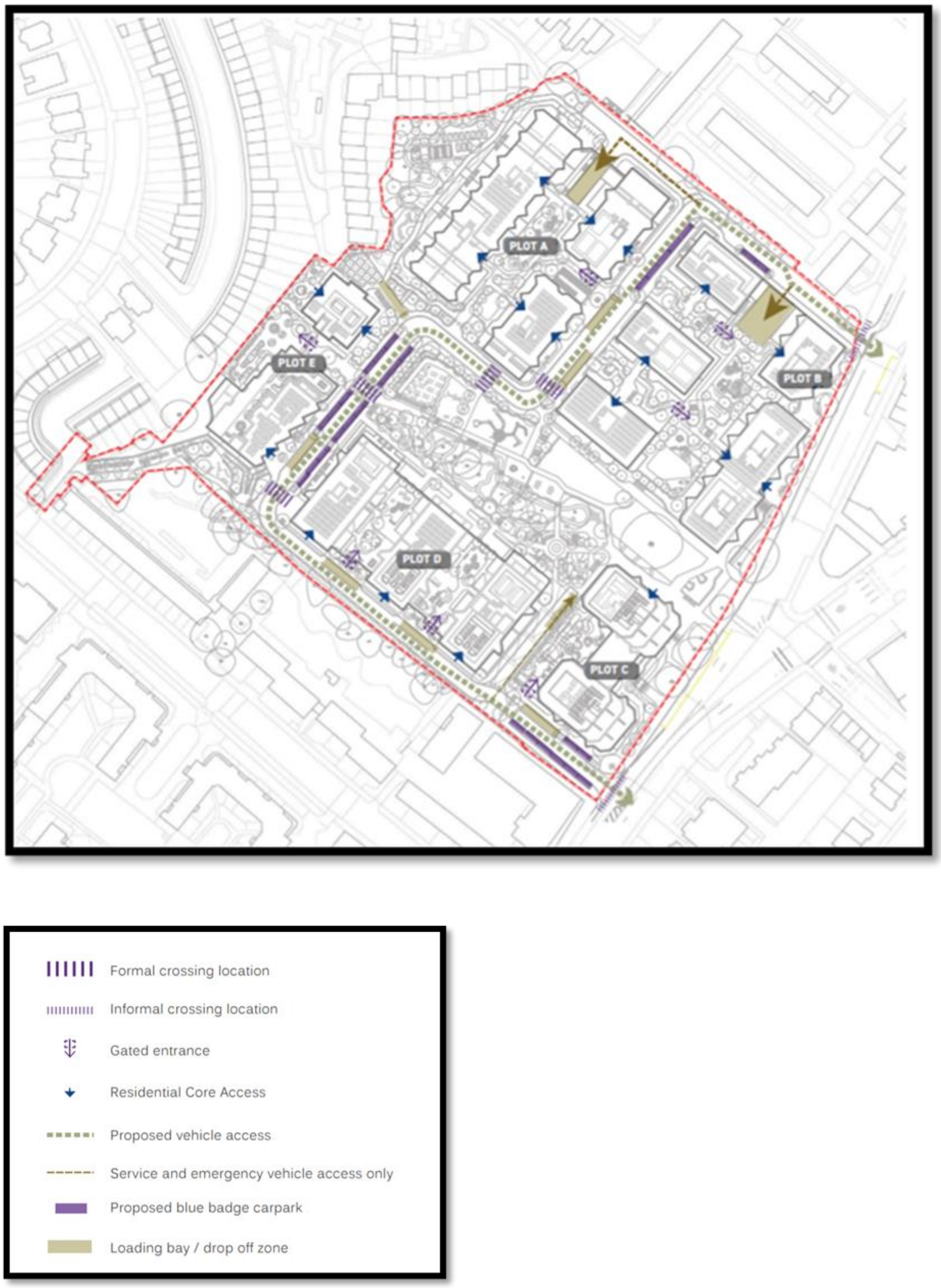
5.8.1 The key points of vehicular access would be located off the existing access onto Parkhurst Road (A503) to the east and via a new access onto Camden Road (A503) in the southern corner of the Site. The existing eastern access would be left-in / left-out whereas the southern access all movements would be allowed. Vehicles approaching the Site from the north along Camden Road (A503) via the southern access would use the existing right-turn storage lane to Dalmeny Avenue which would be modified. A new road with footways either side separated from the carriageway by kerbs would follow the Site boundary from the south of the Site (from

Camden Road (A503)), feeding into minor access roads within the Site to accessible cycle, mobility scooter and cycle parking, and setting-down bays, and would then re-join Parkhurst Road (A503) at the Site's eastern extent. Vehicle traffic would be restricted to the following:

- Residents of the Development / staff working in the Development who have an allocated on-street residents' accessible car parking bay.
- Emergency vehicles.
- Delivery and removal vehicles for residential and commercial areas.
- Refuse vehicles.

5.8.2 The vehicular access points and internal road are shown in **Figure 5.4**.

Figure 5.4: Vehicular Access Points (Source: Exterior Architecture)



Servicing and Delivery

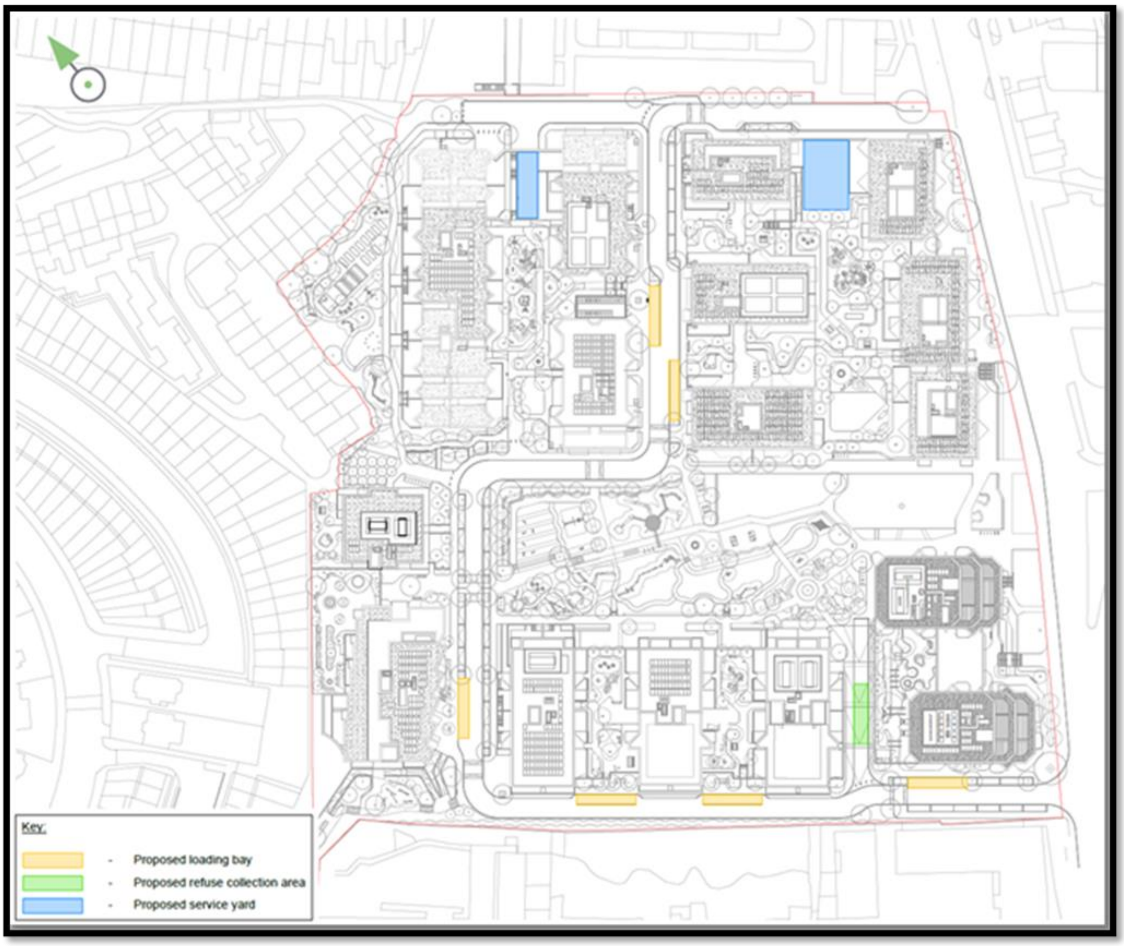
5.8.3 Servicing of the Development would primarily take place from the loading bays along the new internal road which would include six loading bays. This geometry provides for flexible use and can accommodate one large delivery/refuse truck or two vans at the same time. In addition, the Development would provide podium loading bays located within Plots A and B.

5.8.4 The proposed on-street loading bays could be used for a variety of purposes and vehicle sizes:

- Short duration deliveries – mail, parcels, food – typically by vans.
- Waste collection – waste vehicles would spend over 15 minutes at each building and benefit from using dedicated bays. The Plots A and B will have a provision of designated loading bays within the buildings.
- Long duration maintenance – typically vans.
- Long duration move-in / move-out – typically large vans / small lorries.
- They could also be used informally for drop-off/pick-up activity, but parking in the loading bays will be banned at all times.

5.8.5 The delivery and servicing locations are shown in **Figure 5.5.**

Figure 5.5: Delivery and Servicing Locations (Source: Velocity Transport Planning)



Car-Parking

5.8.6 The Development is proposed to be car-free and would only provide 30 accessible car parking spaces. These spaces would be provided within the Site as on-street parking along the internal road.

5.8.7 All parking spaces would have access to active Electric Vehicles Charging Points.

5.9 Cycle Access and Parking

5.9.1 The Development would provide a total of 1,897 long stay cycle-parking spaces for residents and employees of the Development. These spaces would be provided across the lower ground floor level and upper ground floor level of each of the Plots.

5.9.2 The Development would also provide a total of 112 short stay spaces at surface level for both residents and employees of the Development. The proposed quantum of cycle spaces is provided in **Table 5.9**.

Table 5.9: Proposed Cycle Parking Provision

Cycle Parking Provision	Long Stay Spaces	Short Stay Spaces	Total
Cycle spaces for residential units.	1,855	62	1,917
Cycle spaces for Plot B commercial.	16	20	36
Cycle spaces for Plot C commercial.	4	6	10
Cycle spaces for Women's Building.	18	18	36
Cycle spaces for the residents' facilities including concierge which is located to Plot D.	4	6	10
Total	**1,897**	**112**	**2,009**

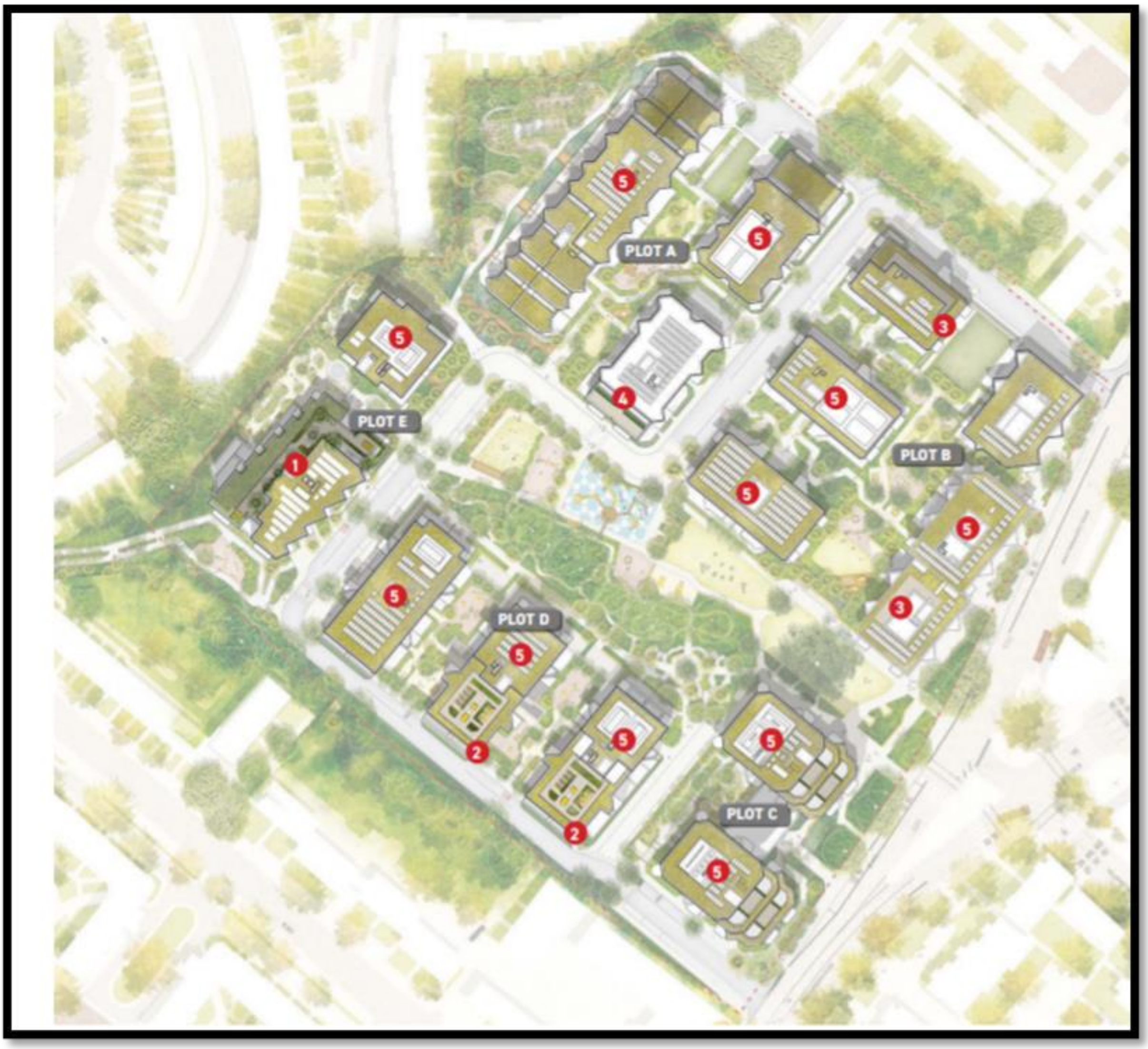
5.10 Public Realm, Private Amenity and Play Space

5.10.1 The Development would provide significant improvements to the public and private realm with the introduction of play space on to the Site. This is demonstrated within **Figure 5.6** to **Figure 5.10**.

Figure 5.6: Ground Level Landscaping Masterplan (Source: Exterior Architecture)

1. The Public Garden & Destination Play Space
2. Residents Communal Gardens
3. Nature Garden
4. Sensory Garden (Older Persons Housing)
5. Women's Garden
6. Pedestrian & cycle connection to Trecastle Way
7. Memory Garden Corner
8. Pedestrian connection to Crayford Road (potential)
9. Eco-Garden
10. Residential Street
11. Retained CAT A tree

Figure 5.7: Rooftop Landscaping Masterplan (Source: Exterior Architecture)



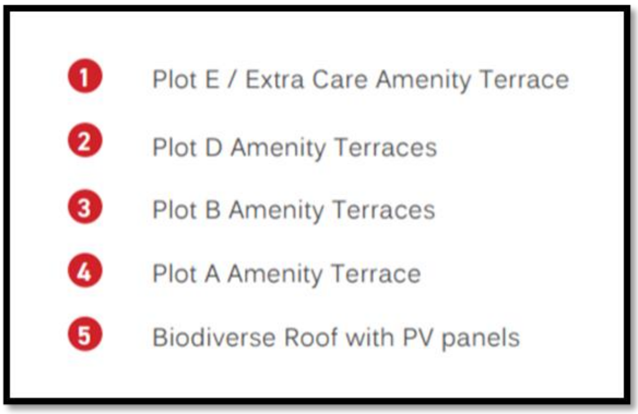


Figure 5.8: Communal Residential Gardens within the Development (Source: Exterior Architecture)

Figure 5.9: Open Space Strategy within the Development (Source: Exterior Architecture)

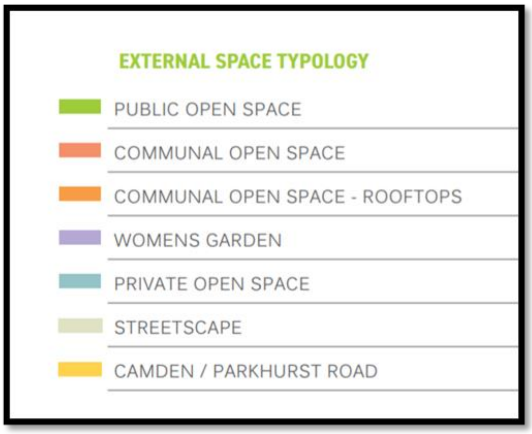
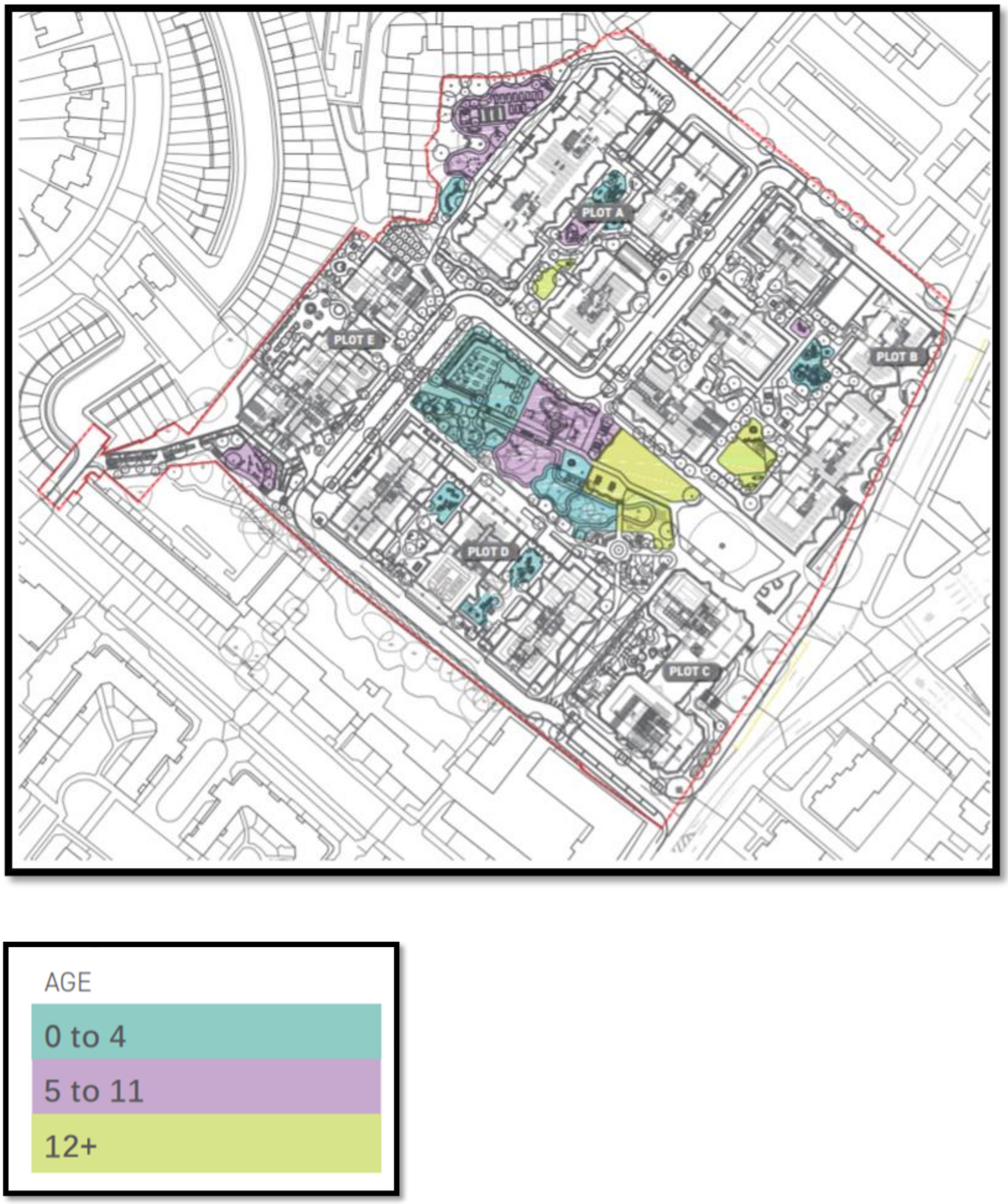


Figure 5.10: Play Provision within the Development (Source: Exterior Architecture)



5.10.2 The Development would provide approximately 10,480 sqm of public open space, comprising a Public Garden (public park), nature garden and Trecastle connection with an additional provision of 2,613 sqm private amenity space serving residential units, 6,128 sqm communal amenity space (including rooftop space) serving residential units and 699 sqm garden dedicated to the Women's Building.

5.10.3 5,292 sqm of play space would be provided throughout the Site. This would include the following:

- A large, public 'destination' play area at the heart of the Site for all ages and abilities.
- Utilisation of the safe and enclosed nature of the communal gardens for provision of additional play opportunities.

- Doorstep play opportunities for 0-4 year olds integrated into communal amenity spaces.
- Space for teenagers and young adults which are activated and well overlooked.

5.10.4 With reference to **Figure 5.6** and **Figure 5.7**, the following public realm and public play space would be provided:

- **A new Public Garden and Destination Play Space**. This park would be located at the centre of the Development, enclosed by the proposed buildings. The park is intended to provide an area for performance, gathering, and pop-up activities, such as food trucks and markets. Central to the design of this space is the introduction of a destination play area which encompasses a feature play tower with elevated play areas, bridges, climbing nets and a slide, along with natural play and ecoplay trails under existing retained trees.
- **Nature Garden**. The Nature Garden would be located to the north-west of the Plot A buildings. The garden would include opportunities to grown fruit and vegetables as well as play spaces. The garden would also include new and retained habitats for birds, bees, bats and invertebrates. New and retained vegetation along the borders of the Site would provide a buffer to the adjacent properties on the Bakersfield Estate to the north-west. The Nature Garden would also include rain gardens, creating new habitats on the Site.
- **Improvements to public realm along Camden / Parkhurst Road (A503)**. The Development would introduce new commercial units along Camden / Parkhurst Road (A503). New planting would be placed beneath the retained trees provide series of spaces stepped back from the carriageway so the commercial units can 'spillout' comfortably without disrupting pedestrian movement along the footpath. In the centre of the space, between Plot B and Plot C, would be an entrance space which serves to 'open up' and make prevalent the previously closed site, creating views into the new park.

5.10.5 With reference to **Figure 5.6** and **Figure 5.7**, the following private amenity areas and private play space would be provided:

- **Residents Communal Gardens**. The Residents Communal Gardens would be located adjacent to the residential buildings on the Site as shown in **Figure 5.6**. These would serve as areas for social exchange, and encompass communal dining areas, places to rest and relax, and outdoor spaces for quiet work, reading or recreation. Doorstep play with additional elements for a range of ages would be located across the gardens.
- **Sensory Garden (Extra Care Housing)**. Located to the north-east of the Building E1, which is proposed to be extra care accommodation, the Sensory Garden would include accessible urban farming areas, spaces for communal sitting and walking routes for the elderly. The space is designed to encourage mental well-being for a range of users and abilities and would only be accessed from Building E1.
- **Women's Garden**. The Women's Garden would be located to the west of Plot D buildings and would be a communal garden connected to the Women's Building. The space comprises a series of small and enclosed seating areas with planting for physical and mental rehabilitation, contemplation, gathering, workshops, meetings and socialising.
- **Roof Terraces**. Located on Buildings A3, B1, B4, C1, C2, D1, D2, and E1, the communal roof terraces are intended to provide an opportunity for residential recreation and relaxation for residents of those buildings.

5.10.6 The Development would provide high-quality pedestrian connections that would improve permeability across the Site. These routes would include a new connection between the Site and Trecastle Way to the south-east. The Trecastle Connection provides a ramped and stepped route from the Site to Trecastle Way as a mechanism to promote connectivity between the Site and the surrounding schools, greenspaces and streets.

5.10.7 Further details regarding public realm, private amenity areas, play space and associated landscaping are included within **ES Volume 3, Appendix 5.1 (Planning Application drawing Numbers 1947-EXA-ZZ-ZZ-DR-L-00100 and 1947-EXA-ZZ-ZZ-DR-L-00110**).

5.11 Lighting

5.11.1 Thoroughfares, public spaces and courtyards would use a combination of columns, bench lighting, tree up-lights and recessed floor up-lights to provide a sufficient level of light to ensure safety and visibility. Any new lighting proposed as part of the Development would be in accordance with British Standards[2,3], the Bat Conservation Trust[4], the Institution of Lighting Professionals ('ILP')[5] which prescribes required lighting levels.

5.12 Ecological Enhancement

5.12.1 As previously noted, 44 individual trees (25 Category B, 18 Category C and one Category U), 10 tree groups (three Category B and seven category C) and three hedgerows (Category C) would be removed to facilitate the Development. A single Category A (high quality) tree on the Site would be retained together with other 24 individual and one group of Category B (Moderate quality) and four individual and two groups of Category C (low quality) trees. As well as the retention of 29 individual trees and three groups of trees, a total of 350 new trees would be planted. The tree species would be native and would include a mixture of evergreen and semi-evergreen species to provide winter shelter for wildlife. The new trees would also include species on the Royal Horticultural Society's (RHS) 'Plant for Pollinators' list and trees which produce fruits and seeds which will further benefit local wildlife. A further three trees would be transplanted from their existing locations to the Women's Garden in Plot C.

5.12.2 The planting and landscaping for the Development would comprise native plants and trees to encourage and enhance biodiversity within the Site and surrounds. The soft landscaping strategy would include the following to match the anticipated microclimates on site, clearly define spaces, soften the appearance of the Development, help create variation in character, enhance ecological diversity, and provide visual interest and colour throughout the seasons:

[2] BS EN 5489-1:2020 +A2 (2020) Code of Practice for the design of road lighting: Part 1 Lighting of roads and public amenity areas
[3] BS EN 13201-2:2015 Road lighting – Part 2: Performance requirements
[4] Guidance Note 08/18: Bats and artificial lighting in the UK
[5] SKU: GN01-21: Guidance Note 1 for the reduction of obtrusive light 2021

- **Understorey Planting** – this would include shade-tolerant plant species which would seek to enhance bio-diversity beneath/around retained trees.
- **Rain Gardens** – this would include plants that can withstand waterlogging and would be located within areas where surface water percolates through the soil and would form part of the Surface Water Drainage Strategy.
- **Eco-Buffers** – these would include trees, large shrubs, high grass and perennials that would create buffers to neighbouring sites and between public / private and semi-private areas.
- **Featured Planting** – this would include species rich lawns which would frame seating areas and meeting points.
- **Sensory Planting** – this would include scented plants, edible species and medicinal plants with soft textures to create therapeutic and relaxing spaces.

5.12.3 The non-accessible rooftops across the Site would provide an opportunity to include a variety of habitats to support a range of local bird and insect species. The proposed biodiverse roofs would include a mosaic of nectar-rich low maintenance planting, bare ground, stones, sand, rubble, logs, invertebrates loggers, nest/ roost boxes and photovoltaic (PV) panels which can be integrated into the biodiverse roofscape. The locations of these roofs are noted in **Figure 5.7** above.

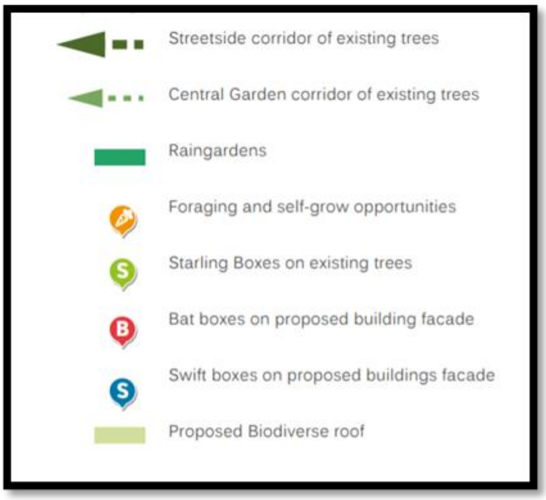
5.12.4 Further ecological enhancements measures which would be incorporated into the Development include:

- Eight summer bat roosts integrated within buildings in Plots A, B and D.
- Eight hibernation bat roosts integrated within buildings in Plots A, B, D and E.
- On-Site bat foraging habitat and off-Site habitat connectivity through the inclusion of substantial areas of new landscape planting which reflect the existing habitat location and extent.
- Adoption of best practice lighting to minimise disturbance to wildlife in accordance with Bat Conservation Trust and Institution of Lighting Professionals (2018) . In particular this would avoid direct illumination of artificial bat roost features.
- Seven starling boxes installed on retained trees in the Public Garden and the Trecastle Connection.
- Seven swift nest boxes integrated within buildings in Plots A and B.
- Four bug hotels, located across the Development.

5.12.5 The bat boxes would be positioned as far as practicable away from light sources on the buildings.

5.12.6 Further details regarding the provision of ecological measures are included on **Figure 5.11** and within **ES Volume 3, Appendix 5.1** (**Planning Application drawing Numbers 1947-EXA-ZZ-ZZ-DR-L-00100 and 17105-0-00-P150**).

Figure 5.11: **Ecological Features included within the Development (Source: Exterior Architecture)**



5.13 Surface Water Drainage Strategy

5.13.1 Full details of the proposed surface water drainage strategy are provided within the stand-alone Flood Risk Assessment (FRA) and Drainage submitted in support of the detailed planning application. However, in summary, a range of Sustainable Drainage Systems (SuDS) would be implemented across the Site to enable the Development to achieve an 82.04% reduction to the existing runoff rate generated by the 1 in 100 year rainfall event from 270 litres per second (l/s) to 48.5 l/s. Further to this, the Development would achieve an 82.04% reduction to the existing runoff rate generated by the 1 in 100 year with +40% climate change scenario rainfall event. Attenuation would be required on-Site to achieve the proposed discharge rate. It is anticipated that approximately 3,222m^3 would be required. This would be provided through a combination of permeable paving, plinth tanks and below ground tanks. Permeable paving would be provided throughout the Development, plinth tanks would be provided on Plots A and B and the below ground tanks would be provided on Plots A and B, and beneath the central landscaped area. The range of SuDS to be incorporated into the Development would be as follows:

- **Green roofs**. Green roofs would provide a bio-diverse habitat, water quality benefits, as well as capturing rainwater and naturally slowing the rate of runoff. Green roofs are incorporated in each Plot of the Development.
- **Permeable paving**. Permeable paving / porous surfacing would provide water quality benefits as well as attenuating flows with the aggregate sub-base storage. The inclusion of permeable paving is proposed throughout the Development.
- **Rain gardens**. Rain gardens are planted areas where surface water percolates through the soil and aggregates, providing treatment of the water prior to being conveyed into the surface water piped system. Rain gardens also provide amenity and biodiversity benefits. Lined rain gardens are proposed to provide treatment to the runoff arising from the hardstanding areas and roads where possible.
- **Geo-cellular attenuation tanks**. As noted above, attenuation tanks would also need to be incorporated to restrict surface water runoff sufficiently.

5.13.2 Due to the lack of suitable surface water bodies and sewers in the vicinity of the Site, and the spatial constraints precluding discharge to ground, it is proposed to discharge surface water runoff into the existing Thames Water sewer network located within Parkhurst Road (A503), mimicking the existing situation.

5.14 Energy Provision

5.14.1 The heat network for each Plot would be served by Air Source Heat Pumps (ASHPs) which would form the central component of the energy strategy for the Development. Each Plot would have an individual ASHP located at roof level. The roof-mounted ASHPs would generate the heat energy, which would feed down to the buffer tanks at lower ground levels, before being distributed around the Plots via a centralised low temperature heat-loop. The centralised low temperature heat-loop would directly feed into localised Water Source Heat Pumps (WSHPs) and Variable Refrigerant Flow (VRF) units within each floor and to each individual dwelling. Where required, this system would be able to provide heating, cooling and domestic hot water. For non-residential land uses, heating and cooling would be provided by a localised VRF system, with domestic hot water being provided by instantaneous electric systems. Further to this, PV panels would be installed on the roof of each Plot to maximise the Site-wide reduction of carbon emissions.

5.14.2 The ASHP units would be roof-mounted with supporting energy plant within the lower or upper ground floors of each building. The energy strategy for the Development would achieve a total reduction in regulated Carbon Dioxide (CO_2) emissions in exceedance of the 35% Target Emission Rate (TER) Approved Document Part L (AD L) 2013[6] and therefore successfully delivers the target 35% minimum on-Site reduction in regulated CO_2 emissions over AD L 2013 for domestic and non-domestic elements of the Development separately.

5.14.3 Selected commercial units within the Development would be provided with a metered gas supply. Individual residential dwellings would not to be provided with gas supplies.

5.15 Waste Management

5.15.1 Waste storage provision would be provided in line with the LBI's Recycling and Refuse Storage Requirements guidance[7]. Residential waste provision would be provided based LBI's LBI Waste Generation Metrics which is detailed in **Table 5.10** below.

Table 5.10: LBI Residential Waste Generation Metrics

Size of Unit	Total Storage Capacity Required for Refuse and Recycling
One bedroom	200 litres
Two Bedroom or more	A further 140 litres for each additional bedroom.
Recycling - At least 50% of total storage capacity (calculated using the above table) must be allocated for recycling.	

5.15.2 For food waste storage for residential dwellings, a formula of 12 litres per unit per week was applied.

5.15.3 The commercial waste arisings were estimated using metrics for weekly waste arising sourced from the LBI's Recycling and Refuse Storage Requirements Guidance[8] and BS5906:2005[9]. These are detailed in **Table 5.11** below.

6 Approved Document Part L of Buildings Regulations. 2013.
7 LBI Street Environment Services. Recycling and Refuse Storage Requirements. 2013.
8 Approved Document Part L of Buildings Regulations. 2013.

Table 5.11: Commercial Waste Generation Metrics

Use	Waste Generation Metric	Assumption
Flexible Use.	1.5 cubic metres per 20 dining spaces.	Assumes Restaurant as worst-case scenario. Assumes one dining space per 6 sqm.
Women's Building (Leisure).	Volume per sqm of floor area (5l) x floor area.	-
Gym.	Volume per m2 of floor area (2.5l) x floor area.	Assumes no food waste generated.
Cinema.	Volume per m2 of floor area (5l) x floor area.	-
Concierge.	Volume per m2 of floor area (5l) x floor area.	-
Dining.	1.5 cubic metres per 20 dining spaces.	-
Post Office.	2.6 cubic metres per 1,000 sqm.	Assumes no food waste generated.
Office.	2.6 cubic metres per 1,000 sqm.	-
Restaurant.	1.5 cubic metres per 20 dining spaces.	Assumes one dining space per 6 sqm.

5.15.4 The waste storage facilities and operational waste management strategy for each of the Plots within the Development would be as follows:

Plot A

- Six residential homes (two on the lower ground floor and four on the upper ground floor) would have their waste stored in the front gardens of the homes in refuse, recycling and food waste bins which would be collected directly from the street on waste collection days.

[9] British Standards Institution. Waste management in buildings - Code of practice. 2005.

- For the remainder of the Plot, residential waste would be stored within separate centralised waste storage areas. Buildings A1/A2 and A4 waste stores would be located on the lower ground floor. The Building A3 waste store would be located on the upper ground floor. Residents would transport their waste directly from their homes to the waste stores where they would segregate their waste into appropriately labelled bins.
- Waste collection would take place from the loading bays at upper ground level for Building A3 and lower ground level for Buildings A1/A2 and A4. Facilities Management would be responsible for transferring waste from the waste storage area in Core A2 to temporary holding area located in Building A1, before transferring the bins back to the waste storage area after waste has been collected. The waste storage areas for Buildings A1, A3 and A4 would be accessible by LBI's refuse collection workers.

Plot B

- Two residential homes (one in Building B2 and one in B3) would have their waste stored in the front gardens of the homes in refuse, recycling and food waste bins which will be collected directly from the street on waste collection days.
- For the remainder of the Plot, residential waste would be stored within separate centralised waste storage areas. Buildings B1, B2, B4, B5 and B6 waste stores would be located on the lower ground floor. Building B3 store will be located on the upper ground floor. Residents would transport their waste directly from their homes to the waste stores where they would segregate their wate into appropriately labelled bins.
- Waste collection would take place from the loadings bay at upper ground level for Building B3 and lower ground level for the remaining buildings. Facilities Management would be responsible for transferring waste from the waste storage area in Buildings B2, B4 and B5 to temporary holding area before transferring the bins back to the waste storage area after waste has been collected. The temporary waste holding area and the waste stores for the remaining Buildings would be accessible by LBI's refuse collection workers.
- Commercial waste generated in the Plot would be stored in a separate waste storage area to the residential waste at the lower ground level.

Plot C

- Residential waste would be stored within a single centralised waste storage area which would serve Plot Buildings which would be located at the lower ground level. Residents would transport their waste directly from their homes to the waste stores where they would segregate their waste into appropriately labelled bins.
- Waste collection would take place from the street at lower ground level.
- Commercial waste and waste from the Women's Building would be stored in a separate waste storage area to the residential waste at the lower ground level.

Plot D

- Residential waste would be stored within separate centralised waste storage areas which would be located in each building at the lower ground level.
- Residents would transport their waste directly from their homes to the waste stores where they would segregate their waste into appropriately labelled bins.
- Waste collection would take place from the street at the lower ground level at Building D1. Facilities Management would be responsible for transferring waste from the waste storage areas in Buildings D2 and D3 to temporary holding area before transferring the bins back to the waste storage area after waste has been collected. The temporary waste holding area and the waste stores for Building D1 would be accessible by LBI's refuse collection workers.
- Commercial waste generated in the Plot from the residents' facilities including concierge would be stored in a separate waste storage area to the residential waste at the lower ground level in D1.

Plot E

- Residential waste would be stored within separate centralised waste storage areas which would be located in the buildings at the lower ground level.
- Residents would transport their waste directly from their homes to the waste stores where they would segregate their waste into appropriately labelled bins.
- Waste collection would take place from the loadings bays adjacent to each building. The waste stores for each building would be accessible by LBI's refuse collection workers.

5.16 Climate Change Resilience

5.16.1 The Development incorporates a number of features that would contribute to climate change resilience. These include:

- A surface water drainage strategy which accounts for future climate change was developed for the Site. The strategy was designed to accommodate surface water runoff during all events up to and including 100 year plus 40% climate change allowance. A summary description of the surface water drainage strategy is provided earlier in this Chapter.
- An Energy Strategy that reduces energy demand and CO_2 emissions, as described earlier in this Chapter.
- The Development has been designed to avoid excessive overheating and cope with the predicted increase in global temperatures as a result of global climate change. Measures include:
    - Façades have been developed with suitable glazing-to-solid ratios.
    - Incorporation of Solar control blinds to some homes.

- Energy efficient lighting (i.e., LED) with low heat output.
- Insulation to all heating and hot water pipework.
- Energy efficient equipment with low heat output to reduce unnecessary heat gain.
- Passive ventilation would be possible via opening windows in all areas of the Development allowing occupants the option to make use of natural ventilation to improve thermal comfort in the spaces. However, in response to the acoustician's advice, openings should remain closed on some façades with high external noise levels. In these areas, tempered air mechanical ventilation solutions will be proposed.
- Mechanical ventilation would be incorporated throughout the Development.

5.17 Health and Wellbeing

5.17.1 A Health Impact Assessment (HIA) has been prepared by WSP in accordance with the London Healthy Urban Development Unit's (HUDU) Rapid Health Impact Assessment Tool and is included at **ES Volume 3, Appendix 5.2**. In evaluating the health impacts of the Development, the HIA addressed the 51 questions raised by the London HUDU's Rapid Health Impact Assessment Tool, for each of the relevant categories:

- Housing design and affordability.
- Access to health and social care services and other social infrastructure.
- Access to open space and nature.
- Air quality, noise and neighbourhood amenity.
- Accessibility and active travel.
- Crime reduction and community safety.
- Access to healthy food.
- Access to work and training.
- Social cohesion and inclusive design.
- Minimising the use of resources.
- Climate Change.

5.17.2 The Development is anticipated to have 43 positive impacts, 8 neutral impacts and 0 negative impacts. It can therefore be concluded that the Development would overall have a positive impact on the health and wellbeing of on the local population and future residents and employees at the Site.

5.17.3 The Development proposes a number of features that could be inferred to promote and encourage healthy lifestyles and wellbeing. Such design features include the following:

- The provision of significant public and private amenity spaces (including play space for children), allowing for physical activity and social interaction and integration.
- The provision of ample cycle parking-spaces, new pedestrian and cycle routes. Again, this would encourage physical activity.
- Provision of a Women's Building to support women in the local area.

5.17.4 In addition to the above, with reference to **ES Volume 1, Chapter 8: Air Quality**, the completed and operational Development would not give rise to any significant air quality effects. Owing to the fact that the air quality assessment included within **ES Volume 1, Chapter 8: Air Quality** is benchmarked against certain air quality pollutant concentrations, standards and objectives and their evidenced implications upon human health, it can be inferred that the Development would not give rise to any air quality health related issues.

5.17.5 Similarly, with reference to **ES Volume 1, Chapter 9: Noise and Vibration** the completed and operational Development would not give rise to any significant noise and vibration effects that would likely cause nuisance and annoyance to existing sensitive receptors surrounding the Site.

5.17.6 **ES Volume 1, Chapter 11: Wind Microclimate** notes that the Development would not give rise to any significant adverse effects which could result in risks to the comfort and safety of pedestrians and cyclists on or in the vicinity of the Site.

5.17.7 **ES Volume 1, Chapter 12: Daylight, Sunlight and Overshadowing** concludes the Development would largely give rise to insignificant changes to levels of daylight and sunlight received at existing residential dwellings adjacent to the Site and to overshadowing experienced at existing residential amenity spaces adjacent to the Site. It can therefore be inferred that such results would not affect the overall daylight and light quantum and quality to surrounding residential occupants which can be a contributing factor to a feeling of wellbeing.

6. The Works

6.1 Introduction

6.1.1 This Chapter has been prepared by Avison Young with relevant advice and information provided by the Applicant and their construction advisors, London Square. It describes the anticipated programme of enabling works, demolition and construction, and the key activities that would be undertaken in relation to the implementation and construction of the Development (the 'Works'). It identifies, in general terms, the potential effects associated with the Works and outlines the proposals for the mitigation of potential likely significant effects. Detailed consideration of likely significant environmental effects related to the Works are presented within **Environmental Statement (ES) Volume 1: Main Text and Figures** and **ES Volume 2: Townscape, Visual and Above Ground Built Heritage Assessment**.

6.1.2 A Site-specific Construction Environmental Management Plan (CEMP) was written for the Development and is submitted as a stand-alone document supporting the detailed planning application. It was written in line with the Code of Practice for Construction Sites[1] (CoP) produced by the London Borough of Islington (LBI) and best practice measures.

6.1.3 LBI's CoP sets out the minimum standards and procedures for managing and minimising the environmental effects of construction projects within the borough of Islington. Such standards and procedures are aimed at safeguarding the environment in general, and the amenity and safety of local residents, businesses, and the general public. The requirements within the CoP have been taken into account in developing the mitigation measures set out within this Chapter and **ES Chapters 7** to **13** of **ES Volume 1: Main Text and Figures**.

6.1.4 Following the grant of detailed planning permission and once the Principal Contractor has been appointed, the CEMP would be further developed to include details of the proposed methodologies, programme, method statements and detailed mitigation measures. The contents of the CEMP would then be discussed and agreed with planning and environmental health officers of the LBI. It is anticipated that the CEMP would be secured by planning condition.

6.1.5 This Chapter draws on the information within the CEMP, LBI's CoP and **ES Chapters 7** to **13** of **ES Volume 1: Main Text and Figures**. It should also be noted that many of the mitigation measures associated with the Works and referenced in this Chapter and **ES Chapter 7** to **13** of **ES Volume 1: Main Text and Figures** draw directly from LBI's CoP.

[1] Islington Council. Code of Practice for Construction Sites. 2018.

6.1.6 Planning for the Works is necessarily broad at this stage and may be subject to modification. However, it is considered that sufficient planning has taken place at this stage to enable the likely significant environmental effects relating to the Works to be identified and assessed.

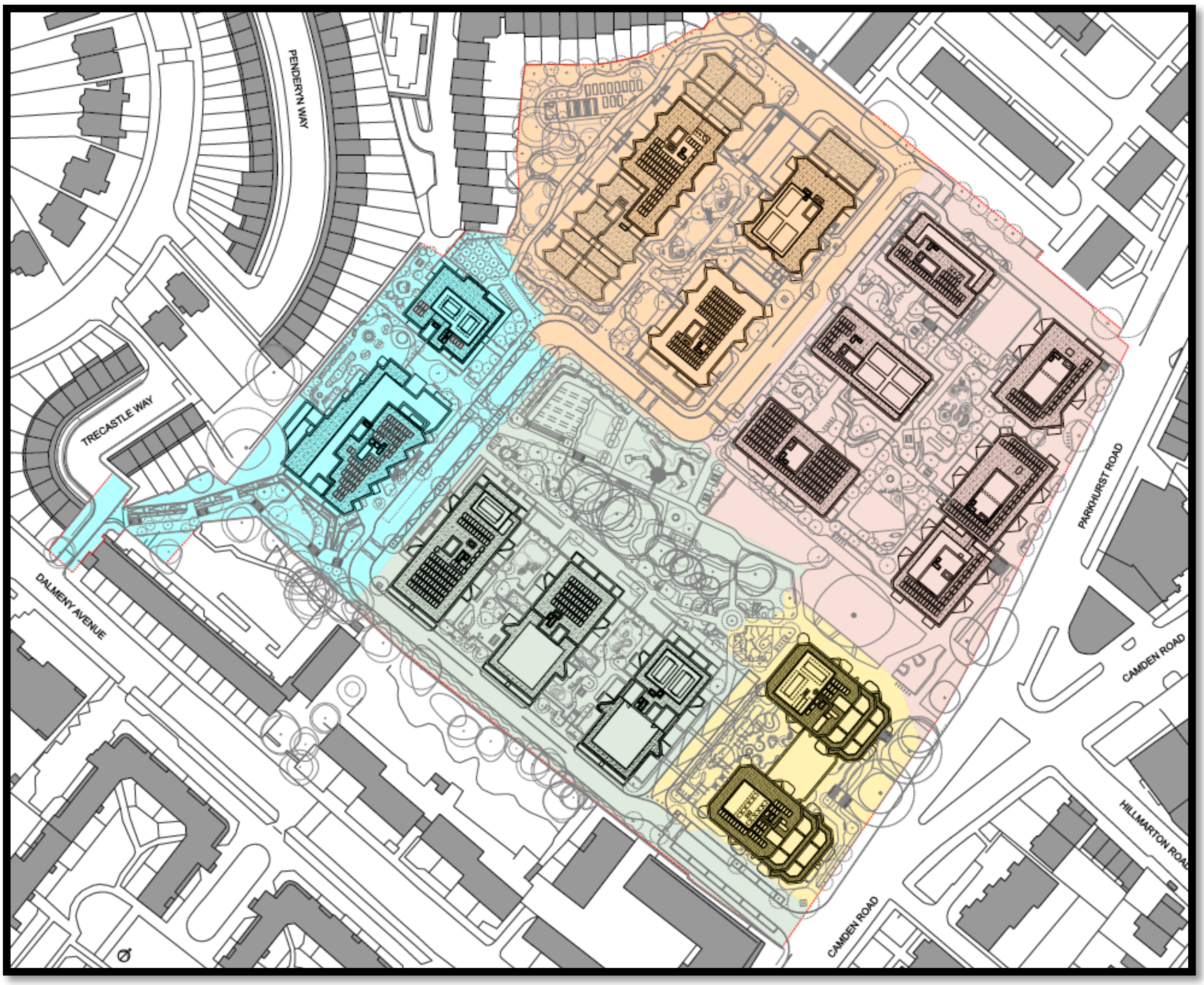
6.2 Programme of Works

6.2.1 Subject to detailed planning permission, the Works are anticipated to commence in July 2022. The Works would initially consist of enabling works followed by the demolition of all buildings on the Site in a single stage. Phasing of the demolition works would be undertaken in accordance with the bat licence to be obtained from Natural England prior to the commencement of demolition works which would require that demolition of buildings that have hibernation roost potential would not be demolished during the core hibernation period as set out in the licence from Natural England.

6.2.2 The construction works would take place split into three phases. The build sequence would be to construct the buildings from the west around the Site to the east, starting with Plot C, then Plot D, Plot E, (Phase 1) Plot A (Phase 2) and finishing with Plot B (Phase 3). Occupation of the Site would commence with Plot D during December 2025. Phased completion and occupation would follow with the final buildings handed over in October 2027. Landscaping works and access around each Plot would be completed before the first occupation of each Plot.

6.2.3 Accounting for the completion, handover and occupation of all Blocks and associated public realm works, the Works are anticipated to complete in 2027**.** As such, 2027 is considered to be the full year of completion and occupation of the Development. This would give rise to an envisaged five-year Works programme (60 months). Phase 1, Phase 2 and Phase 3 areas are shown in **Figure 6.1.**

Figure 6.1: Plan showing Indicative Phasing during Construction Works



KEY

- PHASE 1.1
- PHASE 1.2
- PHASE 1.3
- PHASE 2
- PHASE 3

6.2.4 In general terms, the Works would comprise the following phases:

- **Enabling Works and Demolition:**
  - Erection of hoarding around Site.
  - Set up of Site offices and welfare facilities.
  - Service diversions and connections.
  - Tree protection measures.

  - Surveys, investigations and consents.
  - Asbestos removal and soft strip.
  - Demolition of all buildings across the Site**.**
- **Phase 1 Construction:**
  - Construction of Plots C (Buildings C1 and C2), D (Buildings D1, D2, and D3) and E (Buildings E1 and E2).
  - Delivery of the Phase 1 public realm and landscaping.
- **Phase 2 Construction:**
  - Construction of Plot A (Buildings A1 / A2, A3 and A4).
  - Delivery of Phase 2 public realm and landscaping.
- **Phase 3 Construction:**
  - Construction of Plot B (Buildings B1, B2, B3, B4 / B5 and B6).
  - Delivery of Phase 3 public realm and landscaping.

6.2.5 An indicative programme for the Works is presented in **Table 6.1**. Although the exact dates may vary, the estimated periods would still apply as an indication for each element / activity of the Works. In addition, it is likely that a number of the activities within **Table 6.1** would overlap.

Table 6.1: An Indicative Programme for the Works

Phase	Start Date	End Date	Duration (Approximate Weeks)
Enabling Works and Demolition Phase	**July 2022**	**June 2023**	**46**
Vacant possession	July 2022	July 2022	-
Site set up, hoarding, tree protection, disconnection / diversion of services	July 2022	September 2022	12
Demolition	October 2022	June 2023	34
Phase 1	**February 2023**	**August 2026**	**171**
Construction of Plots C, D and E			
Piling	February 2023	June 2023	15
Substructure	April 2023	August 2024	74

Phase	Start Date	End Date	Duration (Approximate Weeks)
Superstructure	June 2023	January 2025	91
Façade	October 2023	January 2026	120
Internal Works	August 2023	June 2026	139
External Works	May 2025	June 2026	58
Handover / Occupation Plot D	October 2025		--
Handover / Occupation Plot E	June 2026	-	-
Handover / Occupation Plot C	August 2026	-	-
Phase 2	**March 2024**	**November 2026**	**135**
Construction of Plot A			
Piling	March 2024	May 2024	10
Substructure	April 2024	December 2024	37
Superstructure	November 2024	July 2025	34
Façade	January 2025	July 2026	77
Internal Works	February 2025	September 2026	87
External Works	October 2025	September 2026	53
Handover / Occupation of Plot A	November 2026	-	-
Phase 3	**January 2025**	**October 2027**	**135**
Construction of Plot B			
Piling	January 2025	March 2025	11
Substructure	March 2025	October 2025	28
Superstructure	June 2025	May 2026	47

Phase	Start Date	End Date	Duration (Approximate Weeks)
Façade	August 2025	July 2027	100
Internal Works	October 2025	July 2027	94
External Works	October 2026	September 2027	47
Handover / Occupation of Plot B	October 2027	-	-

6.3 Description of the Works

Site Enabling Works

6.3.1 One of the first activities of the Works would be to establish the area as a construction site. Construction site areas would be made safe and secure prior to any work commencing, with the use of solid and well maintained 2.4m high hoardings and screening around the Site. Any trees to be retained, as detailed within the Arboricultural Impact Assessment which is a stand alone document supporting the detailed planning application, including root protection zones would be fenced off. Temporary hoardings would be provided on short-term boundaries and for highway works. Secure access points with wheel cleaning facilities would be established at all Site access and egress locations. Pedestrian access points would generally be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided.

6.3.2 The construction project offices and associated welfare facilities for the workforce would be located in an existing building at the front of the Site and would stay there until the building is required to be demolished to facilitate the construction of Plot B which would be the last to be constructed. At that time the temporary offices and welfare facilities would be established close to Plot B.

6.3.3 Other activities that would take place in this stage of work include disconnection of services that would be no longer required, undertaking surveys including unexploded ordnance, any ground investigations, condition surveys (of boundary walls and relevant highways) and obtaining any necessary licences, for example for the discharge of water from the Site into the public sewer.

6.3.4 Asbestos removal and soft strip works would be the first activities to be undertaken once the Site has been setup and secured. Upon completion of those works the demolition would commence. Asbestos would be removed in accordance with the Hazardous Waste Regulations 2005[2] (as amended) and the Control of Asbestos Regulations 2012[3].

[2] HMSO. 2009. Hazardous Waste (England and Wales) (Amendment) Regulations 2009.
[3] HMSO. 2012. The Control of Asbestos Regulations. 2012.

Demolition

6.3.5 As noted above, phasing of the demolition works would be undertaken in accordance with the bat licence to be obtained from Natural England prior to the commencement of demolition works which would require that demolition of buildings that have hibernation roost potential would not be demolished during the core hibernation period.

6.3.6 Demolition comprises the deconstruction of the existing structures on Site along with the grubbing out of foundations and obstructions, such as previous foundations.

6.3.7 The demolition contractor would act as Principal Contractor for the duration of this stage of the Works.

Piling, Substructure and Excavation Works

6.3.8 The full construction design is still to be developed and would be an iterative process following the grant of detailed planning permission and during the detailed design stage. Further ground investigation work would be undertaken prior to commencing on-Site and throughout the enabling works stage which would determine the extent of these works.

6.3.9 Once Stage 1 demolition has been completed, that area would be handed over to the Groundworks and Reinforced Concrete (RC) Frame contractor. The contractor would act as Principal Contractor for Phase 1 until façade works commence and would follow this strategy when further phased demolition has been completed and handed over.

6.3.10 Any suitable material would be retained on-Site for use in a piling mat and would be augmented by imported crushed material for that purpose. Pile probing for below ground obstructions would be undertaken prior to forming the pile mat.

6.3.11 Piling would be undertaken from the existing ground levels where possible. New piled foundations are proposed and it is anticipated that Continuous Flight Auger (CFA) concrete piles would be installed to a maximum depth of 30 m.

6.3.12 Due to the sloping nature of the Site, localised earthworks and semi-basement excavations are proposed.

6.3.13 Once the bearing piles are installed, they would be broken down, capped and ground beams installed. Under-slab drainage and service ducts would then be installed prior to blinding, waterproofing and the construction of then finally the ground floor slab.

Superstructure

6.3.14 The proposed superstructures to the buildings would be reinforced concrete frames. Consideration would be given in the detailed construction planning to utilising pre-fabricated elements, such as staircases.

6.3.15 Tower cranes would be erected for the construction of the concrete frames and proceeding any façade works.

6.3.16 The construction of Phase 1 works would commence once half of the demolition is complete, subject to any restrictions due to the bat licence to be obtained from Natural England. At that point, it is anticipated that the Site would be split into two with the demolition contractor in control of half of the Site and the groundworks and RC Frame contractor taking over responsibility for the other half. Both would act as Principal Contractor for the part of the Site in their control.

Façades

6.3.17 Façades works would commence once the RC Frame has reached third floor slab, with the erection of scaffolding and the Metsec (steel frame system), Cement Particle (CP) board, brickwork and window installation. Balcony finishes would then follow.

6.3.18 It is currently envisaged that all façade elements would be constructed in-situ from external scaffolding. Any large pre-cast or cladding elements would be lifted into position by the tower cranes.

Fit-Out

6.3.19 Finishes and services fit-out of the floors to each building would commence once a level of temporary or permanent water tightness has been achieved, working from the lower floors upwards. Plant would be installed in basements and roofs, when available and services distribution installed across the buildings.

6.3.20 The fit-out works would comprise complete installation of finishes and fixed equipment to apartments and shell and core fit out to the commercial spaces and Women's Building.

Landscaping / Public Realm

6.3.21 On completion of the external façade for each Plot, external hard and soft landscaping would be completed to provide the substantial landscaping and areas of public realm within the Site as described within **ES Volume 1, Chapter 5: The Development**. As the Works come to an end, temporary Site accommodation and hoardings would be cleared.

Handover / Occupation

6.3.22 The handover and occupation of each Plot would begin upon its completion (refer to **Table 6.1**). Again, as shown in **Table 6.1**, all Plots are anticipated to be completed, occupied and operational in 2027.

6.4 Site Access and Egress

6.4.1 There would be two gates at the Site boundary during the demolition works and until just prior to the completion of Plot D:

- One on Camden Road in the far southern corner (Gate 1) providing access.
- One on Parkhurst Road in the north-eastern corner of the Site (Gate 2) allowing egress from the Site.

6.4.2 Following the completion of Plot D, the Site gate would be removed on Camden Road to open the permanent public access road facilitating Plot D. Plot C would then establish its own isolated Site access / egress gate off the new access road. This would be removed upon Plot C's completion and Gate 2 (on Parkhurst Road) would become the main point of access / egress.

6.4.3 Gate locations were selected to ensure the least effect to the highway network.

6.4.4 It is currently anticipated that the main access routes to the Site would follow the Strategic Road Network (SRN) as far as possible. Construction traffic would be expected to access the Site from the A1 connecting to the A406 for all routes from the north, east and west and the A501 for routes from the south of the Site.

6.4.5 As the demolition and construction programme progresses, construction gate locations would be relocated around the Site so as to efficiently serve the part of the Site 'under construction', and to minimise disturbance to existing surrounding sensitive receptors.

6.4.6 Secure access points with wheel cleaning facilities would be established at all construction gate locations. As mentioned previously, pedestrian access points would generally be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided.

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

6.5 Materials and Resource Use

Demolition, Excavation and Groundwork Activities

6.5.1 It is anticipated that the Works would give rise to an indicative 63,134 m^3 of materials from the demolition of the buildings on Site, typically comprising soil, concrete, brick, cladding, timber and plasterboard. Of this, an anticipated 8,000 m^3 of material would be crushed and used for the piling mats. It is anticipated that the construction of the buildings would generate approximately 6,000 m^3 of crushed concrete and masonry and 22,500 m^2 of glass, metalwork, plasterboard, carpet and timber.

6.5.2 Bulk excavation works would generate an estimated 31,755 m^3 of material.

6.5.3 Further details of the types and quantities of waste produced, material excavated and materials required for construction are set out in the Site Waste Management Plan which is submitted as a stand-alone document in support of the detailed planning application.

6.5.4 The typical materials arising from and required for the construction of the Development are estimated to be as follows:

- Soil / muck-away.
- Concrete.
- Brick, tiles and ceramics.
- Glazing / glass.
- Metals.
- Plastic.
- Packaging Waste.
- Timber.
- Floor coverings.
- Electrical and electric equipment.
- Furniture / canteen / office equipment.
- Block work / plasterboard.
- Liquids.
- Oils.
- Bituminous material.
- Insulation material.

6.6 Plant and Equipment

6.6.1 Consideration was given to the types of plant and equipment likely to be used during the Works. An indication of the typical types of plant and equipment associated with each key element of the Works are shown in **Table 6.2**.

Table 6.2: Indicative Plant and Equipment

Plant and Equipment	Stage of Works					
	Site Enabling Works	Demolition	Excavation	Substructure	Fit Out	Public Realm and Landscaping
Bulldozers	✓	✓	✓	✓		
Compaction plant				✓		
Cranes and hoists	✓	✓	✓	✓	✓	✓
Cutters, drills and small tools	✓	✓		✓	✓	✓

Plant and Equipment	Stage of Works					
	Site Enabling Works	Demolition	Excavation	Substructure	Fit Out	Public Realm and Landscaping
Crushers		✓	✓			
360° excavators		✓	✓			
Floodlights	✓	✓	✓	✓	✓	
Fork lift truck		✓		✓	✓	✓
Generators	✓	✓	✓	✓	✓	✓
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			✓	✓	✓	

6.7 Hours of Work

6.7.1 Prescribed hours of work would be agreed and secured by condition with the LBI. It is anticipated that the core working hours for the Works would be in accordance with those set out in the CoP, as follows:

- 08:00 - 18:00 hours weekdays.
- 08:00 - 13:00 hours for Saturday.
- No audible building works to be carried out on Sundays or bank Holidays.

6.7.2 Approval from the LBI would be required for any works that need to be undertaken outside of permitted hours.

6.7.3 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 would not include works that are likely to exceed any pre-agreed maximum construction works noise levels). Specialist construction operations and the delivery and removal of large plant to / from the Site or abnormal loads, may also be required to be carried outside these core hours. The Principal Contractor would be expected to make the necessary road closure applications to the LBI and other relevant parties, if required.

6.8 Potential Environmental Effects

6.8.1 All construction sites have the potential to cause temporary nuisance and other disruptions to existing users, neighbouring occupants, vehicular users, pedestrians and other sensitive receptors within the vicinity. Detailed assessments of the likely significant environmental effects resulting from the Works are considered in **ES Volume 1, Chapters 7** to **13** and **ES Volume 2: Townscape, Visual and Above Ground Built Heritage Assessment**. However, **Table 6.3** provides a summary of the type of effects which could arise as a result of the Works and in the absence of mitigation.

Table 6.3: Summary of Potential Environmental Effects resulting from the Works

Issue	Potential Effects
Townscape, visual and above ground heritage.	• Temporary deterioration of townscape character during the Works. • Temporary visual intrusion during the Works. • Temporary deterioration to the setting(s) of above ground heritage assets during the Works.
Socio-economics.	• The generation of employment arising from the Works, including opportunities from local employment and training initiatives and temporary gross value added to the local economy. • The generation of additional expenditure resulting from the workforce associated with the Works.
Air quality.	• Temporary generation of dust arising from the Works leading to potential dust nuisance to surrounding sensitive receptors. • Localised increases in traffic related emissions during Works as a as a result of construction traffic.
Noise and vibration.	• Temporary noise and vibration effects to existing sensitive receptors surrounding the Site as a result of noise generated by the physical processes necessary to implement the Works. • Temporary noise effects arising from changes in traffic flows associated with the Works.
Ecology.	• The loss and / or disturbance of on-Site habitats during the Works. • The potential displacement and risk of injury / killing / disturbance of protected bats during the Works. • The potential displacement and risk of injury / killing / disturbance of protected nesting birds during the Works.
Wind microclimate.	• Temporary and transient changes in the local wind environment both on and off-Site during the Works together with any associated effects to pedestrian comfort and safety giving due

Issue	Potential Effects
	consideration to the type of pedestrian activity likely to occur at specific locations and specific seasons.
Daylight, sunlight and overshadowing.	• Temporary and transient changes to levels of daylight and sunlight to residential properties surrounding the Site during the Works. • Temporary and transient changes to incidences of overshadowing to amenity areas surrounding the Site during the Works.
Greenhouse gases.	• Embedded carbon associated with the Works, including greenhouse gas (GHG) emissions arising from the manufacture and production of construction materials. • Carbon emissions arising from construction traffic associated with the Works.

6.9 Construction Environmental Management Plan

6.9.1 As noted earlier in this Chapter, a CEMP was produced and submitted as a stand-alone document supporting the detailed planning application, in line with the requirements of the LBI's CoP. Following the grant of detailed planning permission, the CEMP would be further developed to include roles and responsibilities, details of the proposed methodologies and further detailed mitigation measures including monitoring, auditing and training procedures once the Principal Contractor and other contractors have been appointed. The contents of the CEMP would be discussed and agreed with the relevant planning and environmental health officers of the LBI prior to the commencement of the Works. It is anticipated that the CEMP would be secured by planning condition. A commitment has been made to periodically review the CEMP and undertake regular environmental audits of its implementation during the demolition and construction works.

6.9.2 The CEMP would address requirements in relation to environmental controls and would include the following:

- The programme for the Works.
- Site working hours.
- A broad plan of the Works, highlighting the various stages and their context within the overall Works, including a full schedule of materials and manpower resources, as well as plant and equipment schedules.
- Details of activities associated with the Works, highlighting any operations likely to result in adverse environmental effects, with an indication of the specific detailed mitigation measures to be employed in accordance with the principles outlined in this Chapter.
- Details of proposed routes for heavy goods vehicles (HGV) associated with the Works.
- Detailed Site layout arrangements (including requirements for temporary works), plans for storage, accommodation, vehicular movements, delivery and site access and egress.
- Prohibited or restricted operations (locations, hours, noise etc.)

- Information relating to measures to protect bats during the demolition works, in accordance with the bat licence to be obtained from Natural England.
- Details of operations that are likely to result in disturbance, with an indication of the expected duration of each activity with key dates, including a procedure for prior notification of the LBI and relevant statutory and non-statutory (including neighbours) parties so that local arrangements can be agreed.
- A procedure to ensure communication is maintained with the LBI and the local community to provide information on any operations likely to cause disturbance (e.g. through meetings and newsletters).
- Provisions for affected parties to register complaints and the procedures for responding to complaints.
- Provisions for reporting on work progress and environmental performance to the Applicant and the LBI.
- Reference to, and provision of, a framework for compliance with relevant legislation and guidance.
- Details of emergency procedures which would be implemented on the Site.
- Control limits or target criteria for environmental issues, where practicable.
- Any requirements for monitoring and record-keeping.
- Housekeeping procedures and environmental management controls.

Management of the Works and Liaison

6.9.3 The Site would be registered with the Considerate Constructors Scheme[4].

6.9.4 All Works would be undertaken in line with the relevant legislative requirements, including the Construction (Design and Management) Regulations 2015[5] and Environmental Protection Act[6].

6.9.5 Following the appointment of the Principal Contractor, a single point of contact for neighbours, the LBI and public relations would be established, with a senior member of the project staff nominated for the role. Contact details would be displayed on the Site hoarding. Outside normal working hours, Site security would act as the main point of contact via a dedicated phone number. It is anticipated that regular meetings would take place to review progress and to agree any necessary actions. Notwithstanding this, it is recognised that positive action and reaction in the field are essential components for effective environmental management. Should there be any complaints, these would be logged, fully investigated and reported to the relevant department within the LBI as soon as possible. The complainant would be informed as to what action had been taken.

6.9.6 The Principal Contractor would continue to liaise with the local community, the LBI and other stakeholders, as appropriate, during the Works. The key liaison activities are anticipated to include:

- Site information boards, outlining progress to date and emergency contact details.

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[4] Considerate Constructors Scheme. Available at https://www.ccscheme.org.uk/. 1997.
[5] Construction (Design and Management) Regulations 2015 (Statutory Instrument No. 51) (online) Available at: http://www.legislation .gov.uk /uksi/2015/51/contents/made. 2015.
[6] Environmental Protection (as amended) (online) Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents. 1990.

- Regular newsletters and letter drops to businesses / key local community members in advance of any specific operation likely to cause disruption.
- Regular update meetings with neighbours and relevant stakeholders on no less than a quarterly basis.

Management of Contractors and Sub-Contractors

6.9.7 Individual contracts (for example waste removal) would incorporate appropriate requirements in respect of environmental management and control. These would be based upon statutory requirements and the principles of 'good working practice' outlined in the CEMP. Potential contractors and sub-contractors would be required to demonstrate how they would achieve the provisions of the CEMP, how targets would be met and how potential adverse effects would be prevented, reduced and offset.

Scope of Environmental Management Control

6.9.8 The CEMP would include detailed information on the controls to be implemented for the following:

- Public liaison (refer to above).
- Complaints procedure (refer to above).
- Public safety, emergencies and accidents.
- Traffic and access management (interaction with public highways, protection measures for pedestrians and cyclists and access and egress arrangements).
- Control of noise, vibration, dust and lighting.
- Materials storage and handling.
- Waste management and minimisation.
- Hazardous materials and contaminated land.
- Site drainage.
- Water use.
- Energy use.
- Protection of utility services.
- Protection of ecological resources including bats, breeding birds and retained trees.

6.9.9 A summary of the control measures that would be included in the CEMP is provided as follows.

Public Safety, Emergencies and Accidents

6.9.10 Site security arrangements for the Works would be in line with the requirements set out within the Construction (Design and Management) Regulations[7]. Appropriate levels of security, including fencing, CCTV and on-Site security personnel would be provided.

6.9.11 All Works would be undertaken in line with the Health and Safety at Work Act[8]. In addition, as part of the CEMP, there would be a requirement for the preparation of risk assessments and method statements prior to the commencement of activities. This would aid with the identification of risks and the development of mitigation measures to reduce any risk to an acceptable level.

6.9.12 Project offices and a main workforce welfare facility would be provided, as appropriate, with relocation according to the particular phase of the Works.

6.9.13 The CEMP would also contain a series of procedures / measures for emergencies / accidents that could occur alongside contact details for relevant organisations that need to be notified.

Vehicular Traffic and Access Management

6.9.14 All traffic entering and leaving the Site would be closely controlled. Vehicles making deliveries or removing spoil or demolition waste material would travel via designated routes which would be agreed with the LBI and other relevant bodies such as TfL.

6.9.15 To minimise the likelihood of congestion during the Works, strict monitoring and control of vehicles entering and exiting, and travelling around Site, would be implemented through a Construction Logistics Plan (CLP). An Outline CLP is included as Chapter 7 of the Transport Assessment which is submitted as a stand-alone document in support of the detailed planning application. It forms the basis for a detailed CLP which would be developed following the grant of planning permission and the appointment of the Principal Contractor.

6.9.16 Construction deliveries would also be carefully planned with delivery times agreed with each contractor using a booking system. Delivery schedules would be produced in order to look at the profiles of up and coming deliveries, regulate deliveries and eliminate bottle necks.

6.9.17 Consideration would also been given to reducing the number of vehicle movements by:

- The possible reuse of crushed concrete produced during demolition.
- Reuse of excavated material for filling (based on its suitability).
- The use of reusable hoardings where they can be used in non-aesthetic locations.

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[7] Construction (Design and Management) Regulations 2015 (Statutory Instrument No. 51) (online) Available at: http://www.legislation .gov.uk /uksi/2015/51/contents/made. 2015.

[8] Health and Safety at Work Act 1974 (as amended) (Statutory Instrument No. 37) (as amended) (online) Available at: http://www.legislation.gov.uk/ukpga/1974/37/contents. 1974.

- The potential use of prefabrication techniques and modern methods of construction, where practical and viable to do so without compromising quality.

6.9.18 Notices regarding any planned closures and diversion of either roads or footpaths would be given by the Principal Contractor to the LBI, the police, fire brigade and other emergency services. This would be undertaken sufficiently in advance of the required closures or diversion.

6.9.19 Effective wheel cleaning facilities would be provided at all Site entrance gate locations, together with a concrete hardstanding. In addition, recycled water would be used wherever possible. Supplementary cleaning would be provided as necessary using suitable means to keep the surrounding highway clean. Collected debris would be disposed of as controlled waste at a licensed waste disposal facility.

Pedestrian Routing

6.9.20 Pedestrians would be segregated from the Works at all times. Operative and staff access points would generally be located close to the main vehicular access gates, with separate pedestrian gates and footpaths provided.

6.9.21 Where temporary closures of pedestrian routes may be required for the erection of scaffolds and incoming services connections, the relevant permissions and licences would be obtained for the re-routing of pedestrian thoroughfares. Where more extensive closures or diversions are required, temporary proposals would be agreed with the LBI and the Local Highways Authority.

Construction Traffic Management

6.9.22 The topic of transport and access was scoped out of the ES (refer to **ES Volume 1, Chapter 2: EIA Methodology** and **ES Volume 3, Appendix 2.1 and Appendix 2.2**). However, a full assessment of the vehicle movements associated with the Works on the surrounding road network is presented within a standalone Transport Assessment submitted in support of the detailed planning application. As noted above, Chapter 7 of the Transport Assessment comprises a CLP which details construction traffic routing anticipated from the Works.

6.9.23 The estimated number of HGV movements was projected for the busiest periods during the Works to allow for the assessment of a robust reasonable worst-case scenario.

6.9.24 During the peak month, a total of 3,539 vehicle movements were anticipated, comprising 2,654 cars and 885 HGVs. This is equivalent to circa 165 vehicle movements per day (comprising 124 cars and 41 HGVs).

6.9.25 The average number of movements per month is estimated 1,946 vehicles, comprising 1,432 cars and 515 HGVs. This is equivalent to an average of 91 vehicle movements per day (comprising 67 cars and 24 HGVs).

6.9.26 Vehicles, generated by the development are expected to arrive at the site using Camden Road, and other parts of the Transport for London Road Network (TLRN) such as the A1, A501, M1, A40 which are already carrying high volumes of HGVs. For example, outside the Site Camden Road already carried an average per day of 24,545 vehicles in 2018 of which 814 were buses and 941 were HGVs. Similarly, the A503 Parkhurst Road carried 17,333 vehicles, 1,159 buses and 621 HGVs on an average day in the same year.

6.9.27 Therefore, the Works are expected to result in an impact of 0.7% on Camden Road and 0.9% on A503 Parkhurst Road.

Car Parking

6.9.28 The labour force would be encouraged to use public transport. Local traffic management measures for Site access would be agreed with the LBI prior to construction commencing in conjunction with surrounding development sites.

Control of Noise, Vibration, Dust and Lighting

6.9.29 It is anticipated that noise mitigation measures and the Best Management Practices as outlined in British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 1 noise'[9] and British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 2 vibration'[10], would be implemented. Measures outlined within the Greater London Authority's (GLA's) guidance on the Control of Dust and Emissions during Construction and Demolition[11] would also be adopted during the Works.

6.9.30 Mitigation measures that would be considered include using quiet construction methods, locating plant and equipment away from noise sensitive receptors, limiting hours of construction, and ongoing monitoring.

6.9.31 It is recognised that Works generated noise, vibration and dust could give rise to temporary and local disturbance. Site-specific best practice measures would therefore be implemented by the contractors to minimise the disturbance to local residents and other potentially sensitive receptors in the surrounding area. **ES Volume 1, Chapter 8: Air Quality, ES Volume 3 Appendix 8.9** and **ES Volume 1, Chapter 9: Noise and Vibration** include a detailed review of the proposed mitigation measures during demolition and construction. However, a summary is provided below:

- Display contact details on hoarding and in newsletters (specific individual who is based on Site).
- Record all dust, air quality and noise complaints, identify causes, take appropriate measures to reduce emissions in a timely manner, and record the measures taken, make the log available to the LBI.
- Familiarisation by all trade contractors with current legislation and best practice measures.
- Carry out regular dust inspections.
- Plan the Site layout so that noise producing and dust causing machinery and activities are located away from receptors, as far as possible.
- Erect barriers around dusty activities where practical.

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9 British Standards Institution. British Standard 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1 noise. 2014.

10 British Standards Institution. British Standard 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2 vibration. 2014.

11 GLA. The Control of Dust and Emissions during Construction and Demolition. 2014.

- Avoid Site runoff of water or mud.
- Keep hoarding, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from Site as soon as possible, unless being re-used on the Site.
- Cover or fence stockpiles to prevent wind whipping, where practicable.
- Ensure all vehicles switch off engines when stationary – no idling vehicles.
- Ensure all on-road vehicles use Ultra Low Sulphur Diesel (ULSD) and comply with the requirements of the London Low Emission Zone and the London Non-Road Mobile Machinery standards, where applicable.
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment, where practicable.
- Impose appropriate speed limits around Site and enforce them.
- Use cutting, grinding or sawing equipment fitted, or in conjunction, with suitable dust suppression techniques such as water sprays or local extraction.
- Ensure adequate water supply on the Site for effective dust/particulate matter suppression / mitigation, using non-potable water, where possible and appropriate.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the Site.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving the Site are covered to prevent escape of materials during transport.
- Used enclosed chutes and conveyors and covered skips.
- Use of hoarding around the perimeter of the Site.
- Use of hydraulic construction methods and demolition 'munchers' in preference to impact techniques where practical.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate and in a manner which minimises noise.
- Ensure equipment is readily available on the Site to clean any dry spillages. Clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Inspect on-Site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Effective wheel cleaning and specific fixed wheel washing on leaving the Site and damping down on haul routes.
- Access gates to be located at least 10 m from sensitive receptors, where possible.
- Employ best practices and adherence to appropriate guidance such as British Standard 5228 – Part 1[1].

- Switch all audible warning systems to the minimum setting required by the Health and Safety Executive (HSE).
- Selection of the quietest working equipment available (for example, electric / battery powered equipment which is generally quieter than petrol / diesel powered equipment) where practicable.
- Undertake activities such as loading and unloading, dismantling of equipment including scaffolding, and moving equipment and materials around the Site to minimise noise generation and, where practical, such activities would be undertaken away from noise sensitive areas.
- Position equipment behind physical barriers such as existing features or hoarding where practicable.
- Use of modern plant and equipment which is properly maintained and silenced where appropriate. All equipment to comply with EC Directives and UK Regulations set out in British Standard 5228-2:2009.

6.9.32 Noise and vibration levels would be monitored during the Works. If noise and vibration levels breach the agreed levels above which action must be taken to reduce potentially harmful effects, at sensitive receptors, alternative methods would be explored and employed.

6.9.33 Dust monitoring would also be undertaken during the Works, with special provisions applied for any materials containing asbestos. A safety method statement would outline the control measures necessary to minimise the risks to an acceptable level, and all statutory notices would be placed with the HSE. **ES Volume 3, Appendix 8.5 The Works Dust Risk Assessment** categorises the Site as a High Risk site for potential dust emissions. As such, **ES Volume 3, Appendix 8.9** sets out a comprehensive list of dust management controls to be implemented via the CEMP.

6.9.34 Good practice guidance documents prepared by the CIRIA[12] note that lighting on construction sites is typically part of on-site security and health and safety requirements. As such, it is assumed that the following sources of lighting would be present during the Works:

- Health, safety and security lighting associated with the Site perimeter, access(s), working areas, temporary car parking areas and construction compound(s). It is assumed that construction lighting would not include floodlighting.
- Vehicular / plant lighting required for particular work tasks.
- Internal lighting associated with any temporary office units / welfare facilities in the construction compound(s).

6.9.35 There would be a curfew to ensure that no lighting would be kept switched on overnight aside from low level lighting (for security / safety purposes), which would be implemented along the perimeter of the Works area(s) as part of a presence detection type security system.

6.9.36 Measures to minimise light spill and glare would be adopted during the Works, including use of baffles / shields, directional lighting and advanced notice / prior notification of works that would require construction lighting in proximity to sensitive receptors and post-installation checks, to ensure that any temporary lighting is suitably

[12] Construction Industry Research and Information Association. Environmental good practice on-site guide 4th edition (C741) available at: https://www.ciria.org/ 2015.

controlled. The measures would take into account the presence of bats on the Site and ensure lighting would be appropriate to ensure no adverse effects on bats using the Site.

Materials Storage and Handling

6.9.37 Environmental issues would be considered in the procurement of raw materials and all such materials would be appropriately stored in order to minimise damage by vehicles, vandals, weather or theft.

6.9.38 Contractors and their subcontractors would be expected to maintain a tidy Site and where practical, to operate a 'just-in-time' policy for the delivery and supply of materials for the works.

6.9.39 Excavated materials would primarily be removed from Site as there would be limited opportunity to store this material on spoil heaps. The excavated material would be loaded into HGVs for transportation to nearby construction or disposal sites.

6.9.40 Tanks and drums of liquid chemicals and fuels would be stored in bunded compounds and, where feasible, packaging would be returned.

Waste Management and Minimisation

6.9.41 Potential waste would be generated during all stages of the Works. An indication of likely waste types and volumes associated with the Works are set out earlier in this Chapter. Prior to the commencement of demolition a final pre-demolition audit would be undertaken to confirm quantities of individual waste types.

6.9.42 A Site Waste Management Plan (SWMP) was prepared for the Works and is submitted as a stand-alone supporting document to the detailed planning application. It sets out management / control measures to ensure that waste generated from the Works is kept to a minimum. Following the grant of planning permission and appointment of the Principal Contractor, the SWMP would be updated and agreed with the LBI. The Principal Contractor would be responsible for implementing, auditing and updating the SWMP as required.

6.9.43 As part of implementing the SWMP, the following measures would be investigated to facilitate the minimisation of waste generation:

- Agreements with material suppliers to reduce the amount of packaging, to use reusable packaging or to participate in a packaging take-back scheme.
- Implementation of a 'just-in-time' material delivery system to avoid materials being stockpiled, which would increase the risk of their damage and disposal as waste.
- Attention to material quantity requirements, to avoid over-ordering and generation of waste materials.
- Re-use of materials wherever feasible.
- Segregation of waste at source where practical.
- 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).

6.9.44 The SWMP includes a target for 95% of waste materials to be reused, recovered or recycled with the remaining 5% being sent to landfill. Of the 95%, 20% would be reused on-Site and 75% reused, recovered or recycled off-Site.

6.9.45 In order to reduce potential risks throughout the demolition and construction works, the following waste management measures would also be implemented:

- Skips would be colour coded and signposted to reduce risk of cross contamination.
- Skips would be covered to prevent dust and debris blowing about the Site and immediate environment.
- Burning of waste or unwanted materials would not be permitted on-site.
- All potentially hazardous materials would be properly sealed and securely stored when not used.
- Food waste from the welfare facilities on-site would be suitably packaged and stored for collection by the authorities to reduce the risk of infestation by pests or vermin. Where there is a local infestation then the local environmental health officer would be consulted about the action to be taken.
- All hazardous materials, including chemicals, cleaning agents, solvents and solvent containing products would be properly sealed in sealed containers at the end of each day prior to storage in appropriately protected and bunded storage areas.

6.9.46 The movement of materials would adhere to the guidance set out in the 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites'[13]. The destination of all waste or other materials removed during demolition and construction would be notified to the relevant authority by the Principal Contractor or relevant contractor for approval. Loads would only be deposited at authorised waste treatment and disposal sites. Deposition of waste would be in accordance with the requirements of legislation.

Contaminated Land

6.9.47 The Works would be carried out to prevent, contain or limit, as far as reasonably practicable, any adverse impacts arising from the presence of contaminated land or materials such as asbestos.

6.9.48 The results of the site investigations have allowed a remediation framework to be developed for the identification, assessment, and mitigation of contamination risks associated with in situ soils and reuse of excavated materials. The remediation framework identifies remediation requirements for the protection of human health and controlled waters as well as identifying any areas that require remediation to be undertaken. A suite of documents including a Preliminary Environmental Risk Assessment, Generic Quantitative Risk Assessment (including the results of an environmental site investigation) and Remediation Strategy are submitted as separate stand-alone supporting documents to the detailed planning application planning application.

6.9.49 The Site Investigation found only minor exceedance of metals and hydrocarbons in the Made Ground and the absence of widespread contamination across the Site. As a result, the Remediation Strategy is limited in scope and

[13] Department for the Environment, Food and Rural Affairs. Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (online) Available at: https://www.gov.uk/ government/uploads/system/uploads/attachment_ data/file/ 69308/pb13298-code-of-practice-090910.pdf. 2009.

primarily refers to standard construction practices required by all UK construction sites, including appropriate waste handling and management, dust suppression and water management practices.

6.9.50 Any contaminated ground encountered would be excavated, separated, stockpiled and removed off site, via an approved waste contractor under the Duty of Care Regulations to the level of contamination present and the waste classification determined from chemical analysis and Waste Acceptance Criteria testing as necessary, to ensure compliance with relevant legislation.

6.9.51 Key information on excavated and fill materials, which fall within the Contaminated Land: Applications in Real Environments (CL:AIRE) Definition of Waste: Code of Practice (version 2) would be registered with the CL:AIRE Register of Materials with the intention of linking up with other project partners and services providers to make the process quicker and easier to find 'homes' for reuse of the soil or fill materials.

6.9.52 Appropriate use of Personal Protective Equipment (PPE) would be enforced and implemented, in adherence to health and safety protocols, plans and procedures. Demolition and construction workers would be reminded to remain vigilant of ground conditions at all times and report to the Principal Contractor, any suspect areas of potential contamination. Provision would be made for adequate facilities and procedures for personal washing and changing.

6.9.53 Oils and hydrocarbons would be stored in designated locations with specific measures to prevent leakage and release of their contents, including the siting of storage areas away from surface water drains, on impermeable bases with impermeable bunds that have no outflow and are of adequate capacity to contain 110% of the contents. Valves and trigger guns would be protected from vandalism and kept locked up when not in use. Details of appropriate storage and handling measures would be presented within the CEMP.

6.9.54 Ground investigations have been undertaken and would inform the Foundation Works Risk Assessment, which would define the appropriate piling methods and foundation design to mitigate risk.

6.9.55 The Works would be managed in accordance with the CIRIA guidance 'C532 - Control of Water Pollution from Construction Sites'[14] and the relevant Guidelines for Pollution Prevention (GPP)[15].

Unexploded Ordnance (UXO)

6.9.56 Screening for UXO, in areas not covered in any previous munitions clearance surveys, would be undertaken on behalf of the Principal Contractor. A watching brief for UXO would be maintained during excavation works.

Protection of Utility Services

6.9.57 A Utilities Survey would be completed for the Site to confirm any existing services present within the Site boundary. Any that are considered to be impacted by the Works would be relocated during the enabling works, prior to

[14] Construction Industry Research and Information Association. Control of Water Pollution from Construction Sites. Guidance for consultants and contractors (C532) (online) Available at: https://www.ciria.org/ProductExcerpts/C532.aspx. 2001.

[15] Environment Agency. Pollution Prevention Advice and Guidelines. Withdrawn 2015.

commencement of the substructure works proposed. Any proposed relocation or diversions proposed for existing services would be designed and completed prior to consultation with the appropriate utility companies.

6.9.58 The Thames Lea Tunnel is located beneath the Site at a depth of 40 m beneath the existing Site ground levels. Piling in the vicinity of the tunnel would be restricted to a maximum depth of 20m to avoid entering the exclusion zone. In addition, Ground Movement Analysis will be undertaken to demonstrate that there are no adverse effects on the tunnel. Ongoing consultation will be held with Thames Water.

Site Drainage

6.9.59 The Principal Contractor would ensure that potentially contaminated water is disposed of in accordance with the Water Resource Act (1991)[16] and other relevant legislation, and to the satisfaction of the Environment Agency and / or Thames Water Utilities Limited.

6.9.60 Best practice pollution prevention measures would be put in place to isolate environmentally damaging substances and the prevention of their release into surface water or underground drainage systems. These would include:

- Careful siting and bunding of fuel storage facilities and any areas used for the storage of potentially hazardous materials.
- Works involving concrete would be carefully controlled.
- Management of Site drainage to prevent sediment laden / contaminated run-off entering the wider environment.
- Surface drainage would pass through settlement tanks and oil interception facilities where required and discharge arrangements would be agreed with Thames Water Utilities Limited and the LBI.
- Construction vehicle parking areas may need to be paved.
- Provision of safe disposal of wastewaters.

6.9.61 The detailed CEMP would outline procedures to be implemented in the instance of accidents and / or spillages. This would include the on-Site provision of equipment for containing spillages, such as emergency booms and chemicals to soak up spillages. In the unlikely and unplanned event of an incident occurring, the Environment Agency (EA) and Thames Water Utilities Limited would be immediately contacted.

Water Use

6.9.62 All contractors would be required to investigate opportunities to minimise and reduce the use of water, such as:

- Implementation of staff-based initiatives such as turning off taps when not in use, both on-site and within Site offices.
- Use of recycling water systems such as wheel washes.

[16] HMSO. Water Resources Act 1991 (as amended). 1991.

- Use of a rainwater harvesting system, for use in equipment and vehicle washing, would also be investigated.

6.9.63 Water consumption during the Works would be monitored, either through sub-metering or reading of utility bills, to allow comparison against best practice benchmarks and improvements to be made.

Protection of Ecological Resources

6.9.64 As part of the CEMP, procedures and management measures would be included to ensure the protection of ecological resources.

6.9.65 The CEMP would include measures to ensure compliance with the bat licence from Natural England to allow the demolition of the buildings. This would include the detailed information that sets out timing and methods for demolition including measures such as on-Site ecological supervision and sensitive, soft-strip of roost features as well as the avoidance of demolition of buildings that have hibernation roost potential during the core hibernation period set out in the licence from Natural England. Further details are provided in **ES Volume 1, Chapter 10: Ecology**.

6.9.66 To avoid a potential offence under the relevant legislation, no clearance of suitable vegetation would be undertaken during the bird-nesting season (1st March to 31st August inclusive). If this is not practicable, any potential nesting habitat to be removed should first be checked by a competent ecologist in order to determine the location of any active nests. Any active nests identified would then need to be cordoned off (minimum 5 m buffer) and protected until the end of the nesting season or until the birds have fledged. These checking surveys would be carried out no more than three days in advance of vegetation clearance.

6.9.67 All trees to be retained within the Site or adjacent to the boundary off-Site would be subject to protective measures in line with NJUG 4 Guidelines[17] and BS5837 [18].

6.9.68 Invasive species are known to be present on the Site (refer to **ES Volume 3, Appendix 10.3 and Appendix 10.6**). Appropriate safeguards would be implemented to prevent the spread of the species during the Works. Such measures would likely involve herbicide application and / or excavation and removal of any material within the Site itself (which would be disposed of appropriately to prevent colonisation of off-Site areas).

Energy Use

6.9.69 All relevant contractors would be required to investigate opportunities to minimise and reduce the use of energy, such as:

- Use of alternatives to diesel / petrol powered equipment where possible.
- The incorporation of sources of renewable energy, to offset the use of main utilities, would be considered.
- Selection and specification of energy efficient plant and equipment wherever viable.

[17] National Joint Utilities Group (NJUG). Guidance for the planning, installation and maintenance of utility apparatus in proximity to trees NJUG Volume 4. 2007.

[18] British Standards Institution (BSI). BS 5837:2012 Trees in Relation to Design, Demolition and Construction - Recommendations. 2012.

- Implementation of staff-based initiatives such as turning off plant and equipment when not in use, both on-site and within Site offices.

6.9.70 Energy consumption during the Works would be monitored, either through sub-metering or reading of utility bills, to allow comparison against best practice benchmarks and improvements to be made.

Conclusions

6.9.71 The Works would be undertaken over a period of approximately five years. Works, subject to planning permission being granted, would commence in 2022 and complete in 2027**.** The year of opening and operation of the Development is taken to be 2027.

6.9.72 The Works would be managed via the development of a CEMP which was prepared and submitted as a stand-alone document supporting the detailed planning application. The final CEMP would be refined, updated and agreed with the LBI and other relevant bodies prior to the commencement of Works. The CEMP would comply with the LBI's CoP and all mitigation measures set out in this Chapter. The appointed Principal Contractor(s) for the Works would be obliged, via planning condition, to adhere to the CEMP.

6.9.73 The above procedures would ensure the delivery of a high level of environmental control throughout the Works, thereby minimising the potential for adverse effects. Further detail regarding specific mitigation during the Works are presented within **ES Volume 1, Chapters 7** to **13** and **ES Volume 2: Townscape, Visual and Above Ground Built Heritage Assessment**.

7. Socio-Economics

7.1 Introduction

7.1.1 This Chapter, prepared by WSP, presents an assessment of the likely significant socio-economic effects of the Development.

7.1.2 This Chapter provides a description of the methods used in the assessment. This is followed by a description of the relevant socio-economic baseline conditions of the Site and surrounding area, together with an assessment of the likely effects of the Development during the Site preparation, demolition and construction phase (the 'Works') and once the Development is completed and operational. The significance of such effects is highlighted.

7.1.3 Where appropriate, additional mitigation measures are identified to avoid, reduce or offset any likely significant adverse effects. Taking account of the additional mitigation measures, the nature and significance of the likely residual effects are described. The cumulative socio-economic effects of the Development and other relevant Cumulative Schemes are also considered.

7.1.4 The Chapter is supported by further detailed information contained within the following appendices:

- **ES Volume 3, Appendix 7.1: Population Yield Calculations.**
- **ES Volume 3, Appendix 7.2: Policy Review.**

7.2 Policy Review

7.2.1 In order to provide context for the assessment, and to illustrate how the Development will help to meet local policy targets and aspirations, a review of the key regeneration, economic development and related planning policies for LBI has been undertaken. It is included within **ES Volume 3: Appendix 7.2**. The Planning Statement, which is submitted as a standalone document supporting the planning application, also includes appendices with a detailed matrix for each of the following planning policy documents:

- The London Plan (2021).
- LBI Adopted and Emerging Local Plans.
- Holloway Prison Site SPD (2018).
- Mayor of London's emerging Good Homes Guidance.

7.2.2 Given the nature of the Development, this Chapter has supplemented the planning policy review set out in the Planning Statement, giving particular consideration to policy in relation to housing and employment needs. **Appendix 7.2** outlines the core messages from the following policy documents, and should be read in conjunction with the detailed Policy Review included in the Planning Statement:

- The Islington Core Strategy (2011) [1].
- Islington's Local Plan Development Management Policies (2013) [2].
- The London Plan (2021)[3].
- The National Planning Policy Framework (2021)[4].
- Emerging Islington Local Plan Strategic and Development Management Policies[5].
- Islington Strategic Housing Market Assessment (2017)[6].
- Islington Employment Land Study (2016) [7].

7.3 Assessment Methodology and Significance Criteria

Assessment Methodology

7.3.1 In order to assess the likely socio-economic effects of the Development, baseline information on a variety of socio-economic indicators was obtained and interpreted through a desktop analysis exercise. Data included in this assessment was collected from nationally recognised and reputable resources, such as:

- The Office for National Statistics (ONS).
- The National Online Manpower Information System (NOMIS).
- The Greater London Authority's London Datastore.

7.3.2 Information was also obtained from the Applicant and the project team regarding existing on-site employment. The indicators were grouped into several thematic areas. Taken together, it is considered that these thematic areas provide a robust indication of the prevailing baseline socio-economic situation. The main thematic areas considered within the baseline assessment are as follows:

- Population and demographic change.
- Economic activity.
- Education and skills.
- Housing.

[1] Islington Council. The Islington Core Strategy. 2011. [Online] Accessed 1 June 2021.
[2] Islington Council. Islington Local Plan Development Management policies. 2013. [Online]. Accessed 1 June 2021.
[3] Mayor of London. The London Local Plan. 2021. [Online]. Accessed 30 August 2021.
[4] MHCLG. The National Planning Policy Framework. 2021. [Online]. Accessed 30 August 2021.
[5] Islington Council. Islington Local Plan and DMPs 2020. [Online]. Accessed 30 August 2021.
[6] Islington Council. Islington Strategic Housing Market Assessment. 2017. [Online]. Accessed 30 August 2021.
[7] Islington Council. Islington Employment Land Survey. 2016. [Online]. Accessed 30 August 2021.

- Deprivation and poverty.

7.3.3 The baseline assesses the economic and social conditions at a range of spatial scales (effect areas). The following effect areas were used in the socio-economic baseline:

- **Local:** Effects within the St George's ward (in which the Site is located).
- **District:** Effects within the London Borough of Islington (LBI) administrative boundary.
- **Regional:** Effects within Greater London.
- **National:** Effects compared to UK or Great Britain average depending on the dataset.

7.3.4 The baseline compares socio-economic indicator data across the above geographic scales. Data were provided for the local effect area of St George's ward where available, while the assessment has also drilled down to the smaller geography of Lower Layer Super Output Areas (LSOAs) when assessing deprivation conditions. The most up to date data available has been used for each socio-economic indicator. Data from the 2011 Census have been used throughout the socio-economic baseline to characterise the existing local conditions since this still provides the single best source of statistics available at a geographic scale disaggregated at the ward level. The results of the 2021 census are not due to be published until March 2022.

7.3.5 The baseline includes an assessment of health facilities, schools and open space surrounding the Site. The following catchment areas were applied:

- 1 km for Primary schools.
- 2 km for Secondary schools.
- 1.5 km for General Practitioners (GPs) and open space.

7.3.6 1 km and 2 km catchment areas were used in the assessment of primary and secondary schools, respectively, based on the average distance travelled to school across LBI for primary and secondary schools in 2016 (the most recently available data)[8].

7.3.7 For GPs and open space, a radius of 1.5 km from the centre of the Site was used. It is widely accepted (and is considered standard practice within EIA socio-economic assessments for sites in London), that 1.5 km is a suitable radius when considering the provision of these facilities, as it represents an approximate 15 to 20-minute walk.

7.3.8 It should be noted that WSP consulted with the North Central London Clinical Commissioning Group (CCG) and NHS London Healthy Urban Development Unit (HUDU) during the preparation of this Chapter and the separate Health Impact Assessment which is submitted as a stand-alone document supporting the planning application.

[8] Greater London Authority. Distance Travelled (2010-2016) [Online]. [Accessed 1 June 2021].

The NHS London HUDU suggested that for some sites in LBI it may be more appropriate to consider GP practices within 1 km of the site, given the LBI has a high population density and the Site is within an inner London location.

7.3.9 However, as mentioned above, it is widely accepted that 1.5 km is a suitable radius when considering GP capacity in London, as it is an approximate 15 to 20-minute walk. Moreover, the Site is in a highly accessible location, with a Public Transport Accessibility Level rating (PTAL) ranging from 6a to 4, indicating it has very good accessibility to public transport. In addition, the Development would significantly improve the permeability of the Site, opening up the former Prison site and providing pedestrian routes through it, allowing easier access to local amenities. It is therefore reasonable to assume that future residents at the Site would be willing to travel over 1 km to a GP practice, and certainly up to 1.5 km. As a result, following consultation with the wider EIA team, it was agreed that a catchment area of 1.5 km should be retained.

7.3.10 Effects of the additional population from the residential element of the Development on existing health and education facilities were assessed based on the estimated net additional population yield of the completed and operational Development. The LBI does not provide a specific methodology for calculating child yield or population yield for new developments within the local authority. The Greater London Authority (GLA) Population Yield Calculator (Version 3.2)[9] was therefore used to estimate the total population that would be generated by the Development. In this case the 'Inner London' density levels and a PTAL rating of 5-6 were applied. The unit numbers within the complete and operational Development are detailed in **Table 7.18**. Population yield calculation tables are included at **Table 7.14, Table 7.15,** and **ES Volume 3, Appendix 7.1**.

The Works

Temporary Construction Employment

7.3.11 The temporary demolition and construction employment benefits have been assessed based on the anticipated build cost for the Development provided by the Applicant.

7.3.12 Data from the Annual Business Survey (ABS) 2018 Revised Results[10] reveals that total turnover in the UK construction sector during 2018 was £287,717 million. Concurrently the average number of people employed in the construction sector during 2018 was 1.53 million according to the ABS, suggesting that average turnover per Full Time Equivalent (FTE) construction job in 2018 was £188,050.

7.3.13 Using the build cost estimate and the average turnover per full time equivalent construction job in 2018 of £188,050, the gross number of person years of temporary construction employment has been estimated.

[9] Greater London Authority. GLA Population Yield Calculator v3.2 [Online]. [Accessed 1 June 2021].
[10] ONS. Annual Business Survey 2018 Revised Results. 2020 [Accessed 1 June 2021].

Net Additional Construction Employment

7.3.14 In order to calculate the net additional employment during the construction phase, adjustments have been made for several factors which, when considered together, allow an assessment of the net additional jobs that will be generated during the construction phase. The following adjustment factors have been considered:

- **Displacement effects** – would occur if some construction workers simply switch jobs from one location to another (and not at the Development).
- **Substitution effects** – would occur if a construction firm substitutes one activity for a similar one (such as recruiting a jobless person while another employee loses a job) to take advantage of public sector assistance. It can be thought of as 'within firm' displacement.
- **Leakage effects** – would occur if some of the construction jobs created by the Development are taken up by people living outside the impact areas assessed;
- **An indirect multiplier effect** – is likely to create supply chain effects which would benefit local firms such as cleaning and maintenance contractors, training agencies and other suppliers of goods. This effect is known as a supply linkage multiplier; and
- **An induced multiplier effect** – is associated with increased expenditure in the local area by people deriving incomes from the direct and indirect effects of the construction employment. The induced effects of the Development would bring benefits to local shops and other service providers. This effect is known as a consumption multiplier.

7.3.15 These adjustment factors have been informed by the HCA Additionality Guide[11] and WSP's professional judgement.

7.3.16 The following formula has been used to assess the net additional construction employment generated by the proposed development:

Gross on-site construction jobs x (1 – displacement) x (1 – substitution) x (1 – leakage) x Composite Multiplier = net additional jobs

7.3.17 The assumptions outlined in **Table 7.1** below have been used to calculate the net additional construction jobs. To demonstrate the wider impacts of this Development, assumptions have been made based at both the district level (LBI) and at a regional level (Greater London).

[11] English Partnerships. Additionality Guide: A Standard Approach to Assessing the Additional Impacts of Projects (3rd Edition). 2008.

Table 7.1 Assumptions Used to Calculate Net Additional Construction Jobs

Adjustment	District Level (LBI)	Regional Level (Greater London)
Displacement.	**15%** As of the 2019, 8,000 persons across LBI worked in the construction industry[12]. The potential for 1,082 jobs per year for the development (see assessment section) would therefore represent 13% of this workforce. As such, it is likely that this employment would have a minor impact on the local workforce and therefore displacement would be minimal. A conservative displacement rate of 15% has therefore been applied based on the HCA Additionality Guide.	**15%** This level of displacement is adopted to account for any potential local adverse effects and for consistency with the district level of displacement.
Substitution.	**0%** It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible.	**0%** It is not considered likely that any firms that will be operating within the construction industry will be substituting employment activities for other activities. Therefore, this has been considered to be negligible.
Leakage.	**20%** A low level of leakage at the local area has been assumed based on the HCA Additionality Guide.	**10%** A low level of leakage at the local area has been assumed based on the HCA Additionality Guide.
Composite Multiplier.	**1.1** It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.1 at the district level (which covers both the indirect and induced multiplier effect).	**1.5** It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.5 at the regional level (which covers both the indirect and induced multiplier effect).

[12] NOMIS. Labour Market Profile - Islington [Online]. [Accessed 1 June 2021].

Gross Value Added from Temporary Construction Employment

7.3.18 To estimate the Gross Value Added (GVA)[13] by construction employment, the Annual Business Survey 2018 Revised Results[10] provides estimates of the approximate GVA by different sectors of the UK economy. During 2018 the approximate GVA by the construction sector was £107,614 million.

7.3.19 With an average number of people employed in the construction sector during 2018 of 1.53 million, this suggests that the GVA per FTE construction job in 2018 was £70,335. Based on ready reckoner figures provided in the Additionality Guide[14] and professional judgement, a low level of leakage was assumed (10% leakage), to reflect that a proportion of GVA generated by the temporary construction employment will likely leak outside of the local and regional area.

The Completed and Operational Development

Gross On Site Employment

7.3.20 The likely number of gross full-time equivalent (FTE) jobs that would be supported by the commercial floorspace of the Development was assessed using a combination of the HCA's Employment Density Guide (Third Edition 2015)[15], information provided by the Applicant, and WSP's professional experience and expertise.

7.3.21 The Development will support a number of permanent jobs across Plots B and C of the Development. This includes a Women's Building located on Plot C and flexible commercial floorspace across Plots B and C. It should be noted that the specifics of the end use and owners of the flexible commercial floorspace created by the Development is not known. This is to allow flexibility in the planning application, allowing for a mixture of uses across both Plots. As a result, there are inherent difficulties in estimating the additional employment effects of the proposed development. To overcome this, WSP have made a number of reasonable assumptions, in conjunction with the EIA team, around the appropriate use classes, informed by knowledge of the Development and WSP's professional judgement. These are set out below, and in **Table 7.16**, in the Assessment section.

- **Changes to Use Class Orders** – in August 2020, the UK Government laid Statutory Instrument 2020/757, the Town and Country Planning (Use Classes) (Amendment) (England) Regulations 2020. This related to changes to the use class orders which came into effect in September 2020. One of the key changes is that the former Classes A1, A2, A3, B1a, B1b, B1c, D1 and D2 will be grouped together into the much broader Class E. Pertinently however, at the time of writing, these changes have not been translated into a modified Employment Density Guide. WSP, for the purpose of this assessment, have continued to apply the employment

[13] Gross Value Added (GVA) is a conventional measure of economic well-being. It measures the value of goods and services produced in an area, industry, or sector of an economy.
[14] English Partnerships. Additionality Guide: A Standard Approach to Assessing the Additional Impacts of Projects (3rd Edition). 2008.
[15] Homes & Communities Agency. 2015. Employment Density Guide 3rd Edition [Online]. [Accessed 1 June 2021].

densities recommended in the Employment Density Guide to provide a nuanced and appropriate estimate of employment supported;

- **Employment density** – evidence provided by the Employment Density Guide has been used to estimate the employment created at the Development. Employment density refers to the average floor space in square metres (sqm) per full-time equivalent (FTE) job. Employment density describes the intensity of use within a building and is an indicator of the amount of space typically occupied by one person in a commercial building.
- **Women's Building (Use Class F2)** – the Women's Building would be under Use Class F2 which is akin to the now revoked Class D1. As the Employment Density Guide does not recommend an employment density for D1 uses due to the diversity of operations under D1 Use, an employment density of between 70 and 90 was assumed. This assumption was based on research into the type of facility which are typically provided under D1 uses, and experience of delivering schemes of this nature in the past. These include day nurseries and day centres, which are considered to support an equivalent level of employment as the Women's Building. This employment density was applied to the GIA floorspace.
- **Flexible Commercial Space (Use Class E)** – given the flexibility of the end uses of the commercial floorspace to come forward across Plots B and C, the assessment has considered the lowest job generating employment density under the new Use Class E and the highest job generating employment density under the new Use Class E. This provides a maximum and minimum range of employment generation across the flexible commercial space, with the ultimate job generation falling within this range. The lowest employment density will be for the former Use Class B1a (8), and the largest will be Use Class D2 (200). These employment densities were applied to the Gross Internal Area (GIA) floorspace. More details can be viewed in **Table 7.16**.
- **Employment derived from 'extra care' residential units** – amongst the 985 residential units to be provided by the Development, there would be 60 'extra care' units which would be served by staff. Based on consultations with Velocity Transport Planning (the project Transport Consultants) it is estimated that the extra care units would support 10 FTE staff. This estimate has been applied within the assessment as the Employment Density Guide does not provide employment densities for residential related uses.
- **Employment derived from concierge services** - There would be a further 20 staff employed working various shifts providing concierge services for the residential units. It is estimated that this equates to a further 10 FTE roles. This estimate has been applied within the assessment as the Employment Density Guide does not provide employment densities for residential related uses.

7.3.22 Given the assumptions outlined above, and the inherent difficulties in estimating employment generation without more specific information, the employment calculations set out later in the assessment should be considered an indicative range of the minimum and maximum amount of employment which will be generated. This provides a robust assessment. The ultimate job creation would fall somewhere in this range.

Net Additional Employment

7.3.23 To calculate the net additional employment of the complete and operational Development, adjustments have been made for several factors which, when considered together, allow an assessment of the net additional jobs that would be generated as a result of the Development. The following adjustment factors have been considered:

- **Displacement effects** – would occur if some employees simply switch jobs from one location to another (and not within the Development).
- **Substitution effects** – would occur if a firm substitutes one activity for a similar one (such as recruiting a jobless person while another employee loses a job) to take advantage of public sector assistance. It can be thought of as 'within firm' displacement.
- **Leakage effects** – would occur if some of the jobs created by the Development are taken up by people living outside the impact areas assessed.
- **An indirect multiplier effect** – is likely to create supply chain effects which would benefit local firms such as cleaning and maintenance contractors, training agencies and other suppliers of goods and services to the occupiers of the Development. This effect is known as a supply linkage multiplier.
- **An induced multiplier effect** – is associated with increased expenditure in the local area by people deriving incomes from the direct and indirect effects of the Development. The induced effects of the Development would bring benefits to local shops and other service providers. This effect is known as a consumption multiplier.

7.3.24 The following formula has been used to assess the net additional employment generated by the proposed development:

Gross on-site jobs x (1 – displacement) x (1 – substitution) x (1 – leakage) x Multiplier = net additional jobs

7.3.25 The assumptions used to calculate the net additional permanent employment are outlined in **Table 7.2**. To demonstrate the wider impacts of this scheme, assumptions have been made based at both the district level (LBI) and at the regional level (Greater London).

Table 7.2 Assumptions Used to Calculate Net Additional Permanent Employment

Adjustment	District Level (LBI)	Regional Level (Greater London)
Displacement.	**15%** As the new employment space is not considered to have a notably adverse effect on the existing businesses within LBI, a low rate between 0% and the ready reckoner figure for 'low' displacement of 25% from the HCA Additionality Guide was adopted.	**15%** This level of displacement is adopted to account for any potential local adverse effects and for consistency with the district level of displacement.
Substitution.	**0%**	**0%**

Adjustment	District Level (LBI)	Regional Level (Greater London)
	It is not considered likely that any firms that will be operating at the development will be substituting employment activities for other activities. Therefore, this has been considered to be negligible.	It is not considered likely that any firms that will be operating at the development will be substituting employment activities for other activities. Therefore, this has been considered to be negligible.
Leakage.	**34%** Out of 206,000 people residing in LBI, the 2011 Census recorded 71,000 residents who commuted outside of the local authority for work[16]. This represents a leakage rate of 34%. This would be considered a worst-case scenario.	**10%** A low level of leakage at the local area has been assumed based on the HCA Additionality Guide and professional judgement.
Composite Multiplier.	**1.1** It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.1 at the district level (which covers both the indirect and induced multiplier effect).	**1.5** It is assumed that 'average' linkages will be evident in the supply chain. Based on this, the Additionality Guide recommends a composite multiplier of 1.5 at the regional level (which covers both the indirect and induced multiplier effect).

7.3.26 In addition to the above adjustment factors, the status of the employment currently supported on Site was considered to determine the net employment created by the Development.

Gross Value Added from Net Additional Employment

7.3.27 To estimate the annual GVA created by the net additional employment associated with the Development, information from the ONS Sub-regional Productivity tables[17] was used.

Housing Delivery

7.3.28 The effect of the Development on housing delivery was calculated based on LBI's housing delivery targets as set out in the London Plan (2021)[18].

7.3.29 The Development's contribution to the provision of affordable housing was also assessed against the targets set in LBI's Adopted Local Plan. Policy CS 12 of LBI's Local Plan sets a target that 50% of additional housing should be affordable housing[19].

[16] ONS. Location of usual residence and place of work by method of travel to work. 2011. [Online] [Accessed 1 June 2021]
[17] ONS. Sub regional Productivity: Labour Productivity (GVA per Hour Worked and GVA per filled job) Indices. by UK NUTS2 and NUTS3 Subregions. 2020. [Accessed 1 June 2021].
[18] Mayor of London. The London Plan. 2021. [Online] [Accessed 1 June 2021].
[19] Islington Council. Islington's Core Strategy. 2011. [Accessed 1 June 2021].

Additional Household Expenditure

7.3.30 An estimation of the additional local expenditure created by the Development was calculated by estimating the spending generated by future residents of the Development based on an estimated average weekly household expenditure of £567. This figure is derived from the statement on Family Spending (2020), published by ONS in March 2021[20]. A percentage figure of 25% was assumed for leakage.

Additional Council Tax Receipts

7.3.31 An estimate of the additional Council Tax receipts generated by the new residential accommodation in the Development was calculated based on the assumption that all new properties at the Site are rated as Council Tax Band D. This is a mid-rate Council Tax Band which generates a conservative estimate of Council Tax receipts. It was assumed that the 289 one-bedroom units are likely to be occupied by only one person and, as such, it is assumed that residents of these properties would be eligible for the single adult discount of 25% on the standard Band D charge. It is also assumed that all residential units are fully occupied. The additional council tax revenue was assessed in relation to overall council tax revenue for LBI, which is at the district level.

Effects of the Additional Residential Population

7.3.32 Effects of the additional population arising from the residential element of the Development on existing services and facilities were assessed based on the estimated population yield of the completed Development. The GLA Population Yield Calculator (Version 3.2)[9] and proposed accommodation schedule for the Development was used to estimate the size of the new population that would be generated by the Development. Following consultation with the wider EIA team, two population yield scenarios were undertaken.

- **Full Population Yield** – in which the full accommodation schedule was inputted into the GLA Population Yield Calculator. This provides the total population yield of the Development.
- **Child Population Yield** – in which the 60 1-bed units which have been designated as extra care homes have been removed, given these do not generate children. The occupancy of these units would be ensured through a S106 agreement, which would include a clause which restricts the occupancy age of these units to over 55's. This was agreed with the LBI as part of pre-application discussions.

7.3.33 **Table 7.14** and **Table 7.15** in the assessment section shows the two population yield calculations.

[20] ONS. Family Spending in the UK: financial year ending 2020. Published March 2021. [Accessed 1 June 2021].

Education Facilities

7.3.34 Effects of the Development on education facilities capacity was estimated by comparing the child yield of the Development (calculated using the GLA's Population Yield Calculator) with school capacity data as published by the Department for Education. Details of this are set out in the social infrastructure audit section of this Chapter.

7.3.35 The calculation set out in later in this Chapter assumes a worst-case scenario in which none of the new residents of the Development are already enrolled at local primary and secondary schools. Although it is not possible to quantify the exact proportion of residents already enrolled at local primary and secondary schools, this has been taken into consideration when determining the likely magnitude of effect of the Development upon local education provision in order to provide a realistic assessment.

General Practitioner Services

7.3.36 Population demand for GPs services likely to arise from the Development was assessed based on the GP: patient ratio of 1:1,800, as recommended by the Healthy Urban Development Unit (HUDU)[21], compared against the total population yield of the Development (calculated using the GLA's Population Yield Calculator).

7.3.37 The calculation set out later in this Chapter assumes a worst-case scenario in which none of the new residents of the Development are already registered to local GP practices. Although it is not possible to quantify the exact proportion of residents already registered to local GPs, this has been taken into consideration when determining the likely magnitude of effect on local GP provision in order to provide a realistic assessment.

Open Space

7.3.38 Open space requirements arising from the Development were calculated based on LBI's requirements as set out in LBI's Local Plan: Development Management Polices (2010)[22] . Specifically, public open space should be provided in new developments of over 200 residential units based on the following standards:

- 5.21 sqm per resident.
- 2.6 sqm per employee.

[21] NHS London Health Urban Development Unit. 2009.
[22] London Borough of Islington. Development Management Polices (2013) [Accessed 1 June 2021].

Children's Play Space

7.3.39 Children's play space requirements were calculated using the benchmark outlined in the GLA's Shaping Neighbourhoods: Play and Informal Recreation SPG (2012)23 of 10 sqm per child and the estimated child population yield of the Development using the GLA Population Yield Calculator (Version 3.2).

Consultation

7.3.40 As part of undertaking the assessment, consultation was undertaken with the North Central London Clinical Commissioning Group (CCG) and the Healthy Urban Development Unit (HUDU). This was undertaken in order to gain a local insight into the provision of GP practices within the local area and any particular issues faced by practices individually. This helped to inform the assessment on the impact of the Development on healthcare facilities.

7.3.41 In addition, between July and September 2021, three approaches were made to the LBI regarding further consultation on the additionality assumptions applied to the employment calculations. Whilst no response was received, it is not considered that this has affected the assessment.

7.3.42 The EIA Scoping Opinion (refer to **ES Volume 3, Appendix 2.2: EIA Scoping Opinion**) issued by the LBI in July 2020 reviewed the proposed approach of the socio-economic assessment set out in the EIA Scoping Report (refer to **ES Volume 3, Appendix 2.1: EIA Scoping Report**). The EIA Scoping Opinion agreed with the proposed scope of the assessment but requested the following be included or considered within the assessment:

- Details of the methodology for undertaking each element of the assessment.
- The assessment of employment should ensure that the net employment benefits of the Development are reported, and so include leakage, displacement and multiplier effects.
- The most up to date data should be used and sources stated.
- A relevant and robust review of policy should be undertaken; this is included as Appendix 7.2.
- The EIA Scoping Opinion considered that it was not appropriate for the assessment to include local employment and training initiatives within the assessment; this has therefore not been included.

Significance Criteria

7.3.43 The assessment of significant effects was undertaken in accordance to the general methodology presented in **ES Volume 1, Chapter 2: EIA Methodology** and professional judgement as there are no industry standard

[23] Greater London Authority. Shaping Neighbourhoods: Play and Informal Recreation: Supplementary Planning Guidance. 2012. [Accessed 1 June 2021].

significance criteria for the assessment of socio-economic effects. The assessment was aimed to be objective and to quantify effects where possible. In circumstances where this is not possible, qualitative assessments were made and justified.

7.3.44 The identified effects have then been evaluated against three main criteria, drawing on the evaluation criteria typically used in environmental impact assessment. The evaluation criteria used in this Chapter are as follows:

- **Scale of the effect** – this includes the magnitude and likely severity of the effect.
- **Permanence of the effect** – this distinguishes between temporary effects and those that will continue to have an effect in the long run.
- **Importance of the effect** – to the affected communities in the impact area e.g. the sensitivity of the receptor.

7.3.45 Effects were defined as either:

- **Beneficial:** Advantageous or positive effect to an environmental resource or receptor.
- **Insignificant:** No significant effect to an environmental resource or receptor.
- **Adverse:** Detrimental or negative effect to an environmental resource or receptor.

7.3.46 The magnitude of change are classified as either negligible, small, medium or large as set out below:

- **Negligible:** The change does not result in notable variation beyond baseline conditions, and is unlikely to measurably affect people and/or businesses.
- **Small:** The change will result in a perceptible difference from baseline conditions, and is likely to affect a small number of people and/or businesses over a short duration. The change is unlikely to be critical in decision-making process.
- **Medium:** The change can be demonstrated to baseline conditions, and is likely to affect a moderate number of people and/or businesses over a medium duration. The change may be important, but is not likely to be a key decision-making factor unless the cumulative effects of such factors lead to an increase in the overall effect on a particular socio-economic resource or receptor.
- **Large:** The change will result in significant changes to baseline conditions, or will be highly likely to affect large numbers of people and/or businesses over the long term. Considered to be a very important consideration, and likely to be material in the decision-making process.

7.3.47 In accordance with **ES Volume 1, Chapter 2: EIA Methodology**, temporary, short to medium term effects were considered to be those associated with the 'Works' and long-term effects were those associated with the Development once completed and operational.

7.3.48 The significance of the identified socio-economic effects has been assessed by considering both the magnitude of change and the sensitivity of the receptor. Receptors are considered to be of low, moderate or high sensitivity. The sensitivity of each receptor to an effect is set out in **Table 7.12**. **Table 7.3** below shows the range of significance of socio-economic effects. Where the Significance Matrix (**Table 7.3**) results in a range of possible effects (e.g.

Moderate – Minor Beneficial), professional judgement has been used to ascertain the most appropriate and likely effect.

Table 7.3 Significance Matrix

Magnitude of Change	Sensitivity		
	High	**Moderate**	**Low**
Large	Major Adverse / Beneficial	Major – Moderate Adverse / Beneficial	Moderate – Minor Adverse / Beneficial
Medium	Major – Moderate Adverse / Beneficial	Moderate – Minor Adverse / Beneficial	Minor Adverse / Beneficial
Small	Moderate – Minor Adverse / Beneficial	Minor Adverse / Beneficial	Minor Adverse / Beneficial – Insignificant
Negligible	Insignificant	Insignificant	Insignificant

7.3.49 The geographical extent considers the appropriate policy / administrative boundary or geographical area of influence within which an effect occurs and is assessed at the following spatial scales:

- **District:** within the administrative boundary of LBI.
- **Regional:** within the Greater London area.

7.4 Relevant Baseline Conditions

Population and Demographic Change

Population Projections

7.4.1 The GLA provides 2018-based population projections at the ward level based on housing led projections [24]. The housing-led projections reconcile future population growth with available housing supply by incorporating a housing supply trajectory. Based on a 2018 population of 12,669 within St George's ward, St George's population in 2021 is projected to be 13,058. The ward's population is forecast to reach 14,098 in 2030 and 14,975 in 2040; a percentage increase of 7.9% and 14.7% respectively from its level in 2021. St George's population is expected to grow at a faster rate than Islington's (5.5%) between 2021 and 2040.

[24] Greater London Authority. GLA Population and Household Projections. 2020. [Accessed 1 June 2021].

Age Distribution

7.4.2 In terms of the age distribution within the St George's ward, as of 2019 the working age population (between the ages of 16 and 64) was estimated at 9,373 (72% of the population)[25]. Concurrently 2,146 (17% of the population) were of pre-working age (between the ages of 0 and 15) and 1,461 (11%) were of retirement age (65 years or over).

7.4.3 A marginally larger than average share of St George's population are children (17%) than the level across the wider borough (16%), but notably lower than the level across the UK (19%) more generally. Conversely as of 2019, 72% of St George's population were of working age, in line with LBI's population (75%) but higher than the figure for the UK (62%)[25].

7.4.4 The share of St George's population who are of retirement age (11%) is again similar to the equivalent figures for Islington (9%) but lower than the proportion across the UK as a whole (19%)[25].

7.4.5 Taken together it can be inferred that the St George and Islington populations are characterised by younger working age residents.

Economic Activity

Existing Employment at the Site

7.4.6 The Site used to be the location of the former Holloway Prison, which was closed in 2016. Since 2019, the Site has been used as a filming site for the production of various television shows and films, and it is understood this will continue until construction on the Development starts and vacant possession of the Site is handed over. The nature of the filming work is ad-hoc, with the Site generally occupied for between 2 and 5 days at a time. It is estimated that across days when filming occurs, 50 people utilise the Site. There are also 3 security personnel on Site.

7.4.7 Following the closure of the former Holloway Prison, a homeless shelter also operated on the Site. This however closed in March 2020 due to the Covid-19 pandemic and has not reopened since.

7.4.8 There is no existing residential population at the Site.

Rates of Economic Activity

7.4.9 As of the 2011 Census, the percentage of the working age population (aged 16 to 64 inclusive) of St George's ward who were economically active was 74.7%[26]; slightly above the average for LBI (74.3%) but below that across England and Wales (76.8%).

[25] ONS. National and subnational mid-year population estimates. 2019. [Online]. [Accessed 1 June 2021].
[26] NOMIS. Ward Labour Market Profile – St George's. 2011. [Online]. [Accessed 1 June 2021].

7.4.10 More recent data relating to LBI shows that in 2020 LBI's economic activity rate had increased to 79.1%, marginally below the London rate (80.1%) but the same as Great Britain[27].

Unemployment

7.4.11 As of 2011, 9.2% of St George's working age population was unemployed, the same as the figure across LBI. Both are notably higher than the average across England and Wales of 7.6%[26].

7.4.12 More recent data relating to LBI shows that in 2020 LBI's unemployment rate was 6.7%, considerably higher than the London (5.9%) and Great Britain (4.6%) average. This is despite having a similar proportion of economically active people[27].

Dependence on other Benefits

7.4.13 The most recent data regarding out-of-work benefits (dating to April 2021) shows that benefits were claimed by 9.0% of St George's working age population; notably higher than LBI's average of 7.7% and the average across Great Britain (6.4%)[26].

Jobs Density

7.4.14 As of 2019, there were a total of 263,000 jobs across LBI, or a jobs density of 1.44 jobs for every working age resident (aged 16 to 64)[27]. This is considerably higher than the figure across London of 1.03 jobs for every working age resident, and Great Britain (0.87), but below the figure for the neighbouring borough of Camden (2.11).

Employment Structure - Occupation

7.4.15 As set out in **Table 7.4**, St George's population, and the wider population of Islington is more likely to be employed within highly skilled occupations and less likely to be employed in elementary or lower skilled occupations than the equivalent population of London.

7.4.16 As of the 2011 Census, 64.1% of the local working population were employed within Standard Occupational Classification (SOC) Groups 1 to 3, encompassing Managers and Senior Officials, Professionals and Associate Professional groups. This was in line with the figure for LBI (64.7%) and considerably higher than the proportion of Greater London's working age population (50.3%)[26].

7.4.17 A correspondingly smaller share of St George's population were employed in SOC Groups 7 to 9 - lower-skilled occupations comprising Sales and Customer Services (5.3%), Process Plant and Machine Operatives (2.8%) and

[27] NOMIS. Labour Market Profile- Islington. 2021. [Online]. [Accessed 1 June 2021].

Elementary Occupations (7.7%)[26]. This equals a total of 15.8%, similar to that for Islington (15.3%), but considerably lower than Greater London (21.8%).

Table 7.4 Working Population by Occupation (2011 Census)[26]

Occupation	St George's (Ward)	LBI	Greater London
1. Managers and Senior Officials.	10.8%	11.5%	11.6%
2. Professional.	30.8%	31.2%	22.4%
3. Associate Professional and Technical.	22.5%	22.0%	16.3%
4. Administrative and Secretarial.	9.0%	9.1%	11.7%
5. Skilled Trades.	5.6%	5.1%	8.3%
6. Personal Services.	5.6%	5.8%	7.8%
7. Sales and Customer Services.	5.3%	5.7%	7.5%
8. Process Plant and Machine Operatives.	2.8%	2.7%	4.7%
9. Elementary Occupations.	7.7%	6.9%	9.6%

Employment Structure - Sector

7.4.18 When analysed in terms of sector, LBI's working population is not especially typical of London or Great Britain more generally.

7.4.19 As set out in **Table 7.5**, as of 2019 a greater share of LBI's population was employed in the Professional, Scientific and Technical activities (21.7%) than the average across London (12.9%) and Great Britain (8.8%)[27]. Similarly, a greater share of LBI's working population was employed within the Information and Communication sector than across London and Great Britain more generally (14.9% compared to 8.4% and 4.3% respectively) and in the Administrative and Support Service Activities (12.8% compared to 10.8% and 8.9% respectively)[27].

7.4.20 A smaller share of LBI's population was employed in certain industry-based sectors, such as Construction (3.4% of Islington's working population, compared to 3.8% across London and 4.9% across Great Britain), manufacturing (1.3% across Islington, compared to 2.3% across London and 8.0% across Great Britain), as well as the Education sector (4.3% in Islington compared to 7.1% in London and 8.7% across Great Britain as a whole)[27].

7.4.21 The most important sectors to LBI are the Professional, Scientific and Technical activities sector, employing over a fifth (21.7%) of the working age population and the Information and Communications sector (14.9% of the working population are employed in this sector)[27].

Table 7.5 Working Population by Sector (2019)[27]

Occupation	LBI (numbers employed)	LBI	Greater London	Great Britain
1. Mining and Quarrying.	75	0.0%	0.0%	0.2%
2. Manufacturing.	3,000	1.3%	2.3%	8.0%
3. Electricity, Gas, Steam and Air Conditioning Supply.	200	0.1%	0.2%	0.4%
4. Water Supply, Sewage and Waste Management.	500	0.2%	0.3%	0.7%
5. Construction.	8,000	3.4%	3.8%	4.9%
6. Wholesale and Retail Trade.	18,000	7.7%	11.5%	15.0%
7. Transportation and Storage.	6,000	2.6%	4.9%	4.9%
8. Accommodation and Food Service Activities.	17,000	7.2%	8.1%	7.7%
9. Information and Communication.	35,000	14.9%	8.4%	4.3%
10. Financial and Insurance Activities.	13,000	5.5%	7.3%	3.5%
11. Real Estate Activities.	6,000	2.6%	2.7%	1.7%
12. Professional, Scientific and Technical Activities.	51,000	21.7%	12.9%	8.8%
13. Administrative and Support Service Activities.	30,000	12.8%	10.8%	8.9%
14. Public Administration and Defence.	4,500	1.9%	4.4%	4.4%
15. Education.	10,000	4.3%	7.1%	8.7%
16. Human Health and Social Work Activities.	20,000	8.5%	10.0%	13.1%
17. Arts Entertainment and Recreation.	7,000	3.0%	2.7%	2.5%
18. Other Service Activities.	5,000	2.1%	2.3%	2.0%
Total	**235,000**	**100%**	**100%**	**100%**

Employment Structure - Earnings

7.4.22 As of 2020, the average weekly earnings across among LBI's residents was £842.90, which is 17.7% higher than the equivalent figure for London of £716.40; and over 43.6% above the Great Britain average of £587.10[27]. This reflects the greater share of the working population employed in higher skilled sectors (e.g. Professional, Scientific and Technical Activities) as outlined in **Table 7.5.**

Education and Skills

Qualifications

7.4.23 As of the 2011 Census, the percentage of working age residents in St George's with no qualifications (12.4%) was broadly the same as the average for LBI (12.3%) but lower than the London (17.6%) and England and Wales averages (15%)[26].

7.4.24 At the same time, the share of the local working age population (ward level) with Level 4 qualifications or above in 2011 (equivalent to a Certification of Higher Education, a degree or higher) was considerably higher at 50.9% than the London wide (37.3%) and England and Wales average (29.7%). The proportion of the local population with Level 4 qualifications or above was slightly below that for LBI at 51.2%[26].

7.4.25 More recent data for LBI shows that the proportion of working age residents within the borough who had no qualifications had fallen considerably by 2020, to just 5.5%. Concurrently the share of the working age population within LBI with Level 4 qualifications or above had risen to 62.1% in 2020, indicating that the skills profile in the borough has improved over the last 10 years[27].

Housing

7.4.26 As of the 2011 Census, there were a total of 5,627 household spaces across St George's ward, compared to 98,196 across LBI and 3,387,255 across Greater London[26].

7.4.27 The previous London Plan (March 2016) set out an annual target across LBI of 1,264 net new homes per year (12,641 across the 10-year period 2015 - 2025)[28]. This target is slightly higher than that set out in LBI's Local Plan of an additional 1,160 houses per annum (17,400 over the period 2010/11-2024/25)[29].

[28] The Mayor of London. The London Plan. 2016. [Accessed 1 June 2021].
[29] Islington Council. Islington's Core Strategy. [Accessed 1 June 2021].

7.4.28 The new London Plan (2021)[30] sets out a revised annual target of 775 new homes per annum between 2019/20 to 2028/29 for LBI (7,750 across the 10-year period). This is below the targets as set out in the 2016 London Plan and LBI's Local Plan and provides recognition of the true extent of LBI's population growth.

7.4.29 In terms of affordable housing, as demonstrated by Islington Strategic Housing Market Assessment (2017)[6], the need for affordable housing, and for social rented housing in particular, remains very high. Lack of affordable housing is, and will continue to be, a major issue in the borough for the foreseeable future. Consequentially, Policy CS 12 of LBI's Adopted Local Plan sets a target that 50% of additional housing should be affordable housing[19].

7.4.30 As set out in **Table 7.6**, the mix of tenures across households in St George's ward does not especially resemble that of LBI or Greater London as a whole.

7.4.31 A larger share of St George's population lives in properties which they own either fully or with a mortgage than the corresponding rate for LBI (33.6% compared to 28.4%). However, the proportion is less when compared to Greater London (48.2%)[26].

7.4.32 Conversely, a smaller share of St George's population lives in properties which they socially rent, than the average across Islington. As of 2011, 38% of St George's population socially rented, compared to 42.1% across Islington. Both were higher than the corresponding rate for Greater London however at 24.1%[26].

7.4.33 The share of residents living in privately rented accommodation across all three geographical areas are broadly in line, with 26.1% of St George's population privately renting, compared to 27% across LBI and 25.1% across Greater London as a whole[26].

Table 7.6 Residents by Tenure (2011 Census)[26]

Tenure	St George's (Ward)	LBI	Greater London
% Privately Owned (outright or with mortgage).	33.6%	28.4%	48.2%
% Social Rented.	38.0%	42.1%	24.1%
% Privately Rented.	26.1%	27.0%	25.1%
% Other (shared ownership, living rent free).	2.3%	2.5%	2.6%

[30] The Mayor of London. The London Plan. 2021. [Accessed 1 June 2021].

Deprivation

English Indices of Deprivation 2019

7.4.34 The English Indices of Deprivation (EID) 2019 enable comparisons to be made for a range of deprivation indicators at the small area level[31]. The small areas, or neighbourhoods, are known as Lower Layer Super Output Areas (LSOAs) which on average contain around 1,500 people. There are 32,844 of these neighbourhoods across England.

7.4.35 The EID 2019 provides an overall index of multiple deprivation which is based on seven separate deprivation domains. Each deprivation domain is weighted, as shown below:

- Income deprivation: with a weighting of 22.5%.
- Employment deprivation: with a weighting of 22.5%.
- Health deprivation and disability: with a weighting of 13.5%.
- Education, skills and training deprivation: with a weighting of 13.5%.
- Barriers to housing and services: with a weighting of 9.3%.
- Crime: with a weighting of 9.3%.
- Living environment deprivation: with a weighting of 9.3%.

7.4.36 **Table 7.7** shows the ranking of LBI's 010E LSOA, in which the Site is located, when ranked across all LSOAs within England. In addition, **Table 7.7** shows overall ranking and ranking when assessed via individual measures of deprivation.

Table 7.7 English Indices of Deprivation 2019 – Islington 010E Ranking[31]

Domain of Deprivation	Rank (Decile)
Income Deprivation.	7,695 (bottom 30%)
Employment Deprivation.	9,478 (bottom 30%)
Education, Skills and Training Deprivation.	19,484 (top 50%)
Health Deprivation and Disability Deprivation.	4,241 (bottom 20%)
Crime Deprivation.	6,494 (bottom 20%)
Barriers to Housing and Services Deprivation.	6,028 (bottom 20%)

[31] Department for Communities and Local Government. English Indices of Deprivation 2019

Domain of Deprivation	Rank (Decile)
Living Environment Deprivation.	4,738 (bottom 20%)
Overall	**7,051 (bottom 30%)**

7.4.37 In terms of overall EID ranking, LBI's 010E ranks 7,051 out of 32,844 LSOAs in England, where 1 is the most deprived LSOA. LBI's 010E is therefore among the 30% most deprived neighbourhoods in the country. However, there are variations across the different domains.

7.4.38 For the education, skills and training domain, LBI 010E is ranked 19,484 out of 32,844 LSOAs in England, making it among the 50% least deprived (i.e. above average) neighbourhoods in the country. This was the LSOA's strongest performance across any domain and aligns with other socio-economic data cited in this baseline review.

7.4.39 Conversely LBI's 010E scored poorly across the other domains. For health, the domain measures the risk of premature death and the impairment of quality of life through poor physical or mental health. LBI's 010E is ranked 4,241 out of the 32,844 LSOAs in England, making it among the 20% most deprived in terms of health deprivation and disability. Similarly, LBI's 010E is also ranked in the bottom 20% for the living environment domain.

7.4.40 The employment deprivation domain, which measures the proportion of the working-age population in an area involuntarily excluded from the labour market (i.e. people who want to and are able to work, but unable to find a job) scored slightly better, placing LBI's 010E within the 30% most deprived LSOAs in England.

7.4.41 LBI's 010E also scores poorly across the crime and barriers to housing domains. The crime domain measures the risk of personal and material victimisation and is made up of several indicators based on the recorded numbers of violent crimes, burglaries, thefts and criminal damage. The LSOA is ranked 6,494 out of 32,844 LSOAs, placing it within the 20% most deprived in the country. Similarly, LBI's 010E is also within the 20% most deprived neighbourhoods in term of barriers to housing, ranking at 6,028 out of 32,844 LSOAs across the country.

7.4.42 In view of the above, the neighbourhood impact area does not perform particularly well in any domain of deprivation, and scores particularly poorly across the barriers to housing and crime domains.

Education Infrastructure

Primary School Provision

7.4.43 There are seven state-funded primary schools within a 1 km radius of the Site[32] all located within LBI.

[32] Pitney Bowes. GeoInsight – Primary schools within 1km of Site. 2021.

7.4.44 The locations of the seven state-funded schools are identified in **Figure 7.1**. Details regarding the seven schools are provided in **Table 7.8.**

7.4.45 It should be noted that school capacity data relates to the 2018/19 academic year. The Department for Education's 'School capacity survey: 2020' and 'School capacity statistics: academic year 2019 to 2020' were cancelled due to the coronavirus pandemic. This therefore represents the latest published data. WSP did however supplement this data with a review of local school websites, to determine whether additional capacity had been provided at each school in the intervening period, and thus not captured in the latest DfE data. The review revealed an extension in capacity at Tufnell Park Primary School, which was confirmed via a telephone call in July 2021. The updated school capacity and enrolment data is reflected in **Table 7.8** below.

Figure 7.1 Primary Schools within a 1 km radius of the Site

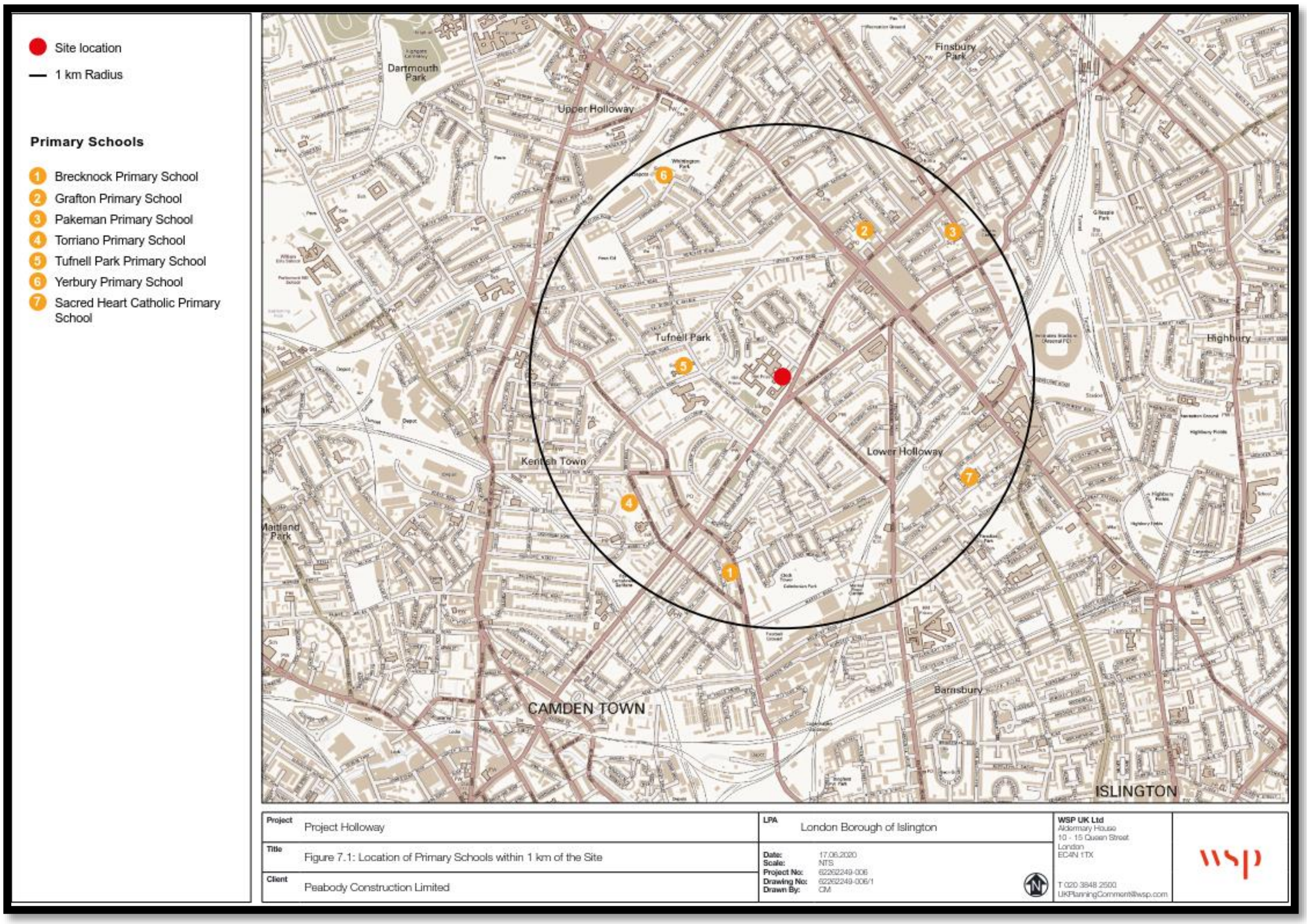


Table 7.8 Primary Schools within a 1 km radius of the Site[32] [33]

Primary School (Reference no. on Figure 7.1)	Borough	Number of Students (2018/2019)	Capacity (2018/2019)	Surplus / Deficit (2018/2019)
Brecknock Primary School. (1)	LBI.	345	411	+66
Grafton Primary School. (2)	LBI.	429	450	+21
Pakeman Primary School. (3)	LBI.	285	315	+30
Torriano Primary School. (4)	LBI.	414	426	+12
Tufnell Park Primary School. (5)	LBI.	420	386	+34
Yerbury Primary School.(6)	LBI.	419	420	+1
Sacred Heart Catholic Primary School (7)	LBI.	412	420	+8
Total.		**2,762**	**2,609**	**+172**

7.4.46 Across the seven state-funded primary schools within 1 km of the Site, the most recent 2018-2019 Department for Education (DfE) data on individual school capacities (along with additional school capacity data ascertained on Tufnell Park Primary School) suggests that there is a combined surplus of 172 places[33].

7.4.47 At the individual school level, there is a surplus of places across all schools. Brecknock Primary School has the greatest surplus with 66 places across all years. Conversely Yerbury Primary School has a marginal surplus of 1 place.

Secondary School Provision

7.4.48 There are nine state-funded secondary schools within a 2 km radius of the Site[34].

7.4.49 The nine state-funded schools are set out in . Details regarding the nine schools are provided in **Table 7.9**.

7.4.50 As was the case with the primary school assessment, school capacity data relates to the 2018/19 academic year. The Department for Education's 'School capacity survey: 2020' and 'School capacity statistics: academic year 2019 to 2020' were cancelled due to the coronavirus pandemic. This therefore represents the latest published data.

[33] Department of Education. School Capacity: Academic Year 2018 to 2019 [Online] [Accessed 1 June 2021].
[34] Pitney Bowes. GeoInsight – Secondary schools within 2km of Site. 2021.

Figure 7.2 Secondary Schools within a 2 km radius of the Site

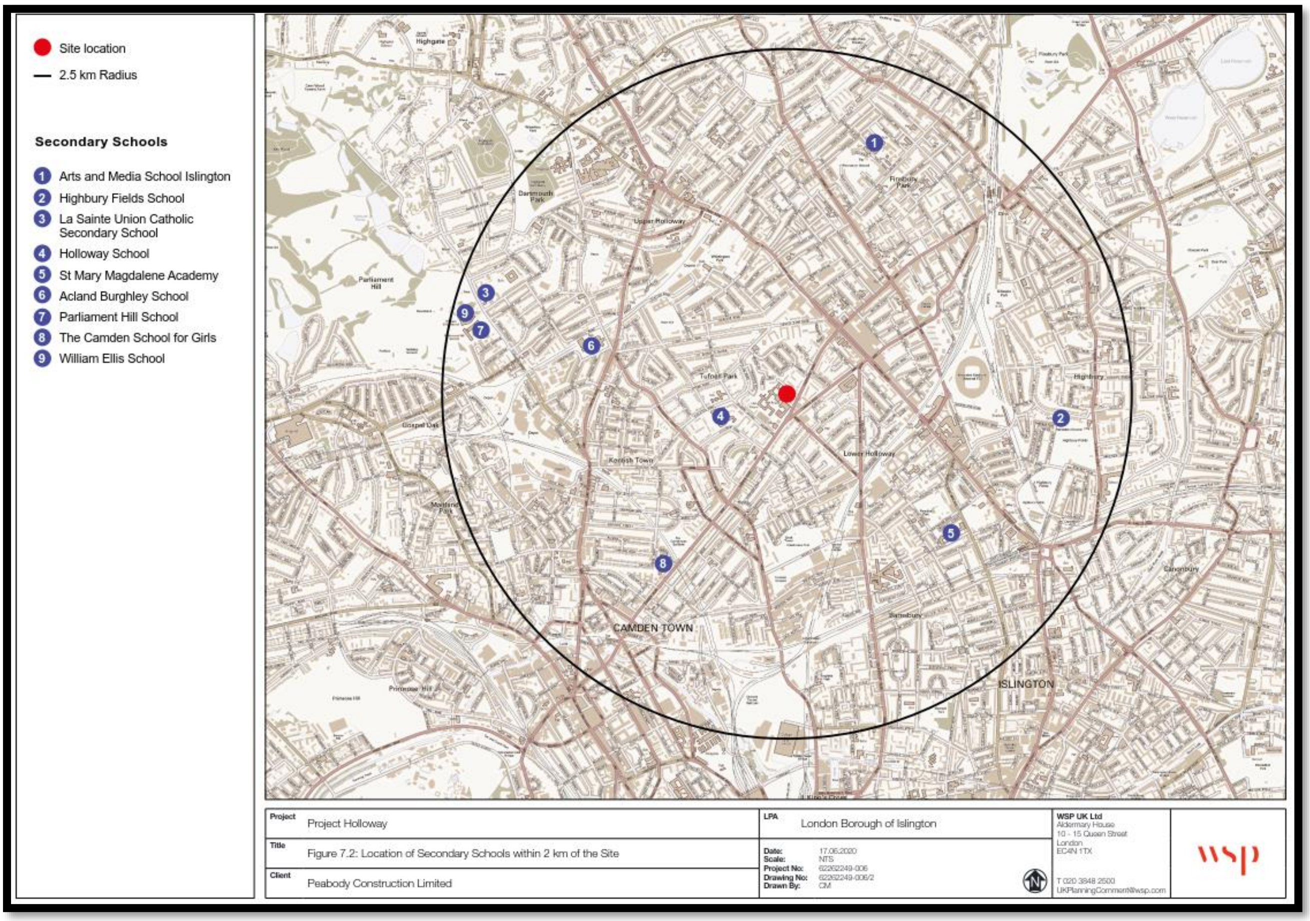


Table 7.9 Secondary Schools within a 2 km radius of the Site[33 34]

Primary School (Reference no. on Figure 7.2)	Borough *	Number of Students (2018/19)	Capacity (2018/2019)	Surplus / Deficit (2018/2019)
Arts and Media School Islington. (1)	LBI.	646	810	+164
Highbury Fields School. (2)	LBI.	765	750	-15
Holloway School. (4)	LBI.	610	900	+290
St Mary Magdalene Academy. (5)	LBI.	1,313	1,322	+9
Acland Burghley School. (6)	LBC.	1,008	1,381	+373
Parliament Hill School. (7)	LBC.	1,163	1,260	+97
The Camden School for Girls. (8)	LBC.	1,022	1,134	+112
William Ellis School. (9)	LBC.	838	883	+45
La Sainte Union Catholic Secondary School. (3)	LBC.	1,066	1,185	+119
Total.		**9,625**	**8,431**	**+1,194**

* LBC = London Borough of Camden

7.4.51 As set out in **Table 7.9**, there is a total surplus of 1,194 secondary school places across the nine secondary schools within a 2 km radius of the Site for which the average resident would have a realistic chance of being able to attend, based on admissions arrangements. Four of the schools are located in LBI, and five are located in the neighbouring borough of Camden.

7.4.52 At the individual secondary school level, there is a surplus of places at eight of the nine schools, varying from a surplus of 373 at Acland Burghley School to 9 places at St Mary Magdalene Academy, as of the 2018/19 academic year. Only one school, Highbury Fields School has a deficit of secondary school places (-15).

7.4.53 Across a 2 km radius from the Site and at the individual school level, in general there is a current surplus of secondary school places.

Health Infrastructure

GP Provision

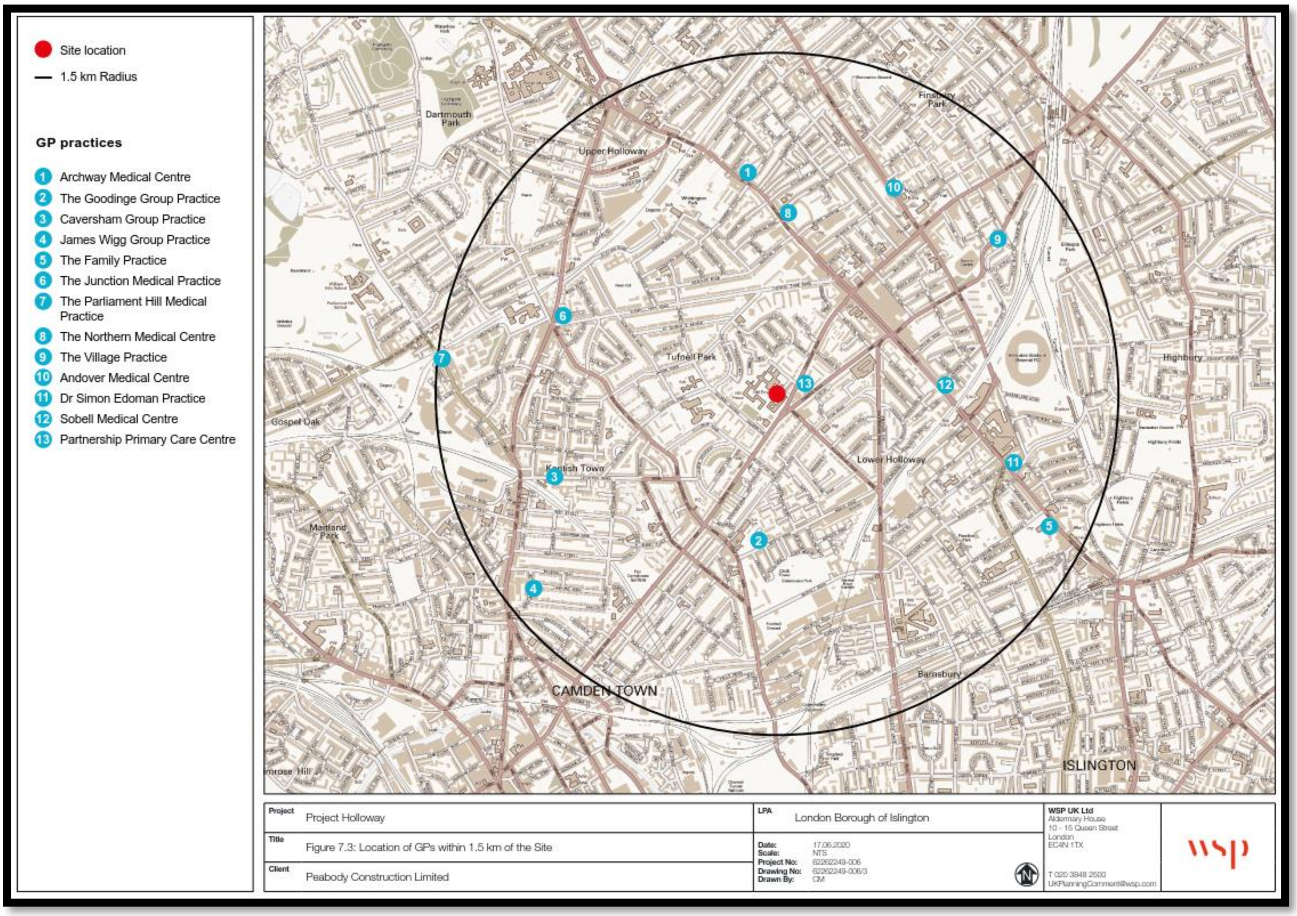
7.4.54 There are 13 operating GP practices within a 1.5 km radius of the Site[35].

7.4.55 In order to ascertain the number of patients and FTE GPs associated with each practice, as well as whether each practice was accepting new patients, WSP accessed practice level data published by NHS Digital from July 2021 (the latest available data)[36]. Consultation was also undertaken with the North Central London CCG and HUDU, to gain insight into the issues faced by particular practices and across the area more generally. Further details of this can be viewed in the separate Health Impact Assessment, prepared by WSP and submitted as a standalone document supporting the planning application.

7.4.56 The location of the 13 GP practices within 1.5 km of the Site are identified in **Figure 7.3**.

[35] Pitney Bowes GeoInsight – GPs within 1.5 km of Site (2021).
[36] NHS Digital - General Practice Workforce July 2021 https://digital.nhs.uk/data-and-information/publications/statistical/general-and-personal-medical-services/31-july-2021 [Online] [Accessed 23 September 2021].

Figure 7.3 GP Practices within 1.5 km radius of the Site



7.4.57 As set out in **Table 7.10**, the most recent NHS data on local GP practice capacities from July 2021, reveal there is a total of 123,171 patients who are currently registered to the 13 GP Practices within a 1.5 km radius of the Site which includes the Site in their catchment area.

7.4.58 The 122,582 patients are served by a total of 77 GPs, which amounts to a GP to patient ratio of one GP for every 1,600 patients. This is below the London Healthy Urban Development Unit's (HUDU)[21] recommended threshold of one GP for every 1,800 patients.

Table 7.10 GP Surgeries within 1.5 km radius of the Site[35] [36]

GP Surgery (Reference no. on Figure 7.3)	Accepting new NHS patients?	Total Patients	Total GPs (rounded up where necessary)	Ratio of GPs to Patients
Archway Medical Centre. (1)	Yes	16,952	3	1: 5,651
The Goodinge Group Practice. (2)	Yes	12,024	10	1: 1,202
Caversham Group Practice. (3)	Yes	16,262	13	1: 1,251

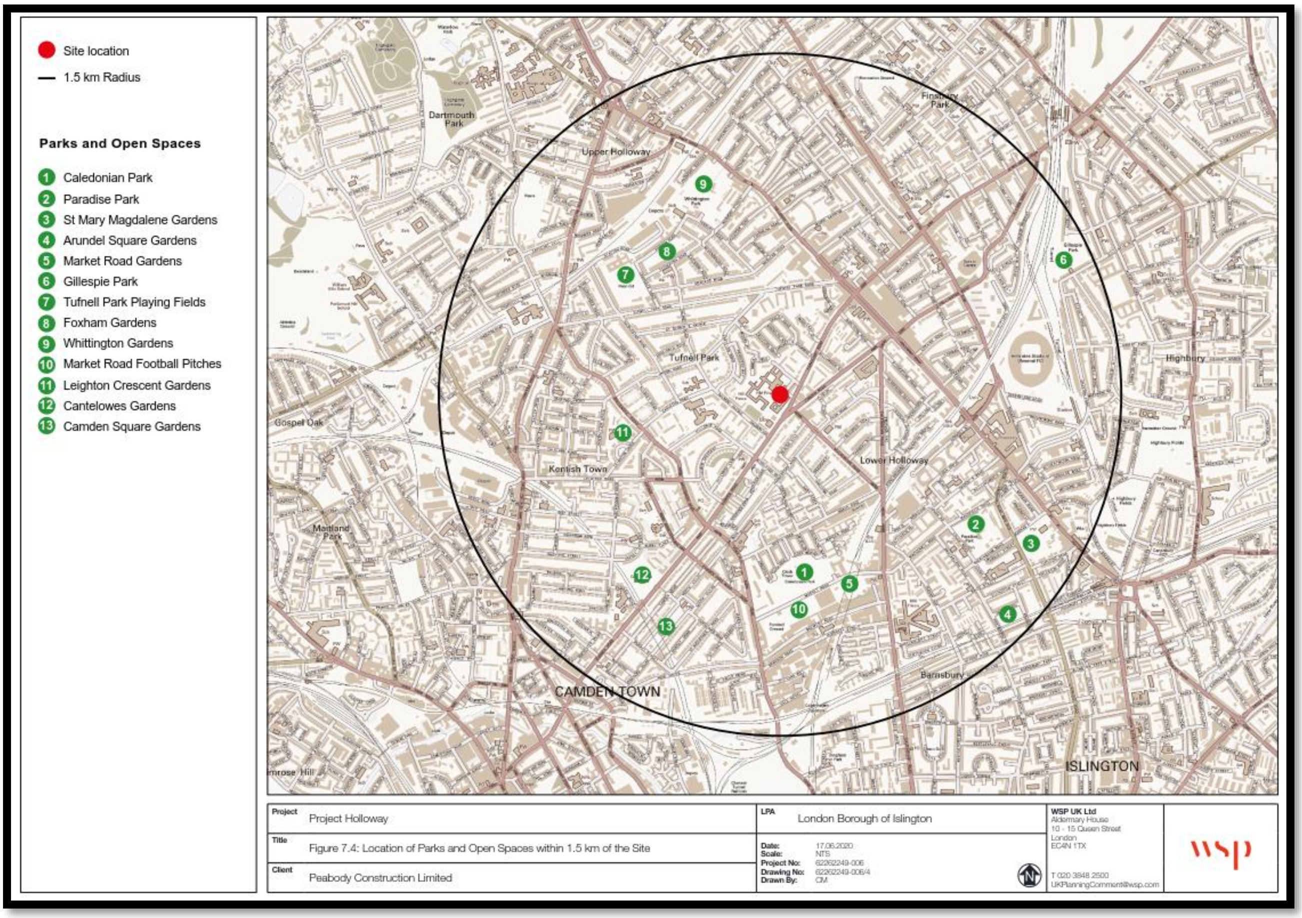
GP Surgery (Reference no. on Figure 7.3)	Accepting new NHS patients?	Total Patients	Total GPs (rounded up where necessary)	Ratio of GPs to Patients
James Wigg Group Practice. (4)	Yes	22,019	16	1: 1,376
The Family Practice. (5)	Yes	5,132	3	1: 1,711
The Junction Medical Practice. (6)	Yes	9,551	2	1: 4,776
The Parliament Hill Medical Practice. (7)	Yes	7,833	6	1: 1,306
The Northern Medical Centre. (8)	Yes	9,134	6	1: 1,522
The Village Practice. (9)	Yes	10,084	5	1: 2,017
Andover Medical Centre. (10)	Yes	5,963	6	1: 994
Dr Simon Edoman Practice. (11)	Unsure	Data unavailable.	Data unavailable.	N/A.
Sobell Medical Centre. (12)	Yes	4,258	1	1: 4,258
Partnership Medical Centre. (13)	Yes	3,959	6	1: 660
Total		**123,171**	**77**	**1: 1,600**

7.4.59 As illustrated in **Table 7.10** patient to GP ratios vary considerably at the individual practice level. The highest patient to GP ratio belongs to the Archway Medical Centre (1: 5,651), which is more than three times above the recommended ratio, while the Sobell Medical Centre and the Junction Medical Practice are also both well above the recommended ratio. In contrast, the Andover Medical Centre had a GP to patient ratio of 1: 994 and the Partnership Medical Centre had a GP to patient ratio of 1: 660, both well within the HUDU recommendation. Overall of the 13 GP practices assessed, eight were within the recommended ratio, four were above, and data for one practice (Dr Simon Edoman Practice) was not available. The aggregated GP: patient ratio of 1:1,600 is well within the HUDU recommendation. Pertinently all 12 GP practices in which data was available were accepting new patients at the time of the assessment. Taken together this suggests there is some capacity across the existing GP practices within 1.5km to take on new patients.

Open Space

7.4.60 As set out in **Figure 7.4**, there are 13 parks and green spaces within a 1.5 km of the Site[37], mostly to the south of the Site.

Figure 7.4 Parks and Open Spaces within a 1.5 km radius of the Site



7.4.61 There are a range of facilities provided across these parks and green spaces, which are set out in **Table 7.11**. Five of these spaces included dedicated play space for children of different ages and a number of other green spaces include sports facilities and space for events, including football pitches and basketball courts.

7.4.62 While LBI benefits from a range of open spaces including parks and gardens, natural green spaces and community gardens, LBI is the most densely populated local authority in the country with one of the lowest amounts of greenspace per person. This results in intensive use of open spaces and areas of open space deficiency across the borough[38].

[37] Pitney Bowes GeoInsight – Parks and open spaces within 1.5 km of Site (2021).
[38] Islington Council. Islington Local Plan - Strategic and Development Management Policies. 2018. [Accessed 1 June 2021].

7.4.63 Islington's Strategic and Development Management policies recognise this with all developments in excess of 200 residential units or 10,000 sqm gross external floorspace required to provide on-site publicly accessible public open space.

Table 7.11 Local Open and Green Spaces within a 1.5 km radius of the Site[37] [39]

Park/Open Space (reference no. on Figure 7.4)	Borough	Facilities
Caladonian Park. (1)	LBI.	Children's play area (age 3 – 12), tarmac ball court with football goals and basketball hoops.
Paradise Park. (2)	LBI.	Five-a-side floodlit Astroturf pitch with football goals, free outdoor gym and table tennis table.
St Mary Magdalene Gardens. (3)	LBI.	None
Arundel Square Gardens. (4)	LBI.	Children's playground, table tennis and tarmac ball court.
Market Road Gardens. (5)	LBI.	None.
Gillespie Park. (6)	LBI.	2.8-hectare nature reserve which is home to a wealth of wildlife, including 244 species of plants, 94 species of birds and 24 types of butterflies. The par also hosts an Ecology centre which provides environmental education for schools and organises walks and talks for adults.
Tufnell Park Playing Fields. (7)	LBI.	Full-size football pitch, cricket nets, tennis courts and playground.
Foxham Gardens. (8)	LBI.	Under 7s play area.
Whittington Gardens. (9)	LBI.	Pocket park.
Market Road Football Pitches. (10)	LBI.	11-a-side and 7-a-side football pitches, as well as 5-a-side AstroTurf football pitches.
Leighton Crescent Gardens. (11)	LBC.	Tarmacked area for sports.
Cantelowes Gardens. (12)	LBC.	3 children's playgrounds, games area, picnic area and woodland walk.
Camden Square Gardens. (13)	LBC.	Adjoining Camden Square Play Centre.

[39] Islington Council. Islington Parks and Green Spaces. 2021 [Online]. [Accessed 1 June 2021].

Sensitive Receptors

7.4.64 A number of sensitive receptors have been identified, following the baseline review, as set out in **Table 7.12**. Given the short to medium-term nature of the receptors sensitive to the Works, these have been assumed to have a moderate sensitivity. All other receptors are considered to have a high sensitivity.

Table 7.12 Sensitive Receptors

Receptor	Description	Sensitivity
The Works		
District / Regional Population.	Temporary Construction employment.	Moderate.
District / Regional Economy.	Gross value added by temporary construction employment.	Moderate.
Complete and Operational Development		
District / Regional Population.	Net Additional Employment.	High.
District / Regional Economy.	Gross Value Added by Net Additional Employment.	High.
District Population.	Housing Delivery (including affordable housing delivery).	High.
District / Regional Economy.	Additional household expenditure.	High.
District Economy.	Additional council tax receipts.	High.
District Population.	Effect on demand for education facilities.	High.
District Population.	Effect on demand for healthcare facilities.	High.
District Population.	Effect on demand for open space.	High.
District Population.	Effect on demand for play space.	High.

7.5 Likely Effects of the Development and their Significance

The Works

Temporary Construction Employment

7.5.1 The build cost estimate provided by the Applicant is made up of the direct build cost (net of marketing costs and professional fees), with a 5% contingency fee included to cover any additional costs.

7.5.2 Using the build cost estimate provided by the Applicant and the average turnover per FTE construction job in 2018 (£188,050) as outlined in the Assessment Methodology, it is estimated that the Development would generate 1,446 person years of temporary employment during the 5-year Works programme (anticipated to be completed by 2027). This is equivalent to 1,446 construction workers being employed on a full-time basis for twelve months.

Net Additional Construction Employment

7.5.3 Based on the assumptions outlined in **Table 7.1**, the total number of net additional temporary jobs arising from the construction of the proposed development are detailed in **Table 7.13** below. It should be noted that numbers may not quite add due to rounding at each calculation stage.

Table 7.13 Additionality on construction jobs

Steps involved	District Level (LBI)	Regional Level (Greater London)
Construction workers (gross, total).	1,446	
Leakage to workers from outside impact area.	-289	-145
Displacement of other activities.	-174	-195
Construction workers on-site (net direct).	984	1,107
Employment off-site induced by construction employment (net, indirect)	98	553
Total additional employment from construction of proposed development	1,082	1,660

7.5.4 As demonstrated in **Table 7.13**, after allowing for leakage, displacement and multiplier effects, the net additional construction employment for the district area would be 1,082 person years.

7.5.5 More broadly at the regional scale, the Development would support approximately 1,660 person years of employment (1,107 on site and 553 in the supply chain).

7.5.6 Taken together, Works could support 1,660 person years of employment, of which 1,082 would be located within the district (LBI).

7.5.7 As set out in **Table 7.5**, as of 2019, 3.4% of all jobs located in LBI (or 8,000 jobs out of a total 235,000) are in the Construction Industry. Assuming that all existing jobs in the borough are full-time, the creation of 1,082 construction jobs created would represent a 13% uplift in construction employment across the borough. The ONS estimates that there are approximately 201,000 construction jobs across London[40], therefore the generation of 1,660 construction jobs equates to an 0.8% increase at the regional (London) level. The magnitude of change would be considered to be **medium** at the district level and **small** at the regional level.

7.5.8 With the sensitivity of the receptor assessed as **moderate** (given the temporary nature of the effect) the creation of 1,082 temporary construction jobs at the local level have been assessed as a **direct, short to medium-term, beneficial effect** of **moderate significance** at the **district level.**

7.5.9 At the regional level, the creation of 1,660 temporary construction jobs have been assessed as a **direct, short to medium-term beneficial effect** of **minor significance** at the **regional level.**

GVA from temporary construction employment

7.5.10 Based on gross value added per full time equivalent construction job in 2018 of £70,336, it is estimated that the 1,660 net additional years of temporary construction employment generated by the Development would create GVA to the regional economy of around £116.8 million, of which £76.1 million would be within the district economy.

7.5.11 After allowing for 10% leakage (as outlined in the Assessment Methodology), it is estimated that the construction employment generated by the Development would generate gross value added to the district economy of £68.5 million and overall £105.1 million at the regional level.

7.5.12 According to the ONS[41], the total construction GVA generated by LBI and London in 2018 (the latest available data) was £942 million and £31.5 billion in 2018 respectively. The generation of £68.5 million and £105.1 million would therefore represent a 7.2% and 0.3% uplift in GVA respectively across LBI and London. As a result, the magnitude of change is considered to be **medium** at the district level and **small** at the regional level.

7.5.13 With the sensitivity of the receptor assessed as **moderate** (given the temporary nature of the effect), the generation of GVA from the temporary construction employment has been assessed as a **direct, short to**

[40] ONS (2019) Business Register and Employment Survey [Online] [Accessed 27 August].
[41] ONS. Regional gross value added by industry: local authorities by NUTS1 region. 2018. [Online] [Accessed 27 August 2021].

medium-term, beneficial effect of **moderate significance** at the **district level** and of **minor significance** at the **regional level.**

The Completed and Operational Development

Population Yield

7.5.14 Using the method outlined in the Assessment Methodology, the maximum net additional population yield of the completed and operational Development would be 2,207 (rounded up from 2,206.7).

7.5.15 The breakdown of the additional population by age is set out in **Table 7.14** and **Appendix 7.1.**

Table 7.14 Total Additional Population from the Development

Age Group	Market Housing	Social (including Social Rent and London Shared Ownership)	Total
0 - 4	38.4	196.0	234.5
5 - 11	25.0	153.1	178.1
12 - 15	5.2	73.9	79.2
16 - 17	2.8	39.1	41.8
18 - 64	968.8	665.7	1,634.6
65 +	23.2	15.5	38.7
Total.	**1,063.4**	**1,143.3**	**2,206.7**

7.5.16 As set out in the Assessment Methodology, the Child Yield of the completed and operational Development has been calculated by removing the 60 1-bed units which have been designated as extra care homes.

7.5.17 Under this approach, the net additional school age child yield of the completed and operational Development would equate to 523 (rounded up from 522.6). This total child yield includes 229 pre-primary school age children (ages 0 - 4), 174 primary school age children (ages 5 – 11) and 119 secondary school age children (12 - 17 years old, inclusive).

7.5.18 The breakdown of the child yield population is set out in **Table 7.15** and **Appendix 7.1**.

Table 7.15 Total Child Yield from the Development (excludes older person units)

Age Group	Market Housing	Social Housing (including Social Rent and London Shared Ownership)	Total
0 - 4	38.4	190.5	228.9
5 - 11	25.0	149.3	174.3
12 - 15	5.2	72.9	78.1
16 - 17	2.8	38.5	41.3
Total.	**71.4**	**451.2**	**522.6**

Gross on-Site Employment

7.5.19 The Development includes a range of non-residential uses that would generate employment at the Site across a range of sectors.

7.5.20 **Table 7.16** shows the estimated gross, on-Site employment generated from the non-residential elements of the completed and operational Development.

7.5.21 Based on the assumptions set out in the Assessment Methodology, it is calculated that the completed and operational Development would support a total of between 46 and 269 gross FTE permanent jobs.

Table 7.16 Gross, On-Site Employment Generation from the Complete and Operational Development

Proposed Use	Proposed Floorspace (GIA)	Minimum estimated job creation	Maximum estimated job creation	Comments
Women's Building (Use Class F2).	1,489	17	21	Based on an employment density of between 70 – 90.
Flexible Commercial Floorspace (Use Class E).	1,822	9	228	Based on an employment density of between 8 and 200
Employment derived from 'extra care' residential units.	-	10	10	Based on estimates provided by Velocity Transport Planning in conjunction with wider EIA team.
Employment derived from concierge services.	-	10	10	Based on estimates provided by Velocity Transport Planning in conjunction with wider EIA team.
Total.	**3,302**	**46**	**269**	

Net Additional Employment

7.5.22 Based on the assumptions outlined in the Assessment Methodology, the total number of net additional jobs arising from the Development is detailed in **Table 7.17** below. It should be noted that numbers may not quite add due to rounding at each calculation stage.

Table 7.17 Additionality on Permanent Employment

Steps involved	District Level (LBI)	Regional Level (Greater London)
Operational workers (gross, total).	46 - 269	
Leakage to workers from outside impact area.	-16 to -91	-5 to -27
Displacement of other activities.	-5 to -27	-6 to -36
Operational workers on-site (net direct).	26 to 151	35 to 206
Employment off-site induced by operational employment (net, indirect).	3 to 15	18 to 103
Total additional employment from operation of Development.	28 to 166	53 to 309

7.5.23 As shown in **Table 7.17**, whilst the Development itself would support between 46 - 269 gross jobs, taking into account leakage, displacement and multiplier effects, this equates to approximately 28 – 166 net additional jobs for the district area being supported.

7.5.24 More broadly at the regional scale, the Development would support between approximately 18 – 103 jobs in the supply chain.

7.5.25 In total the Development can expect to support between approximately 53 – 309 net additional jobs regionally, of which between 28 - 166 will be located in LBI.

7.5.26 As set out in **Table 7.5**, LBI supported approximately 235,000 jobs in 2019. Assuming that all existing jobs in the borough are full-time, the creation of between 28 – 166 in LBI would represent an uplift in employment of between 0.01% and 0.07% across the borough.

7.5.27 The ONS estimates that there are approximately 5.2 million jobs across London, therefore the generation of between 53 - 309 operational jobs equates to an increase of between 0.001% and 0.006% at the regional (London) level. The magnitude of change is considered to be **small** at the district level and **negligible** at the regional level.

7.5.28 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the generation of additional employment has been assessed as a **direct, long-term, beneficial effect** of **minor significance** at the **district level,** and an **insignificant** effect at the **regional level.**

GVA from Net Additional Employment

7.5.29 The net additional employment created by the Development would have wider economic effects by generating gross value added to the local economy.

7.5.30 To estimate the annual GVA created by the complete and operational Development information from the ONS Sub-Regional Productivity tables was used.

7.5.31 Detailed information on GVA per filled job is provided by the ONS Regional Economic Analysis Sub-Regional Productivity Tables. Table B3 reveals that GVA per filled job for LBI was £72,718 in 2019, the most recent year for which data is currently available. Table B3 also indicates that the GVA per filled job for the London region was £79,663 in 2019.

7.5.32 Based on this evidence, it was estimated that the total jobs to be supported by the Development and the supply chain linkages could contribute approximate GVA to the London economy of between £4.2 million - £24.6 million annually in perpetuity. Of this, £2.0 million – £12.0 million would be generated within the district (LBI) economy (based on 28 – 166 FTE net additional jobs identified in **Table 7.17**).

7.5.33 According to the ONS the total GVA generated in LBI and London in 2018 was £18.1 billion and £436 billion respectively. The generation of the additional GVA by the employment supported by the Development therefore represents an uplift of between 0.01% and 0.07% at the district level, and between 0.001% and 0.006% at the regional level. As a result, the magnitude of change is considered to be **small** at the district level and **negligible** at the regional level.

7.5.34 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the generation of additional GVA has been assessed as a **direct, long-term, beneficial effect of minor significance** at the **district level,** and an **insignificant** effect at **the regional level.**

Additional Household Expenditure

7.5.35 The report on Family Spending, published by the ONS in March 2021[20], provides data for the financial year ending 2020 on household expenditure. The results reflect the data from the Living Cost and Food Survey completed across the United Kingdom, as described in the Assessment methodology.

7.5.36 Family Spending reveals that the average weekly household expenditure in London for the period between the financial year ending 2018 and financial year ending 2020 was £703.10. The survey also shows that, on average, each household in London spends £136.10 per week on net housing (excluding mortgage interest payments and Council Tax), fuel and power costs. Since this spending typically goes to major national institutions with only modest impacts on the local economy, this spending has been deducted from average weekly household expenditure.

7.5.37 This means that for the period between the financial year ending 2018 and financial year ending 2020 (net) average weekly household expenditure in London was £567, which is equivalent to an annual figure of £29,484. Assuming that VAT of 20% had been paid on all of this spending, the average annual household expenditure (net of indirect taxation and housing, fuel and power costs) was £23,587.20 for London during the period April 2018 to March 2020.

7.5.38 Based on this analysis and the net addition of up to 985 households to the local area, it is estimated that the gross additional household expenditure generated by the new residential population at the Site would be around £23.2 million per annum. This assumes that the 985 net additional households demonstrate spending patterns typical of London as a whole.

7.5.39 This additional household expenditure of £23.2 million per annum is a gross effect. Some of this spending would clearly leak out of the area. It has been assumed that 25% of the additional household expenditure generated by the new residential population would be spent outside the district impact area.

7.5.40 This means that the net additional household expenditure generated by the new residential population at the Development would be approximately £17.4 million per annum to LBI.

7.5.41 This net additional household expenditure would be generated in stages as the residential accommodation is constructed and occupied. The full effect of the net additional household expenditure would be felt on completion and occupation of all of the new residential dwellings at the Development by 2027.

7.5.42 The magnitude of change is considered to be **large** at the district level and **medium** at the regional level. The assessment of magnitude reflects the fact that the Development would result in an injection into the economy in the form of increased consumer expenditure. This would be generated per annum and would be of benefit to the district area in particular, given the income elasticity of the local economy to injections of such nature.

7.5.43 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the generation of £17.4 million per annum in household expenditure has been assessed as a **direct, long-term, beneficial effect** of **major significance** at the **district level,** and of **moderate significance** at the **regional level**.

Additional Council Tax Receipts

7.5.44 The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by LBI. Council Tax for a Band D property in LBI would amount to £1,640.14 per annum, based on 2020/21 figures. The council tax receivable to LBI from a Band D property with a single person discount (25% discount) would therefore be £1,230.10[42].

7.5.45 Based on the assumptions outlined in the Assessment Methodology, it is estimated that the 985 net additional households at the Site would generate additional Council Tax receipts for LBI of £1.5 million per annum at 2020/21 prices.

7.5.46 This additional Council Tax revenue would be generated in stages as the residential accommodation at the Site is constructed and then occupied. The full effect of the increased Council Tax receipts would be felt on completion of all of the new residential accommodation after 2027.

7.5.47 In 2020/21 LBI has budgeted for £98.7 million in council tax revenue to deliver vital services. The generation of £1.5 million equates to approximately 1.5% of this budget. As a result, the magnitude of change is considered to be **small**.

7.5.48 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the generation of £1.5 million per annum in council tax revenue was assessed as a **direct, long-term, beneficial effect** of **minor significance** at the **district level**.

Housing Delivery

7.5.49 The Development would provide 985 net additional new homes across a range of sizes and tenures (as outlined in **Table 7.18**).

Table 7.18 Residential Unit Numbers within the Complete and Operational Development

Tenure	1-bed	2-bed	3-bed	4-bed	Total
Private.	87	278	27	-	392
Shared Ownership. (Affordable).	96	82	-	-	178
Social Rent (Affordable).	106	209	87	13	415
Total.	**289**	**569**	**114**	**13**	**985**

[42] Islington Council Tax Bands [Online] [Accessed 2 September 2021].

7.5.50 As outlined in the Baseline Conditions section of this Chapter (paragraph 7.4.8), there is no residential population at the existing Site. The Development would therefore result in the provision of up to 985 net additional dwellings. The provision of 985 net additional dwellings is equivalent to 7.8% of LBI's 10 year delivery target of 12,641 units (2015 - 2025) in the previous London Plan (2016), and 12.7% of LBI's revised 10 year delivery target of 7,750 units (2019/20 – 2028/29), as outlined in the New London Plan (2021).

7.5.51 Moreover, of the total 985 units to be provided, 593 units would be affordable. This equates to 60% of the total residential units to be provided, and is broken down as follows:

- 70% 'social rent'. This comprises 415 units, including the 60 extra care units.
- 30% 'Shared Ownership'. This comprises 178 units.

7.5.52 This provision more than meets LBI's target of 50% affordable housing. As a result, the magnitude of change is considered to be **large**.

7.5.53 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the delivery of 985 net additional residential units (60% of which affordable) would be considered to be a **direct, long-term, beneficial effect** of **major significance** at the **district level**.

Effect on Education Facilities Capacity

7.5.54 As outlined in in **ES Volume 3, Appendix 7.1** and **Table 7.15**, the Development would be expected to generate demand for an additional 174 primary school places (ages 5-11) and 119 secondary school places (12-17).

Primary School Provision

7.5.55 The Development is estimated to yield a requirement for an additional 174 primary school places.

7.5.56 As set out in the baseline assessment there are 7 state funded primary schools within 1km of the Site, which have a total of 172 surplus places (**Table 7.8**). As such, in a worst-case scenario in which none of the new child yield are currently enrolled at schools, there would be insufficient capacity across the primary schools to accommodate the new primary school aged child population. There would be a very marginal deficit of 2 places.

7.5.57 Despite this, the magnitude of the effect is considered to be **negligible**. This reflects the fact that:

- This is a phased development delivered over five years. Each phase includes market, social rent and shared ownership units, and therefore the 'need' for school places is not overly weighted to one phase.
- It is unrealistic to assume all of the new child population would need to be enrolled at local schools (i.e. in reality a large proportion are likely to already be enrolled). And even if they did need to be this wouldn't occur immediately given the length of the build period.

7.5.58 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the effect of the new child yield population on primary school provision is considered to be **insignificant** at the **district level**.

Secondary School Provision

7.5.59 The Development is estimated to yield a requirement for an additional 119 secondary school places.

7.5.60 There are 9 state funded secondary schools within 2km of the Site, which have a total of 1,194 surplus pupil places **(Table 7.9)**. As such, there is currently capacity across the secondary schools surrounding the Site to comfortably accommodate the additional 119 pupils generated by the Development. There would remain a surplus of 1,075 secondary school places. As a result, the magnitude of the effect is considered to be **negligible**.

7.5.61 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the effect of the new child yield population on secondary school provision is considered to be **insignificant** at the **district level.**

GP Provision

7.5.62 The Development would increase the demand for existing health facilities within the vicinity of the Site, with an estimated maximum of 2,207 net additional residents (**Table 7.14**).

7.5.63 Based on the HUDU guidance of 1,800 patients per GP, the 2,207 new residents would require an additional 1.2 GPs.

7.5.64 The Development would result in a requirement for just over one additional GP. As set out in the baseline assessment, 12 GPs located within the vicinity of the Site are accepting new patients, with an aggregated GP;patient ratio of 1,600 – well within the HUDU recommendation of 1,800. This indicates that the existing GPs in the area have capacity to take on new patients. Moreover, as was the case with the primary school places assessment, in reality it is unrealistic to assume all of the new population would need to be enrolled at local GPs (a proportion are likely to be already enrolled). As a result, the magnitude of the change is considered to be **negligible**.

7.5.65 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the effect of the new population on GP provision is considered to be **insignificant** at the **district level**.

Effect on Demand for Open Space

7.5.66 LBI's adopted and emerging policy suggests a standard of 5.21 sqm of open space per resident and 2.6 sqm of open space per employee should be provided for developments in excess of 200 residential units. The total public open space requirement based on LBI's standards is therefore 11,616.5 sqm to 12,196.3 sqm. This is expressed as a range given the employment generation could vary within the flexible Class E commercial space and within the Women's Building, and reflects the minimum and maximum estimated job creation for the Development.

7.5.67 The Development delivers 10,480 sqm of public open space. This equates to between 86% and 90% of the target taking into account the minimum and maximum estimated job creation. The provision therefore narrowly misses LBI's requirements. However, it is considered the open spaces identified in close proximity to the Site (**Table 7.11 and Figure 7.3**) including Caledonian Park and Paradise Park, would more than cater for the remaining marginal requirement.

7.5.68 As a result, the magnitude of the effect is considered to be **negligible.**

7.5.69 With the sensitivity of the receptor assessed as high (**Table 7.12**), the effect of the new population on open space provision is considered to be **insignificant** at the **district level**.

Effect on Demand for Play Space

7.5.70 The Development would provide a total of 5,292 sqm of additional play space.

7.5.71 The GLA's Shaping Neighbourhoods: Play and Informal Recreation SPD sets out a minimum requirement of 10 sqm per child, regardless of age.

7.5.72 The Development, once fully operational, is estimated to generate a total of 523 children (rounded up from 522.6) between the ages of 0 and 17, as set out in **Table 7.15**. Among this additional population, 229 children would be aged 4 or under, 174 would be of primary school-age and 119 would be of secondary school-age.

7.5.73 Based on the anticipated child yield from the Development, a total of 5,226.1 sqm of play space would need to be delivered to meet the GLA's requirements. The dedicated play space proposed as part of the Development represents 101% of the GLA's requirement (i.e. it more than meets the requirement, albeit by a small margin). As a result, the magnitude of the change is considered to be **small**.

7.5.74 With the sensitivity of the receptor assessed as **high** (**Table 7.12**), the effect of the new population on play space provision is considered to be a **direct, long-term, beneficial effect** of **minor significance** at the **district level.**

7.6 Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance

The Works

Direct Employment Generated from the Works and Associated Gross Value Added by Direct Employment

7.6.1 The Works would give rise to additional employment and additional GVA to the local economy. All such effects were judged to be significantly beneficial. Accordingly, no additional mitigation would be required, and the likely residual effects of the Works would be the same as the likely effects of the Works. That is:

- **Direct employment generated from the Works**: Direct, short to medium-term, beneficial effect of moderate significance at the district level and of minor significance at the regional level**.**
- **GVA added by direct employment generated from the Works:** Direct, short to medium-term, beneficial effect of moderate significance at the district level and of minor significance at the regional level.

The Completed and Operational Development

Net Additional Employment Opportunities, Gross Value Added to the Local Economy and Local Expenditure from the Completed and Operational Development's Residents

7.6.2 The completed and operational Development would give rise to additional employment opportunities, additional GVA to the local economy and additional expenditure from the introduced residential population. All such effects were judged to be significantly beneficial at the district level. Accordingly, no mitigation would be required and the likely residual effect of the completed and operational Development would be the same as the likely effects of the completed and operational Development. That is:

- **Net Additional Employment Opportunities**: Direct, long-term and of minor beneficial significance at the district level and insignificant at the regional level.
- **Gross Value Added to the Local Economy:** Direct, long-term and of minor beneficial significance at the district level and insignificant at the regional level.
- **Local Expenditure from Residents of the Completed and Operational Development**: Direct, long-term and of major beneficial significance at the district level and of moderate beneficial significance at the regional level.

Additional Council Tax Receipts and Contribution to Housing Delivery

7.6.3 The completed and operational Development would give rise to an increased population within the local areas, resulting in total increased amount of council tax receipts. Additionally, the Development itself would directly contribute to the housing delivery targets of the local area. These effects were judged to be significantly beneficial at the district level. Accordingly, no mitigation would be required and the likely residual effect of the completed and operational Development would be the same as the likely effects of the completed and operational Development. That is:

- **Additional Council Tax Receipts**: Direct, long-term and of minor beneficial significance at the district level.
- **Contribution to Housing delivery**: Direct, long-term and of major beneficial significance at the district level.

Primary Healthcare Capacity, Education Capacity and Open Space Provision

7.6.4 The completed and operational Development would give rise to an increased population within the local area and as such would result in an increased demand on the existing local services and facilities. However, a surplus of both primary and secondary school places would support the additional resultant child yield, and the capacity across existing GP services which are all taking on new patients will support the 'need' derived from the new population.

7.6.5 As well as on-Site provision, the local open space and play space provision means the increased proportion of young persons would not result in a significant change in demand for these facilities. These likely effects were judged to be insignificant for open space, and minor beneficial for play space. Accordingly, no mitigation would be required and the likely residual effect of the completed and operational Development would be the same as the likely effects of the completed and operational Development. That is:

- **Primary Healthcare Capacity**: Insignificant.
- **Primary School Provision**: Insignificant.
- **Secondary School Provision**: Insignificant.
- **Demand for Open Space**: Insignificant.
- **Demand for Play Space**: Direct, long-term and of minor beneficial significance at the district level.

7.7 Likely Residual Cumulative Effects and their Significance

Approved Projects

7.7.1 This section of the chapter assesses the potential socio-economic effects of the Development in combination with the potential effects of other Approved Projects within the surrounding area, as listed within **ES Volume 1: Chapter 2: EIA Methodology** and below:

- Islington Arts Factory, 2 and 2A Parkhurst Road (P2015/0330/FUL).
- 65 – 59 Parkhurst Road (P2020/0648/FUL).
- 392A Camden Road and 1 Hillmarton Road (P121287).

7.7.2 In total, it is estimated that the 3 Approved Projects identified (excluding the Development) would deliver around 1,500 sqm of gross commercial floorspace (predominantly B1 uses), as well as approximately 152 residential units. The assessment of the schemes' cumulative effects has been undertaken based on the following assumptions:

- The assessment has been completed based on available information regarding each scheme in the public domain. Where information is not available, impacts have been quantified where possible using the methodology outlined in this Chapter.
- Some or all schemes identified may be operational once the Development is fully operational.
- Any mitigation measures required to minimize or avoid likely adverse effects arising from each development would be adopted as part of the implementation of those schemes.

The Works

Net Additional Construction Employment

7.7.3 The Development and all three Approved Projects would generate short to medium-term employment associated with the Works programmes of each Approved Project, the extent of which would be dependent on the build cost for each of the schemes.

7.7.4 Information on the build cost estimate for each Approved Project was not available, however, based on the scale of the Approved Projects and using professional judgement, the likely residual cumulative effect from employment generated during all Works programmes considered together would be a **direct, short to medium-term effect of major beneficial significance** at the **district level** and of **moderate significance** at the **regional level**.

GVA from Net Additional Construction Employment

7.7.5 It is estimated that the temporary employment associated with the Works of the Development and the three Approved Projects would create a combined positive GVA to the district and regional economy.

7.7.6 The addition of the combined GVA to the local economy, as a result of the Development together with the three Approved Projects, directly attributable to the Works, are considered likely to result in a **direct, short to medium-term residual cumulative effects of major beneficial significance** at the **district level,** and of **moderate beneficial significance** at the **regional level.**

The Completed and Operational Development

Net Additional Employment

7.7.7 The Development, together with two of the three Approved Projects (Islington Arts Factory and Former Territorial Army) would result in the delivery of employment-generating floorspace across several use classes.

7.7.8 The Islington Arts Factory scheme would provide approximately 1,400 sqm of commercial floor space across B1 and D1 uses. The Development at 65 – 69 Parkhurst Road (Former Territorial Army site) would provide approximately 100 sqm of B1 office space. Based on the HCA's Employment Density Guide and using the same methodology as outlined earlier in this Chapter, it is estimated that the two-employment generating Approved Projects would support approximately 65 jobs. Combining with the estimated 28 - 166 net additional jobs generated at the Development (at the district level) gives an estimated total of between 93 - 231 net additional jobs.

7.7.9 As a result, the likely residual cumulative effects from net additional employment would be considered to be **direct, long-term** of **moderate beneficial significance** at the **district level,** and of **minor beneficial significance** at the **regional level.**

GVA from Net Additional Employment

7.7.10 The net additional employment created by the Development, and two employment generating Approved Projects would have wider economic effects by generating a combined GVA to the district economy.

7.7.11 Based on the same methodology outlined earlier in the Chapter, this would generate GVA to the district economy of between approximately £6.8 million - £16.7 million annually.

7.7.12 The cumulative addition of the GVA to the economy was therefore considered likely to result in **direct, long-term residual cumulative effects** of **moderate beneficial significance** at the **district level** and of **minor beneficial significance** at the **regional level.**

Additional Household Expenditure

7.7.13 All three Approved Projects include the provision of residential units which would increase the residential population within the LBI.

7.7.14 The three Approved Projects would provide approximately 150 residential units. Combining this with the 985 residential units to be delivered by the Development results in approximately 1,135 residential units. Based on the same methodology outlined earlier in this Chapter, the net additional household expenditure generated by the new residential population at the Development and three Cumulative Schemes would be around £19.5 million per annum.

7.7.15 The likely residual cumulative effect of the local expenditure on the part of new residents of the Development together with the three Approved Projects would be considered **direct, long-term** of **major beneficial significance** at the **district level** and of **moderate beneficial significance** at the **district level.**

Additional Council Tax Receipts

7.7.16 The Development together with the three Approved Projects would provide approximately 1,135 new residential units within the LBI. The proposed residential units would have a beneficial effect on the annual Council Tax receipts received by the LBI.

7.7.17 Based on the same methodology outlined earlier in this Chapter (that all new properties across the Sites are rated as Council Tax Band D and that the 1-bed units would be applicable for single person discount), it is estimated that the 1,100 residential units would generate council tax receipts to the LBI of approximately £1.7 million annually.

7.7.18 The likely residual cumulative effects of the additional Council Tax revenue generated by new residents of the Development and the three Approved Projects were considered to be **direct, long-term** of **moderate beneficial significance** at the **district level.**

Contribution to Housing Delivery

7.7.19 The Development together with the three Approved Projects would contribute to the LBI’s housing targets, by providing new residential units.

7.7.20 The cumulative effect would result in the delivery of up to 1,135 new residential units, equating to 13% of the ten-year target (8,620 units) in the new London Plan (2021).

7.7.21 The likely residual cumulative effect on housing provision was assessed as a **direct, long-term, effect** of **major beneficial significance** at the **district level.**

Education Capacity

Primary School Provision

7.7.22 All three Approved Projects together with the Development would result in the introduction of additional residents, which cumulatively could increase the pressure on local primary education facilities to varying degrees.

7.7.23 As set out earlier in this Chapter, is has been proven that the Development (considered in isolation) would not lead to any significant pressure upon existing primary school capacity.

7.7.24 With reference to the three Approved Projects it was assumed that the needs for primary school places have been (or would be) considered on a case by case basis by LBI during the determination of each Approved Project. As such, it is reasonable to assume that any necessary contributions to offset any significant adverse effect would be secured via a Community Infrastructure Levy (CIL) contribution, as set out in the LBI's Regulation 123 List[43] [44].

7.7.25 In view of the above, the likely residual cumulative effect on the supply of primary school places is considered to be **insignificant** at the **district level**. This likely residual cumulative effect is identical to that of the likely residual effect of the Development in isolation. As such, the cumulative effect of the Development, together with the three Approved Projects, would remain the same as for the residual effect of the Development in isolation.

Secondary School Provision

7.7.26 All three of the Approved Projects together with the Development would result in the introduction of additional residents, which together are likely to increase the pressure on local secondary education facilities to varying degrees.

7.7.27 As set out earlier in this Chapter, is has been proven that the Development (considered in isolation) would not lead to any significant pressure upon existing secondary school capacity.

7.7.28 With reference to the Approved Projects, it is assumed that the need for secondary school places have been (or would be) considered on a case by case basis by LBI during the determination of each Approved Project. As such, it is reasonable to assume that any necessary contributions to offset any significant adverse effect would be secured via a CIL contribution, as set out in the LBI's Regulation 123 List.

7.7.29 In view of the above, the likely residual cumulative effect on the supply of secondary school places is considered to be **insignificant** at the **district level**. This likely residual cumulative effect is identical to that of the likely residual

[43] 'Regulation 123' infrastructure lists set out the items and types of infrastructure that may be fully or partially funded by Community Infrastructure Levy (CIL).
[44] Islington Council. Community Infrastructure Levy 'Regulation 123' Infrastructure List 2021. [Online] Accessed 1 June 2021.

effect of the Development in isolation. As such, the cumulative effect of the Development, together with the three Approved projects, would remain the same as for the residual effect of the Development in isolation.

Primary Healthcare Capacity – GP Provision

7.7.30 All three Approved projects would increase the residential population and would therefore have the potential to increase the pressure on local healthcare services to varying degrees.

7.7.31 These issues would be considered by LBI in the determination of the planning application in the case of each Approved project, with any necessary contributions secured via a CIL contribution, as set out in LBI's Regulation 123 List. It is therefore assumed that, given this mechanism for securing any necessary financial contributions, payments would be paid in mitigation against any adverse effects on healthcare services.

7.7.32 Taking the above measures into account, it was considered that the likely residual cumulative effects on healthcare services would be **insignificant** at the **district level**.

Demand for Open Space

7.7.33 Open space for the three residential-led Approved Projects typically comprises a balance between landscaped areas and balconies. Where public space is provided, this would be a resource for the community as well as future occupiers of the schemes.

7.7.34 It would be assumed that, given the above mechanisms for securing any necessary financial contributions, issues relating to demand for open space would have been adequately considered at the time when the Approved Projects were consented.

7.7.35 Therefore, the likely residual cumulative effect on open space provided by the Development and the three Approved projects would be considered to be **insignificant** at the **district level**. As such, the cumulative effect of the Development, together with the three Approved Projects, would remain the same as for the residual effect of the Development in isolation.

Demand for Play Space

7.7.36 A range of dedicated play space and playable space would have been provided or committed as part of the three Approved Projects.

7.7.37 It was assumed that issues relating to demand for play space would have been adequately considered and resolved through construction of additional space, or through the necessary contributions at the time when the Approved Projects were consented.

7.7.38 As such, the likely residual cumulative effect on play space provided by the Development and the three Approved Projects would be considered to be **insignificant** at the **district level**. As such, the cumulative effect of the

Development, together with the three Approved Projects, would remain the same as for the residual effect of the Development in isolation.

Approved Projects plus Developments that have a Planning Status in the Development Plan Process

7.7.39 This section of the Chapter assesses the potential socio-economic effects of the Development in combination with the potential effects of other Approved Projects within the surrounding area, and those projects that have a planning status in the development plan process. There are listed within **ES Volume 1: Chapter 2:EIA Methodology**. There are 20 projects with a planning status identified in total.

7.7.40 Given the limited information available for the latter schemes, this section entails a qualitative assessment, with information drawn from the following documents:

- Islington's Local Plan: Site Allocations (June 2013).
- Islington Local Plan Site allocations (September 2019).
- Islington Site Allocations – Modifications for Consultation (2021).

The Works

Net Additional Construction Employment

7.7.41 All 20 developments that have a planning status, together with the Approved Projects and Development previously assessed would entail a construction period which would generate short to medium-term construction employment opportunities. The extent of which would be dependent on the build cost for each of the schemes.

7.7.42 As a result, using professional judgement, the likely residual cumulative effect from employment generated during all Works programmes considered together would be **direct, short to medium-term, effect** of **major beneficial significance** at the **district level** and of **moderate significance** at the **regional level**.

GVA from Net Additional Construction Employment

7.7.43 It is estimated that the temporary employment associated with the Works of the Development, together with the three Approved Projects and 21 projects with a planning status, would create a combined positive GVA to the district and regional economy.

7.7.44 The addition of the combined GVA to the economy, directly attributable to the construction employment of the Works of each scheme, are considered likely to result in **direct, short to medium-term cumulative effects** of **major beneficial significance** at the **district level,** and of **moderate beneficial significance** at the **regional level.**

The Completed and Operational Development

Net Additional Employment

7.7.45 Based on a review of the relevant site allocation documents, it is expected that the majority of the 20 schemes with planning status would provide some form of commercial floorspace which would generate permanent employment opportunities. These include:

- **Emerging Site Allocation NH1** - the site has potential for a significant retail-led mixed-use development, with provision of improved retail provision (in terms of quantum and quality) as well as a significant amount of new office floorspace.
- **Emerging Site Allocation NH2** - possibility for retail at ground floor level, with business and residential uses above.
- **Emerging Site Allocation NH3** - Site is considered suitable for intensification of business uses (including office and warehouse use), and commercial uses along Holloway Road.
- **Emerging Site Allocation OIS21** - Residential-led, mixed use development including the introduction of retail uses at ground level. The station must be retained and protected.

7.7.46 Together with the expected 28 - 166 jobs to be created by the Development at the district level, and two of the three Approved Projects, it is expected that the likely residual cumulative effects from net additional employment would be considered to be **direct, long-term** and of **major beneficial significance** at the **district level, and of moderate beneficial significance** at the **regional level**.

GVA from Net Additional Employment

7.7.47 The net additional employment created by the Development, two employment generating Approved Projects, and those schemes with a planning status that provide some form of commercial employment, would have wider economic effects by generating a combined GVA to the local economy. The scale of which will be directly attributed to the quantum of employment generated.

7.7.48 The cumulative addition of the GVA to the local economy were therefore considered likely to result in **direct, long-term residual cumulative effects** of **major beneficial significance** at the **district level** and of **moderate beneficial significance** at the **regional level.**

Housing Delivery, Household Expenditure and Council Tax Receipts

7.7.49 Based on a review of the relevant site allocation documents, it is expected that a proportion of the 20 schemes with planning status would provide some form of residential units. These include:

- **Emerging Site Allocation NH10** - Site suitable for redevelopment for conventional housing; given its location adjacent to London Metropolitan University.

- **Emerging Site Allocation NH8** - Retention and sensitive refurbishment of this locally listed building to provide employment and residential uses.
- **Emerging Site Allocation OIS18** – residential development.

7.7.50 The provision of further sites which have a residential development will have beneficial effects in terms of housing delivery, household expenditure effects and council tax receipts. Taking into account the Development, Approved Projects and those projects with a planning status, it is considered the residual cumulative effect on housing provision impacts (housing delivery, household expenditure and council tax receipts) was assessed as a **direct, long-term, effect of major beneficial significance** at the **district level.**

Education and Healthcare Capacity

7.7.51 The developments with planning status which provide residential units, together with the Approved Projects and Development, would result in the introduction of additional residents, which cumulatively could increase the pressure on local education and healthcare facilities to varying degrees.

7.7.52 As was the case in the cumulative assessment of the Approved Projects, it is assumed that the additional need for education and healthcare facilities will be considered on a case by case basis by LBI during the determination of each Project. As such, it is reasonable to assume that any necessary contributions to offset any significant adverse effect would be secured via a CIL contribution, as set out in the LBI's Regulation 123 List. It is not possible to determine at this stage whether any of the projects with planning status would provide specific education or healthcare facilities.

7.7.53 It is therefore considered that the likely residual cumulative effects on healthcare services would be **insignificant** at the **district level.**

Open Space and Play Space

7.7.54 As was the case above, the developments with planning status which provide residential units, together with the Approved Projects and Development, would result in the introduction of additional residents, which cumulatively could increase the pressure on local open space and play space facilities.

7.7.55 It would be assumed that, given the above mechanisms for securing any necessary financial contributions, issues relating to demand for open space and play space would be adequately considered at the time when the Approved Projects and projects with Planning Status are consented.

7.7.56 It is therefore considered that the likely residual cumulative effects on open space and play space facilities would be **insignificant** at the **district level.**

7.8 Conclusions

7.8.1 An assessment of the likely socio-economic effects associated with the Works and the completed and operational Development was undertaken, using a range of methods. The Works would generate 1,660 temporary construction jobs over the five-year period, of which 1,082 would be located in LBI. These temporary construction jobs would generate £105.1 million in GVA to the regional economy.

7.8.2 It is estimated that the Development would result in an additional population of 2,207 residents. The Development would also expect to support between approximately 53 – 309 net additional jobs regionally, of which between 28 - 166 would be located in LBI. This would generate between £2 million and £12 million in additional GVA at the district level.

7.8.3 Residents of the Development would be anticipated to generate annual expenditure of £17.4 million per annum within the district economy and £1.5 million per annum in additional Council Tax receipts for LBI. The Development would greatly contribute to the overall housing delivery targets for the LBI and wider area with the provision of 985 dwellings.

7.8.4 It was concluded that there is sufficient capacity within the existing primary and secondary schools located in proximity to the Site to provide for the additional demand in services that the new population from the Development would create. The same was true for healthcare (GPs) services.

7.8.5 Accounting for the availability of open space and open play space in the local area and that proposed by the Development, there would be an adequate supply of such community facilities to cater for the population and child yield of the Development.

7.8.6 Considering the impact of the Development in conjunction with the identified Approved Projects and Projects with Development Planning Status, it is expected that there will be beneficial effects in terms of employment generation and associated GVA, household expenditure impacts, council tax receipts and housing delivery. It has been assumed that population related impacts (e.g. the impact of the developments on social infrastructure services like GPs and schools) would be considered on a case by case basis by the LBI during the determination of each Project, with necessary mitigation measures implemented to mitigate any adverse effects identified.

8. Air Quality

8.1 Introduction

8.1.1 This Chapter, prepared by Air Quality Consultants ('AQC'), presents an assessment of the likely significant air quality effects of the Development on identified sensitive receptors.

8.1.2 This Chapter provides a description of the methods used in the air quality assessment. This is followed by a description of the relevant baseline conditions at the Site and surrounding area, and an assessment of the likely environmental effects of the Development during Site preparation, demolition and construction works (the 'Works') and once the Development is completed and operational. The significance of such effects is highlighted.

8.1.3 Where appropriate, mitigation measures are identified to avoid, reduce or offset any significant adverse effects. Taking account of the mitigation measures, the nature and significance of the likely residual effects are described. The cumulative air quality effects of the Development and other relevant Cumulative Schemes are also considered.

8.1.4 In accordance with Policy SI 1 (c) of the London Plan[1] an air quality positive approach has been undertaken to maximise benefits to local air quality and reduce exposure. In addition, an air quality neutral assessment has been undertaken to comply with Policy SI 1 (b) of the London Plan.

8.1.5 This Chapter is supported by further detailed information contained within the following Appendices:

- **ES Volume 3, Appendix 8.1: Air Quality Assessment Consultation.**
- **ES Volume 3, Appendix 8.2: Legislative and Planning Policy Context.**
- **ES Volume 3, Appendix 8.3: EPUK & IAQM Planning for Air Quality Guidance.**
- **ES Volume 3, Appendix 8.4: Modelling Methodology.**
- **ES Volume 3, Appendix 8.5: The Works Dust Risk Methodology and Assessment.**
- **ES Volume 3, Appendix 8.6: Air Quality Neutral Calculations.**
- **ES Volume 3, Appendix 8.7. Air Quality Preliminary Assessment.**
- **ES Volume 3, Appendix 8.8. Air Quality Positive Statement.**
- **ES Volume 3, Appendix 8.9: Construction Mitigation.**
- **ES Volume 3, Appendix 8.10: Glossary.**

[1] GLA. The London Plan, Available: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf. 2021.

8.2 Assessment Methodology and Significance Criteria

Assessment Methodology

8.2.1 Specific consultation with the Environmental Health Officer (EHO) at the London Borough of Islington (LBI) was undertaken to agree the following approach for the air quality assessment (refer to **ES Volume 3, Appendix 8.1**):

- Identification of potentially sensitive existing and future receptor locations which could be affected by changes in air quality resulting from the Works, as well as the operation of the completed and occupied Development.
- Establishment of the relevant existing air quality baseline conditions via a review of:
  - LBI air quality review and assessment reports documents[2].
  - Air quality monitoring data from the LBI monitoring network,
  - The national background pollution maps by Department for Environment, Food & Rural Affairs (Defra)[3].
  - Defra's Pollutant Release and Transfer Register[4] to establish industrial and waste management sources that may affect the ambient air quality of the Site and its wider area.
- In addition to the above, existing ambient pollutant concentrations at sensitive receptor locations were determined using dispersion modelling (refer to **ES Volume 3, Appendix 8.4**).
- Application of the ADMS-Roads air quality dispersion model using data from the Applicant's Transport Consultant (Velocity Transport Planning), to assess the likely effects of emissions from traffic generated by the Works and the completed and operational Development on local air quality. The technical approach to the air quality assessment is detailed in **ES Volume 3, Appendix 8.4**.
- Comparison of the predicted air pollutant concentrations with LBI monitored concentrations for the latest year of monitoring data, 2019; 2020 was not used due to the impacts of the Covid-19 pandemic, discussed further in **paragraph 8.3.5**), and adjustment of modelled results where necessary (model verification details are provided in **ES Volume 3, Appendix 8.4**).
- Comparison of the predicted pollutant concentrations with the Air Quality Strategy Objectives (UK AQS)[5] (the AQS objectives are discussed later in this Chapter and in **ES Volume 3, Appendix 8.2**).
- Determination of the likely significant dust effects of the Works accounting for the implementation of Tertiary Mitigation in the form of the Construction Environmental Management Plan (CEMP), which is submitted as a

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2 Latest Air Quality Reports available at: https://www.islington.gov.uk/environment-and-energy/pollution/air-quality
3 Defra. Local Air Quality Management (LAQM) Support Website, Available: http://laqm.defra.gov.uk/. 2019.
4 Defra. UK Pollutant Release and Transfer Register, Available: http://prtr.defra.gov.uk/map-search. 2019.
5 Department of the Environment, Food and Rural Affairs (Defra). 'The Air Quality Strategy for England, Scotland, Wales & Northern Ireland'. 2007.

stand-alone document supporting the planning application, as an inherent part of the Works (refer to **ES Volume 1, Chapter 6: The Works**), and consideration of the necessary dust mitigation measures (see **ES Volume 3, Appendix 8.9** for proposed mitigation). In the absence of any formal assessment criteria, the approach developed by the Institute of Air Quality Management (IAQM)[6] was employed; the Greater London Authority (GLA)'s Supplementary Planning Guidance (SPG)[7] recommends that the assessment be based on the latest version of the IAQM guidance. Full details of this approach are provided in **ES Volume 3, Appendix 8.5**.

- Determination of the likely significant effects of construction traffic during the Works and the completed and operational Development on air quality, based on the application of the Environmental Protection UK Guidance (EPUK) and Institute of Air Quality Management (IAQM) significance criteria[8] to modelled results (see **ES Volume 3, Appendix 8.3** for details of the criteria).
- Determination of future air quality conditions that would be experienced by future occupants of the completed and operational Development.
- Identification of the Primary Mitigation and Tertiary Mitigation associated with the completed and operational Development which would have a beneficial effect on local air quality but cannot be quantified by the air quality model (owing to a lack of standard or recognised methodologies).
- Establishment of the likely residual effects of the Development upon air quality taking into account any necessary additional mitigation measures (over and above Primary and Tertiary mitigation).
- Determination of likely significant effects for the Development together with relevant Cumulative Schemes.

8.2.2 Demolition and construction plant emissions has not been explicitly modelled or assessed, as the relevant guidance from the IAQM states that "*experience from assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) […] suggests that they are unlikely to make a significant impact on local air quality and in the vast majority of cases they will not need to be quantitatively assessed*". However, suitable mitigation measures for Site plant, to minimise their use and effects as far as practicable, are presented in **ES Volume 3, Appendix 8.9**, as part of the Tertiary Mitigation measures to be implemented in relation to the Development, based on advice presented in the IAQM and GLA guidance documents.

8.2.3 The assessment focusses upon emissions of nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$)[9] as these are the primary pollutants of concern with respect to emissions from road traffic.

8.2.4 The Development does not incorporate any centralised combustion plant as the Energy Strategy relies on air-source heat pumps (ASHPs) and photovoltaics (PV) for the provision of heat and hot water and therefore would

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6 IAQM. Guidance on the Assessment of Dust from Demolition and Construction v1.1, Available: http://iaqm.co.uk/guidance/. 2016.
7 GLA. The Control of Dust and Emissions from Construction and Demolition SPG, Available: https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/supplementary-planning-guidance/. 2014.
8 Moorcroft and Barrowcliffe et al, Land-Use Planning & Development Control: Planning For Air Quality v1.2, IAQM, London, 2017.
9 PM_{10} is particulate matter in the air with a diameter of 10 micrometres or less. $PM_{2.5}$ is particulate matter in the air with a diameter of 2.5 micrometres or less.

have no building-related emissions. Therefore, there are no Development energy plant emissions to include within the air quality assessment. Further details on the proposed Energy Strategy are included in the Sustainable Design & Construction Statement which his submitted as a stand-alone document supporting the planning application.

8.2.5 In addition to the air quality impact assessment set out in this Chapter, an 'Air Quality Neutral' assessment was undertaken for the completed and operational Development, in accordance with the requirements of Policy SI 1 (b) of the London Plan. The Air Quality Neutral assessment is provided in **ES Volume 3, Appendix 8.6**.

8.2.6 An air quality positive approach was also undertaken, which has included a preliminary air quality assessment to inform the design of the Development (see **ES Volume 3. Appendix 8.7**. Air Quality Preliminary Assessment) and an Air Quality Positive assessment undertaken for the completed and operational Development, as required by Policy SI 1 (c) of the London Plan. The Air Quality Positive Statement is provided in **ES Volume 3 Appendix 8.8**.

General Assessment Criteria

8.2.7 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations 2000[10] and the Air Quality (England) (Amendment) Regulations 2002[11].

8.2.8 The UK-wide objectives for NO_2 and PM_{10} were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. The $PM_{2.5}$ objective was to be achieved by 2020. Measurements across the UK have shown that the 1-hour NO_2 objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 μg/m^3 [12]. Where relevant, this value has been used as an indication of the likelihood of the 1-hour mean NO_2 objective to be exceeded in the study area (see Figure A4.1 in **ES Volume 3, Appendix 8.4** relating to the study area). Measurements have also shown that the 24-hour PM_{10} objective could be exceeded at roadside locations where the annual mean concentration is above 32 μg/m^3 [3]. The predicted annual mean PM_{10} concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM_{10} objective. Where predicted annual mean concentrations are below 32 μg/m^3 it is unlikely that the 24-hour mean objective will be exceeded.

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10 The Air Quality (England) Regulations, 2000, Statutory Instrument 928 (2000), HMSO, Available: http://www.legislation.gov.uk/uksi/2000/928/contents/made.
11 The Air Quality (England) (Amendment) Regulations, 2002, Statutory Instrument 3043 (2002), HMSO, Available: https://www.legislation.gov.uk/uksi/2002/3043/contents/made.
12 Defra (2018) Review & Assessment: Technical Guidance LAQM.TG16 February 2018 Version, Defra, Available: https://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf.

8.2.9 The European Union has also set limit values for NO_2, PM_{10} and $PM_{2.5}$. The limit values for NO_2 are the same numerical concentrations as the UK objectives, but achievement of these values is a national obligation rather than a local one[13]. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and Department for Transport (DfT's) Joint Air Quality Unit (JAQU).

8.2.10 The relevant air quality criteria for this assessment are provided in **Table 8.1**.

Table 8.1: Air Quality Criteria for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Time Period	Objective
Nitrogen Dioxide (NO_2)	1-hour mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual mean	40 µg/m^3 [a]
Fine Particulates (PM_{10})	24-hour mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual mean	40 µg/m^3 [b]
Fine Particulates ($PM_{2.5}$) [c]	Annual mean	25 µg/m^3

Notes; a. A proxy value of 60 µg/m^3 as an annual mean can be used to assess the likelihood of the 1-hour mean NO_2 objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 1-hour mean NO_2 objective are possible.

b. A proxy value of 32 µg/m^3 as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM_{10} objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM_{10} objective are possible[3].

c. The $PM_{2.5}$ objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

World Health Organisation (WHO) Guideline for Annual Mean $PM_{2.5}$

8.2.11 The WHO has set a guideline for annual mean $PM_{2.5}$ of 10 µg/m^3. The guideline is not currently in UK regulations and there is no explicit requirement to assess against it. However, achievement of the guideline is a long-term

[13] European Parliament and the Council of the European Union (2008) Directive 2008/50/EC of the European Parliament and of the Council, Available: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050.

aspiration of the UK Government[14], and, as set out in **ES Volume 3, Appendix 8.2**, the GLA aims to achieve it by 2030. As such, consideration of the impact of the Development on the WHO guideline for annual mean $PM_{2.5}$ has been included within this assessment, in addition to the criteria in **Table 8.1**.

The Works

Construction Dust

8.2.12 The assessment of dust emissions (airborne particulate matter and dust deposition) during the Works was determined using the IAQM methodology[5]. Consequently, as presented in **ES Volume 3, Appendix 8.5** the IAQM methodology was used to determine the likely effects of the Works without mitigation and to identify the level of dust mitigation to be implemented during the Works.

8.2.13 The mitigation measures detailed in **ES Volume 3, Appendix 8.9** were included as part of the Tertiary Mitigation as detailed in the outline CEMP submitted as a stand-alone document supporting the planning application and summarised in **ES Volume 1, Chapter 6 The Works**. Details of the assessor's experience and competence to undertake the dust assessment is provided in **ES Volume 3, Appendix 8.4**.

8.2.14 Following on from the above and in accordance with **ES Volume 1, Chapter 2: EIA Methodology**, the assessment of likely dust effects as presented in this Chapter considers the likely effect of the Works accounting for the implementation of Tertiary dust Mitigation that would be set out in the Site-Specific CEMP.

Construction Traffic

8.2.15 EPUK & IAQM[8] consider that a detailed assessment is required where a development leads to an increase in Heavy Duty Vehicles (HDV) of more than 25 Annual Average Daily Traffic (AADT) in an Air Quality Management Area (AQMA)[15]. Velocity Transport Planning have advised that the Development would generate 78 annual average daily trips (AADT), 38% (30 vehicles) would be HDVs. Given the number is above the EPUK & IAQM screening criteria a quantitative assessment of construction vehicle emissions impacts has therefore been carried out to determine the impacts that construction traffic emissions could have on existing sensitive receptors located along the affected routes. As a worse case, the 30 HDVs have been modelled in the first year of construction works (2022). The main air pollutants of concern related to traffic emissions are NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$). The methodology employed to quantify impacts from construction vehicles emissions is similar to that employed to determine operational road traffic impacts, described in the 'The Completed and Operational Development' section below.

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14 Defra (2019) Assessing progress towards WHO guideline levels of PM2.5 in the UK, Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/930104/air-quality-who-pm25-report.pdf.

15 The whole of the LBI is designated an AQMA; further details are provided in Section 8.3.

8.2.16 All vehicles would travel along the strategic construction route, along Camden Road and Parkhurst Road arriving from the wider Transport for London Road Network (TLRN). Receptors along Parkhurst Road[16] to the east of the Site have therefore been modelled, as these receptors are considered worst case as they would experience the greatest change in vehicle emissions.

The Completed and Operational Development

Modelled Receptors

8.2.17 Concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been predicted at a number of locations both within, and close to the Development. Receptors have been identified to represent a range of exposure within the Development, including the worst-case locations (these being at the façades of the residential properties closest to the sources of emissions). When selecting receptors, particular attention was paid to assessing impacts close to junctions, where traffic may become congested and where there is a combined effect of several road links.

8.2.18 **Table 8.2** and **Figure 8.1** present the 12 existing residential properties, which were selected for assessment due to their proximity to the road network likely to be affected by the Development. In addition, concentrations have been modelled at the automatic monitoring site (IS2) located on Holloway Road, in order to verify the model outputs. Further details of the model verification are provided in **ES Volume 3, Appendix 8.4**.

Table 8.2: Description of Existing Receptor Locations

Receptor [a]	Description	X	Y	Modelled Heights
R1	Residential property on Parkhurst Road	530249.9	185694.6	2 m [a]
R2	Residential property on Parkhurst Road	530235.1	185600.5	1 m [b]
R3	Residential property on the Hillmarton Road - Camden Road Junction	530199.2	185474.1	4.5 m
R4	Residential property on Camden Road	530130.4	185400.5	1.5 m
R5	Residential property on Camden Road	530107.6	185368.1	1.5 m
R6	Residential property on Camden Road	530066.2	185308.2	1.5 m
R7	Residential property on Camden Road	530018	185316	1.5 m
R8	Residential property on Camden Road	530077.2	185403.1	1.5 m

[16] As a worst case, it has been assumed that all vehicles will travel north along Parkhurst Road towards Holloway Road.

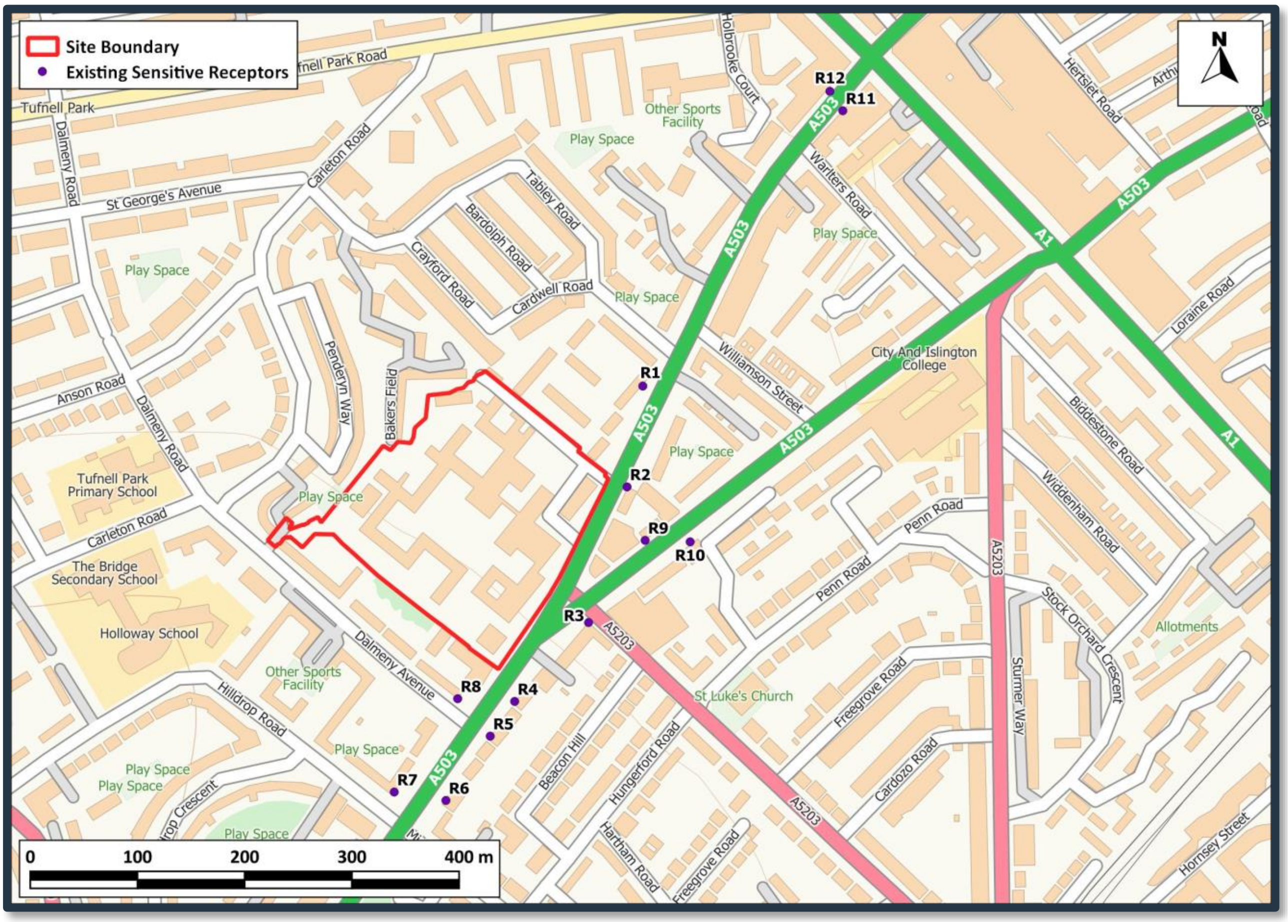
Receptor [a]	Description	X	Y	Modelled Heights
R9	Residential property on Camden Road	530252	185550.7	1.5 m
R10	Residential property on Camden Road	530294.1	185549.3	1.5 m
R11	Residential property on Parkhurst Road - Holloway Road Junction	530436.4	185951.3	4.5 m
R12	Residential property on Parkhurst Road - Holloway Road Junction	530424.4	185969.3	1.5 m

Notes; [a] Receptors R1, R2, R11 and R12 have been used as receptors for construction vehicle emissions, being located along the strategic route for construction vehicles.

[b] Receptor R1 is on an elevated ledge so has been modelled at a height of 2 m.

[c] Receptor R 2 is at a lower level than the pavement and has been modelled at a height of 1 m.

Figure 8.1: Mapped Location of Existing Sensitive Receptors Assessed



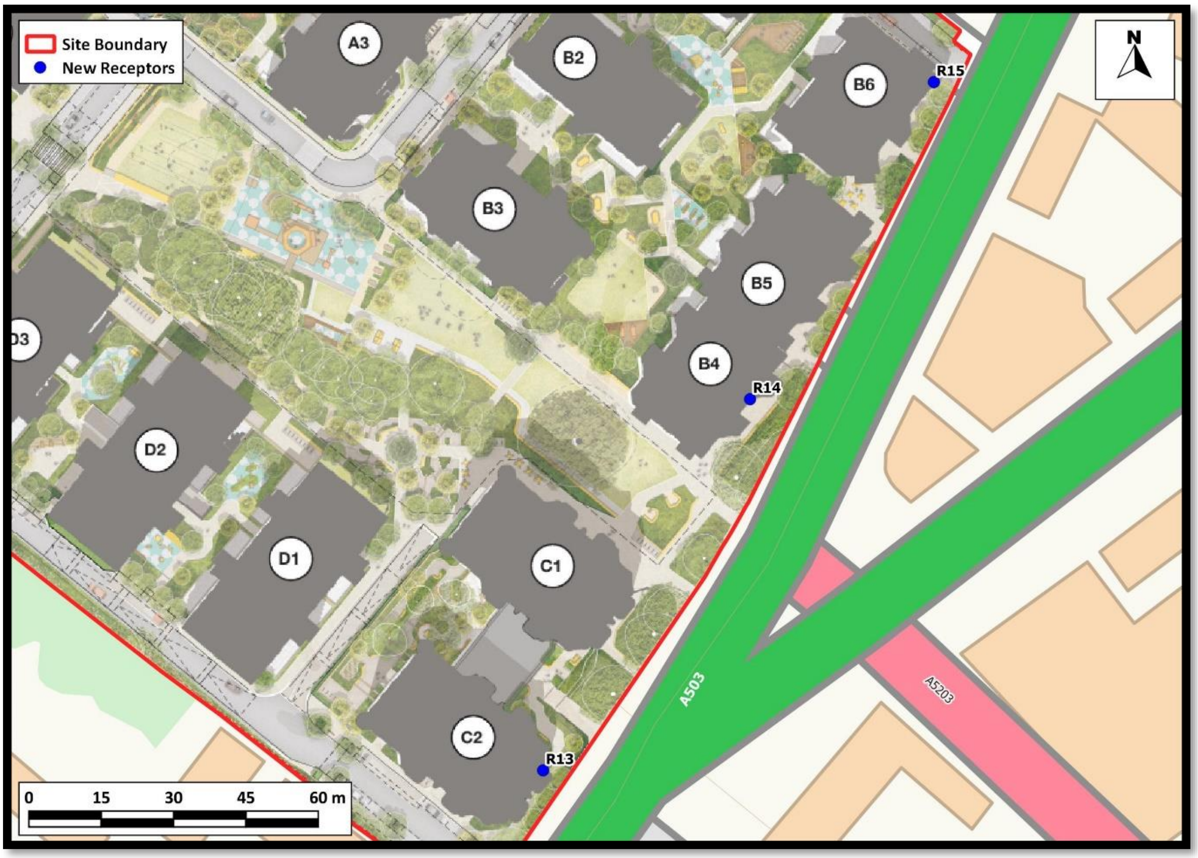
Notes: Contains Ordnance Survey data © Crown copyright and database right 2020. Ordnance Survey licence number 100046099. Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v1.0.

8.2.19 **Table 8.3** and **Figure 8.2** show future sensitive receptor locations which are representative of sensitive uses (i.e. residential uses) within the Development itself. The future sensitive receptor locations represent the areas of the Development that would likely be exposed to the worst-case air quality conditions, i.e. the lowest residential levels of the Development that would be closest to road. A height of 1.5 m has been used to represent worst case exposure to road traffic emissions; in reality, residential exposure in these locations would be located on the first floor and upwards, and therefore the modelling results are worst-case.

Table 8.3: Future Sensitive Receptors Locations Assessed

Receptor	Description	X	Y	Modelled Heights
R13	Residential property within Building C2	530249.9	185694.6	1.5 m
R14	Residential property within Building B4	530235.1	185600.5	1.5 m
R15	Residential property within Building B6	530199.2	185474.1	1.5 m

Figure 8.2: Mapped Location of Future Sensitive Receptors Assessed



Notes: Contains Ordnance Survey data © Crown copyright and database right 2020. Ordnance Survey licence number 100046099. Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v1.0.

Assessment Years

8.2.20 NO_2, PM_{10} and $PM_{2.5}$ concentrations were predicted for a base year (2019) and for the proposed completed and operational year of the Development (2027). The base year of 2019 was used as this was the latest representative year for which a fully ratified calendar year of local air quality monitoring data was available for model verification and most suitable year of monitoring data (i.e. prior to the Covid-19 pandemic in 2020, which impacted travel patterns). For 2027, predictions were made assuming both that the Development does proceed (the 'With Development' scenario) and does not proceed (the 'Without Development' scenario).

Modelling Methodology

8.2.21 Concentrations were predicted using the ADMS-Roads[17] dispersion model, with vehicle emissions derived using Defra's latest Emission Factor Toolkit (EFT) (v10.1)[18]. Details of the model inputs, assumptions and the verification are provided in **ES Volume 3, Appendix 8.4**, together with the method used to derive base (2019) and future year (2027) background concentrations. Where assumptions were made, a realistic worst-case approach was adopted.

8.2.22 An important stage in the modelling process is model verification, which involves comparing the model output with measured concentrations (refer to **ES Volume 3, Appendix 8.4**). The level of confidence in the verification process is necessarily enhanced when data from an automatic analyser have been used (as the automatic analyser is regularly calibrated and continuously monitors air quality concentrations), as has been the case for this assessment. Because the model has been verified and adjusted, there can be reasonable confidence in the prediction of base year (2019) concentrations. As such, model uncertainty can be reduced.

Traffic Data

8.2.23 As noted earlier in this Chapter, data regarding the traffic generation of the Development was provided by Applicant's Transport Consultant (Velocity Transport Planning). Further details of the traffic data used in this assessment are provided in **ES Volume 3, Appendix 8.4**.

Model Uncertainty

8.2.24 European type approval ('Euro') standards for vehicle emissions apply to all new vehicles manufactured for sale in Europe. These standards have, over many years, become progressively more stringent and this is one of the factors that has driven reductions in both predicted and measured pollutant concentrations over time.

8.2.25 Historically, the emissions tests used for type approval were carried out within laboratories and were quite simplistic. They were thus insufficiently representative of emissions when driving in the real world. For a time,

[17] Atmospheric Dispersion Modelling System model for Roads.
[18] Defra. Emissions Factors Toolkit V10.1: https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html. 2021.

this resulted in a discrepancy, whereby nitrogen oxides emissions from new diesel vehicles reduced over time when measured within the laboratory, but did not fall in the real world. This, in turn, led to a discrepancy between models (which predicted improvements in nitrogen dioxide concentrations over time) and measurements (which very often showed no improvements year-on-year).

8.2.26 Recognition of these discrepancies has led to changes to the type approval process. Vehicles are now tested using a more complex laboratory drive cycle and also through 'Real Driving Emissions' (RDE) testing, which involves driving on real roads while measuring exhaust emissions. For HDVs, the new testing regime has worked very well and NOx emissions from the latest vehicles (Euro VI[19]) are now very low when compared with those from older models[20].

8.2.27 For Light Duty Vehicles (LDVs), while the latest (Euro 6) emission standard has been in place since 2015, the new type-approval testing regime only came into force in 2017. Despite this delay, earlier work by AQC[21] showed that Euro 6 diesel cars manufactured prior to 2017 tend to emit significantly less NOx than previous (Euro 5 and earlier) models.

8.2.28 AQC has analysed trends in measured NOx concentrations against trends in Defra's Emission Factor Toolkit (EFT) model predictions for the period 2013 to 2019[22]. This has demonstrated that, while the EFT typically over-stated the improvements over the period 2013 to 2016, it has tended to under-state the improvements since 2016. Wider consideration of the assumptions built into the EFT suggests that, on balance, the EFT is unlikely to over-state the rate at which NOx emissions decline in the future at an 'average' site in the UK. In practice, the balance of evidence thus suggests that NOx concentrations are most likely to decline more quickly in the future, on average, than predicted by the EFT, especially against a base year of 2016 or later. Using EFT v10.0 for future-year forecasts in this report thus provides a robust assessment, given that the model has been verified against measurements made in 2019.

8.2.29 It must also be borne in mind that the predictions in 2027 are based on worst-case assumptions regarding the increase in traffic flows, such that all approved developments (referred to later as Approved Projects) and the Development, are assumed to be fully operational. This will likely have overestimated the traffic emissions and hence the concentrations in 2027.

[19] Euro VI refers to HDVs while Euro 6 refers to LDVs.
[20] ICCT. (201). NOx emissions from heavy-duty and light-duty diesel vehicles in the EU: Comparison of real-world performance and current type-approval requirements.
[21] AQC (2016) Emissions of Nitrogen Oxides from Modern Diesel Vehicles.
[22] AQC (2020) Performance of Defra's Emission Factor Toolkit 2013-2019

Significance Criteria

The Works

Construction Dust

8.2.30 Guidance from IAQM[5] states that with appropriate mitigation in place, the effects of construction dust would be 'not significant'. This is the latest version of the guidance upon which the assessment methodology set out in the GLA guidance is based (the GLA guidance advises that the latest version of the IAQM guidance should always be used). Consequently, this assessment focuses on determining the appropriate level of mitigation so as to ensure that effects would, indeed, be 'not significant'. Accordingly, there is no requirement to consider any other definition of 'significance' for the assessment of the Works.

Construction Traffic

8.2.31 The methodology employed to quantify impacts from construction vehicles emissions uses the same significance criteria as set described below under 'The Completed and Operational Development' Section and as detailed in **Table 8.4**.

The Completed and Operational Development

8.2.32 The following significance criteria were used for the assessment of the impacts of road traffic emissions from the completed and occupied Development on existing off-Site receptors.

8.2.33 There is no official guidance in the UK in relation to development control on how to describe air quality impacts / effects, nor how to assess their significance. The approach developed jointly by EPUK and the IAQM[7] was therefore used. This includes defining descriptors of the impacts at individual receptors, which take account of the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective. The overall significance of the air quality effects were determined using professional judgement, taking account of the impact descriptors.

8.2.34 The air quality impact descriptors and full details of the EPUK / IAQM approach, are provided in **ES Volume 3, Appendix 8.3**. The approach includes elements of professional judgement. In this respect, the experience of the Applicant's Air Quality Consultant (AQC) is set out in **ES Volume 3, Appendix 8.4** and in **ES Volume 1, Chapter 1: Introduction.**

Table 8.4: Air Quality Impact Descriptors for Individual Receptors for All Pollutants

Long-Term Average Concentration at Receptor in Assessment Year	Change in Concentration Relative to Air Quality Assessment Level (AQAL)				
	Less than 0.5%	1%	2-5%	6-10%	More than 10%
75% or less of AQAL	Negligible	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Negligible	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Negligible	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Negligible	Moderate	Substantial	Substantial	Substantial

Notes:

- Values are rounded to the nearest whole number.
- The 'Long Term Average Concentration at Receptor' is the 'Without Development' scenario concentration where there is a decrease in pollutant concentration and the 'With Development' scenario concentration where there is an increase in pollutant concentration.
- The AQAL may be an air quality objective, EU limit or target value, or an Environment Agency Environmental Assessment Level (EAL).
- Impact descriptors are based on EPUK/IAQM approach. Substantial = Major, Moderate = Moderate, Slight = Minor and Negligible = Insignificant.

8.2.35 **Table 8.4** shows that any change in concentration smaller than 0.5% of the long-term environmental standard presented in **Table 8.1** would be 'negligible', regardless of the existing air quality conditions and, therefore, 'not significant'. Any change smaller than 1.5% of the long-term environmental standard (which would be rounded down to 1% in accordance with EPUK / IAQM Guidance) would be 'negligible' so long as the total concentration is less than 94.5% of the standard and any change smaller than 5.5% (which would be rounded down to 5% in accordance with EPUK / IAQM Guidance) of the long-term environmental standard would be 'negligible' so long as the total concentration is less than 75.5% of the standard.

8.2.36 In view of the above, if the short-term process contribution is less than 10% of the short-term AQAL then the impacts are 'negligible' and, therefore, insignificant.

8.2.37 It is important to differentiate between the terms impact and effect with respect to the assessment of air quality. The term impact is used to describe a change in pollutant concentration at a specific location. The term effect is used to describe an environmental response resulting from an impact, or series of impacts. EPUK and IAQM guidance outlines that this change may have an effect on the receptor depending on the severity of the impact and other factors that may need to be taken into account. The assessment framework for describing impacts / effects can be used as a starting point to make a judgement on significance of effect.

8.2.38 Within this Chapter, the air quality assessment has used published guidance and criteria described in **ES Volume 3, Appendix 8.3** to determine the likely air quality impacts at a number of sensitive locations. However, whilst there may be 'slight', 'moderate' or 'substantial' impacts described at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances. The likely significance of effects were determined by professional judgement, based on the geographical extent (local, district, sub-regional, regional, national or international), duration, reversibility and magnitude of predicted impacts at all the modelled sensitive receptors presented in **Table 8.2**, **Figure 8.1**, **Table 8.3**, and **Figure 8.2** and their relationship to appropriate air quality objectives.

8.2.39 As per **ES Volume 1, ES Chapter 2: EIA Methodology**, 'short-' to 'medium-term' effects were considered to be those associated with the Works, and 'long-term' effects were those associated with the completed, and operational Development. 'Local' effects were those affecting neighbouring receptors of the Development, whilst effects upon receptors within the wider Borough of LBI were considered to be at a 'District' level. Due to the nature and scale of the Development, no 'sub-Regional', 'Regional' 'National' or 'International' effects were identified (refer to later in this Chapter). Effects were considered to be 'adverse', 'beneficial' or 'insignificant', with adverse and / or beneficial effects considered to be of either 'minor', 'moderate' or 'major' significance.

8.2.40 It should be noted that the guidance[5] states that the term 'significant' and 'not significant' should be used to describe impacts and effects; however, in order to ensure consistency with other Chapters within this **ES Volume 1: Main Text and Figures**, the term 'insignificant' has been used instead of 'not significant' in this Chapter.

8.3 Relevant Baseline Conditions

Industrial Sources

8.3.1 A search of the UK Pollutant Release and Transfer Register[23] has not identified any significant industrial or waste management sources that are likely to affect the Development, in terms of air quality.

Air Quality Management Areas (AQMAs)

8.3.2 The LBI investigates air quality within its area as part of its responsibilities under the Local Air Quality Management (LAQM) regime. In January 2001 an AQMA was declared for the whole borough for exceedances of the annual mean and 1-hour mean nitrogen dioxide objectives as well as the 24-hour mean PM_{10} objective, therefore, the Site is located in an AQMA.

[23] Defra UK Pollutant Release and Transfer Register, 2021

Air Quality Focus Areas

8.3.3 The Site is located 250 m to southwest of the 'A1 Holloway Road from Highbury to Archway' Air Quality Focus Area, one of 187 Air Quality Focus Areas in London, these being locations that not only exceed the EU annual mean limit value for nitrogen dioxide but also locations with high levels of human exposure. The location of the Air Quality Focus Area is shown in **Figure 8.3**.

Local Air Quality Monitoring

8.3.4 The LBI operates two automatic monitoring stations within its area. One of these (Site No. IS2) is located on Holloway Road, approximately 450 m north-east of the Site. The LBI also operates a number of nitrogen dioxide monitoring sites using diffusion tubes prepared and analysed by Lambeth Scientific Services (using the 50% TEA[24] in acetone method). These include one deployed on Lady Margaret Road (Site No. BIS005/12), 700 m northwest of the Site. In addition, there are a number of diffusion tube monitoring sites deployed outside schools; monitoring at these sites commenced in 2018. Results for the years 2015 to 2020 are summarised in **Table 8.5** and **Table 8.6** and the monitoring locations are shown in **Figure 8.3**.

Table 8.5: Summary of Nitrogen Dioxide (NO_2) Monitoring (2015-2020)

Site No.	Site Type	Location	2015	2016	2017	2018	2019	2020
Automatic Monitors - Annual Mean (μg/m^3)								
IS2	Roadside	Holloway Road	**61**	**60**	**49**	**47**	40	31
Objective			40					
Automatic Monitors - No. of Hours > 200 μg/m^3								
IS2	Roadside	Holloway Road	0	0	0	0	0	0
Objective			18 (200)					
Diffusion Tubes - Annual Mean (μg/m^3)								
BIS005/12	Urban Background	Lady Margaret Road	35	36	34	31	28	24
Objective			40					

Notes: Exceedances of the objectives are shown in bold. Data taken from the London Borough of Islington 2019 Annual Status Report (London Borough of Islington, 2021).

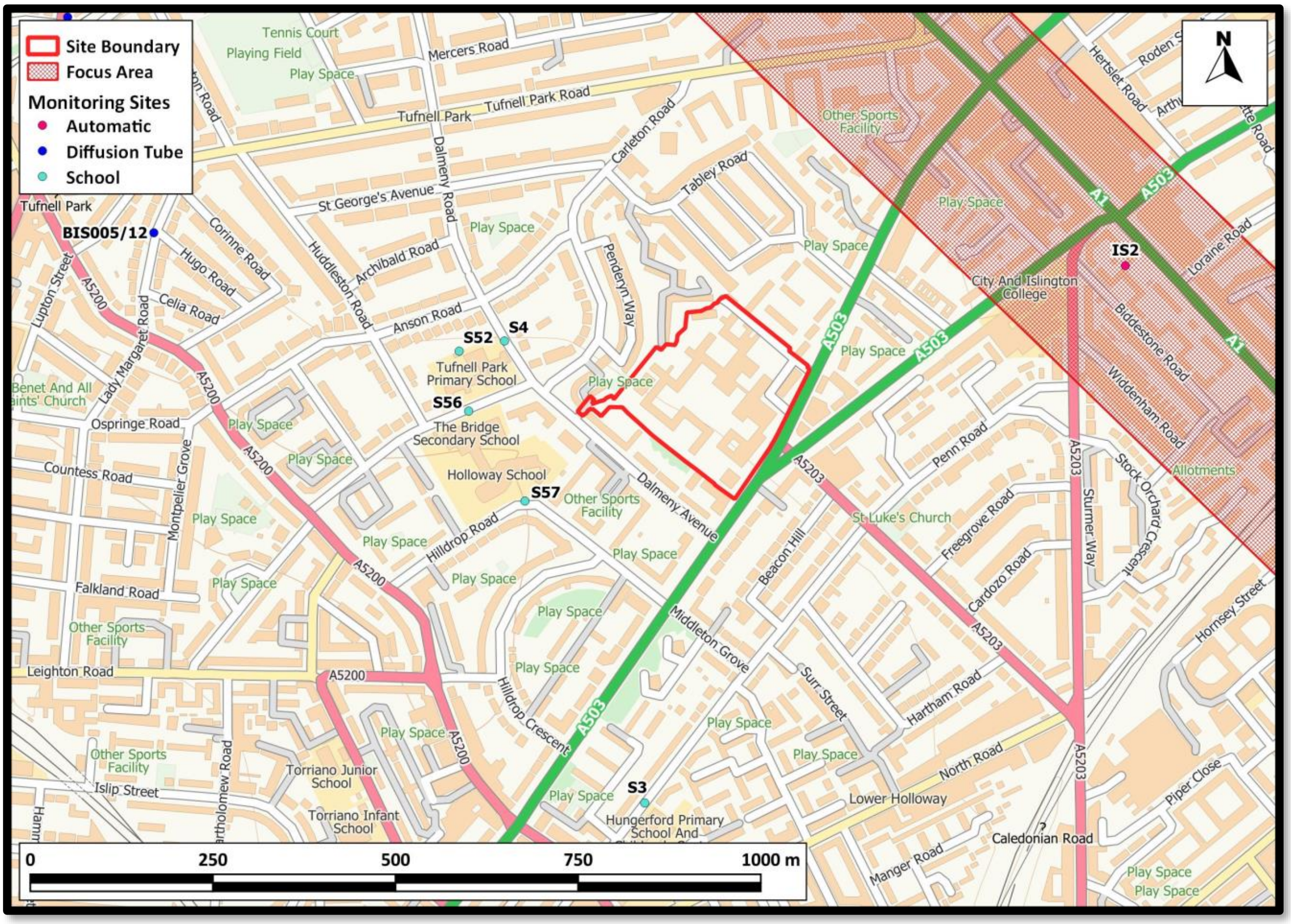
[24] Triethanolamine.

Table 8.6: Summary of Nitrogen Dioxide at School Sites (NO_2) Monitoring (2018-2020)

Site No.	Site Type	Location	2018	2019	2020
S3	School	Hungerford Primary School	33	30	25
S4	School	Tufnell Park Primary School	29	25	20
S52	School	Tufnell Park Primary School	24	24	18
S56	School	The Bridge Secondary School	33	27	25
S57	School	Beacon High	34	27	20
Objective				40	

Notes: Exceedances of the objectives are shown in bold. Data taken from the London Borough of Islington 2019 Annual Status Report (London Borough of Islington, 2021).

Figure 8.3: LBI Monitoring Locations



Notes: Contains Ordnance Survey data © Crown copyright and database right 2020. Ordnance Survey licence number 100046099. Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v1.0.

8.3.5 As can be seen in **Table 8.5,** exceedances of the annual mean nitrogen dioxide objective have been measured at site IS2 from 2015 to 2018, however in 2019 the objective was met at site IS2. Pollutant concentrations at all local monitoring sites were measured to be below the objective in 2020, however due to the impact of covid-19 on travel patterns, monitoring results for this year are not considered to be representative. Both of these sites are located at roadside locations adjacent to the A1 and are not representative of conditions at the Site, which is located on the A503 with lower daily traffic flows (see Table A4.2 of **ES Volume 3, Appendix 8.4**). Pollutant concentrations at urban background monitoring site BIS005/12 were measured below the objectives for every year from 2015-2020. This is considered representative of air quality conditions at the majority of proposed residential properties within the Site, which are set back from Camden Road, in an area where pollutant concentrations are expected to be close to background concentrations and below the objectives.

8.3.6 An overall decrease in pollutant concentrations can be seen for all local monitoring sites between 2015 and 2019.

8.3.7 For all school sites, the measured annual mean nitrogen dioxide concentrations as shown in **Table 8.6** were below the objectives for all years from 2018 to 2020. A decrease in concentration is seen at all of these sites from 2018-2020, with concentrations at all sites being well below the objectives in 2019 and 2020. These sites are all considered to be broadly representative of conditions at the Site, being located in locations where pollutant locations are not anticipated to be elevated.

8.3.8 The Holloway Road Roadside automatic monitoring station, located approximately 450 m north-east of the Site, is the closest station which measured PM_{10} concentrations in 2019. Results for the years 2015 to 2020 are summarised in **Table 8.7**.

Table 8.7: Summary of PM_{10} Automatic Monitoring (2015-2020)

Site No.	Site Type	Location	2015	2016	2017	2018	2019	2020
PM_{10} Annual Mean (µg/m^3)								
IS2	Roadside	Holloway Road	21	22	21	21	20	18
Objective					40			
PM_{10} No. Days >50 µg/m^3								
IS2	Roadside	Holloway Road	6	3	7	6	2	2
Objective					35			

Notes: The $PM_{2.5}$ objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

8.3.9 The results in **Table 8.7** monitored concentrations were below the objective in all years. Concentrations at this monitoring site are anticipated to be higher than those at the Site, due to it being located adjacent to the busy Holloway Road, where pollutant concentrations are expected to the elevated.

8.3.10 There are no monitors measuring $PM_{2.5}$ concentrations in the LBI.

Exceedances of EU Limit Value

8.3.11 There are several Automatic Urban and Rural Network (AURN) monitoring sites within the Greater London Urban Area that have measured exceedances of the annual mean nitrogen dioxide limit value. Furthermore, Defra's roadside annual mean nitrogen dioxide concentrations[25], which are used to report exceedances of the limit value to the EU, identify exceedances of this limit value in 2019 along many roads in London, including the A503 near to the Site. The Greater London Urban Area has thus been reported to the EU as exceeding the limit value for annual mean nitrogen dioxide concentrations. However, Defra's predicted concentrations for 2027 do not identify any exceedances within 1 km of the Site. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the Site by the time that the Development is completed and occupied.

8.3.12 Defra's Air Quality Plan requires the GLA to prepare an action plan that will "*deliver compliance in the shortest time possible*", and the 2015 Plan assumed that a Clean Air Zone (CAZ) was required. The GLA has already implemented a Low Emission Zone (LEZ) and an Ultra Low Emission Zone (ULEZ), thus the authority has effectively already implemented the required CAZ. These have been implemented as part of a package of measures including 12 Low Emission Bus Zones, Low Emission Neighbourhoods, the phasing out of diesel buses and taxis and other measures within the Mayor's Transport Strategy.

Background Concentrations

8.3.13 Estimated background concentrations at the Site have been determined for 2019 and the Development opening year of 2027 using Defra's 2017-based background maps[2]. The background concentrations are set out in **Table 8.8** and have been derived as described in **ES Volume 3, Appendix 8.4**. The background concentrations are all well below the objectives.

Table 8.8: Estimated Annual Mean Background Pollutant Concentrations in 2019 and 2027 ($\mu g/m^3$)

Year	NO_2	PM_{10}	$PM_{2.5}$
2019	24.6	20.2	12.9
2027	19.3	18.6	11.8
Objectives	40	40	25/10[a]

Notes: [a] The $PM_{2.5}$ objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 $\mu g/m^3$ is the WHO guideline for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this.

[25] Defra. UK Ambient Air Quality Interactive Map. 2020

Baseline Dispersion Model Results

8.3.14 Baseline concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ have been modelled at each of the existing receptor locations (see **Figure 8.1** and **Table 8.2** for receptor locations). The results, which cover both the existing (2019) and future year (2027) baseline (Without Scheme), are set out in **Table 8.9** for nitrogen dioxide and **Table 8.10** for PM_{10} and $PM_{2.5}$. The modelled road components of nitrogen oxides, PM_{10} and $PM_{2.5}$ have been increased from those predicted by the model based on a comparison with local measurements (see **ES Volume 3, Appendix 8.4** for the verification methodology).

Table 8.9: Modelled Annual Mean Baseline Concentrations of Nitrogen Dioxide (μg/m^3) at Existing Receptors

Receptor	2019	2027 Without Scheme
R1	31.0	22.5
R2	35.4	24.8
R3	34.9	24.5
R4	33.1	23.5
R5	33.0	23.5
R6	33.8	23.9
R7	31.8	22.8
R8	30.4	22.2
R9	33.9	24.0
R10	31.4	22.7
R11	**47.4**	31.1
R12	**49.0**	32.0

Notes: Exceedances of the objectives are shown in bold.

Table 8.10: Modelled Annual Mean Baseline Concentrations of PM_{10} and $PM_{2.5}$ (μg/m^3) at Existing Receptors

Receptor	PM_{10}		$PM_{2.5}$	
	2019	2027 Without Scheme	2019	2027 Without Scheme
R1	20.8	19.1	13.2	12.1
R2	21.2	19.5	13.4	12.4

Receptor	PM_{10}		$PM_{2.5}$	
	2019	2027 Without Scheme	2019	2027 Without Scheme
R3	21.0	19.3	13.3	12.2
R4	21.0	19.3	13.3	12.2
R5	21.0	19.3	13.3	12.2
R6	20.9	19.3	13.3	12.2
R7	20.8	19.1	13.2	12.1
R8	20.7	19.1	13.2	12.1
R9	21.0	19.4	13.4	12.3
R10	20.8	19.2	13.2	12.2
R11	21.9	20.2	13.9	12.7
R12	22.0	20.3	14.0	12.8
Assessment Criterion	32 [a]		25 [b] / 10 [c]	

Notes: [a] While the annual mean PM_{10} objective is 40 µg/m^3, 32 µg/m^3 is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG16[12]. A value of 32 µg/m^3 is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance [8].

[b] The 25 µg/m^3 $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

[c] 10 µg/m^3 is the WHO target for annual mean $PM_{2.5}$.

8.3.15 As shown in **Table 8.9**, the predicted annual mean concentrations of nitrogen dioxide are below the objective in 2019 at a number of receptors with the exception of R11 and R12, but by 2027 baseline concentrations at every receptor are predicted to be below the objective. The annual mean nitrogen dioxide concentrations are below 60 µg/m^3 at every receptor in both 2019 and 2027; it is, therefore, unlikely that the 1-hour mean nitrogen dioxide objective will be exceeded (see **paragraph 8.2.8**).

8.3.16 **Table 8.10** shows the predicted annual mean concentrations of PM_{10} and $PM_{2.5}$ are well below the objectives in both 2019 and 2027 at all receptors. The annual mean PM_{10} concentrations are below 32 µg/m^3 and it is, therefore, unlikely that the 24-hour mean PM_{10} objective will be exceeded.

8.3.17 The annual mean concentrations of $PM_{2.5}$ exceed the WHO target in both 2019 and 2027. Exceedances of the guideline are common, and their nationwide achievement is very unlikely to be possible before 2030, especially in London[26]. As such, it is unsurprising that there are exceedances in 2019 and 2027.

8.4 Likely Effects of the Development and their Significance

The Works

Construction Dust

8.4.1 A full construction dust risk assessment is provided in **ES Volume 3, Appendix 8.5**. The impacts of dust during the construction phase are judged to be 'not significant' with appropriate mitigation applied in accordance with relevant guidance[6].

Construction Traffic

8.4.2 Predicted contributions from the 41 two-way HDV and 124 LDV movements during construction[27] to annual mean concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ in 2022 (the first year of construction works as outlined in **ES Volume 1, Chapter 6: The Works**) at the existing receptors along Parkhurst Road are set out in **Table 8.11**.

Table 8.11: Predicted Impacts on Annual Mean Nitrogen Dioxide, PM_{10} and $PM_{2.5}$ Concentrations in 2022 from Construction Traffic

Receptor	Construction Traffic Contribution			% Change		
	NO_2	PM_{10}	$PM_{2.5}$	NO_2	PM_{10}	$PM_{2.5}$
R1	0.01	0.004	0.002	0	0	0
R2	0.01	0.006	0.004	0	0	0
R11	0.03	0.01	0.006	0	0	0
R12	0.03	0.01	0.007	0	0	0
Objective	40	32[b]	25[c]/10[d]	-		

Notes: [a] % changes are relative to the objective and have been rounded to the nearest whole number.

[b] While the annual mean PM_{10} objective is 40 µg/m^3, 32 µg/m^3 is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG16[12]. A value of 32 µg/m^3 is thus

[26] Defra. Assessing progress towards WHO guideline levels of PM2.5 in the UK. 2019.
[27] The peak traffic generation has been used as a worst case assumption.

used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance[8].

[c] The $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

[d] 10 μg/m³ is the WHO guideline for annual mean $PM_{2.5}$.

8.4.3 **Table 8.11** shows the contributions to annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations from construction traffic associated with the Works are far less than 0.1μg/m³ at all existing sensitive receptors (high sensitivity), meaning the percentage changes relative to the annual mean criteria (when rounded) for all pollutants (including the WHO guideline for $PM_{2.5}$) are zero, regardless of the overall annual mean concentrations.

8.4.4 Using the matrix in **Table 8.4**, these impacts are described as negligible and therefore the effects are **insignificant**.

Completed and Operational Development

Impacts at Existing Receptors

8.4.5 The Development would generate traffic volumes that exceed the EPUK/IAQM screening thresholds on a number of local roads, thus a detailed assessment is required.

8.4.6 Predicted annual mean concentrations of nitrogen dioxide in 2027 for existing receptors are set out in **Table 8.12** for both the “Without Scheme” and “With Scheme” scenarios. The impact at each receptor is also described using the impact descriptors given in **Table 8.4**.

Nitrogen Dioxide

Table 8.12: Predicted Impacts on Annual Mean NO_2 Concentrations in 2027 (μg/m³)

Receptor	Without Scheme	With Scheme	%Change [a]	Impact Descriptor
R1	22.5	22.5	0	Negligible
R2	24.8	24.8	0	Negligible
R3	24.5	24.5	0	Negligible
R4	23.5	23.6	0	Negligible
R5	23.5	23.5	0	Negligible
R6	23.9	23.9	0	Negligible
R7	22.8	22.9	0	Negligible
R8	22.2	22.2	0	Negligible
R9	24.0	24.1	0	Negligible

Receptor	Without Scheme	With Scheme	%Change [a]	Impact Descriptor
R10	22.7	22.7	0	Negligible
R11	31.1	31.2	0	Negligible
R12	32.0	32.1	0	Negligible
Objective	40		-	-

Notes: [a] % changes are relative to the objective and have been rounded to the nearest whole number.

8.4.7 **Table 8.12** shows the annual mean nitrogen dioxide concentrations are below the objective at all receptors. Furthermore, as the annual mean nitrogen dioxide concentrations are below 60µg/m^3, it is unlikely that the 1-hour mean nitrogen objective would be exceeded. The long-term average concentration at receptor in assessment year is 75% or less of AQAL.

8.4.8 The percentage changes in concentrations, relative to the air quality objective (when rounded), are predicted to be zero at all receptors. Using the matrix in **Table 8.4**, these impacts are described as negligible and therefore, the effects **insignificant.**

PM_{10} and $PM_{2.5}$

8.4.9 Predicted annual mean concentrations of PM_{10} and $PM_{2.5}$ in 2027 for existing receptors are set out in **Table 8.13** for both the "Without Scheme" and "With Scheme" scenarios. The impacts at each receptor are also described using the impact descriptors given in **Table 8.4**.

Table 8.13: Predicted Impacts on Annual Mean PM_{10} and $PM_{2.5}$ Concentrations in 2027 (µg/m^3)

Receptor	PM_{10}				$PM_{2.5}$			
	Without Scheme	With Scheme	%Change	Impact Descriptor	Without Scheme	With Scheme	%Change	Impact Descriptor
R1	19.1	19.1	0	Negligible	12.1	12.1	0	Negligible
R2	19.5	19.6	0	Negligible	12.4	12.4	0	Negligible
R3	19.3	19.3	0	Negligible	12.2	12.2	0	Negligible
R4	19.3	19.3	0	Negligible	12.2	12.2	0	Negligible
R5	19.3	19.3	0	Negligible	12.2	12.2	0	Negligible
R6	19.3	19.3	0	Negligible	12.2	12.2	0	Negligible
R7	19.1	19.1	0	Negligible	12.1	12.1	0	Negligible
R8	19.1	19.1	0	Negligible	12.1	12.1	0	Negligible

Receptor	PM_{10}				$PM_{2.5}$			
	Without Scheme	With Scheme	%Change	Impact Descriptor	Without Scheme	With Scheme	%Change	Impact Descriptor
R9	19.4	19.4	0	Negligible	12.3	12.3	0	Negligible
R10	19.2	19.2	0	Negligible	12.1	12.2	0	Negligible
R11	20.2	20.2	0	Negligible	12.7	12.7	0	Negligible
R12	20.3	20.3	0	Negligible	12.8	12.8	0	Negligible
Objective	40		-	-	25/10		-	-

Notes: [a] % changes are relative to the criterion and have been rounded to the nearest whole number.

[b] While the annual mean PM_{10} objective is 40 μg/m³, 32 μg/m³ is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG16[12]. A value of 32 μg/m³ is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance[8].

[c] The $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

8.4.10 **Table 8.13** shows that the annual mean PM_{10} and $PM_{2.5}$ concentrations are well below the relevant criteria at all receptors, with or without the Development. Furthermore, as the annual mean PM_{10} concentrations are below 32 μg/m³, it is unlikely that the 24-hour mean PM_{10} objective would be exceeded at any of the receptors. The long-term average concentration at receptor in assessment year is 75% or less of AQAL.

8.4.11 The percentage changes in both PM_{10} and $PM_{2.5}$ concentrations, relative to the applied annual mean criteria (when rounded), are predicted to be zero at all receptors. Using the matrix in **Table 8.4**, these impacts are described as negligible and therefore the effects are **insignificant**.

World Health Organisation Target for $PM_{2.5}$

8.4.12 As discussed in **paragraph 8.2.11**, the GLA aims to achieve the WHO target for $PM_{2.5}$ of 10μg/m³ by 2030. Exceedances of the guidelines are common and their nationwide achievement is very unlikely to be possible before 2030. As such, it is unsurprising that there are exceedances for both 'with Development' and 'without Development' scenarios. Based on the rate of reduction in Defra's background maps, it is judged unlikely that the guidelines will be achieved by 2030 (the last projected future year). As such, the long-term average concentration is 110% or more of AQAL. Achievement of the $PM_{2.5}$ target is a London policy requirement and due to exceedances across London (including beyond 2030) cannot be achieved by individual developments.

8.4.13 However, the Development's contribution to annual mean $PM_{2.5}$ concentrations is very small (all less than 0.05 μg/m³) and would not significantly delay achievement of the guideline. As such the change is considered negligible and therefore the effects are **insignificant**.

Impacts of Existing Sources on Future Residents of the Development

8.4.14 Predicted air quality conditions for future residents of the Development, taking account of emissions from the adjacent road network, are set out in **Table 8.14** for Receptors R13 to R15 (see **Table 8.3** and **Figure 8.1** for receptor locations).

Table 8.14: Predicted Annual Mean Concentrations of Nitrogen Dioxide (NO_2), PM_{10} and $PM_{2.5}$ in 2027 for New Receptors in the Development (µg/m^3)

Receptor	NO_2	PM_{10}	$PM_{2.5}$
R13	23.1	19.2	12.2
R14	23.0	19.2	12.2
R15	23.6	19.3	12.2
Objective / Guideline	40	32 [a]	25/10 [b]

Notes: [a] While the annual mean PM_{10} objective is 40 µg/m^3, 32 µg/m^3 is the annual mean concentration above which an exceedance of the 24-hour mean PM_{10} objective is possible, as outlined in LAQM.TG16[12]. A value of 32 µg/m^3 is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM_{10} objective, as recommended in EPUK & IAQM guidance[8].

[b] The 25 µg/m^3 $PM_{2.5}$ objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. 10 µg/m^3 is the GLA target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this.

8.4.15 As shown in **Table 8.14**, all of the values are below the objectives. Air quality for future residents within the Development would thus be acceptable.

Significance of Operational Air Quality Effects

8.4.16 The operational air quality effects are judged to be **insignificant**. This professional judgement is made in accordance with the methodology set out in **ES Volume 3, Appendix 8.3**, and takes account of the assessment that:

- Pollutant concentrations at worst-case locations within the Development would all be below the objectives, thus future residents would experience acceptable air quality.
- Pollutant concentrations at all of the selected worst-case existing receptors along the local road network would be well below the air quality objectives, and all of the impacts are predicted to be negligible.

Air Quality Neutral

8.4.17 The Development complies with the requirement that all new developments in London should be at least air quality neutral. The full air quality neutral assessment can be found in **ES Volume 3, Appendix 8.6**.

Air Quality Positive

8.4.18 The air quality positive approach, as outlined in Policy SI 1 (c) of the London Plan is designed to ensure large-scale developments deliver maximum air quality benefits and improvements, and incorporate best practice and good design measures to reduce exposure to air pollution as far as possible. An Air Quality Positive Statement is included in **ES Volume 3, Appendix 8.8**, which sets out the inherent measures included within the Development.

8.5 Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance

Construction Impacts

Construction Dust

8.5.1 The Site has been identified as a *High* Risk site during demolition, earthworks, construction and for trackout, as set out in **ES Volume 3, Appendix 8.5** and appropriate mitigation presented in **ES Volume 3, Appendix 8.9 Table A9.1** and included within the CEMP would ensure the effects of construction dust are insignificant. No further mitigation is therefore proposed and the residual effects remain **insignificant**.

Construction Traffic

8.5.2 As described in **paragraph 8.4.4**, without mitigation the impacts of construction traffic are negligible and the effects insignificant. As such no further mitigation is required and the residual effects would remain **insignificant**.

Road Traffic Impacts

8.5.3 The assessment has demonstrated that the Development would not cause any exceedances of the air quality objectives and that the overall air quality effect of the Development would be insignificant. In addition, air quality for future residents within the Development would be acceptable. As such, there is no requirement for mitigation beyond the best practice design measures included within the design, as detailed in the Air Quality Positive Statement presented in **ES Volume 3, Appendix 8.8.** As such the residual effects would remain **insignificant.**

8.5.4 Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law).

8.6 Cumulative Effects

Approved Projects

The Works

8.6.1 The IAQM guidance is clear that, with appropriate mitigation measures in place, any residual construction dust effects from an individual site will be 'not significant'. The guidance also suggests that cumulative construction dust impacts are only likely where sites are within 500 m of each other. Work would also have to be taking place in areas of both sites that are close to a receptor in order for cumulative effects to occur.

8.6.2 In accordance with the mitigation measures set out in **ES Volume 3, Appendix 8.9**, if there is concurrent construction work on sites within 500 m of each other, the construction contractors should "*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*".

8.6.3 All three of the Approved Projects are within 500 m of the Site. It is anticipated that all construction sites would adopt appropriate mitigation measures to limit emissions of dust, would hold the liaison meetings recommended above and would ensure that plans are co-ordinated to minimise impacts upon the most sensitive receptors. These measures are in line with the requirements of the LBI's Code of Practice for Construction Sites[28]. With these measures in place, the cumulative effect of construction activities should be **insignificant**.

8.6.4 With regards to the cumulative effect of construction vehicle emissions, a Construction Logistics Plan (CLP) would be implemented to minimise the environmental and road traffic related impacts of The Works. During the Works the appointed contractor would collaborate with the developers of the Approved Projects where there is likely to be cumulative effects in construction traffic to avoid any overlap in peak construction vehicle activities in order to reduce the potential cumulative effects of construction emissions. It is assumed that all CLP's for the Approved Projects would be agreed with the LBI. The cumulative effects of construction traffic are therefore anticipated to be **insignificant**.

The Completed and Operational Development

8.6.5 The traffic data used in the 2027 'Without Scheme' and 'With Scheme' scenarios incorporate traffic flows associated with all of the Approved Projects which would affect flows on the roads included in this assessment. As such, predictions of future pollutant concentrations presented in this Chapter take account of cumulative effects of the Approved Projects.

[28] Islington Council. Code of Practice for Construction Sites. 2018.

8.6.6 Operational effects, which inherently include the Approved Projects, have been shown to be '**insignificant** in relation to road traffic emissions.

8.6.7 As detailed in **paragraph 8.2.4** the Development would not include a combustion plant, and as such there are no onsite emissions that would impact the Approved Projects. Furthermore, a review of the planning permissions of the Approved Projects shows the Approved Projects do not include any combustion plants and as such there are no future sources of emissions that has the potential to affect the site suitability of the Development. The cumulative effects of combustion plant emissions are expected to be **insignificant**.

Approved Projects plus Developments that have a Planning Status in the Development Plan Process

The Works

8.6.8 As above, it is anticipated that any nearby construction sites would adopt mitigation and regular liaison meetings, as recommended above, would be held. With these measures in place, the cumulative impact of construction dust from the Approved Projects plus Developments that have a Planning Status in the Development Plan Process would be **insignificant**.

8.6.9 Similarly, as above with the implementations of CLP, which would be agreed with the LBI, the cumulative effect of construction traffic from the Approved Projects plus developments that have a planning status in the Development Plan Process would be **insignificant**.

The Completed and Operational Development

8.6.10 The traffic data used in the 2027 scenarios, does not account for the traffic flows which may result from the developments that have a planning status in the Development Plan Process. These developments cannot be accounted for due to limited information on the schemes and the likely traffic generation. However, where needed these developments would be required to undertake appropriate air quality assessments during their planning stage. Traffic data used within this would include Holloway Prison as a cumulative scheme and the cumulative impacts would therefore be assessed. The cumulative effects are therefore considered to be **insignificant**.

8.6.11 In addition, as shown in **Table 8.12** and **Table 8.13** the impact of the Development on the closest existing sensitive receptors would be negligible and the effects identified as **insignificant**. Given the developments that have a planning status are located further away from the Development than modelled receptors and traffic would disperse once on the road network, the effects of the Development on future users of the developments that have a planning status are considered to be **insignificant**.

8.6.12 The developments that have a planning status in the Development Plan Process are situated at a distance away from the Development such it is unlikely any combustion plant introduced in the developments would have an impact on the Development. Similarly, where needed, these developments would be required to undertake appropriate air quality assessments during the planning stage. The cumulative effects on receptors within the Development are therefore considered **insignificant**.

8.7 Conclusions

8.7.1 The air quality impacts associated with the Development have been assessed. Consideration was given to the potential air quality impacts associated with The Works, including impacts associated with construction dust and exhaust emissions from construction vehicles on local air quality. Operational impacts from the Development considered the impacts of emissions from traffic generated by the Development.

8.7.2 Baseline air quality conditions in the study area were determined based on LBIs monitoring data and other publicly available data. It was shown that existing nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$) concentrations were below the national air quality objectives for most of the study area, with the exception of receptors on the junction between Parkhurst Road and Holloway Road.

8.7.3 A qualitative construction dust risk assessment was carried out. Based on the identified level of risk, a list of suitable mitigation measures to apply during the construction works was provided which have been incorporated into the CEMP. A quantitative assessment using dispersion modelling of impacts from construction vehicles exhaust emissions was also carried out, based on the number of vehicles generated by The Works. The impacts of construction vehicles is anticipated to be insignificant.

8.7.4 Air quality dispersion modelling was also carried out to predict the impacts of additional road traffic on local roads, resulting from the operation of the Development, as well as the expected concentrations of key pollutants at sensitive receptors within the Development. The Development would utilise air source heat pumps (ASHPs) and photovoltaics (PVs) to provide heating and hot water and therefore would have no building-related emissions.

8.7.5 The operation of the Development is not predicted to result in any significant effects on the receptors considered. Within the Development predicted future concentrations are below the relevant objectives and, as such, air quality for future residents within the Development would be acceptable.

8.7.6 In accordance with the London Plan an air quality neutral assessment has been undertaken, which shows the Development is air quality neutral. An air quality positive approach has also been completed, and an Air Quality Positive Statement provided which sets out the design and operational measures to reduce exposure to air pollution and maximise air quality benefits.

8.7.7 The Development together with other Cumulative Schemes would not give rise to any materially different air quality effects over and above those identified for the Development in isolation.

9. Noise and Vibration

9.1 Introduction

9.1.1 This Chapter, prepared by WSP, presents an assessment of the likely significant noise and vibration effects associated with the construction and operation of the Development. In particular, consideration is given to the potential noise and vibration effects of the Site preparation, demolition and construction (the 'Works') activities on neighbouring receptors. Noise limits have also been set for emissions from fixed mechanical plant associated with the Development at neighbouring receptors.

9.1.2 This Chapter provides a description of the methods and significance criteria used in the assessment. This is followed by a description of the relevant baseline conditions of the Site and surrounding area, together with an assessment of the likely effects of the Development during the Works and once the Development is completed and operational. The significance of such effects is highlighted.

9.1.3 Where appropriate, mitigation measures are identified to avoid, reduce or offset any likely significant adverse effects. Taking account of the mitigation measures, the nature and significance of the likely residual effects are described. The cumulative noise and vibration effects of the Development and other relevant Cumulative Schemes are also considered.

9.1.4 This Chapter is supported by further detailed information contained within:

- **ES Volume 3, Appendix 9.1, Consultation.**
- **ES Volume 3, Appendix 9.2, Noise Survey Data.**
- **ES Volume 3, Appendix 9.3, Legislation, Policy and Guidance.**
- **ES Volume 3, Appendix 9.4, Construction Noise and Vibration Data.**

9.2 Assessment Methodology and Significance Criteria

Scope of the Assessment and Consultation Undertaken to Date

Elements Scoped Out of the Assessment

9.2.1 **Table 9.1** presents the elements which are considered not to have the potential to give rise to likely significant effects during construction of the Development and have therefore not been considered within the ES. This approach was confirmed as acceptable by the London Borough of Islington (LBI) in their EIA Scoping Opinion, July 2020 (**ES Volume 3, Appendix 2.2**).

Table 9.1: Elements which have been Scoped Out of the Assessment

Stage	Element	LBI Comments (additions and variations)
Demolition and Construction Works.	Noise generated by construction-related traffic affecting sensitive receptors nearby.	It is expected that mitigation measures to manage construction traffic effects will be included within a project Construction Traffic Logistics Plan (CTLP).
	Vibration generated by construction-related traffic affecting sensitive receptors nearby.	
Completed and Operational Development.	Non-plant noise.	Noise from proposed commercial, retail or open spaces, including food or drink establishments should be controlled via a commitment to mitigate through condition or the LBI's licensing application process.
	Vibration generated by traffic associated with the operational Development affecting sensitive receptors nearby.	It is expected that mitigation measures to manage operational traffic effects will be included within a project Delivery Service Plan (DSP).
	Noise from development generated road traffic.	

Elements Scoped into the Assessment

9.2.2 **Table 9.2** presents the elements which are considered to have the potential to give rise to likely significant effects during construction and operation of the Development and have therefore been considered within the ES. This approach was confirmed as acceptable by the LBI in their EIA Scoping Opinion, July 2020 (**ES Volume 3, Appendix 2.2**).

Table 9.2: Elements which have been Scoped into the Assessment

Stage	Element	LBI Comments (additions and variations)
Demolition and Construction Works.	Noise generated by on-site activities affecting sensitive receptors nearby.	It is expected that mitigation measures to manage construction noise and vibration effects will be included within a project Construction Environmental Management Plan (CEMP).
	Vibration generated by on-site activities affecting sensitive receptors nearby.	
Complete and Operational Development.	Noise emissions from fixed mechanical plant associated with the Development.	Noise from mechanical services type equipment should be controlled via a commitment to mitigate through condition.

9.2.3 An email was sent to the acting Environmental Health Officer (EHO) for acoustics at the LBI on 25th September 2019 providing details of the intended methodology for the noise survey and the methodology and criteria for the assessment. A detailed response to the proposed assessment methodologies and criteria was received on 26th September 2019, which is provided for reference in **ES Volume 3, Appendix 9.1.**

9.2.4 A further email was issued to the acting EHO for acoustics at the LBI on 11th May 2021 to obtain agreement that the measurement data obtained via baseline noise survey in October 2019 was still valid for use in 2021, to which the EHO responded on 11th May 2021 and confirmed that the data would still be considered valid, though a Site walk-over should be undertaken and observations made to ensure that the noise climate remained broadly the same as that which was measured in 2019. A copy of the email correspondence is presented in **ES Volume 3, Appendix 9.1**.

9.2.5 A telephone call was placed with the EHO on 15th May 2021 with regard to the guidance which the LBI recommended should be followed for the assessment of noise from fixed mechanical plant. The EHO confirmed that the 2014[1] (BS 4142: 2014) iteration of BS 4142, which is referenced in the emerging Islington Local Plan[2], should be followed, rather than the more recent 2019[3] (BS 4142:2014+A1:2019) version. This telephone call was followed up with an email on the 15th May 2021 to confirm the matter and a copy of the email is presented in **ES Volume 3, Appendix 9.1**.

Extent of the Study Area

9.2.6 The study area is defined by the boundaries of the Site and the proximity of potentially affected sensitive receptors. The locations of sensitive receptors are provided graphically in **Figure 9.2**.

Method of Baseline Collation

Approach

9.2.7 The baseline noise conditions described in section 9.3 of this Chapter have initially been derived through a combination of short-term (five-minute) attended measurements and continuous unattended measurements for periods of up to six days. In this way it has been possible to cover a large number of positions and relevant periods of the day and night. The measurements are described further in the following paragraphs and Section 9.3.

9.2.8 The Site visit undertaken in October 2019 confirmed no sources or incidence of perceptible vibration at the Site. Furthermore, there are no underground rail lines beneath or in the vicinity of the Site. As such, there is considered to be no potential for the Site to be affected by ground-borne vibration.

1 The British Standards Institution. BS 4142:2014 Methods for rating and assessing industrial and commercial sound. 2014.
2 Islington Local Plan Strategic and Development Management Policies - Regulation 19 draft. September 2019.
3 The British Standards Institution. BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound. 2019.

Attended Noise Measurements

9.2.9 The seven attended noise monitoring locations are shown on **Figure 9.1** whilst the results are summarised in Section 9.3 and presented in full in **ES Volume 3, Appendix 9.2**. The measurements were taken on Thursday 3rd October 2019 between 00:00 and 01:30.

Unattended Noise Measurements

9.2.10 The six unattended noise monitoring locations are shown on **Figure 9.1,** whilst the results are summarised in **Section 9.3** and presented in full in **ES Volume 3, Appendix 9.2.** The measurements were taken between Tuesday 1st October 2019 at 12:00 and Monday 7th October 2019 at 11:00 and between Wednesday 23rd June 2021 at 16:00 and Sunday 27th June 2021 at 17:00.

Assessment Methodology

9.2.11 In this section, the methods used to assess noise and vibration are set out for each of those elements being considered.

Policy Context

9.2.12 Various legislative, policy and technical guidance documents have been used to shape the assessment of noise and vibration effects arising from the Proposed Development and are referenced in the following paragraphs. Further details on each are provided in **ES Volume 3, Appendix 9.3**.

9.2.13 The following legislative documents are relevant to the assessment of the effects of the Development:

- The Control of Pollution Act (CoPA), 1974[4].
- Environmental Impact Assessment Directive 2014/52/EU[5].

9.2.14 The following national policy documents are relevant to the assessment of the effects of the Development:

- Department for Communities and Local Government National Planning Policy Framework (NPPF) (2021)[6].
- Defra Noise Policy Statement for England (NPSE) (2010)[7].
- Ministry of Housing, Communities and Local Government Planning Practice Guidance, (2019)[8].

4 HM Government. Control of Pollution Act. 1974.
5 The European Commission. Environmental Impact Assessment Directive 2014/52/EU. 2014.
6 Department for Communities and Local Government. National Planning Policy Framework. 2021.
7 Department for Environment, Food and Rural Affairs. Noise Policy Statement for England. 2010.
8 Department for Communities and Local Government. Planning Practice Guidance. 2019.

9.2.15 The NPSE provides more detail than the NPPF, and sets out the long-term vision of the Government noise policy and applies to all forms of noise. The NPSE repeatedly refers to the management and control of noise within the context of Government policy on sustainable development and stresses that noise impacts should not be treated in isolation from other related factors.

9.2.16 The NPSE introduces and describes three categories, or levels, describing the presence or absence of noise effects but does not quantify those categories, stating that the corresponding objective levels are likely to be different for different noise sources, receptors and times of the day or night. These categories are:

- NOEL – No Observed Effect Level – This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- LOAEL – Lowest Observed Adverse Effect Level – This is the level above which adverse effects on health and quality of life can be detected.
- SOAEL – Significant Observed Adverse Effect Level – This is the level above which significant adverse effects on health and quality of life occur.

9.2.17 The NPSE recognised, at the time of publication, that further research was needed into how these categories might be quantified for different scenarios. There is still no robust, universally accepted method of deriving suitable values and a variety of approaches are adopted in different circumstances. However, professional judgement and relevant guidance documents have been used to define the LOAEL and SOAEL within the scale of effect tables for the assessment of construction noise and construction vibration.

9.2.18 The following local noise guidance and policy documents are relevant to the assessment of the Development:

- Code of Practice for Construction Sites (2018)[9].
- The Islington Local Plan – Strategic and Development Management Policies (2019)[10].

Professional Guidance

9.2.19 The following professional guidance documents are relevant to the assessment of the Development:

- BS 5228-1:2009+A1:2014[11] (BS 5228-1).
- BS 5228-2:2009+A1:2014[12] (BS 5228-2).

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9 Islington Council. Code of Practice for Construction Sites. 2018.
10 Islington Council. Islington Local Plan – Strategic and Development Management Policies. 2019.
11 The British Standards Institution. BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Part 1: Noise. 2014.
12 The British Standards Institution. BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Part 2: Vibration. 2014.

- BS 4142:2014.

9.2.20 Further details on each are provided in **ES Volume 3, Appendix 9.3**.

The Works

9.2.21 **ES Volume 1, Chapter 6: The Works** and Section 5.3 of the Construction Environmental Management Plan (CEMP) which is submitted as a stand-alone document in support of the planning application provides the likely plant and equipment to be used during the Works. Based on this, **ES Volume 3, Appendix 9.4** provides a list of the key noise generating plant and associated source noise levels used to inform the construction assessment based on the example data in BS 5228-1.

9.2.22 As presented in Table 5.3 of the CEMP, the Development has been divided into 7 broad stages of construction. These Works are also set out and described in **ES Volume 1, Chapter 6: The Works**. For the purposes of this assessment, the Superstructure and Fit-out stages have been combined into a single stage. This is considered an acceptable approach as the construction plant is the same for each of the stages, as is the geographical locus of the Works.

9.2.23 Therefore, **Table 9.3** presents the construction stages which have been assessed.

Table 9.3: Construction Stages which Form the Basis of this Assessment

Construction Stage
Site Enabling Works
Demolition
Piling and Excavation
Substructure
Superstructure and Fit Out
Roads and Landscaping

9.2.24 The calculation methodology contained in BS 5228-1 has been used to predict the levels of noise that are likely to be generated by the Works at the nearby sensitive receptors. The construction plant noise emission data have been taken from Annex C of BS 5228-1 for the plant anticipated to be used during the construction stage. Details of these plant and their noise emission levels, as well as their assumed 'on-time', are shown in **ES Volume 3: Appendix 9.4**.

9.2.25 The worst-case scenario predicts the noise levels at a sensitive receptor with one item of each of the construction plant (relevant to each stage of the construction Works) located along the closest Site boundary. For the average-case scenario, noise levels have been predicted based on the full complement of plant working in a more central location of the area assumed for each phase of Works.

9.2.26 The worst-case and average case distances (i.e. the smallest distance between the sensitive receptor and construction activity at the Site boundary, and the distance between the receptor and the centre of the Site, respectively) for each receptor during each of the construction stages are presented in **ES Volume 3, Appendix 9.4**.

Noise Predictions

9.2.27 BS 5228-1 provides guidance on the measurement and prediction of construction noise. Of particular relevance to this assessment are the calculation procedures set out in Annex F to BS 5228-1 as these have been used to quantify the likely noise levels from specific construction activities.

9.2.28 The BS 5228-1 ABC method of assessing the potential significance of construction related noise (Table E1 in the Standard) is reproduced in **Table 9.4** below. The table and associated notes describe how the existing ambient noise level is used to determine relevant threshold categories for the construction noise assessment.

Table 9.4: Example Threshold of Potential Significant Effect at Dwellings

Assessment Category and Threshold Value Periods	Threshold Value, in Decibels (dB $L_{Aeq,T}$)		
	Category A(A)	Category B(B)	Category C(C)
Night-time (23:00 − 07:00)	45	50	55
Evenings and weekends (D)	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 − 13:00)	65	70	75

Notes:

[1] A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

[2] If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.

[3] Applied to residential receptors only.

(A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

(B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

(C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

(D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

9.2.29 In addition to the guidance presented in BS 5228-1, the LBI's Code of Practice for Construction Sites[13] (CoPCS) advises that sites will be allowed to carry out noisy work between:

- 08:00 to 18:00 - Monday-Friday.
- 08:00 to 13:00 – Saturdays.

9.2.30 No noisy works are to take place outside of these hours without prior permission (including Sundays and Bank Holidays).

9.2.31 The CoPCS further states that if noise levels from a site are more than 10 dB(A) above the 'background levels'[14] ($L_{Aeq,T}$) there will be significant effects and measures must be taken to reduce the noise.

9.2.32 Potential impacts have been predicted using a combination of the criteria set out in the ABC method of BS 5228-1 and LBI's CoPCS.

Vibration Predictions

9.2.33 Two aspects of vibration require consideration: the potential for vibration to cause (a) disturbance to humans and (b) damage to buildings. It is a widely held belief that if vibration can be felt, then damage to property is inevitable. However, vibration levels at least an order of magnitude higher than those for human disturbance are required to cause damage to buildings. Therefore, the vibration assessment concentrates on the potential for human disturbance.

9.2.34 With respect to temporary vibration from demolition / construction activities, Table B.1 of BS 5228-2, provides guidance on the likely reaction of people to various levels of vibration measured in terms of the PPV. This table is reproduced as **Table 9.5.**

Table 9.5: Guidance on Effects of Vibration Levels (From BS 5228-2)

Vibration Level	Effect
0.14 $mm\cdot s^{-1}$	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 $mm\cdot s^{-1}$	Vibration might be just perceptible in residential environments.
1.0 $mm\cdot s^{-1}$	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.

13 Islington Council. Code of Practice for Construction Sites. 2018.

14 The CoPCS refers to 'background levels', which may be confused with 'background noise levels' ($L_{A90,T}$), typically used in the assessment of plant noise limits. During consultation it was proposed that 'ambient noise levels' ($L_{Aeq,T}$) would be used in the assessment of construction noise, which was agreed with the LBI.

Vibration Level	Effect
10 $mm \cdot s^{-1}$	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

9.2.35 LBI's CoPCS advises that vibration levels should not exceed 1 $mm \cdot s^{-1}$ at residential properties and 3 $mm \cdot s^{-1}$ at any other property.

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Noise Emissions from Fixed Mechanical Plant Predictions

9.2.36 Noise from new fixed plant and building services equipment forming part of the Development has the potential to affect existing noise sensitive receptors. In the absence at this stage of sufficient information regarding any future fixed mechanical plant, no predictions can be made to determine the significance of the likely noise effects arising from future fixed mechanical plant. Consequently, noise emission limits have been set, to which all plant associated with the Development should adhere. The commitment to mitigate noise from fixed mechanical plant through condition, as required by LBI in its EIA Scoping Opinion, would be based on the derived noise emission limits.

9.2.37 As stated in paragraph 9.2.5, the LBI confirmed that noise from any plant associated with the operation of the Development should be considered in broad accordance with the requirements of BS 4142:2014 at existing noise-sensitive receptors in proximity to the Site.

9.2.38 Plant noise limits have also been determined for 2 Parkhurst Road & 2A Parkhurst Road, London N7 0SF, which is the location of an Approved Project located approximately 30m east of the Site.

9.2.39 Note that plant noise limits for future receptors within the Development are set out in the associated Noise Impact Assessment Report[15], which considers the suitability of the Site for residential use.

9.2.40 BS 4142 effectively compares and 'rates' the difference between the 'specific noise' level of the source ($L_{Aeq,T}$) and the 'background noise' level ($L_{A90,T}$) in the absence of the specific noise. If appropriate, the specific noise level is corrected (by the application of a feature correction penalty) for acoustic features such as tonal qualities and/or distinct impulses to give a 'rating' level ($L_{Ar,Tr}$).

9.2.41 BS 4142 advises that the time interval ('T') of the background noise measurement should be sufficient to obtain a representative value of the background noise level.

9.2.42 Paragraph 16 in Appendix 2 of LBI's Strategic and Development Management Policies, states that:

[15] Max Fordham. Project Holloway Noise Impact Assessment. September 2021.

"The design and installation of new items of fixed plant shall be such that when operating the cumulative noise level LAeq Tr arising from the proposed plant, measured or predicted at 1m from the facade of the nearest noise sensitive premises, shall be a rating level of at least 5dB(A) below the background noise level LAF90,T. The measurement and/or prediction of the noise should be carried out in accordance with the methodology contained within BS4142:2014."

Assumptions and Embedded Mitigation

9.2.43 **ES Volume 1, Chapter 6: The Works** and the CEMP provide details of the anticipated demolition and construction Works, including associated plant, a high-level programme and methodology. However, the provided programme is indicative only and is based on what is reasonable and achievable in terms of the sequencing of Works and site-logistics. The construction noise and vibration assessments are, therefore, underpinned by a number of stated assumptions which have been informed by advice provided by the Applicant's project team. Assumptions include the number and type of plant, source noise levels and operating duration and location within the Site.

9.2.44 As discussed in the CEMP, the adoption of Best Practicable Means (BPM), as defined in the Control of Pollution Act 1974, would result in a series of noise and vibration control measures which would be employed during the Works.

9.2.45 It is intended that the CEMP would be a 'live working' document, and that the Principal Contractors appointed representative would update the document to reflect any amended construction environmental management measures pertinent to noise as the Works progress. Consequently, the proposed mitigation measures provided within this Chapter would all be incorporated into the final CEMP.

9.2.46 The most relevant specific commitments with respect to noise and vibration (which are considered to be embedded forms of mitigation) are set out below and presented in the CEMP.

- Plant would be properly maintained and operated in accordance with manufacturer's recommendations. Electrically powered plant would be preferred, where practicable, to mechanically powered alternatives.
- Where feasible, all stationary plant would be located so that the noise and/or vibration effect at all occupied residential and commercial properties would be minimised and, if practicable, every item of static plant when in operation would be sound attenuated based on the guidance and advice given in BS 5228.
- Trade contractors would at all times apply the principle of BPM as defined in Section 72 of the COPA and carry out all work in such a manner as to reduce any disturbance from noise and vibration to a minimum.
- The timing of building operations would be critical in avoiding noise and vibration disturbance to surrounding areas and premises. The Principal Contractor(s) would identify particularly sensitive periods in the Works so that potential problems can be minimised and early and good public relations with the adjacent occupants of buildings can be maintained.
- The Site would have a solid 2.4m high hoardings along the boundaries, with gates kept closed except when in use. The hoarding would provide some screening of the construction activity on-site for low rise residential dwellings nearby (though not to high-rise dwellings).

- Bearing piling would be carried out using continuous flight auger and/or rotary boring techniques. No percussive piling techniques would be employed.
- The Site would be registered with the UK's Considerate Constructors Scheme.
- As far as is practicable techniques would be selected to minimise the noise and vibration generated.
- Selected plant would be required to employ all current attenuation measures, and to conform to latest industry standards – life expired plant or plant of an age not allowing retrofit of attenuation measures would not be permitted.
- Selected plant would be in good working order and copies of certificates of inspection and maintenance would be required and would be held with the plant register to ensure peak attenuation performance of plant.
- Demolition activities identified would utilise crushing and bursting techniques in preference to percussive breaking as far as is practicable.
- Electrically and hydraulically powered tools would be used for destructive and excavating activities in preference to air powered tools wherever practicable.
- Robust site rules disseminated at mandatory site induction would address noise and vibration issues, and raise environmental awareness of all operatives, with particular emphasis on consideration of noise and vibration e.g.
    - No idling of plant or mobile plant.
    - Careful handling of materials with potential for generating noise and vibration – for instance scaffold material.
    - No radios or shouting.
- Robust site rules relating to the provisions of the Traffic Management Plan particularly relating to vehicle movement, no idling or local queuing, and compliance with delivery booking and timing to avoid multiple vehicles arriving at the Site at the same time (compliance with the Traffic Management Plan would be a mandatory requirement).
- Use of radio communications for banking and signalling to avoid the need for shouted instructions in the marshalling of vehicles and signalling of hoisting.
- All noisy and vibration producing works would need to be notified to occupants of surrounding properties.

9.2.47 Based on the above assumptions, a -5 dB correction has been applied to all on-site construction activities to take into account the best practice noise control measures to be employed on-site to reduce noise levels.

9.2.48 In the worst-case scenario, where one of each item of plant are assumed to be at or in proximity to the Site boundary, it is likely that the Site hoarding would provide worthwhile acoustic screening of plant for 'low-rise' receptors nearby (i.e. 2/3 storey buildings). It is considered reasonable that the Site hoarding may provide up to 10 dB of noise attenuation of plant at ground level. However, a cautious -5 dB correction has been applied at these properties, in order to present a robust assessment case.

9.2.49 It is often the case that problems concerning noise from construction works can be avoided by taking a considerate and neighbourly approach to relations with the local neighbours. Consequently, and as presented in section 3.4 of the CEMP, a Neighbour and Public Relations Strategy would be developed and implemented.

Significance Criteria

Sensitivity of Receptors

9.2.50 Key receptors to noise and vibration generally include individual or groups of residential properties and schools, both of which have been included in the assessment. **Table 9.6** provides examples of the different sensitivities, which can be assigned to different receptors. With respect to noise and vibration, no receptors are considered to be of negligible sensitivity.

Table 9.6: Sensitivity of Noise and Vibration Receptors

Sensitivity	Example of Receptor
High.	Residential properties, schools and hospitals.
Moderate.	Transient residential receptors such as users of hotels.
Low.	Commercial premises.

Magnitude of Effects

The Works

9.2.51 With respect to construction noise, the CoPCS states that if noise levels from a site are more than 10 dB(A) above the 'background levels'[16] ($L_{Aeq,T}$) there will be significant effects and measures must be taken to reduce the noise.

9.2.52 Accordingly, this limit has been used as the threshold between medium and high adverse impacts. The threshold between low and medium is deemed to be 5 dB below this.

9.2.53 The baseline noise survey measurements presented in Section 9.3 indicate that daytime noise levels in the vicinity of the receptors towards the north-western boundary of the Site are likely to be lower than the lowest threshold set out in the ABC method of BS 5228-1 (i.e. Category A: 65 dB) (refer to **Table 9.4**). Consequently, it is considered reasonable to set the minimum threshold (i.e. for a negligible magnitude of impact) at 65 dB, in accordance with

[16] The CoPCS refers to 'background levels', which may be confused with 'background noise levels' ($L_{A90,T}$), typically used in the assessment of plant noise limits. During consultation it was proposed that 'ambient noise levels' ($L_{Aeq,T}$) would be used in the assessment of construction noise, which was agreed with the LBI.

BS 5228-1.

9.2.54 It must be borne in mind, however, that this approach is purely for the purposes of this assessment. In terms of the management and control of noise during the Works, the contractors would be required to adhere to the absolute limits presented in LBI's CoPCS, or as otherwise agreed with the Council.

9.2.55 Taking into account the lowest threshold set out in the ABC method of BS 5228-1 (i.e. Category A: 65 dB) and guidance in the LBI's noise policy which states that noise levels from site should be reduced if they exceed 10 dB above 'background levels', the following magnitude of effect scale has been adopted for construction noise.

Table 9.7: Magnitude of Effect – Construction Noise

Construction Noise Level* (Threshold Value) dB $L_{Aeq,T}$	Magnitude of Effect
≥76 dB.	High.
71 dB to 75 dB.	Medium.
66 dB to 70 dB.	Low.
≤65 dB.	Negligible.

* Applicable to façade-derived noise levels.

9.2.56 With respect to construction vibration, LBI's CoPCS advises that vibration levels should not exceed 1 $mm{\cdot}s^{-1}$ at residential properties and 3 $mm{\cdot}s^{-1}$ at any other property.

9.2.57 Based on the guidance given in BS 5228-2, and on the basis that the public would be kept regularly informed of forthcoming Works on the Site, and in accordance with the Council's CoPCS, it is considered that a construction vibration level of 1 $mm{\cdot}s^{-1}$ represents the threshold between low and medium adverse impacts (for residential receptors). Whilst BS 5228-2 suggests an upper threshold of 10 $mm{\cdot}s^{-1}$ (i.e. the level at which 'vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments'), experience in such assessments, suggests that an upper threshold of 2 $mm{\cdot}s^{-1}$ may be more appropriate. Consequently, the threshold between medium and high is deemed to be 2 $mm{\cdot}s^{-1}$ above this. This is considered to represent a robust assessment case. The threshold between low and negligible is taken to be 0.3 $mm{\cdot}s^{-1}$ below.

9.2.58 For non-residential properties, including offices, it is considered that construction vibration levels of 3 $mm\ s^{-1}$ represents the threshold between low and medium adverse effects. The threshold between medium and high is deemed to be 2 $mm{\cdot}s^{-1}$ above this, whilst the threshold between low and negligible is taken to be 2 $mm{\cdot}s^{-1}$ below.

Table 9.8: Magnitude of Effect – Construction Vibration

Peak Particle Velocity* (PPV) mm/s (temporary vibration)		
Residential uses	**Non-residential uses**	**Magnitude of Effect**
≥ 2.1	≥ 5.1	High.
1.1 – 2.0	3.1 – 5.0	Medium.
0.6 – 1.0	1.1 – 3.0	Low.
≤ 0.3	≤ 1.0	Negligible.

* At a measurement point representative of point of entry into the recipient within receptor

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Noise Emissions from Fixed Mechanical Plant

9.2.59 Providing the cumulative noise from all fixed mechanical plant on the Site is controlled to achieve the noise emission limit described earlier, it is considered that a negligible magnitude of effect should occur as a result of noise from fixed plant associated with the Development.

Significance of Effects

9.2.60 The assessment of potential significance of effects resulting from the Development has been undertaken during both the Works and once the Development is completed and operational. The significance attributed to each effect has been based on the magnitude of effect predicted from the Development and the sensitivity of the affected receptor to that effect. The magnitude of effect has been assessed on a scale of high, medium, low and negligible and the sensitivity of the potentially affected receptor has been assessed on a scale of high, moderate and low.

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

- Major effect: where the Development could be expected to have a very significant effect (either beneficial or adverse) on noise and vibration levels at the sensitive receptor.
- Moderate effect: where the Development could be expected to have a noticeable effect (either beneficial or adverse) on noise and vibration levels at the sensitive receptor.
- Minor effect: where the Development could be expected to result in a small, barely noticeable effect (either beneficial or adverse) on noise and vibration levels at the sensitive receptor.
- Insignificant: where no discernible noise or vibration effect is expected as a result of the Development at the sensitive receptor.

9.2.62 **Table 9.9** presents the significant of effects matrix for the varying sensitivities of the receptors in the vicinity of the Site.

Table 9.9: Significance of Effects Matrix

		Sensitivity of Receptor		
		High	**Moderate**	**Low**
Magnitude of Effect	**High**	Major.	Moderate.	Minor.
	Medium	Moderate.	Minor.	Insignificant.
	Low	Minor	Insignificant.	Insignificant.
	Negligible	Insignificant.	Insignificant.	Insignificant.

9.2.63 If an effect magnitude has been judged as negative (that is, a relative decrease in noise and / or vibration from the relevant baseline conditions), then the resulting effect has been described as being beneficial; if an effect magnitude has been judged as positive (that is, a relative increase in noise and / or vibration from the relevant baseline conditions) the resulting effect was classed as being adverse.

9.2.64 Typically, a high or medium magnitude of impact would be considered significant if they occur for a duration exceeding:

- 10 or more days or nights in any 15 consecutive days or nights; and
- A total number of days exceeding 40 in any 6 consecutive months.

9.2.65 For those elements of noise and vibration which have been assessed in this Chapter, 'Temporary' and 'Short' to 'medium-term' effects are considered to be those associated with the Works, and 'long-term' effects are those associated with the completed and operational Development.

9.2.66 As set out in **ES Volume 1, Chapter 2: EIA Methodology**, 'Local' effects are those affecting neighbouring receptors of the Development, whilst effects upon receptors within the wider borough of Islington are considered are considered to be at a 'District' level. 'Sub-regional' effects are those affecting adjoining Boroughs, whilst effects upon Greater London are considered to be at a 'Regional' level. Effects upon different parts of the country, or England as a whole, would be considered to be 'National'. However, due to the nature and scale of the likely effects, it is considered that the Development would only result in 'local' noise and vibration effects.

9.2.67 **Table 9.10** indicates the significance of effects of noise and vibration effects, based on the magnitude of impact criteria for a high sensitivity receptor. **Table** 9.10 also includes NPSE categories which have been assigned to the significance of effect.

Table 9.10: Scales for the Assessment for Noise and Vibration Arising from the Development

Construction Noise Level* (Threshold Value), dB $L_{Aeq,T}$	Construction Vibration , Peak Particle Velocity (PPV) mm/s (temporary vibration)		Significance of Effect	NPSE Category
	Residential etc.	Non-residential		

≥76 dB	≥ 2.1	≥ 5.1	Major	SOAEL
71 dB to 75 dB	1.1 – 2.0	3.1 – 5.0	Moderate	LOAEL - SOAEL
66 dB to 70 dB	0.6 – 1.0	1.1 – 3.0	Minor	LOAEL
≤65 dB	≤ 0.3	≤ 1.0	Insignificant	NOEL

Notes:

Fixed Mechanical Plant Noise - Providing the cumulative noise from all fixed mechanical plant on the Site is controlled to achieve the noise emission limit described in paragraph 9.2.42, no significant adverse effects would occur.

* Applicable to façade-derived noise levels.

9.3 Relevant Baseline Conditions

9.3.1 Environmental noise measurements were undertaken during October 2019 to establish the ambient and background noise climate during the daytime and night-time periods at locations considered representative of nearby noise sensitive receptors. These measurements have been used to inform the assessment of construction noise and to set noise emission limits for fixed mechanical plant associated with the Proposed Development.

9.3.2 Further environmental noise measurements were undertaken in June 2021, to inform an assessment of the suitability of the Site for residential use which is submitted as a stand-alone document supporting the planning application. However, the measurements obtained have also been used in the determination of background noise levels for the assessment of fixed mechanical plant noise.

9.3.3 Whilst attending Site, observations were made of noise sources in the surrounding area.

9.3.4 Unattended noise measurements were undertaken at five fixed locations, between Tuesday 1st October 2019 at 12:00 and Monday 7th October 2019 at 11:00 with a series of short-term attended measurements, at seven locations, conducted during the night-time period between 00:00 and 01:30 on Thursday 3rd October 2019.

9.3.5 During Site attendance on Tuesday 1st October and Monday 7th October, it was noted that the main, permanent source of noise present in the area (and as will be the case in the foreseeable future) is road traffic along A503 (Parkhurst Road) and Camden Road, both to the east of the Site.

9.3.6 Lesser contributions were noted from road traffic along Holloway Road to the north-east and the surrounding local road network.

9.3.7 Observations made during the night-time period of Thursday 3rd October 2019 indicated that the main source of noise was road traffic on Parkhurst Road. Single and distinct noise events were noted to include sporadic car passbys on the local road network surrounding the Site and distant sirens, perceived to have come from the direction of Holloway Road.

9.3.8 Following a later request for a site suitability assessment to be undertaken, unattended noise measurements were also undertaken at a single location, between Wednesday 23rd June 2021 at 16:00 and Sunday 27th June 2021 at 17:00 (at this point the sound level meter ceased operating). This location was in proximity to the junction between Parkhurst Road and Camden Road and was carried out at the recommendation of the EHO for the LBI during the EIA scoping and consultation process. Measurements at this location have also been used in the assessments presented within this Chapter.

9.3.9 During Site attendance on Wednesday 23rd June and equipment collection on Monday 28th June, it was noted that the dominant, permanent source of noise present in the area (and as will be the case in the foreseeable future) is road traffic along A503 (Parkhurst Road) and Camden Road, both to the east of the Site.

9.3.10 In accordance with a request made by the EHO for the LBI during the EIA scoping and consultation process (see **Section 9.2**), observations of the noise climate around the Site were made on 23rd June 2021. The purpose of these observations were to ensure that there were no significant changes to the noise climate since the measurements which were captured in October 2019 and, by extension, confirm their ongoing validity.

9.3.11 A Site walk-over was undertaken initially within the perimeter of the Site, followed by a walk around the outside of the Site perimeter (where access allowed). It was noted that there were no new premises in proximity to the Site which would generate noise during the day or night-time periods and there were no noted changes to the road network infrastructure (e.g. road closures, new sets of traffic lights) around the roads local to the Site which might result in significant changes to road traffic noise levels. Therefore, the measured data obtained via survey in October 2019 are considered to remain valid for use.

Figure 9.1: Survey Measurement Locations

9.3.12 A plan of the measurement locations from October 2019 and June 2021 is provided as **Figure 9.1** and a description is provided of the unattended and attended noise monitoring locations in **Table 9.11** and **Table 9.12** below respectively.

Table 9.11: Summary of Unattended Noise Monitoring Locations

ID	Description	Reason for Position	Approx. Height / Acoustic Environment	Measurement Period
P1	At the northern boundary of the Site overlooking Parkhurst Road.	Measurement of road traffic noise levels along Parkhurst Road.	3m / free-field.	3 hours*: Tue 01st (12pm-3pm) October 2021.

ID	Description	Reason for Position	Approx. Height / Acoustic Environment	Measurement Period
P2	Towards the north-eastern boundary of Site approx. 50 m from Parkhurst Road.	To establish ambient and background noise levels at the nearest facades of dwellings within Holloway Estate.	1.5 m / free-field.	6 days: Tue 01st (12 pm) to Mon 07th (10 am) October 2019.
P3	At the northern boundary of the Site approx.15 m from the nearest dwellings located at the northern end of Bakersfield.	To establish ambient and background noise levels at the nearest facades of dwellings located at the eastern end of Bakersfield.	1.5 m / free-field.	4 days*: Tue 01st (12 pm) to Sat 05th (3 am) October 2019.
P4	At the southern boundary of the Site approx. 42 m from Camden Road. This measurement location was set at a height of approx. 6m, in excess of the former prison wall.	To establish ambient and background noise levels at the nearest facades of dwellings located at 275 Camden Road.	6 m / free-field.	6 days: Tue 01st (12 pm) to Mon 07th (11 am) October 2019.
P5	At the south-western boundary of the Site approx. 134 m from Camden Road and approx.. 60m north-east of Dalmeny Avenue. This measurement location was set at a height of approx. 6m, in excess of the former prison wall.	To establish ambient and background noise levels at the nearest facades of dwellings located at Dalmeny Avenue.	6 m / free-field.	1 day*: Tue 01st (1 pm) to Wed 02nd (3 pm) October 2019.
P6	At the north-western boundary of the Site approx.15 m from the nearest dwellings located at the southern end of Bakersfield.	To establish ambient and background noise levels at the nearest facades of dwellings located at the southern end of Bakersfield.	1.5 m / free-field.	6 days: Tue 01st (1 pm) to Mon 07th (11 am) October 2019.
P7	Located at the south-eastern boundary of the Site, overlooking the junction between Parkhurst Road and Camden Road.	To establish road traffic noise levels at the junction and background noise levels in proximity to Camden Road/Parkhurst Road.	3 m / free-field.	4 days*: Wed 23rd (4 pm) to Sun 27th (5 pm) June 2021.
* - Sound level meter ceased recording prior to the end of the survey period				

9.3.13 It should be noted that measurements were undertaken at heights in excess of 1.5m above local ground level at P1, P4, P5 and P7 in order to capture noise levels which were representative of those experienced at the nearest senstive receptors from above the Site hoarding and existing prison wall.

Table 9.12: Summary of Attended Noise Monitoring Locations

ID	Description	Reason for Position	Approx. Height / Acoustic Environment	Measurement Periods
A	Located within the north entrance to Trecastle Way, approx. 25 m from Carleton Road.	To establish ambient and background noise levels at the dwellings located on Trecastle Way during the night-time.	1.5 m / free-field.	5 min x1 Thurs (00:14 am) 3rd Oct 2019.
B	Towards the half-way point of Penderyn Way, approx. 65 m from the north-western boundary of the Site.	To establish ambient and background noise levels at the dwellings located on Penderyn Way during the night-time.	1.5 m / free-field.	5 min x1 Thurs (00:22 am 3rd Oct 2019.
C	At the eastern end of Bakersfield, approx. 16 m from the northern Site boundary.	To establish ambient and background noise levels at the dwellings located on Bakersfield during the night-time.	1.5 m / free-field.	5 min x1 Thurs (00:40 am) 3rd Oct 2019.
D	At the southern end of Crayford Road, approx. 35 m from the northern Site boundary.	To establish ambient and background noise levels at the dwellings located on Crayford Road and the northern part of Holloway Estate during the night-time.	1.5m / free-field.	5 min x1 Thurs (00:51 am) 3rd Oct 2019.
E	Located approx. 12 m from the north-eastern boundary of Site, at the western end of Holloway Estate.	To establish ambient and background noise levels at the dwellings located in the northern part of Holloway Estate during the night-time.	1.5m / free-field.	5 min x1 Thurs (01:01 am) 3rd Oct 2019.
F	At Parkhurst Road, approx. 23 m from the south-eastern boundary of Site.	To establish ambient and background noise levels at the dwellings located on Parkhurst Road during the night-time.	1.5m / free-field.	5 min x1 Thurs (01:09 am) 3rd Oct 2019.
G	Approx. 18 m east of Dalmeny Avenue, in the recess between two of the housing blocks.	To establish ambient and background noise levels at the dwellings located on Dalmeny Avenue during the night-time.	1.5m / free-field.	5 min x1 Thurs (01:19 am) 3rd Oct 2019.

9.3.14 Each microphone was protected with a foam windshield and each kit had been calibrated by a UKAS accredited laboratory within the previous 24 months. The kit was also field calibrated at the commencement and conclusion of each survey using calibrators, which had themselves been calibrated by a UKAS accredited laboratory within the previous twelve months. No significant drift in the calibration signal was noted.

9.3.15 The weather during the survey in October 2019 was generally conducive to the measurement of noise, with wind speeds below 5 m/s for the majority of the survey period. Wind speeds were noted to exceed 5 m/s, briefly, in the afternoon of Sunday 06th October, though only up to a maximum speed of 6 m/s. Spells of rain were noted throughout the afternoon on Tuesday 01st October and for periods of the evening of Saturday 05th and the morning of Sunday 06th October, however none of these spells were noted as being particularly heavy. As such, the weather is considered not to have significantly affected the noise measurements.

9.3.16 The weather during the survey in June 2021 was generally conducive to the measurement of noise, with wind speeds below 5 m/s throughout the survey period. Spells of rain were noted throughout the afternoon on Friday 25th June, however these spells were not noted as being particularly heavy. As such, the weather is considered not to have significantly affected the noise measurements.

9.3.17 The survey results for each of the locations described above are summarised in **Table 9.13** and **Table 9.14**. In terms of the measurements over multiple days, which is the case for all unattended positions, the average of the recorded (daily or nightly) levels is presented, with the exception of the L_{AF90} data. To determine a representative daytime value, the 1-hour L_{AF90} data for the daytime period over the full survey have been combined, and then the modal value determined. For the night-time L_{AF90}, the same procedure was followed, using 15-minute data. Where more than one mode was present, the lowest value has been used.

Table 9.13: Summary of Unattended Baseline Noise Survey Data, Db

ID / Position	Ave. $L_{Aeq,16h}$	Ave. $L_{Aeq,8h}$	Typical $L_{Af90,t}$	
	Day (07:00-23:00)	Night (23:00-07:00)	Day (1hr) (07:00-23:00)	Night (15m) (23:00-07:00)
P1[1]	70	-	-	-
P2	52	48	45	40
P3	49	42	38	34
P4	54	51	47	42
P5	52	45	42	38
P6	49	44	39	36
P7	69	66	59	50

1- Measurements at position P1 concluded during the daytime after a 3 hour period, therefore, night-time measurement data are not available.

Table 9.14: Summary of Attended Baseline Noise Survey Data, Db

ID / Position	Date / Start Time	Duration , T (MIN)	LAeq, 5m	LAF90, 5m	Notes
A Trecastle Way.	03/10/2019 00:14	5	38	34	Quiet (away from significant sources), distant road traffic clear and dominant.
B Penderyn Way.	03/10/2019 00:22	5	37	35	Quiet (away from significant sources), distant road traffic clear and dominant, cyclist arrives home (door slam).
C Bakersfield (east).	03/10/2019 00:40	5	38	35	Quiet (away from significant sources), distant road traffic clear and dominant, sirens briefly.
D Crayford Road (south).	03/10/2019 00:51	5	40	36	Quiet (away from significant sources), distant road traffic clear and dominant, single car locally.
E Holloway Estate (west).	03/10/2019 01:01	5	43	38	Quiet (away from significant sources), distant road traffic clear and dominant, sirens briefly.
F Parkhurst Road.	03/10/2019 01:09	5	65	48	Frequent traffic on Parkhurst Road dominant.
G Dalmeny Avenue.	03/10/2019 01:19	5	44	40	Quiet (away from significant source), distant road traffic clear and dominant + plus local "fan" type noise (possibly from boiler flue).

Sensitive Receptors

9.3.18 The nearest potentially affected receptor locations used in the assessment are shown in **Figure 9.2** and described as follows:

i. 1-12 Fairweather House (dwellings, 4-storey).

ii. 13-24 Fairweather House (dwellings, 4-storey).

iii. 25-40 Fairweather House (dwellings, 4-storey).

iv. 1-18 Crayford House (dwellings, 4-storey).

v. 1-18 McMorran House (dwellings, 4-storey).

vi. 1-18 Bunning House (dwellings, 4-storey).

vii. 1-23 Cardwell Road (dwellings, 2-storey).

viii. 41-53 Crayford Road (dwellings, 2-storey).

ix. 45/171 Bakersfield (dwellings, 4-storey).

x. 36/154/155/225/226 Bakersfield (dwellings, 10-storey).

xi. 53-85 Penderyn Way (dwellings, 3-storey).

xii. 44 Carleton Road (dwellings, 4-storey).

xiii. 1-8 Dolphin Court (dwellings, 4-storey).

xiv. 2-12 Trecastle Way (dwellings, 3-storey).

xv. 2 Dalmeny Avenue (dwellings, 5-storey).

xvi. 4 Dalmeny Avenue (dwellings, 3-storey).

xvii. 6-52 Dalmeny Avenue (dwellings, 3-storey).

xviii. 54-70 Dalmeny Avenue (dwellings, 3-storey).

xix. 72-122 Dalmeny Avenue (dwellings, 4-storey).

xx. 376-380 Camden Road (dwellings, 4-storey).

xxi. 1-23 Poynder Court (dwellings, 4-storey).

xxii. 388-390 Camden Road (dwellings, 4-storey).

xxiii. 392 Camden Road (vacant Public House, 3-storey).

xxiv. 2/2a Parkhurst Road (Existing: Commercial, 2-storey; Proposed: Residential).

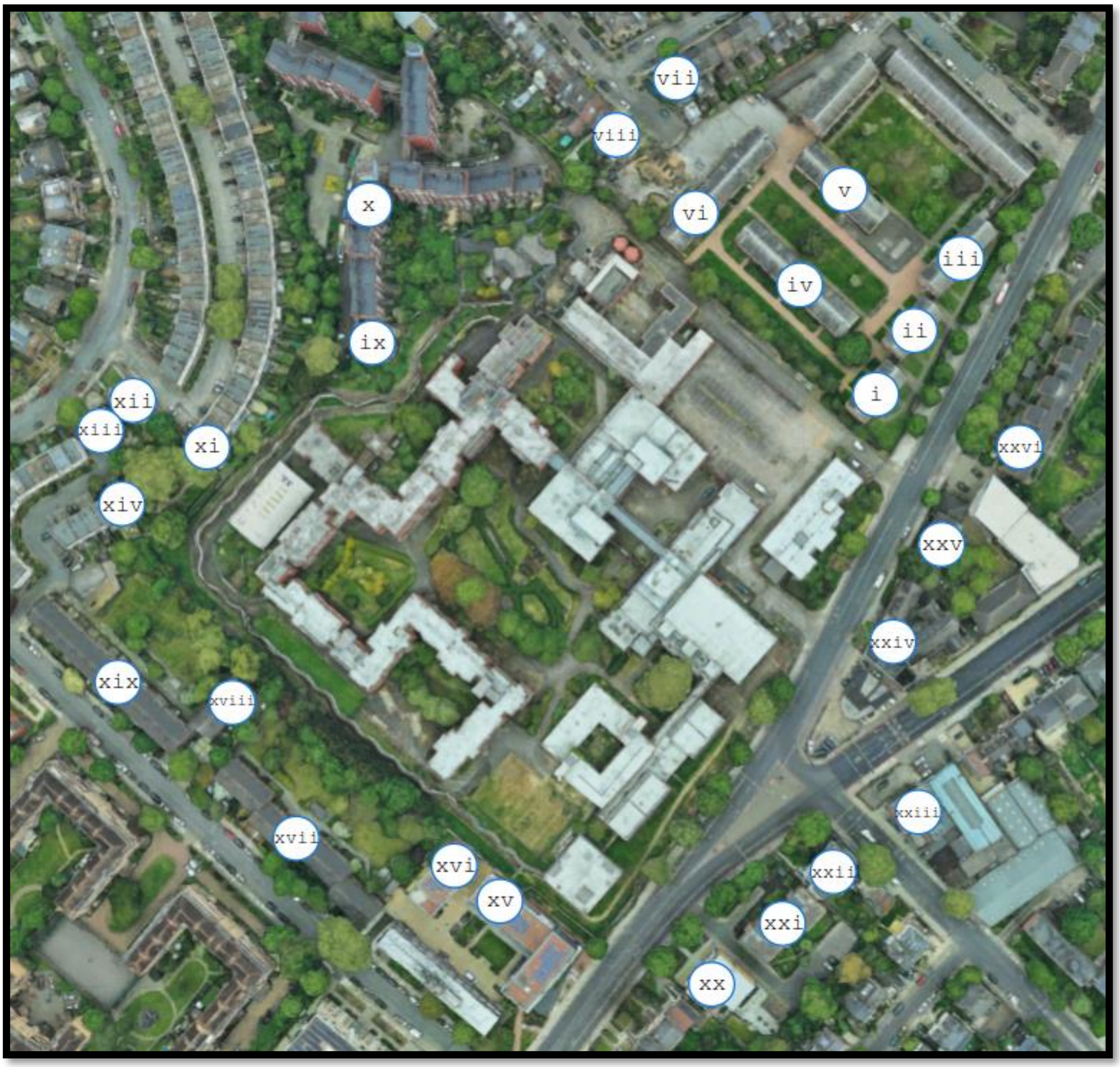
xxv. 2-5 Prospect Place (dwellings, 3-storey).

xxvi. 1-12 Whitby Court (dwellings, 4-storey).

9.3.19 These receptors have been selected for assessment as they have a 'line of sight' to the Development and the Works. Sensitive receptors that are located further away from the Development than those listed above and which do not have 'line of sight' of the Development are likely to benefit from significant acoustic screening afforded by those receptors listed above and, as such, are anticipated not to experience significant adverse effects. Therefore, in considering the receptors listed above, the worst-case scenario has been addressed in these assessments.

9.3.20 It should be noted that 2/2a Parkhurst Road is currently occupied by commercial premises and has been assessed as such with regard to construction noise and vibration. However, this land is also the site for an approved project (see **paragraph 9.6.2**) which will be developed for residential use. Consequently, the proposed residential receptor at 2/2a Parkhurst Road has also been included as a sensitive receptor at which noise emission limits are to be determined in the assessment of noise emissions for fixed mechanical Plant (see **Table 9.21**).

Figure 9.2: Sensitive Receptor Locations



9.4 Likely Effects of the Development and their Significance

The Works: Noise

9.4.1 This assessment considers the noise effects likely to arise during the activities associated with the Works. It is expected that there would be some disruption in terms of noise at existing nearby sensitive receptors. However, disturbance would be localised and Works would be short to medium term in duration. As noted in **ES Volume 1, Chapter 6: The Works**, the programme for the Works is anticipated to last for 5 years.

9.4.2 The noise level generated by construction activities depends on a number of factors. The prediction procedures described in BS 5228-1 take into account the more significant factors, these being:

- The sound power output of the plant or machine.
- The periods of operation.
- The distance between source and receiver.
- The presence of screening by barriers.
- Absorbent ground cover attenuation.
- The reflection of noise.

9.4.3 BS 5228-1 also notes (in Annex F, section F.1) that:

"...other factors such as meteorological conditions (particularly wind speed and direction) and atmospheric absorption may also influence the level of noise received. The estimation of the effects of these factors is complicated... In general, at short distances (say less than 50 m), the size of any effects arising from these factors will be small, whereas at longer distances there will be a tendency towards an increase in sound attenuation".

9.4.4 As a general rule, the noise levels would be attenuated by distance from the source; the greater the distance between the source and receptor, the lower the noise level at that receptor, all else remaining equal. Features between the source and receptor can also help to obstruct the passage of noise. When Works are being undertaken where a line of sight to the plant is obscured or the Works are contained within a building or structure, a significant reduction in noise levels will be experienced.

9.4.5 The predicted façade noise levels for the worst case scenario at the receptors identified in **paragraph 9.3.18** and **Figure 9.2** are presented in **Table 9.15**. As discussed in **paragraph 9.2.47**, these predicted noise levels include the -5 dB correction for adoption of measures set out in the CEMP.

Table 9.15: Predicted Construction Noise Levels at Sensitive Receptors for the Worst-Case Scenario

Receptor	Predicted Construction Noise Levels, dB ($L_{Aeq,T}$)					
	Site Establishment	Demolition	Piling & Excavation	Substructure	Superstructure and Fit Out	Roads and Landscaping
1-12 Fairweather House	77	78	78	78	76	74
13-24 Fairweather House	69	70	70	69	68	66
25-40 Fairweather House	65	67	67	66	64	62
1-18 Crayford House	71	73	73	72	70	68
1-18 McMorran House	65	66	66	65	63	62
1-18 Bunning House	77	78	78	78	76	74
1-23 Cardwell Road	62	63	63	62	61	59
41-53 Crayford Road	66	68	68	67	65	63

Receptor	Predicted Construction Noise Levels, dB ($L_{Aeq,T}$)					
	Site Establishment	Demolition	Piling & Excavation	Substructure	Superstructure and Fit Out	Roads and Landscaping
45/171 Bakersfield	77	78	78	78	76	74
36/154/155/225/226 Bakersfield	68	69	69	68	67	65
53-85 Penderyn Way	70	71	71	70	69	67
44 Carleton Road	63	64	64	63	62	60
1-8 Dolphin Court	63	64	64	63	62	60
2-12 Trecastle Way	70	71	71	70	69	67
2 Dalmeny Avenue	77	78	78	78	76	74
4 Dalmeny Avenue	77	78	78	78	76	74
6-52 Dalmeny Avenue	69	70	70	69	68	66
54-70 Dalmeny Avenue	77	78	78	78	76	74
72-122 Dalmeny Avenue	69	70	70	69	68	66
376-380 Camden Road	70	71	71	70	69	67
1-23 Poynder Court	69	70	70	69	68	66
388-390 Camden Road	67	68	68	67	66	64
392 Camden Road (commercial use)	66	67	67	67	65	63
2/2a Parkhurst Road (commercial use)	75	76	76	75	74	72
2-5 Prospect Place	68	69	69	68	67	65
1-12 Whitby Court	64	65	65	64	63	61

(red)	Effect of major adverse significance
(amber)	Effect of moderate adverse significance
(blue)	Effect of minor adverse significance
(green)	Insignificant Effect

9.4.6 The predicted façade noise levels for the average case scenario at the receptors identified in **paragraph 9.3.18** and **Figure 9.2** are presented in **Table 9.16**. As discussed in **paragraph 9.2.47**, these predicted noise levels include the -5 dB correction for adoption of measures set out in the CEMP.

Table 9.16: Predicted Construction Noise Levels at Sensitive Receptors for the Average-Case Scenario

Receptor	Predicted Construction Noise Levels, dB ($L_{Aeq,T}$)					
	Site Establishment	Demolition	Piling & Excavation	Substructure	Superstructure and Fit Out	Roads and Landscaping
1-12 Fairweather House	60	62	62	61	60	58
13-24 Fairweather House	59	60	60	59	58	56
25-40 Fairweather House	57	59	59	58	57	54
1-18 Crayford House	60	61	61	61	59	57
1-18 McMorran House	57	59	59	58	57	54
1-18 Bunning House	60	62	62	61	60	58
1-23 Cardwell Road	57	58	58	57	56	54
41-53 Crayford Road	59	60	60	59	58	56
45/171 Bakersfield	61	63	63	62	60	58
36/154/155/225/226 Bakersfield	58	59	59	59	57	55
53-85 Penderyn Way	58	59	59	59	57	55
44 Carleton Road	57	58	58	57	56	54
1-8 Dolphin Court	57	58	58	57	56	54
2-12 Trecastle Way	57	58	58	57	56	54
2 Dalmeny Avenue	59	60	60	59	58	56
4 Dalmeny Avenue	59	60	60	59	58	56
6-52 Dalmeny Avenue	58	59	59	58	57	55
54-70 Dalmeny Avenue	59	60	60	59	58	56
72-122 Dalmeny Avenue	57	58	58	57	56	54
376-380 Camden Road	55	57	57	55	54	52
1-23 Poynder Court	56	57	57	57	55	53

Receptor	Predicted Construction Noise Levels, dB ($L_{Aeq,T}$)					
	Site Establishment	Demolition	Piling & Excavation	Substructure	Superstructure and Fit Out	Roads and Landscaping
388-390 Camden Road	57	59	59	58	57	54
392 Camden Road (commercial use)	57	59	59	58	57	54
2/2a Parkhurst Road (commercial use)	60	61	61	61	59	57
2-5 Prospect Place	59	61	61	60	58	56
1-12 Whitby Court	57	59	59	58	57	54
(red)	Effect of major adverse significance.					
(amber)	Effect of moderate adverse significance.					
(blue)	Effect of minor adverse significance.					
(green)	Insignificant Effect.					

9.4.7 Based on the above, **direct, temporary, short to medium-term** and **local** effects of **major adverse significance** are predicted at the following receptors **at the worst-case distances** (i.e. shortest distances) from the Works:

- 1-12 Fairweather House (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 1-18 Bunning House (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 45/171 Bakersfield (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 2 Dalmeny Avenue (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 4 Dalmeny Avenue (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 54-70 Dalmeny Avenue (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).

9.4.8 **Direct, temporary, short to medium-term** and **local** effects of **moderate adverse significance** are predicted at the following receptors at the worst-case distances (i.e. shortest distances) from the Works:

- 1-12 Fairweather House (Roads and Landscaping stage).
- 1-18 Crayford House (Site establishment, Demolition, Piling and Excavation and Substructure stages).

- 1-18 Bunning House (Roads and Landscaping stage).
- 45/171 Bakersfield (Roads and Landscaping stage).
- 53-85 Penderyn Way (Demolition and Piling and Excavation stages).
- 2-12 Trecastle Way (Demolition and Piling and Excavation stages).
- 2 Dalmeny Avenue (Roads and Landscaping stage).
- 4 Dalmeny Avenue (Roads and Landscaping stage).
- 54-70 Dalmeny Avenue (Roads and Landscaping stage).
- 376-380 Camden Road (Demolition and Piling and Excavation stages).

9.4.9 **Direct, temporary, short to medium-term** and **local** effects of **minor adverse significance** are predicted at the following receptors at the worst-case distances (i.e. shortest distances) from the Works:

- 13-24 Fairweather House (all stages).
- 25-40 Fairweather House (Demolition, Piling and Excavation and Substructure stages).
- 1-18 Crayford House (Superstructure and Fit-out and Roads and Landscaping stages).
- 1-18 McMorran House (Demolition and Piling and Excavation stages).
- 41-53 Crayford Road (Site establishment, Demolition, Piling and Excavation and Substructure stages).
- 36/154/155/225/226 Bakersfield (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 53-85 Penderyn Way (Site establishment, Substructure, Superstructure and Fit-out and Roads and Landscaping stages).
- 2-12 Trecastle Way (Site establishment, Substructure, Superstructure and Fit-out and Roads and Landscaping stages).
- 6-52 Dalmeny Avenue (all stages).
- 72-122 Dalmeny Avenue (all stages).
- 376-380 Camden Road (Site establishment, Substructure, Superstructure and Fit-out and Roads and Landscaping stages).
- 1-23 Poynder Court (all stages).
- 388-390 Camden Road (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 392 Camden Road (commercial use) (Demolition and Piling and Excavation stages).
- 2/2a Parkhurst Road (commercial use) (Demolition and Piling and Excavation stages).

- 2-5 Prospect Place (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).

9.4.10 It should be not that although **Table 9.15** indicates noise levels at 2/2a Parkhurst Road, which would result in **direct, temporary, short to medium-term** and **local** effects of **major adverse significance** during the Demolition and Piling and Excavation stages, and **direct, temporary, short to medium-term** and **local** effects of **moderate adverse significance** during all other stages, the sensitivity of this receptor is low (i.e. commercial use). Consequently, **direct, temporary, short to medium-term** and **local** effects of **major adverse significance** are reduced to **direct, temporary, short to medium-term** and **local** effects of **minor adverse significance** and **direct, temporary, short to medium-term** and **local** effects of **moderate adverse significance** are considered **insignificant.**

9.4.11 For all other stages/receptors not mentioned, **insignificant effects** are predicted.

9.4.12 For all stages at all receptors at the average-case distances, **insignificant effects** are predicted.

9.4.13 In most cases, where adverse effects are predicted, they are likely to be restricted only to the façade of the identified receptors nearest to the Site, as the buildings themselves would provide noise attenuation to the remaining façades of the building.

9.4.14 It is also important to note that the identified major adverse effects are predicted at receptors which are approximately 15m from the Works (i.e. at the worst-case distance closest to the Site boundary). As the Works recede from the closest point, the predicted noise levels decrease. It is predicted that major adverse effects would reduce to moderate adverse effects at the following distances from the worst-affected receptors:

- Site Establishment and Substructure stages – 35m (i.e. a further 20m from the worst-affected receptors).
- Demolition and Piling and Excavation stages – 40m (i.e. a further 25m from the worst-affected receptors).
- Superstructure and Fit-out stage – 30m (i.e. a further 15m from the worst-affected receptors).
- Roads and Landscaping stage – 25m (i.e. a further 10m from the worst-affected receptors).

9.4.15 These distances are considered to be relatively small, therefore, activities associated with the Works (and by extension, effects of major significance) occurring within these distances, are anticipated to last for only part of the overall construction period.

The Works: Vibration

9.4.16 As with construction noise, it is expected that there would be some disturbance in terms of vibration caused to nearby sensitive receptors during the Works. However, disturbance would be localised and the Works would be short to medium term.

9.4.17 In accordance with the methodologies and criteria in BS 5228-2, as detailed in **ES Volume 3, Appendix 9.3**, vibration levels likely during any hydraulic breaking for the removal of hardstanding have been predicted. The predictions have been based on the methodology in BS 5228-2 for vibratory compaction activity as vibratory compaction is, by its nature, vibration generating. This activity is considered reasonably representative of all activities anticipated during the Works, in terms of levels of vibration likely to be generated.

9.4.18 Continuous flight auger (CFA) piling would be undertaken within the site. As per the guidance provided in BS 5228-2, the levels of vibration associated with CFA piling are minimal, as the processes do not involve rapid acceleration or deceleration of tools in contact with the ground, but rely to a large extent on steady motions. Consequently, the vibration effects from CFA piling are likely to be **insignificant** and are considered no further in this assessment.

9.4.19 The worst-case and average-case distances between the receptor and construction activity used in the assessment are presented in **ES Volume 3, Appendix 9.4.**

9.4.20 The predicted construction vibration levels during vibratory compaction at the worst-case distances are presented **Table 9.17** below.

Table 9.17: Predicted Construction Vibration Levels for the Worst-Case Scenario

Receptor	Peak Particle Velocity (PPV) mm/s (steady-state operation)
1-12 Fairweather House	1.3
13-24 Fairweather House	0.3
25-40 Fairweather House	0.2
1-18 Crayford House	0.5
1-18 McMorran House	0.2
1-18 Bunning House	1.3
1-23 Cardwell Road	0.2
41-53 Crayford Road	0.5
45/171 Bakersfield	1.3
36/154/155/225/226 Bakersfield	0.3
53-85 Penderyn Way	0.9
44 Carleton Road	0.3
1-8 Dolphin Court	0.3
2-12 Trecastle Way	0.9
2 Dalmeny Avenue	1.3
4 Dalmeny Avenue	1.3
6-52 Dalmeny Avenue	0.3
54-70 Dalmeny Avenue	1.3
72-122 Dalmeny Avenue	0.3
376-380 Camden Road	0.4
1-23 Poynder Court	0.3

Receptor	Peak Particle Velocity (PPV) mm/s (steady-state operation)
388-390 Camden Road	0.2
392 Camden Road (commercial use)	0.2
2/2a Parkhurst Road (commercial use)	0.9
2-5 Prospect Place	0.7
1-12 Whitby Court	0.3
	Effect of major adverse significance.
	Effect of moderate adverse significance.
	Effect of minor adverse significance.
	Insignificant Effect.

9.4.21 The predicted construction vibration levels during vibratory compaction at the average-case distances are presented in **Table 9.18** below.

Table 9.18: Predicted Construction Vibration Levels for the Average-Case Scenario

Receptor	Peak Particle Velocity (PPV) mm/s (steady-state operation)
1-12 Fairweather House	0.1
13-24 Fairweather House	0.1
25-40 Fairweather House	0.0
1-18 Crayford House	0.1
1-18 McMorran House	0.0
1-18 Bunning House	0.1
1-23 Cardwell Road	0.0
41-53 Crayford Road	0.1
45/171 Bakersfield	0.1
36/154/155/225/226 Bakersfield	0.1
53-85 Penderyn Way	0.1
44 Carleton Road	0.0
1-8 Dolphin Court	0.0
2-12 Trecastle Way	0.0
2 Dalmeny Avenue	0.1
4 Dalmeny Avenue	0.1
6-52 Dalmeny Avenue	0.1
54-70 Dalmeny Avenue	0.1
72-122 Dalmeny Avenue	0.0

Receptor	Peak Particle Velocity (PPV) mm/s (steady-state operation)
376-380 Camden Road	0.0
1-23 Poynder Court	0.0
388-390 Camden Road	0.0
392 Camden Road (commercial use)	0.0
2/2a Parkhurst Road (commercial use)	0.1
2-5 Prospect Place	0.1
1-12 Whitby Court	0.0
	Effect of major adverse significance.
	Effect of moderate adverse significance.
	Effect of minor adverse significance.
	Insignificant Effect.

9.4.22 The vibration intensive construction works are likely to cause **direct, temporary, short to medium-term** and **local** effects of **moderate adverse significance** during the worst-case scenario at the following receptors:

- 1-12 Fairweather House.
- 1-18 Bunning House.
- 45/171 Bakersfield.
- 2 Dalmeny Avenue.
- 4 Dalmeny Avenue.
- 54-70 Dalmeny Avenue.

9.4.23 It should be noted, however, that these moderate adverse effects would only occur during demolition and whilst Works take place within 15m to 20m of the buildings. As the identified buildings are approximately 15m away, it is likely that moderate adverse effects would be experienced for only a limited period and effects would reduce to minor adverse as Works recede 5m from the worst-case distance point.

9.4.24 **Direct, temporary, short to medium-term** and **local** effects of **minor adverse significance** are predicted during the worst-case scenario at the following receptors:

- 1-18 Crayford House.
- 41-53 Crayford Road.
- 53-85 Penderyn Way.
- 1-8 Dolphin Court.
- 2-12 Trecastle Way.

- 376-380 Camden Road.
- 2-5 Prospect Place.

9.4.25 For all other receptors **insignificant effects** are predicted during the worst-case scenario.

9.4.26 During the average case scenario **insignificant effects** are predicted at all receptors.

The Completed and Operational Development

Noise Emissions from Fixed Mechanical Plant

9.4.27 In the absence, at this stage, of sufficient information regarding any future external fixed mechanical plant, no predictions can be made to determine the significance of the likely noise emissions. Instead, plant noise emission limits have been set to which all fixed plant would adhere.

9.4.28 In accordance with the adopted criteria, fixed plant would be designed such that the noise emissions would be no greater than a level 5 dB below the existing representative background noise level at the façade of the sensitive receptors, in accordance with BS 4142.

9.4.29 In setting the noise emission limits to which all fixed plant should adhere, it is assumed that plant could operate at any point during a 24-hour period, and, hence, limits are provided in terms of the daytime and night-time periods.

9.4.30 Noise emission limits have been set for the nearest noise sensitive receptors around the boundary of the Site. As noise levels attenuate with distance, it follows that noise emission limits set for these receptors would also be sufficient for those receptors set further back from the Site.

9.4.31 The nearest noise sensitive receptors which have been considered in this assessment are set out in **Table 9.19**.

Table 9.19: Nearest Receptors to the Development

Receptor Numbers (refer to paragraph 9.3.13)	Description
i; iv; xxiv	1-12 Fairweather House; 1-18 Crayford House; 2/2a Parkhurst Road (proposed residential use).
vi	1-18 Bunning House.
xx; xxi; xxv	376-380 Camden Road; 1-23 Poynder Court; 2-5 Prospect Place.
xv; xvi	2 Dalmeny Avenue; 4 Dalmeny Avenue.
xvii; xviii	6-52 Dalmeny Avenue; 54-70 Dalmeny Avenue.
ix; xi; xiv	45/171 Bakersfield; 53-85 Penderyn Way; 2-12 Trecastle Way.

9.4.32 The background noise levels in the vicinity of the nearest sensitive receptors have been determined based on the measured noise levels obtained via the baseline noise survey as reported in **Section 9.3**. **Table 9.20** presents the nearest sensitive receptors, the measurement location which is considered to be most representative of their location and the derived background noise levels during the day and night-time periods at those locations.

Table 9.20: Nearest Sensitive Receptors and Associated Representative Background Noise Levels

Receptor Numbers (refer to paragraph 9.3.13)	Description	Representative Measurement Location	Background Noise (daytime) dB LA90,15min	Background Noise (night-time) dB LA90,15min dB
i; iv; xxiv	1-12 Fairweather House; 1-18 Crayford House; 2/2a Parkhurst Road (proposed residential use).	Daytime / Night-time: P2.	45	40
vi	1-18 Bunning House.	Daytime / Night-time: P3.	38	34
xx; xxi; xxv	376-380 Camden Road; 1-23 Poynder Court; 2-5 Prospect Place.	Daytime / Night-time: P7.	59	50
xv; xvi	2 Dalmeny Avenue; 4 Dalmeny Avenue.	Daytime / Night-time: P4.	47	42
x; xvii	6-52 Dalmeny Avenue; 54-70 Dalmeny Avenue.	Daytime / Night-time: P5.	42	38
ix; xi; xiv	45/171 Bakersfield; 53-85 Penderyn Way; 2-12 Trecastle Way.	Daytime / Night-time: P6.	39	36

9.4.33 On this basis, the plant noise emission limits presented in **Table 9.21** are proposed.

Table 9.21: Nearest Sensitive Receptors and Recommended Plant Noise Limits

Receptor Number (refer to para. 9.3.13)	Description	Rating Noise Upper Limit (daytime) LAr,Tr dB	Rating Noise Upper Limit (night-time) LAr,Tr dB
i; iv; xxiv	1-12 Fairweather House; 1-18 Crayford House; 2/2a Parkhurst Road (proposed residential use)	40	35
vi	1-18 Bunning House.	33	29
xx; xxi; xxv	376-380 Camden Road; 1-23 Poynder Court; 2-5 Prospect Place.	54	45
xv; xvi	2 Dalmeny Avenue; 4 Dalmeny Avenue.	42	37
x; xvii	6-52 Dalmeny Avenue; 54-70 Dalmeny Avenue.	37	33
ix; xi; xiv	45/171 Bakersfield; 53-85 Penderyn Way; 2-12 Trecastle Way.	34	31

9.4.34 The plant noise limits in **Table 9.21** are rating levels, so a correction should be applied where characteristics (such as a noticeable tone or regularly fluctuating noise levels) are present that might attract attention.

9.4.35 The limits apply to the total noise emission from all new plant associated with the Development. Individual plant items would, therefore, be designed to achieve lower levels than stated above where more than one plant item contributes to the overall noise emission outside a particular receptor.

9.5 Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance

The Works

Noise

9.5.1 As set out earlier, the adoption of BPM and compliance with a CEMP would be required of all contractors.

9.5.2 Where major or moderate adverse effects have been predicted at existing receptors from construction noise, it is primarily as a result of the proximity of the receptors to the Works at the worst-case distances. It is likely that these effects would be of a relatively short duration, rather than for prolonged periods of time.

9.5.3 This notwithstanding, where noise levels exceed 75 dB at the nearest receptors, remedial action would be taken to reduce noise levels as far as is practicable (i.e. avoid noise levels in excess of the SOAEL in accordance with the NPSE). These actions may include selection of alternative, quieter plant, or working approaches.

9.5.4 In employing such measures, it is anticipated that the **direct, temporary, short to medium-term** and **local** effects of **major adverse significance** which have been predicted at the worst-case distances, would reduce to **direct, temporary, short to medium-term** and **local** effects of **moderate adverse significance.** The affected receptors are as follows:

- 1-12 Fairweather House (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 1-18 Bunning House (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 45/171 Bakersfield (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 2 Dalmeny Avenue (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).
- 4 Dalmeny Avenue (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).

- 54-70 Dalmeny Avenue (Site establishment, Demolition, Piling and Excavation, Substructure and Superstructure and Fit-out stages).

9.5.5 It follows that applying measures to reduce noise levels at the worst affected receptors, would most likely reduce noise levels at other affected receptors. However, given the absence of detailed information at this stage as to how these noise levels would be reduced, the reduction in noise levels, and, by extension, any change in significance of effects at these other receptors cannot be quantified. Consequently, at worst, the residual effects at all other receptors are considered to remain unchanged from those stated in **paragraphs 9.4.8** and **9.4.9.**

9.5.6 It is also important to note that as the Works progress, some acoustic screening of noise from the Works would be afforded to nearby sensitive receptors by the buildings within the Development. The anticipated completion dates for each of the Plots within the Development are set out within ES Volume 1, **Chapter 6: The Works**. The Plots are completed sequentially in a broadly clock-wise direction (although Plots D and E would be completed before Plot C), beginning in the south-western area of the Site and progressing toward the north-eastern area. As these buildings are constructed, the 'angle of view' between the nearby sensitive receptors and the Works would decrease, or the 'line of sight' would be obscured. In both cases, noise attenuation effects are considered likely as the Development work progress and, as such, the potential duration of any significant adverse effects would be lessened.

9.5.7 **Table 9.22** presents a summary of the predicted residual effects from noise during the Works in the worst-case and average-case scenarios.

Table 9.22: Summary of Residual Effects from Noise During the Works

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D / I	P / T	St / Mt / Lt
Demolition and Construction Noise							
i	1-12 Fairweather House	Worst case scenario noise during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
ii	13-24 Fairweather House	Worst case scenario noise during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
iii	25-40 Fairweather House	Worst case scenario noise during construction works (Demolition; Piling and Excavation; Substructure).	Minor Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Site Establishment; Superstructure and Fit Out; Roads and Landscaping).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D / I	P / T	St / Mt / Lt
iv	1-18 Crayford House	Worst case scenario noise during construction works (Site Establishment; Demolition; Piling and Excavation; Substructure).	Moderate Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Superstructure and Fit Out; Roads and Landscaping).	Minor Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
V	1-18 McMorran House	Worst case scenario noise during construction works (Demolition; Piling and Excavation).	Minor Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Site Establishment; Substructure; Superstructure and Fit Out; Roads and Landscaping).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
vi	1-18 Bunning House	Worst case scenario noise during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
vii	1-23 Cardwell Road	Worst case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
viii	41-53 Crayford Road	Worst case scenario noise during construction works (Site Establishment; Demolition; Piling and Excavation; Substructure).	Minor Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Superstructure and Fit Out; Roads and Landscaping).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
ix	45/171 Bakersfield	Worst case scenario noise during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
x	36/154/155/225 /226 Bakersfield	Worst case scenario noise during construction works (Site Establishment; Demolition; Piling and Excavation; Substructure; Superstructure and Fit Out).	Minor Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Roads and Landscaping).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D / I	P / T	St / Mt / Lt
xi	53-85 Penderyn Way	Worst case scenario noise during construction works (Demolition; Piling and Excavation).	Moderate Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Site Establishment; Substructure; Superstructure and Fit Out; Roads and Landscaping).	Minor Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xii	44 Carleton Road	Worst case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xiii	1-8 Dolphin Court	Worst case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages)	Insignificant	L	D	T	St-Mt
xiv	2-12 Trecastle Way	Worst case scenario noise during construction works (Demolition; Piling and Excavation).	Moderate Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Site Establishment; Substructure; Superstructure and Fit Out; Roads and Landscaping).	Minor Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xv	2 Dalmeny Avenue	Worst case scenario noise during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xvi	4 Dalmeny Avenue	Worst case scenario noise during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xvii	6-52 Dalmeny Avenue	Worst case scenario noise during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xviii	54-70 Dalmeny Avenue	Worst case scenario noise during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xix	72-122 Dalmeny Avenue	Worst case scenario noise during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xx	376-380 Camden Road	Worst case scenario noise during construction works (Demolition; Piling and Excavation).	Moderate Adverse	L	D	T	St-Mt

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D / I	P / T	St / Mt / Lt
		Worst case scenario noise during construction works (Site Establishment; Substructure; Superstructure and Fit Out; Roads and Landscaping).	Minor Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxi	1-23 Poynder Court	Worst case scenario noise during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxii	388-390 Camden Road	Worst case scenario noise during construction works (Demolition; Piling and Excavation).	Minor Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Site Establishment; Substructure; Superstructure and Fit Out; Roads and Landscaping).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxiii	392 Camden Road (commercial use)	Worst case scenario noise during construction works (Demolition; Piling and Excavation).	Minor Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Site Establishment; Substructure; Superstructure and Fit Out; Roads and Landscaping).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxiv	2/2a Parkhurst Road (commercial use)	Worst case scenario noise during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxv	2-5 Prospect Place	Worst case scenario noise during construction works (Site Establishment; Demolition; Piling and Excavation; Substructure; Superstructure and Fit Out).	Minor Adverse	L	D	T	St-Mt
		Worst case scenario noise during construction works (Roads and Landscaping).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxvi	1-12 Whitby Court	Worst case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario noise during construction works (all stages).	Insignificant	L	D	T	St-Mt

Notes:

Residual Effect

- Scale = Negligible / Minor / Moderate / Major
- Nature = Beneficial or Adverse

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D / I	P / T	St / Mt / Lt

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

Vibration

9.5.8 As with construction noise, where major or moderate adverse effects have been predicted at existing receptors from construction vibration, it is primarily as a result of the proximity of the receptors to the Works at the worst-case distances. It is likely that these effects would be of a relatively short duration, rather than for prolonged periods of time.

9.5.9 As stated in BS 5228-2, intensity of vibration at the point of interest would normally be a function of many variables including:

- Energy per blow or cycle.
- Distance between source and receiver.
- Ground conditions at the site, e.g. Soft or hard driving and location of water table.
- Soil–structure interaction, i.e. Nature of connection between soil and structure being monitored.
- Construction of structure.

9.5.10 The distance between source and receiver cannot, through necessity, be increased to mitigate potential adverse vibration effects and ground conditions at the Site and the soil-structure interaction are either natural/unchangeable, or cannot be altered. It is also unreasonable for the construction of existing receptors to be retrospectively upgraded to account for temporary adverse vibration effects. Therefore, consideration must be given to the energy transferred into the ground (i.e. energy per blow or cycle). Where feasible, plant should be sourced which would perform the required function at the lowest possible dynamic force, or vibratory amplitude. Consideration may be given to the use of smaller plant within 15-20m of sensitive receptors. Consideration may also be given to the use of cut-off trenches (i.e. trenches cut into the intervening ground between the source of vibration and the receptor to reduce the transmission of vibration), however it is important to note that such trenches constitute a safety hazard. Given the likely finite duration of adverse vibration effects, the use of cut-off trenches may, on balance with the need for safety, be considered a disproportionate measure. Consequently, at worst, the residual effects at receptors are considered to remain unchanged from those stated in **paragraphs 9.4.8** and **9.4.9,** though moderate adverse effects have the potential to reduce to minor adverse effects through the use of smaller plant within 15-20m of sensitive receptors.

9.5.11 **Table 9.23** presents a summary of the predicted residual effects from noise during the Works in the worst-case and average-case scenarios.

Table 9.23: Summary of Residual Effects from Vibration During the Works

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D	P	St
					I	T	Mt
							Lt
Demolition and Construction Vibration							
i	1-12 Fairweather House	Worst case scenario vibration during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
ii	13-24 Fairweather House	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
iii	25-40 Fairweather House	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
iv	1-18 Crayford House	Worst case scenario vibration during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
v	1-18 McMorran House	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
vi	1-18 Bunning House	Worst case scenario vibration during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
vii	1-23 Cardwell Road	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
viii	41-53 Crayford Road	Worst case scenario vibration during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D I	P T	St Mt Lt
ix	45/171 Bakersfield	Worst case scenario vibration during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
x	36/154/155/225 /226 Bakersfield	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xi	53-85 Penderyn Way	Worst case scenario vibration during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xii	44 Carleton Road	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xiii	1-8 Dolphin Court	Worst case scenario vibration during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xiv	2-12 Trecastle Way	Worst case scenario vibration during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xv	2 Dalmeny Avenue	Worst case scenario vibration during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xvi	4 Dalmeny Avenue	Worst case scenario vibration during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xvii	6-52 Dalmeny Avenue	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D / I	P / T	St / Mt / Lt
xviii	54-70 Dalmeny Avenue	Worst case scenario vibration during construction works (all stages).	Moderate Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xix	72-122 Dalmeny Avenue	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xx	376-380 Camden Road	Worst case scenario vibration during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxi	1-23 Poynder Court	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxii	388-390 Camden Road	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxiii	392 Camden Road (commercial use)	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxiv	2/2a Parkhurst Road (commercial use)	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxv	2-5 Prospect Place	Worst case scenario vibration during construction works (all stages).	Minor Adverse	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
xxvi	1-12 Whitby Court	Worst case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt
		Average case scenario vibration during construction works (all stages).	Insignificant	L	D	T	St-Mt

Receptor Number (para. 9.3.12)	Receptor	Description of the Residual Effect	Scale and Nature	Geo	D	P	St
					I	T	Mt
							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

The Completed and Operational Development

Noise Emissions from Fixed Mechanical Plant

9.5.12 As noise from proposed plant associated with the Development would be designed to meet the limits that have been set in accordance with LBI policy, **insignificant** effects are anticipated. No mitigation measures are required and the residual effects would remain as per the likely effects, that is **insignificant**.

9.6 Likely Residual Cumulative Effects and their Significance

Approved Projects

The Works

9.6.1 Noise and vibration associated with construction activities would usually only cause significant adverse effects at receptors immediately surrounding a site. Significant cumulative effects would not be expected beyond approximately 100m from the Site. This is also demonstrated by the results of the construction noise assessment, whereby insignificant effects were predicted at distances over 100m.

9.6.2 There are two Approved Projects which are located within 100m of the Development and therefore have been included in the cumulative assessment (refer to **ES Volume 1, Chapter 2: EIA Methodology** for more information on the Approved Projects). These schemes are:

- 2 Parkhurst Road & 2A Parkhurst Road, London N7 0SF. Islington Arts Factory Site – approximately 30m east of the Site.
- 392A Camden Road & 1 Hillmarton Road – approximately 50m east of the Site.

9.6.3 It is assumed that the noise generated by the construction works for the two Approved Projects would, at worst, be broadly similar to that of the Development, if only for a short period of time (given the relatively small size of the schemes).

9.6.4 The receptors which are located nearest to both the Development and the identified Approved Projects are:

- 376-380 Camden Road (dwellings, 4-storey).
- 1-23 Poynder Court (dwellings, 4-storey).
- 388-390 Camden Road (dwellings, 4-storey).
- 392 Camden Road (vacant Public House, 3-storey).
- 2-5 Prospect Place (dwellings, 3-storey).
- 1-12 Whitby Court (dwellings, 4-storey).

9.6.5 It is noted that the north-west facing façades of the receptors identified above either have a very limited angle of view of the Approved Projects, or no view at all. Conversely, the façades which do have a line of sight of the Approved Projects, have either a limited angle of view of the Development or no angle of view at all. The net effect is that for the majority of receptors, the cumulative effects during construction works for the Development and the Approved Projects are likely to be no worse than those set out in the residual effects section.

9.6.6 The possible exceptions to this, however, are 2-5 Prospect Place (most notably 5 Prospect Place) and 388-390 Camden Road (most notably 390 Camden Road), which both have façades with a slightly more direct line of sight to both the Development and the Approved Projects.

9.6.7 For 5 Prospect Place and 390 Camden Road it is anticipated that the cumulative effects have the potential to increase from **direct, temporary, short to medium-term** and **local** effects of **minor adverse significance** (during the Site Establishment, Demolition, Piling and Excavation and substructure stages) to **direct, temporary, short to medium-term** and **local** effects of **moderate adverse significance,** but remain **direct, temporary, short to medium-term** and **local** effects of **minor adverse significance** during the Superstructure and Fit-out stage. There is also the potential for an increase from **insignificant** effects during the Roads and Landscaping stage to **direct, temporary, short to medium-term** and **local** effects of **minor adverse significance.**

9.6.8 The results of the construction vibration assessment indicate that vibration from vibratory compaction (and other vibration generating activities for which compaction is considered representative) would be insignificant if in excess of 50m from a receptor. It is noted that the only receptors which are located within 50m of both are 388-390 Camden Road (residential) and 2/2a Parkhurst Road (commercial). It is considered that the cumulative effects have the potential to increase from insignificant to **direct, temporary, short to medium-term** and **local** effects of **minor adverse significance** at both receptor locations. For all other receptors, cumulative effects are anticipated to remain as those set out in the residual effects section.

9.6.9 It should be noted that the stated predicted cumulative effects would only occur if the works programmes for the Development and the Approved Projects coincide.

The Completed and Operational Development

Noise Emissions from Fixed Mechanical Plant

9.6.10 Noise from fixed mechanical plant would be sufficiently controlled in accordance with LBI policy. Consequently, it is assumed that the Approved Projects would be adopting the same approach to noise control, therefore **insignificant** cumulative effects are anticipated.

Approved Projects plus Developments that have a Planning Status in the Development Plan Process

The Works

9.6.11 There are no projects with planning status located within 100m which warrant consideration.

The Completed and Operational Development

Noise Emissions from Fixed Mechanical Plant

9.6.12 There are no projects with planning status located within 100m which warrant consideration.

9.7 Conclusions

9.7.1 Demolition and construction works (the Works) are likely to include activities that would be likely to increase noise levels within and immediately adjacent to the Site. In particular when activities are occurring closest to the Site boundary, this could result in temporary effects on occupants in surrounding properties, those most affected are dwellings at Fairweather House; Bunning House; Bakersfield and properties along Dalmeny Avenue.

9.7.2 However, the implementation of noise and vibration control and management measures through a Construction Environmental Management Plan and compliance with the LBI's CoCPS for the Works would help to reduce the likelihood of noise disturbance to occupants of existing properties.

9.7.1 In addition, as the Works progress, some acoustic screening of noise from the Works would be afforded to nearby sensitive receptors by the buildings within the Development. As these buildings are constructed, the 'angle of view' between the nearby sensitive receptors and the Works would decrease, or the 'line of sight' would be obscured. In both cases, noise attenuation effects are considered likely as the Works progress and, as such, the potential duration of any significant adverse effects would be lessened.

9.7.2 Demolition and construction works are predicted to increase vibration levels within and immediately adjacent to the Site. In particular when activities are occurring closest to the Site boundary, this could result in temporary effects on occupants in surrounding properties, those most affected are dwellings at Fairweather House; Bunning House; Bakersfield and properties along Dalmeny Avenue.

9.7.3 These effects are predicted within a very short distance of the properties (15-20m) and, as such, are only likely to be experienced for a very short duration. The use of smaller plant (i.e. lower dynamic force/vibratory amplitude) within this distance is likely to reduce these effects.

9.7.4 As noise from proposed plant associated with the Development would be designed to meet the limits that have been set in accordance with LBI policy and controlled by a condition of any planning approval, insignificant effects are anticipated from fixed mechanical plant.

9.7.5 In respect of cumulative effects, demolition and construction works at identified Approved Projects and at the Development in combination may increase noise levels at two of the identified nearby senstive receptor locations. Furthermore, demolition and construction works at identified Approved Projects and at the Development may increase vibration levels at a further two nearby senstive receptor locations. However, these cumulative effects would only occur if the works programmes for the Development and the Approved Projects coincide.

10. Ecology

10.1 Introduction

10.1.1 This Chapter, prepared by Penny Anderson Associates Ltd. presents an assessment of the likely significant effects of the Development on identified ecological receptors.

10.1.2 This Chapter provides a description of the methods used in the ecological assessment. This is followed by a description of the relevant baseline conditions at the Site and surrounding area, and an assessment of the likely environmental effects of the Development during Site preparation, demolition and construction works (the 'Works') and once the Development is completed and operational. The significance of such effects is highlighted.

10.1.3 Where appropriate, mitigation measures are identified to avoid, reduce or offset any significant adverse effects. Taking account of the mitigation measures, the nature and significance of the likely residual effects are described. The cumulative ecological effects of the Development together with other relevant Cumulative Schemes are also considered.

10.1.4 This Chapter is supported by further detailed information contained within the following appendices:

- **ES Volume 3, Appendix 10.1: Consultation Information.**
- **ES Volume 3, Appendix 10.2: Desk Study Data.**
- **ES Volume 3, Appendix 10.3: Preliminary Ecological Appraisal (PEA) Report 2020.**
- **ES Volume 3, Appendix 10.4: Bat Survey Report 2020.**
- **ES Volume 3, Appendix 10.5: Autumn and Winter Bat Survey Report 2020.**
- **ES Volume 3, Appendix 10.6: Update PEA Report 2021.**
- **ES Volume 3, Appendix 10.7: Update Bat Survey Report 2021.**
- **ES Volume 3, Appendix 10.8: Shadow Habitat Regulations Assessment Report.**
- **ES Volume 3, Appendix 10.9: Summary of relevant National and Local Planning Policy and Supplementary Planning Guidance.**

10.2 Assessment Methodology and Significance Criteria

Study Area

10.2.1 The study area for the ecology assessment comprised the Site subject to field surveys and a 1km radius from the centre of the Site for the desk study, extended to 10km for consideration of European Protected sites.

Consultation

10.2.2 Consultation with statutory and non-statutory consultees was undertaken as part of the EIA process. Such consultation sought to:

- Obtain views upon the likely significant environmental effects of the Development.
- Agree appropriate EIA related scopes of work and assessment methodologies.
- Agree appropriate environmental mitigation and / or enhancement, where relevant.
- Obtain any other relevant information held by statutory and non-statutory consultees that would facilitate undertaking the ecological assessment and preparing the ES Chapter.

10.2.3 The key statutory consultee is the London Borough of Islington (LBI); consultation was undertaken with the Nature Conservation Manager at the LBI in October 2019 to agree the scope of baseline bat survey work and again in August / September 2021 to agree the scope of update bat surveys due to the amount of time that had lapsed since the original surveys were completed in 2019.

10.2.4 Initial feedback received from the Nature Conservation Manager at the LBI included a recommendation to consider provision of off-Site habitat linkage for bats in terms of habitat creation, connectivity to nearby Sites of Importance for Nature Conservation (SINC) and lighting mitigation. The second round of consultation in August / September 2021 highlighted the significance of any bat roost, no matter how small, in Islington due to the urban and built-up nature of this area, and a recommendation to ensure that the update bat survey work include as wide a scope as possible.

10.2.5 Copies of the consultation responses received from LBI are presented at **ES Volume 3, Appendix 10.1**.

10.2.6 The EIA Scoping Opinion (refer to **ES Volume 3, Appendix 2.2: EIA Scoping Opinion**) issued by the LBI in July 2020 reviewed the proposed approach of the ecology assessment set out in the EIA Scoping Report (refer to **ES Volume 3, Appendix 2.1: EIA Scoping Report**). The EIA Scoping Opinion agreed with the proposed scope of the assessment. The following comments were made:

- Relevant national and local policy should be cited in the Chapter; this is included at **ES Volume 3, Appendix 10.9**.
- The exclusion of reptiles and great crested newts from the EIA should be clarified in the Chapter.

Survey Methods

10.2.7 All methods, equipment and assessment criteria were consistent with current good practice guidelines for each survey type and the surveyors were competent for their assigned tasks based on the Chartered Institute of Ecology and Environmental Management (CIEEM[1]) competency framework (CIEEM 2013[2]). Reporting of ecological surveys also followed accepted guidance (CIEEM, 2017[3]).

10.2.8 Further details of survey methods and assessment criteria are provided under the individual sub-headings below. The approach to the baseline and update bat surveys was agreed with the LBI Nature Conservation Manager, as part of the aforementioned consultation.

Desk Study

10.2.9 The desk study comprised a consultation exercise with eCountability Ltd to gather local and Site-specific ecological information comprising non-statutory designated sites and notable and protected species records within a 1km radius search zone. A 1km study area was considered appropriate to capture desk study records for the more mobile species, namely birds and bats which have the potential to utilise habitats within the Site as part of their wider foraging and dispersal territories. In addition, a 1km study area was considered sufficiently large to capture records of nationally or locally designated sites and priority habitats which could potentially be affected directly or indirectly by the Development. A search of the Multi-Agency Geographic Information for the Countryside (MAGIC) website was also undertaken to search for statutory designated sites and priority habitats within a 1km radius search area. The search radius was extended to 10km to include consideration of European Sites (e.g. Special Areas of Conservation (SAC) and Special Protection Areas (SPA)).

10.2.10 It was considered highly unlikely that significant effects to ecology would occur beyond 1km of the Site as a result of the Development.

10.2.11 The desk study was originally conducted in August 2019 and then updated in August 2021 due to the time that had elapsed since the 2019 work.

Field Surveys

Phase 1 Habitat Survey

10.2.12 A daytime visit to the Site was carried out by Managing Director Sacha Rogers (MCIEEM[4]) and Principal Ecologist Helen Hamilton (MCIEEM) on 3rd September 2019 in fine weather. The survey was updated by Consultant Ecologist Rob Lamb (MCIEEM) and Consultant Ecologist Beth Howes (QCIEEM[5]) on 1st July 2021.

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1 CIEEM is the professional body which represents and supports ecologists and environmental managers.
2 CIEEM. Competencies for Species Survey: Bats. *Chartered Institute of Ecology and Environmental Management. 2013.*
3 CIEEM. Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management. 2017.
4 Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).
5 Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

10.2.13 On both occasions the survey followed the standard (2010[6]) technique for classifying and mapping British habitats based on the identification of individual plant species. The survey recorded common and scientific names according to Stace (2019[7]) where possible. The relative abundance of each plant species is described using the 'DAFOR' scale (where d = dominant; a = abundant; f = frequent; o = occasional; r = rare).

10.2.14 The extent of each habitat type was mapped in the field, with target notes to highlight any features of particular ecological interest.

10.2.15 The habitat survey was 'extended' (IEA 1995[8], CIEEM 2017[9]) to include a general assessment of the suitability of the Site for supporting any protected or notable species. Features with suitability for any individual species were noted, together with any incidental field signs found, such as footprints, feeding remains or sightings of animals themselves.

10.2.16 Invasive species were recorded, where found.

Inspection for Bats

10.2.17 Following a review of the findings of the Phase 1 Habitat Survey and consultation with the LBI, a daytime inspection for bats was carried out by Principal Ecologist Helen Hamilton (Natural England (NE) Bat Survey Licence Level 2[10]) on 3rd September 2019. The survey followed current good practice guidelines published by The Bat Conservation Trust (Collins 2016[11]) and all existing structures and trees within the Site were assessed for their potential to support roosting bats.

10.2.18 The buildings were inspected externally from ground level using close-focussing binoculars and a high-powered torch to search for potential roost features (PRF) that could be used by bats, such as small holes and crevices in soffits or beneath roof coverings, and also potential access points for bats to enter / exit internal areas such as cavity walls. A search was also made for any evidence of bat presence, such as accumulations of droppings and feeding remains or sightings of the animals themselves.

10.2.19 In addition to the above, a further building assessment for bats was conducted by Consultant Ecologist Rob Lamb (MCIEEM) on 6th October 2021 for a row of garages located off Trecastle Way which fall just within the west of the Site.

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6 JNCC. Handbook for Phase 1 Habitat Survey – a technique for environmental audit. Joint Nature Conservation Committee (revised edition. 2010.

7 Stace, C. New Flora of the British Isles. Fourth Edition. C&M Floristics. 2019.

8 IEA. Guidelines for Baseline Ecological Assessment. Chapman and Hall. 1995.

9 CIEEM. Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management. 2017.

10 Natural England class licence registration number 2015-15840-CLS-CLS, survey level 2 (WML-CL18).

11 Collins, J., (ed.) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.). The Bat Conservation Trust. 2016.

10.2.20 Trees on the Site were inspected from ground level and the types and locations of any features that appeared to provide sufficient shelter for bats were recorded, for example woodpecker holes, knot holes, crevices in deadwood or beneath loose bark and other natural fissures and cavities. Any potential indication of bat presence that could be seen was also recorded, for example bat droppings beneath PRF or scratch marks at the entrance. Each PRF was categorised either as Low, Moderate or High potential for roosting bats and, using this data, each tree as a whole was assigned to one of the above categories based on its most suitable feature, or Negligible where no suitable features were present.

10.2.21 The habitats within the Site and immediately adjacent areas were also considered for their general suitability for commuting and foraging bats in order to place the Site in the context of its surroundings, as this can have a bearing on the likelihood of a roost being present.

10.2.22 The assessment of suitability was based on the broad criteria outlined in **Table 10.1** and **Table 10.2** (Collins 2016), combined with the professional judgement and experience of the surveyor in recognising suitable habitat features and field signs of bats. The Bat Tree Habitat Key (Andrews and Gardener 2016[12]) was also used for reference on features in trees, where relevant.

Inspection for Nesting Birds

10.2.23 Inspections for nesting birds were completed at the same time as the building inspection for bats with any evidence of current or former nesting activity recorded.

10.2.24 The buildings and trees were found to still be present and in the same condition during the update Phase 1 Habitat Survey on 1st July 2021.

Table 10.1 Bat Roost Assessment Criteria

Suitability	Description of Roosting Habitats
Negligible.	No features likely to be used by roosting bats.
Low.	A structure with one or more potential roost sites that could be used by individual bats opportunistically, but does not provide enough space, shelter, protection, appropriate conditions and / or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats. A tree of sufficient size to contain potential roost features but none seen from the ground or only those with very limited suitability. (i.e. suitable for occasional day roosting but unsuitable for maternity or hibernation roost).

12 Andrews, H., and Gardener, M. Bat Tree Habitat Key – Database Report 2016. AEcol. 2016.

Suitability	Description of Roosting Habitats
Moderate.	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, condition and surrounding habitat but unlikely to support a roost type of high conservation significance. (i.e. suitable for day roosting but unsuitable for maternity or hibernation roost).
High.	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, condition and surrounding habitat. (i.e. suitable for maternity and / or hibernation roost).
Confirmed Roost.	A structure or tree with evidence of bat presence, i.e. droppings, feeding remains, audible bat calls heard during daytime survey or sightings of the animals themselves, existing (reliable) record of bats roosting at the location.

Table 10.2 Bat Habitat Suitability Assessment Criteria

Suitability	Description of Commuting / Foraging Habitats
Negligible.	No habitat features likely to be used by commuting or foraging bats.
Low.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High.	Continuous, high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.

Bat Activity Transect Surveys 2019

10.2.25 The bat activity transect surveys were undertaken by Consultant Ecologists Victoria Burton (ACIEEM[13]) and Caroline Boffey (ACIEEM) on 18th September 2019 in dry, suitable conditions. The transect surveys began ten minutes before sunset, and were completed 1h 50m later.

[13] Associate Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

10.2.26 Bat activity transect surveys can be used to find out if bats are present or absent and which species, plus the levels of activity and what bats are using the Site for. Two transect routes, undertaken on the same evening by two separate surveyors, were planned around the Site. The location of the transect routes is illustrated in **Figure 10.2** (refer to Baseline Conditions section).

10.2.27 The first route comprised a walk within the Site around the courtyards and the second was a route along the boundary of the Site. Each transect had ten stops. Surveyors walked steadily around the Site recording bat activity, pausing at each stop for three minutes.

10.2.28 The transect routes aimed to cover all parts of the Site which contained potential summer roost features as well as areas with higher, moderate and lower habitat suitability in order to sample all areas.

10.2.29 The survey followed current good practice guidelines published by The Bat Conservation Trust (Collins 2016) and, therefore, the survey techniques and assessment criteria were consistent with industry standard techniques for bat surveys.

Dusk Emergence and Dawn Re-Entry Surveys 2019

10.2.30 The transect survey results were used to target suitable locations for the dusk / dawn survey visit. A total of six locations within the Site were identified for surveyors to be positioned for an emergence or re-entry survey. The locations were selected within areas of higher or moderate bat habitat suitability and where bat foraging activity was recorded during the transect survey.

10.2.31 The surveyors were positioned at vantage points in view of potential roost features, and recorded any bat activity heard or seen. A Batbox Duet bat detector was used to aid detection in the field, and an Anabat SD1 used to record echolocation calls and enable sonogram analysis for confirmation of species identification. Further details of the field survey equipment and sonogram analysis software used are presented in the bat survey reports at **ES Volume 3, Appendix 10.4: Bat Survey Report 2020.**

10.2.32 Surveys were undertaken on the 24th September 2019 (dusk emergence survey) and the 25th September (dawn re-entry survey), both in suitable weather conditions. The surveys were undertaken by Consultant Ecologist Rob Lamb (ACIEEM, Natural England Bat Survey Licence Level 1[14]) and Assistant Ecologists Beth Howes (QCIEEM[15]) and Phoebe Gray.

10.2.33 The dusk survey commenced 15 minutes prior to sunset and continued for one hour, 45 minutes, taking into account the typical emergence times for the species considered likely to be present at the location. The dawn survey took place one hour, 30 minutes before sunrise and finished six minutes before sunrise, taking account the

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[14] Natural England class licence registration number 2020-44441-CLS-CLS.
[15] Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

weather conditions and activity levels detected. Weather conditions were recorded at the start and end of the surveys.

10.2.34 The dusk emergence and dawn re-entry surveys followed current good practice guidelines published by The Bat Conservation Trust (Collins 2016).

Autumn and Winter Bat Surveys 2019 / 2020

10.2.35 During the Site inspection for bats, numerous small slots in the mortar work of the buildings on the Site were assessed as PRF with access into the cavity walls possible in many of these locations. The cavity walls were thus considered potentially suitable for winter hibernation. A two-stage approach was, therefore, devised to ascertain potential for use by hibernating bats in winter. This comprised an initial aerial inspection of potential roost features on the buildings; and a static detector survey covering autumn and winter periods. These approaches are described in more detail below, and both are necessarily bespoke for the Site, but broadly based upon current good practice guidelines published by The Bat Conservation Trust (Collins 2016).

Initial Aerial Inspection

10.2.36 Stage 1 comprised an aerial inspection of PRF on the buildings using a 'spider' mobile elevated work platform to gain access. PRF were then examined using an endoscope[16] (Rigid micro CA-300) to look for evidence of bats or bats themselves. Particular attention was given to the cavity wall ventilation slots that were present throughout the Site. However, due to the size of the Site and of the buildings, a structured sampling approach was followed, where areas were selected for inspection to represent a range of orientations and to focus upon areas assessed as having higher potential value for bats.

10.2.37 The inspection was carried out on the 4th December 2019 by Principal Ecologist Helen Hamilton. Signs or evidence of bats and their roosts were noted, as well as the suitability of PRF identified.

Static Detector Survey

10.2.38 Stage 2 involved the installation of two or three weatherproof SM2 static bat detectors at strategic locations within the Site, and left in-situ for periods of 12 to 16 days. Detectors were placed in suitable locations, at height off the ground. Temperatures were recorded using Tinytag data loggers and software. The dates of the static detector survey programme were as follows:

- Autumn: 24th October to 5th November 2019 (12 nights); three detectors recording from 18:30 for six hours.
- Winter, early: 3rd to 19th December 2019 (16 nights); two detectors recording from 16:30 for six hours.

[16] A long thin flexible tube that has a light and camera on one end. Images are shown on a screen.

- Winter, late: 24th January to 7th February 2020 (14 nights); two detectors recording from 16:00 for 16 hours.

10.2.39 The survey data was then collated and calls and activity hotspots were analysed, revealing information on species present, activity times, types and frequency. Full details of the sonogram analysis software used are presented in **ES Volume 3, Appendix 10.5: Autumn and Winter Bat Survey Report 2020.**

Bat Activity Transect Survey 2021

10.2.40 Due to the period of time that had passed since the original bat activity transect surveys in 2019, an update transect survey was completed on 2nd August 2021 to ascertain general levels of bat activity on and around the Site and to identify any particular hotspots of bat activity.

10.2.41 The update bat activity transect survey was undertaken by Consultant Ecologist Rob Lamb (MCIEEM) on 2nd August 2021 in dry, suitable conditions. The transect survey commenced approximately 30 minutes after sunset for a period of 1 hour.

10.2.42 The update transect route covered all parts of the Site which contained potential summer roost features as identified in 2019 as well as areas with higher, moderate and lower habitat suitability in order to sample all areas.

10.2.43 Further details can be obtained by reference to **ES Volume 3, Appendix 10.7: Update Bat Survey Report 2021.**

Dusk Emergence and Dawn Re-Entry Surveys 2021

10.2.44 Due to the amount of time that had passed since the original dusk emergence and dawn re-entry surveys in 2019, a suite of update dusk and dawn surveys was completed in 2021 focussing on the location of three confirmed common pipistrelle *(Pipistrellus pipistrellus)* summer roosts identified in 2019.

10.2.45 Surveys were undertaken on the 1st July 2021 (dusk emergence survey), 13th July 2021 (dawn re-entry survey) and 2nd August 2021 (dusk emergence survey), all in suitable weather conditions. The surveys were undertaken by Consultant Ecologist Rob Lamb (ACIEEM, Natural England Bat Survey Licence Level 1), Consultant Ecologist Beth Howes (QCIEEM[17]) and Assistant Ecologist Connie Webb.

10.2.46 The surveyors were positioned at vantage points in view of the confirmed roost features, and recorded any bat activity heard or seen. A Batbox Duet bat detector was used to aid detection in the field, and an Anabat SD1 used to record echolocation calls and enable sonogram analysis for confirmation of species identification. Full details of the field survey equipment and sonogram analysis software used are presented in **ES Volume 3, Appendix 10.7: Update Bat Survey Report 2021.**

17 Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

10.2.47 The dusk surveys commenced approximately 15 - 20 minutes prior to sunset, and continued for up to one hour, 45 minutes, taking into account the typical emergence times for the species considered likely to be present at the location. The dawn survey commenced one hour, 30 minutes before sunrise and finished just after sunrise, taking account the weather conditions and activity levels detected. Weather conditions were recorded at the start and end of the surveys.

10.2.48 The row of garages located in the west of the Site and found to have low bat roost potential during the building assessment were also subject to a single dusk survey on 6th October 2021 in accordance with the same methodology as outlined above.

Survey Limitations

10.2.49 It is important to note that the desk study results provide an indication of the species present in and around the Site, but do not confirm current presence or absence of any particular species. Protected species are often under recorded in county wildlife databases.

10.2.50 No access was possible within the interior of the buildings due to health and safety concerns at the time of survey. This was due to the presence of large volumes of animal droppings which required full protective equipment including masks to be used. Given the nature of the building structures with a lack of roof voids and suitable internal features, the lack of internal access was not considered to be a significant constraint; roosts, if present, were considered most likely to be situated on the exterior of the on-Site structures.

10.2.51 Bat activity transect and dusk / dawn surveys in 2019 were carried out within the active period for bats but September is considered too late in the season to detect maternity colonies, which have broken up by this time. Furthermore, the detection of bats in winter is very difficult as some species hibernate fully, and all species are relatively inactive at this time. This difficulty was coupled with the problems of access to such a large structure for detailed inspections. Nonetheless, the combination of building inspections, late season activity surveys, winter aerial inspections and autumn / winter static detector work at the Site was considered to comprise a robust approach. Furthermore, the approach to all bat surveys undertaken was agreed in consultation with the LBI Nature Conservation Manager. An audit trail of this consultation is provided in **ES Volume 3, Appendix 10.1: Consultation Information**).

10.2.52 The update bat activity transect and dusk / dawn surveys in 2021 were carried out within the optimum period for bat survey in July and August 2021.

Ecological Assessment Methodology

10.2.53 This section sets out the methodology applied in assessing the environmental effects of the Development on ecology and to determine the level of significance of those effects. This is referred to as Ecological Impact Assessment (EcIA).

10.2.54 A number of relevant guidance documents were drawn upon throughout the EcIA process. The overall approach was guided by CIEEM's publication 'Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, CIEEM 2019[18]. The Guidelines are intended to promote good practice in EcIA relating to terrestrial, freshwater and coastal environments within the UK and allow for practitioners to refine their own methodology within the broad scope of the guidelines.

10.2.55 The CIEEM approach broadly comprises the following steps:

- Scoping to determine what issues to cover within the EcIA (this should be considered an iterative process that continues throughout the assessment).
- Establishing the baseline of the existing area.
- Identifying important ecological resources/features (value).
- Assessing the potential effects of the project, including cumulative ones.
- Developing mitigation required to avoid adverse effects.
- Assessment of residual effects.
- Compensation if an adverse impact is caused even after mitigation.

Evaluation

10.2.56 **Table 10.3** sets out the evaluation categories used in this assessment. This is based upon the consideration of geographical frame of reference, designated or legal protection status and biodiversity attributes, all described in more detail below. **Table 10.3** was based on CIEEM 2019[19] and adapted to suit the local circumstances of the Site and the Development.

Table 10.3 Nature Conservation Evaluation in Relation to the Geographical Context and Designation of Sites and Ecological Receptors

Description	Relevant Ecological Site or Feature Within Each Class	Level of Importance
International and European.	All internationally important sites such as NATURA 2000 sites – Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Ramsar sites. Species receiving the highest level of protection within the UK legislative framework – European Protected Species (EPS).	Very High.
National.	Sites of Special Scientific Interest (SSSI) and other nationally important sites such as National Nature Reserves (NNR).	High.

[18] CIEEM. Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1. 2019.

[19] CIEEM. Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1. 2019.

Description	Relevant Ecological Site or Feature Within Each Class	Level of Importance
	Species receiving protection under the Wildlife and Countryside Act (WCA) 1981 and its amendments. Priority Species and Habitats in the national Biodiversity Action Plan (BAP) although subject to other considerations such as diversity and rarity.	
Regional, Metropolitan, Borough, vice-county.	These categories typically relate to sites that may be classified as non-statutory 'Local sites', as defined by DEFRA (2006). They are resources that are already, or would merit consideration for designation as, local wildlife sites. Biological Heritage Site (BHS), Local Nature Reserves (LNR), County Wildlife Site (CWS), Regionally Important Geological and geomorphological Sites (RIGS). Regional or Local BAP species and habitats. Birds of high or medium conservation concern (Red or Amber listed).	Medium.
Local.	Typically within the scale of a parish. Species or species assemblages of local interest as identified from local atlases for flora and fauna.	Low.
Within zone of influence / on the subject site.	Ecological resources of value within the boundaries of the subject site or extending to its zone of influence for the feature concerned. Invasive plant species as identified under Schedule 9 of the Wildlife and Countryside Act (WCA)1981[20] and its amendments.	Low

Geographic Frame of Reference

10.2.57 The value of habitats and species can be put into context by placing each ecological site or feature (sometimes referred to as 'receptors') within a geographical frame of reference, which draws upon the CIEEM 2019 Guidelines. Each ecological receptor is placed into one of five geographical categories (refer to **Table 10.3**) which have been adapted to reflect the Site's location in the LBI.

Biodiversity Attributes

10.2.58 The CIEEM 2019 Guidelines also require the identification of various characteristics for each ecological feature that are important in terms of biodiversity, but which are not necessarily related to the geographical frame of reference or designation status. These biodiversity attributes identified by the CIEEM 2019 guidelines comprise:

[20] The Wildlife and Countryside Act 1981 (as amended). London, HMSO.

- Animal or plant species, subspecies or varieties which are rare or uncommon, either internationally, nationally or more locally.
- Endemic species or locally distinct sub-populations of a species.
- Ecosystems and their component parts, which provide the habitats required by the above species, populations and / or assemblages.
- Habitat diversity, connectivity and/or synergistic associations such as species-habitat interdependence.
- Notably large populations of animals or concentrations of animals considered uncommon or threatened in a wider context.
- Plant communities (and their associated animals) considered typical of valued natural / semi-natural vegetation types - these will include examples of naturally species-poor communities.
- Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.
- Species-rich assemblages of plants or animals.
- Typical faunal assemblages which are characteristic of homogenous habitats.

10.2.59 A number of sources of information have been used to assess the importance of the ecological features in terms of biodiversity, including national, regional and local BAPS, local flora and faunal atlases and lists of species of nature conservation concern.

Likely Significant Effects upon European Sites

10.2.60 It is a requirement of the Habitat Regulations 2017 that a plan or project is subject to a Habitat Regulations Assessment (HRA) that considers if that plan or project, alone or in combination, would have a Likely Significant Effect (LSE) upon European Sites. The Habitat Regulations 2017 also require that the HRA process be co-ordinated with the EIA process. In this case the requirement has been met by preparing a separate 'shadow' HRA. The 'shadow' HRA is included at **ES Volume 3, Appendix 10.8: Shadow Habitat Regulations Assessment Report**.

Significance Criteria

10.2.61 The assessment of the significance of the likely ecological effects considers the potential effects on the ecological sites and features identified and characterising the likely ecological effect by referring to the following:

- Whether the effect is direct or indirect.
- Whether the effect is beneficial (positive) or adverse (negative), e.g. in relation to relevant nature conservation objectives / policy.
- Its extent, i.e. the spatial or geographical area over which the effect may occur under a suitably representative range of conditions (e.g. noise transmission under water).
- Magnitude, quantified where possible, e.g. area or individuals affected.

- Duration, e.g. short, medium or long-term.
- Reversibility, i.e. permanent or temporary.
- Frequency, e.g. number of times an effect might occur.
- Timing, e.g. occurring at a critical stage in lifecycle, regular, irregular.

10.2.62 Magnitude refers to size, amount, intensity and volume of the effect on the ecological feature. It is quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population (CIEEM 2018). In this case, baseline surveys and a Biodiversity Net Gain (BNG) calculation have been used to quantify the amount of habitat lost and baseline surveys have been used to estimate the number of individual bats likely to be affected.

10.2.63 **Table 10.4** defines the significance of effects used in the assessment.

Table 10.4: Framework for Categorising the Significance of Each Likely Ecological Effect

Significance Category	Likely Ecological Effect
Major beneficial significance.	Advantageous or positive effect to an environmental resource or receptor. Typically a considerable effect (by extent, duration or magnitude) of more than local significance. Likely to represent a key factor in the decision-making process with effects generally associated with features of National importance, i.e. a feature or features of a High or Very High level of importance.
Moderate beneficial significance.	Advantageous or positive effect to an environmental resource or receptor. Typically a limited effect (by extent, duration or magnitude) which is considered significant. Beneficial effects associated with Regional or District scale considerations i.e. a feature or features of a Medium level of importance, which are likely to be important issues in the decision process.
Minor beneficial significance.	Advantageous or positive effect to an environmental resource or receptor. Typically a slight, very short-term or highly localised effect. Positive effects important at local scale i.e. a feature or features of Low importance but not likely to be key issues in the decision process.
Insignificant.	No significant effect to an environmental resource or receptor.
Minor adverse significance.	Detrimental or negative effect to an environmental resource or receptor. Typically a slight, very short-term or highly localised effect. Effects important at local scale i.e. in relation to feature or features of Low importance but not likely to be key issues in the decision process (generally capable of amelioration by mitigation measures).
Moderate adverse significance.	Detrimental or negative effect to an environmental resource or receptor. Typically a limited effect (by extent, duration or magnitude) which is considered significant. Effects associated with Regional or District scale considerations i.e. a feature or features of a Medium level of importance which are likely to be important issues in the decision process. Mitigation measures required may not be fully successful in entirely mitigating any effect or effects.

Significance Category	Likely Ecological Effect
Major adverse significance.	Detrimental or negative effect to an environmental resource or receptor. Typically a considerable effect (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy of standards. Likely to represent a key factor in the decision-making process with effects generally associated with features of National importance i.e. a feature or features of a High or Very High level of importance. Mitigation measures required may not be fully successful in entirely mitigating any effect or effects.

10.2.64 By definition, an effect of minor, moderate and major significance (either beneficial or adverse) is considered to be significant.

10.3 Relevant Baseline Conditions

Desk Study

10.3.1 A summary of the desk study information is presented in **ES Volume 3, Appendix 10.2: Desk Study Data**. This includes maps showing the Site in context of statutory and non-statutory protected sites and protected and notable species. The desk study data provider (eCountability) stipulates that the full desk study data may not be distributed or published to an external public audience, for example in an appendix to a report. As such, a brief summary overview of the data only is included at **ES Volume 3, Appendix 10.2 Desk Study Data.** An analysis of the data comprising a summary of the records, dates and distance from the Site carried out by Connie Webb, Assistant Ecologist, presented below.

10.3.2 It should be noted that the distances of receptors from the Site is based on the update desk study results from 2021 which used a slightly different central grid reference to that used in the original desk study, hence the distances quoted below are slightly different from those in the 2019 PEA report (refer to **ES Volume 3, Appendix 10.3: Preliminary Ecological Appraisal (PEA) Report 2020)** however this does not result in any material changes to the outcome of the EcIA.

Statutory Protected Sites

European Sites

10.3.3 European protected sites include SAC, SPA, RAMSAR wetland sites[21], possible SAC, potential SPA and proposed RAMSAR sites. Consultation with the search engine MAGIC revealed that there are no European Sites within the 1km search area. However, the nearest European Sites are as follows:

[21] Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

- Lee Valley SPA is located approximately 5km from the Site, notified for supporting overwintering populations of Eurasian bittern (*Botuarus stellaris*) (6% of the GB population five-year peak mean 1992/3 to 1996/7), Shoveler (*Anas clypeata*) (1% of north-western/central Europe population five-year peak mean 1993/4 to 1997/8) and gadwall (*A. strepera*) (1.5% of north-western Europe population five-year peak mean 1993/4 to 1997/8).

- Epping Forest SAC in located approximately 9km from the Site, primarily notified for its Annex I habitat Atlantic beech forest but also supporting Northern Atlantic wet heaths with *Erica tetralix* and European dry heaths as well as stag beetle (*Lucanus cervus),* an Annex II species.

Sites of Special Scientific Interest (SSSI)

10.3.4 SSSI are statutory sites designated to support species of plants and animals that find it more difficult to survive in the wider environment. They represent a selection of this country's best wildlife and geological sites, and cover approximately 7% of the terrestrial area of the country (with over 4,000 separate sites in England).

10.3.5 No SSSI fall directly within the 1km search area for the Site, however, the Site does fall within the Impact Risk Zone of two: Hampstead Heath Woods SSSI 3km north-west of the Site, and Walthamstow Reservoir and Marshes SSSI 5km to the north-east of the Site.

Other Habitats

10.3.6 A number of UK Biodiversity Action Plan (BAP) Priority Habitats[22] were identified within the search area including ancient woodland, hedgerows, neutral grassland and ponds. No Priority Habitats were recorded within the Site boundary.

Non-Statutory Protected Sites

10.3.7 Sites of Importance for Nature Conservation (SINC) are recognised by the Greater London Authority and London Borough Councils as important wildlife sites. A desk-based search shows that there are nine SINC within the search area. **Table 10.5** lists the SINC reported and the reason for their designation.

[22] UK BAP Priority Habitats are a range of semi-natural habitat types that have been identified as being the most threatened and requiring conservation action.

Table 10.5: Sites of Importance for Nature Conservation

Site Name	Approximate Distance from Site	Reason for Interest
Tufnell Park Primary School Gardens.	160m West.	Nature area within primary school grounds. Pond in centre with emergent vegetation including marsh foxtail, watermint, great pond sedge and kingcup. Frogs have been recorded breeding in the pond.
Royal Northern Hospital.	625m North-east.	A park with a good diversity of habitats including amenity grassland, ornamental shrubberies and scattered trees. Approximately 10% of the park has been turned into a wildlife meadow.
Foxham Gardens.	628m North-west.	A small park with native trees and shrubs. A planted boarder along the edge is effectively scrub habitat, providing food and shelter for common birds and insects.
Holloway Road to Caledonian Road Railsides.	671m South-east.	Site includes a section of the Kings Cross main line supporting sizeable areas of ruderal and roughland habitats, with many common birds and butterflies.
Caledonian Park.	672m South.	Managed park, comprising native shrubbery, amenity grassland, flower beds and scattered trees. Part of the amenity grassland is left to grow long in order to encourage wild flowers and insects to colonise.
Market Road Garden.	756m North.	Small garden adjacent to Caledonian Park. Consists of a wildlife garden and an area of parkland with mature trees.
Whittington Park.	809m North.	Park with wildflower meadows, native hedgerows and a small woodland. Good habitat for birds, with regular sightings of mistle thrush, goldfinch and greenfinch.
Gillespie Park.	1km East.	A small ecology park that consists of a mosaic of created habitats, including a pond, woodland and grassland. The grassland of the park extension on former rail sidings is naturally established and unusually species-rich.
Isledon Road Railsides.	1km East.	This site supports open grassy habitats typical of former industrial land.

Protected and Notable Species

Amphibians and Reptiles[23]

10.3.8 Common toad (*Bufo bufo*) were recorded within the study area, the nearest record was 347m south-east of the Site. Multiple records of common frog (*Rana temporaria*) were identified in the search area, the nearest being 208m to the west. One grass snake (*Natrix natrix*) was recorded in 2008, 605m north of the Site boundary. No suitable amphibian (including Great Crested Newts) or reptile habitats were present on Site due to the lack of semi-natural habitat, the small scale of the habitats present and the degree of disturbance to habitats that would have occurred when the site was operational. In addition, the Site is completely isolated from suitable areas of adjacent habitat by the presence of a secure perimeter wall which is a barrier to species other than birds and bats (which can access the Site on the wing).

Bats

10.3.9 The desk study data confirmed no known bat roosts within the study area. **Table 10.6** shows the number of other bat records (non-roosts) and the proximity to the Site of the most recent record for each.

Table 10.6: Bat Species Records

Species		Date	Closest Record (approx. distance from the Site)
Unknown bat species.	*Chiroptera.*	2019.	467m South-east.
Common pipistrelle.	*Pipistrellus pipistrellus.*	Oct 2014.	492m South-east.
Pipistrelle species.	*Pipistrellus sp.*	July 2015.	545m East.
Soprano pipistrelle.	*Pipistrellus pygmaeus.*	2010.	990m South-east.
Nathusius's pipistrelle.	*Pipistrellus nathusii.*	May 2012.	259m South-east.
Nyctalus bat species.	*Nyctalus sp.*	2010.	990m South-east.
Lesser noctule.	*Nyctalus leisleri.*	September 2011.	916m South.
Noctule bat.	*Nyctalus noctule.*	September 2011.	916m South.
Common vesper bats.	*Vespertilionidae.*	Jun to Aug 2008.	561m West.

[23] Note – for species records only those for which an accurate 6-figure grid reference was provided are reported here. Other records for which accuracy is only reported to the nearest 1km or 10km square are summarised in **ES Volume 3, Appendix 10.2: Desk Study Data.**.

Other Mammals

10.3.10 A single record of common shrew (*Sorex Araneus)* was returned dating from 2008 and located approximately 320m to the south of the Site.

10.3.11 Thirteen records of west European hedgehog (*Erinaceus europeaus)* were returned, the most recent dating from 2008 and located 363m east of the Site.

10.3.12 No other mammal records were returned.

Birds

10.3.13 The Red and Amber conservation status assessment (BOU 2017[24]) is based on a number of criteria including historical decline, trends in population and range, rarity, localised distribution and international importance. Red listed species are the most critical group, followed by Amber. Green listed species are of least concern.

10.3.14 Priority Species and Habitats referred to are those of 'Principal Importance' for the conservation of biodiversity in England listed on Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006.

10.3.15 In addition, Schedule 1 species are protected under the WCA 1981 (as amended). It is an offence to intentionally disturb any of these species during the breeding season without a valid licence.

10.3.16 All species of bird recorded are local species of concern in London, except red kite, whimbrel, osprey, sandwich tern, green sandpiper, redwing and fieldfare.

10.3.17 All relevant bird species (i.e. those which might utilise habitats within or near the Site rather than flying over) reported within the search area are listed in **Table 10.7** along with their conservation status. No records were reported within the Site boundary.

Table 10.7: Bird Species Recorded with their Conservation Designations

Common Name	Scientific *Name*	Date of Most Recent Recording	Location and Date of Nearest Record	Amber	Red	Schedule 1	Priority Species (National or London BAP) and/or Section 41 NERC Act
Brambling.	*Fringilla montifringila.*	2015.	680m East. 2015.			✓	
Bullfinch.	*Pyrrhula pyrrhula.*	2010.	220m South. 2010.	✓			✓

[24] British Ornithologists' Union. The British List: A Checklist of Birds of Britain (9th edition). *Ibis*, 160, **190-240**. 2017.

Common Name	Scientific *Name*	Date of Most Recent Recording	Location and Date of Nearest Record	Amber	Red	Schedule 1	Priority Species (National or London BAP) and/or Section 41 NERC Act
Common (mealy) redpoll.	*Acanthis flammea.*	1994.	814m South. 1989.	✓			✓
Dunnock.	*Prunella modularis.*	2019.	603m North. 1989.	✓			✓
Field fare.	*Turdus pilaris.*	2019.	624m North-west. 2017.		✓	✓	
Gold crest.	*Regulus regulus.*	2019.	220m South. 2010.				
Green sandpiper.	*Tringa ochropus.*	2003.	595m North-east. 2003.	✓		✓	
Grey heron.	*Ardea cinerea.*	2019.	605m North. 2008.				
Grey wagtail.	*Motacilla cinerea.*	2017.	595m North-east. 2003.		✓		✓
Herring gull.	*Larus argentatus.*	2019.	786m North-west 2019.		✓		✓
House martin.	*Delichon urbicum.*	2019.	786m North-west. 2019.	✓			
House sparrow.	*Passer domesticus.*	2019.	193m North. 2001.		✓		✓
Kestrel.	*Falco tinnunculus.*	2019.	315m North-west. 2019.	✓			
Lapwing.	*Vanellus vanellus.*	2001.	595m North-east. 2001.		✓		✓
Lesser black-backed gull.	*Larus fuscus.*	2019.	786m North-west. 2019.	✓			
Lesser redpoll.	*Acanthis cabaret.*	2017.	>1km South-west. 2017.		✓		✓
Lesser spotted woodpecker.	*Dendrocopos minor.*	2002.	814m South. 2002.		✓		✓
Linnet.	*Linaria cannabina.*	2017.	743m South-east. 1989.				✓
Little egret.	*Egretta garzetta.*	2014.	>1km South-west. 2014.				
Meadow pipit.	*Anthus pratensis.*	2013.	1km South-west. 2013.	✓			
Mistle thrush.	*Turdus viscivorus.*	2019.	665m North-west. 2008.				
Osprey.	*Pandion haliaetus.*	2015.	>1km South-west. 2012.	✓		✓	

Common Name	Scientific *Name*	Date of Most Recent Recording	Location and Date of Nearest Record	Amber	Red	Schedule 1	Priority Species (National or London BAP) and/or Section 41 NERC Act
Red crossbill.	*Loxia curvirostra.*	2015.	624m North-west. 2015.			✓	✓
Red kite.	*Milvus milvus.*	2017.	>1km South-west. 2017.			✓	
Redwing.	*Turdus iliacus.*	2019.	588m North-east. 2014.		✓	✓	
Ring ouzel.	*Turdus torquatus.*	2017.	624m North-west. 2017.		✓		✓
Rook.	*Corvus frugilegus.*	2008.	320m South. 2008.				
Sand martin.	*Riparia riparia.*	2017.	>1km South-west. 2017.				✓
Sandwich tern.	*Sterna sandvicensis.*	2012.	>1km South-west. 2012.				
Song thrush.	*Turdus philomelos.*	2017.	259m East. 2008.		✓		✓
Spotted flycatcher.	*Muscicapa striata.*	2013.	624m North-west. 2013.		✓		✓
Starling.	*Sturnus vulgaris.*	2019.	259m East. 2008.		✓		✓
Swallow.	*Hirundo rustica.*	2019.	364m East. 2008.				
Swift.	*Apus apus.*	2019.	202m South. 2012.	✓			
Tawny owl.	*Strix aluco.*	2015.	260m North-west. 1989.	✓			
Water rail.	*Rallus aquaticus.*	2004.	595m North-east. 2004.				
Whimbrel.	*Numenius phaeopus.*	2009.	>1km South-west. 2009.		✓	✓	
Willow warbler.	*Phylloscopus trochilus.*	2019.	252m West. 1989.	✓			
Woodcock.	*Scolopax rusticola.*	2019.	615m North-east. 1986.		✓		
Yellow wagtail.	*Motacilla flava.*	2008.	595m North-east. 2003.		✓		✓

Invertebrates

10.3.18 A number of Section 41, local species of conservation concern and Nationally Notable (B) invertebrates were identified within the study area, but none for the Site itself. These are listed in **Table 10.8.**

Table 10.8 Important Invertebrate Species

Scientific Name	Common Name	Section 41	Local Species of Conservation Concern	Nationally Notable (B) or Red List
Dragonflies and Damselflies				
Sympetrum sanguineum.	Ruddy Sympetrum.		✓	
Sympetrum striolatum.	Common Sympetrum.			✓
Beetles				
Lucanus cervus.	Stag beetle.	✓	✓	✓
Butterflies				
Cupido minimus.	Small Blue.	✓	✓	
Lasiommata megera.	Wall.	✓	✓	
Moths				
Calophasia lunula.	Toadflax Brocade.		✓	
Oegoconia caradjai.	Straw Obscure.			✓
Tyria jacobaeae.	Cinnabar.	✓	✓	

Flowering Plants

10.3.19 Several notable plant species were recorded within the study area, the nearest to the Site being a number of large-leaved lime trees (*Tilia platyphyllos*) located 131m north-east of the Site in 2020.

Field Survey

10.3.20 The following appendices present the full field survey information:

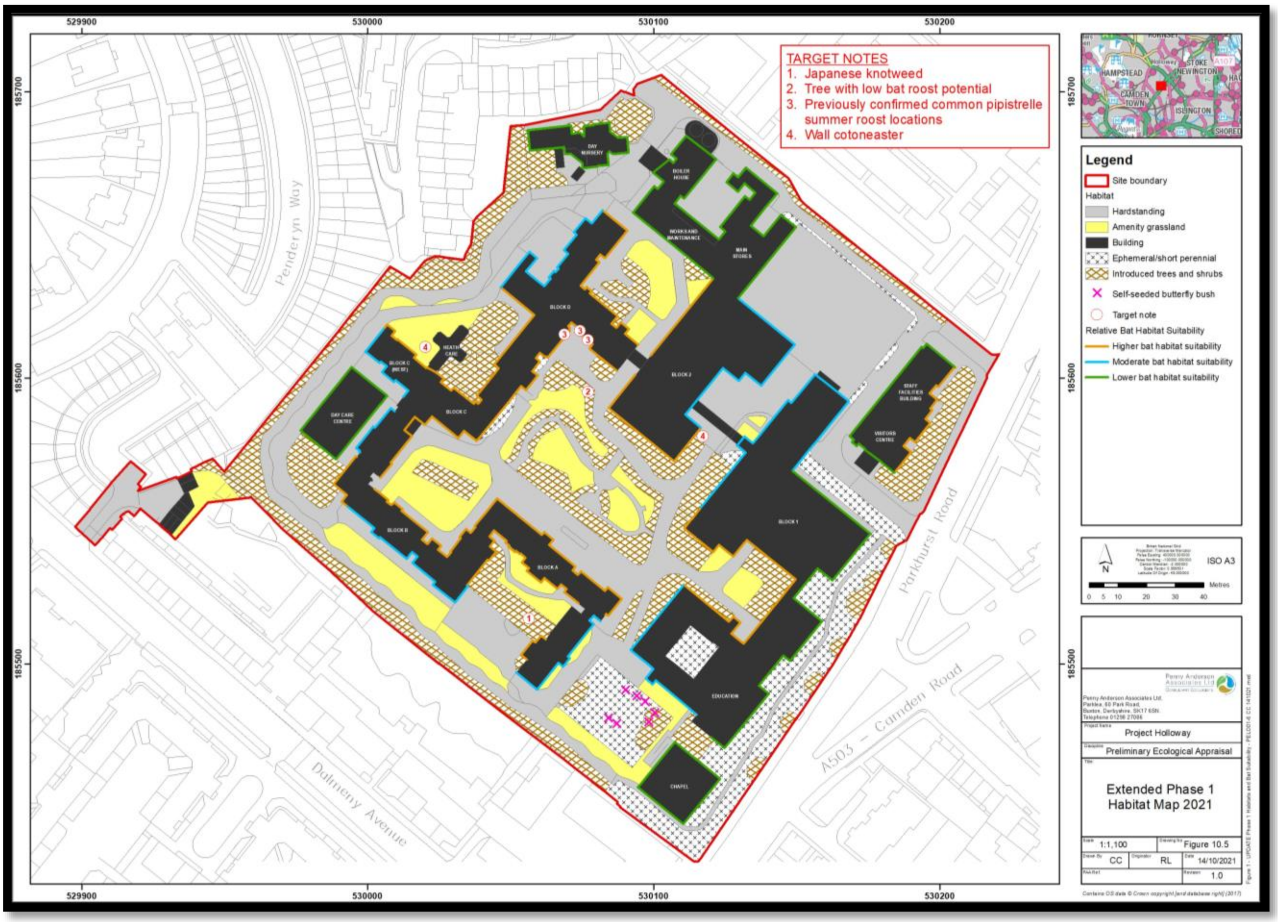
- **ES Volume 3, Appendix 10.3 PEA Report 2020.**
- **ES Volume 3, Appendix 10.4 Bat Survey Report 2020**.
- **ES Volume 3, Appendix 10.5 Autumn and Winter Bat Survey Report 2020.**
- **ES Volume 3, Appendix 10.6 Update PEA Report 2021.**
- **ES Volume 3, Appendix 10.7 Update Bat Survey Report 2021**.

Habitats

10.3.21 The 2019 field survey recorded the following habitats on Site, as illustrated in **Figure 10.1** and in **Photos 10.1** and **10.2**:

- Hardstanding.
- Buildings.
- Introduced shrub and trees.
- Amenity grass.
- Ephemeral short perennial.

Figure 10.1 Phase 1 Habitats and Bat Habitat Suitability Report, 2021



10.3.22 The update survey in 2021 confirmed that the Site was unchanged since 2019 with the exception of the presence of the invasive non-native plant species wall cotoneaster (*Cotoneaster horizontalis*) now recorded.

10.3.23 In summary, the Site was, and remains, unmanaged for some time and areas of introduced trees and shrub and associated amenity grassland planting which occurred throughout the Site in discrete 'garden' areas were becoming overgrown. Patches of ephemeral short perennial vegetation had encroached, in places, into areas of hardstanding.

10.3.24 Trees and shrubs were mainly of exotic, ornamental species and included some mature specimens of silver birch (*Betula pendula),* weeping willow (*Salix babylonica*), Robinia 'Frisia' (*Robinia pseudoacacia* ‘Frisia’), tulip tree (*Liriodendron tulipifera*)and Eucalyptus spp.

10.3.25 The amenity grassland and ephemeral short perennial vegetation was limited in extent and was species-poor.

10.3.26 All plant species were typical of urban landscape planting and amenity grassland.

10.3.27 A single stand of Japanese knotweed was recorded on Site within the landscape plantings of introduced shrubs (see Target Note 1 on **Figure 10.1**). Wall cotoneaster was noted at Target Note 4 on **Figure 10.1**. Both species are listed on Schedule 9 of the WCA, which lists invasive non-native plants which it is illegal to plant or otherwise cause to grow in the wild.

10.3.28 It should be noted that the EIA Scoping Report (refer to **ES Volume 3, Appendix 2.1**) submitted to the LBI in June 2020 included reference to giant hogweed (*Heracleum mantegazzianum*) and Himalayan Cotoneaster (*Cotoneaster simonsii*) being present on site. These species were included in the EIA Scoping Report erroneously and they are not present on the Site. The update Phase 1 Habitat survey in 2021 confirms that these species are not present.

Photo 10.1: Typical Ornamental Tree and Shrub Planting within the Site

Photo 10.2: Typical Amenity Grassland Beneath Ornamental Tree and Shrub Planting

Bats

10.3.29 **ES Volume 3, Appendix 10.4: Bat Survey Report 2020** and **ES Volume 3, Appendix 10.5: Autumn and Winter Bat Survey Report 2020** present the 2019 bat survey data, namely building descriptions and photographs and results of activity transects, dusk / dawn activity surveys and hibernation survey results.

10.3.30 **ES Volume 3, Appendix 10.7: Update Bat Survey Report 2021** presents the updated 2021 bat survey results comprising update dusk / dawn surveys and a repeat bat activity transect.

Building Inspection and Habitat Assessment

10.3.31 The Site is located within an urban area and is surrounded by mainly residential areas, including some properties with gardens and mature planting, particularly to the south and west. It is an extensive Site with many buildings forming part of the former prison complex including cell blocks, staff and visitor facilities, chapel, day care centre, education and maintenance areas. The Site is bounded by a high, brick security wall with a small strip of amenity grassland and amenity trees beyond and the external boundary comprises a mix of wooden fencing and metal railings. Parkhurst Road, to the front (east) of the Site, is a busy, well-lit road. An area in the west of the Site comprises a row of garages and a small number of ornamental planted trees.

10.3.32 The habitat within the Site is assessed as being of low value for bats, with better commuting and foraging habitats to be found in gardens nearby.

10.3.33 A single tree only, a mature eucalyptus (Target Note 2 on **Figure 10.1**), was considered to have low potential to support roosting bats associated with patches of flaking bark located at approximately 4 m above ground level. All other trees were too small and / or lacked suitable roost features.

10.3.34 Opportunities for bat roosting within the buildings are described in **ES Volume 3, Appendix 10.6: Update PEA Report 2021** (including illustrative photos). The building names are shown on **Figure 10.1**.

10.3.35 The external assessment of buildings for bats identified no individual bat roost features of particular note, but there were a large number of PRF which were considered to be of 'Low' potential for summer roosting bats. These comprised primarily small slots in the mortar work which may lead to a wall cavity in the external wall of a number of the buildings, plus a smaller number of minor gaps such as beneath sections of flashing. The update survey in 2021 confirmed that the buildings are still present and unchanged in condition since 2019.

10.3.36 In terms of habitat quality for commuting and foraging bats, the Site is ranked ‘Low’ overall. This is because the Site provides habitat that could only be used by limited numbers of commuting and foraging bats of species that can tolerate artificial lighting, such as common pipistrelle – the Site is in proximity to a busy road with street lighting and situated in a very urban area.

10.3.37 The distribution of potential summer use roost features, combined with areas of higher, moderate and lower suitability for roosting and foraging bats based on the distribution of vegetation cover and levels of disturbance from lighting were used to derive an overall map of bat habitat suitability (refer to **Figure 10.1**).

10.3.38 Many of the buildings were also identified as having potential to support hibernating bats due to the presence of the slots in mortar work which may lead to a wall cavity in the external structure of the buildings.

Dusk Transect Survey 2019

10.3.39 The dusk bat activity transect survey undertaken on 18th September 2019 followed the route detailed in **Figure 10.2**. The findings of the survey are summarised in **Table 10.10**.

Figure 10.2 Bat Transect Activity Results (2019)

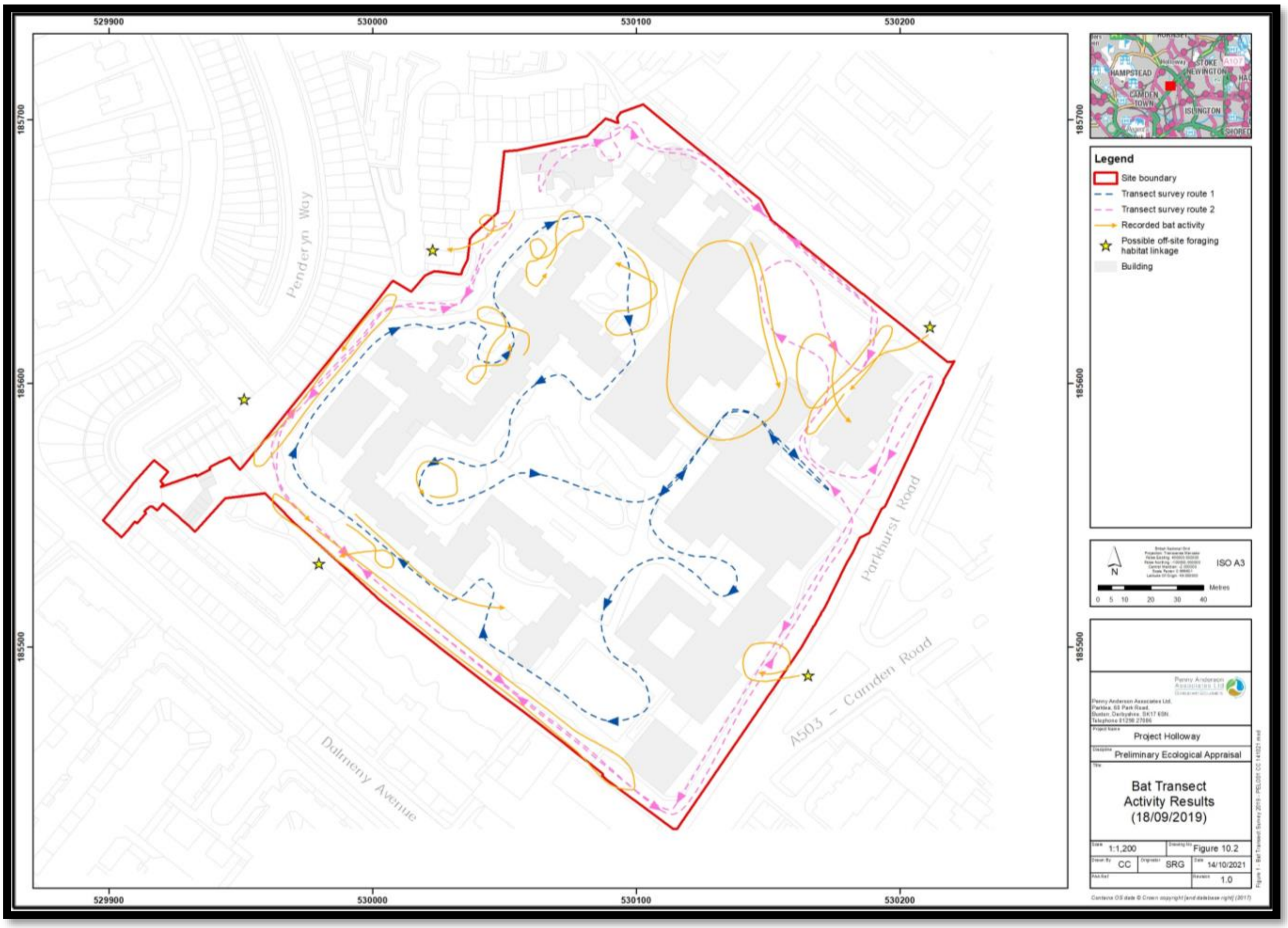


Table 10.10: Bat Activity Transect Results, 18th Sep 2019

Species	First Heard	Potential Emergence on Site	Activity Levels on Site
Common pipistrelle.	19:25.	Low.	Low-Moderate – a small number of bats detected foraging across the Site, first detected 15 minutes after sunset.
Start time: 19:00.	Sunset: 19:10.		End time: 20:50.
Conditions: Dry with light wind and no cloud cover.			
Temperature: 17.9`C decreasing to 14.4`C. Humidity: 54% decreasing to 39%.			

10.3.40 Common pipistrelle (*Pipistrellus pipistrellus*) was the only bat species encountered during the transect survey. Because of the timings of the first encounter with the species at fifteen minutes after sunset, it was considered that these bats were likely roosting nearby.

10.3.41 The transect survey confirmed a low to moderate amount of common pipistrelle activity throughout the Site, with less activity towards the well-lit main road. Less activity was observed in open, vegetated areas, with bats typically foraging around the tops of buildings, particularly in the northern and western part of the Site (see **Figure 10.2**). Possible linkage with off-site foraging habitats was noted to the north, east and west of the Site.

10.3.42 No emergences or roosting behaviour within the Site was observed during the transect walks. The survey recorded areas with low to moderate bat foraging activity and this data was used to inform appropriate surveyor locations for subsequent dusk/dawn survey visits. In particular, the single tree with 'low' bat roost potential (Target Note 2 on **Figure 10.1**) showed no evidence of being used by bats during the transect surveys.

Dusk Emergence and Dawn Re-Entry Surveys 2019

10.3.43 The dusk emergence and dawn re-entry surveys were undertaken on the 24th and 25th September 2019 respectively, with details of the survey presented in **Table 10.11** and **Table 10.12**. **Figure 10.3** shows the location of surveyors and observations made during the surveys.

Figure 10.3 Dusk/Dawn Bat Survey Results (2019)

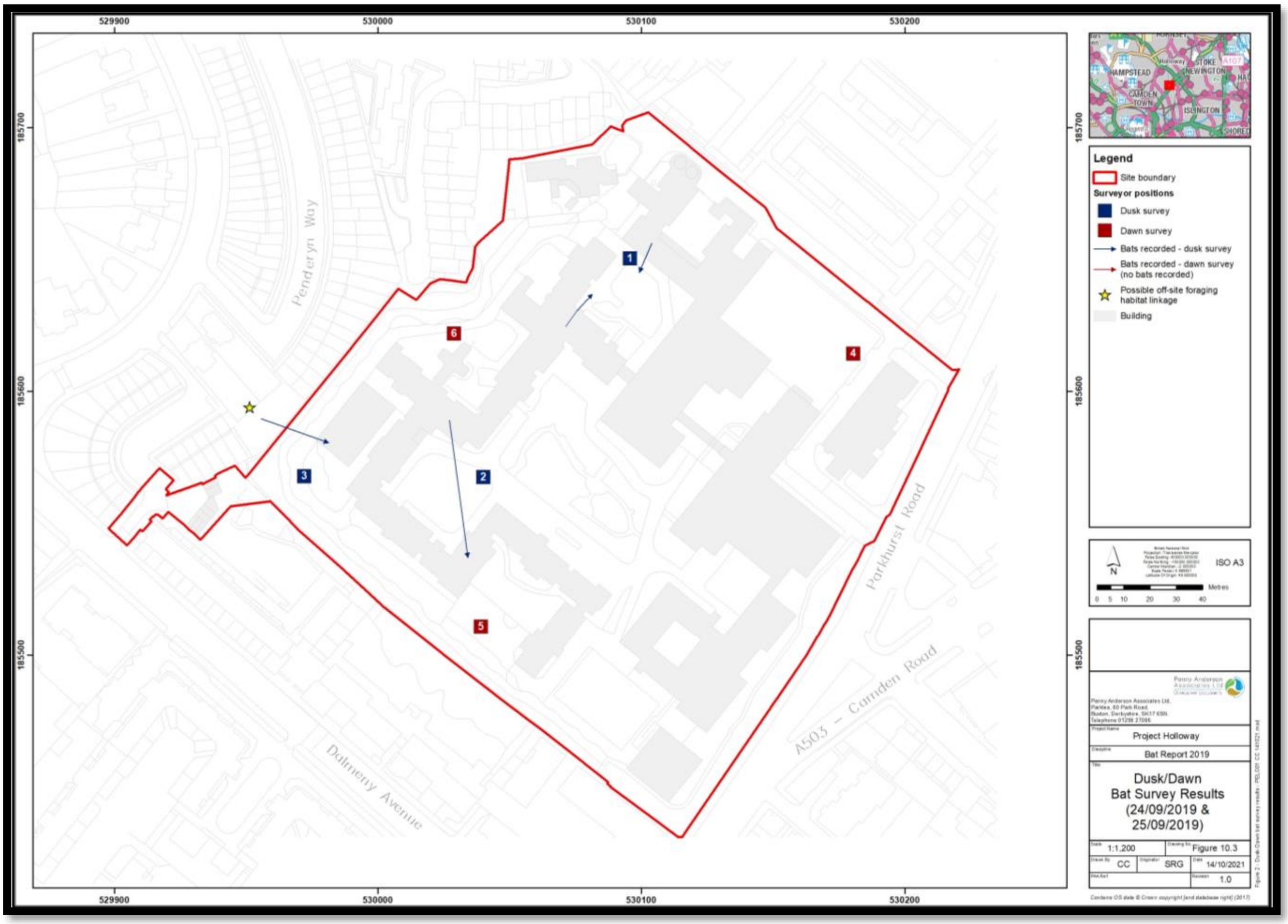


Table 10.11: Bat Dusk Emergence Survey Results, 24th Sep 2019

Location of Surveyor (see Map in Figure 10.3)	Species	First Recorded	Notes
Surveyor 1.	Common pipistrelle.	19:10.	Common pipistrelles observed flying across courtyard at 19:10. Activity in area low but foraging and feeding buzzes detected sporadically in the wider area. No emergences observed.
Surveyor 2.	Common pipistrelle.	19:15.	Occasional common pipistrelle detections from 19:15. Some flying over building roofs within Site and around trees in the courtyard. No emergences observed.
Surveyor 3.	Common pipistrelle.	19:20.	Common pipistrelle seen flying in from off-site at 19:20. Very occasional pipistrelle calls heard during rest of survey. Activity in this area very low.
Start time: 18:40.	Sunset: 18:55.		End time: 20:25.
Conditions: Dry and calm with 60% cloud cover decreasing to 30%.			
Temperature: 17`C decreasing to 16`C. Humidity: 66% increasing to 77%.			

Table 10.12: Bat Dawn Re-Entry Survey Results, 25th Sep 2019

Location of Surveyor (see Map in Figure 10.3)	Species	First Recorded	Notes
Surveyor 4.	Common pipistrelle.	NA.	No bat activity recorded.
Surveyor 5.	Common pipistrelle.	06:02.	Faint common pipistrelle calls heard but not seen on three occasions between 06:02 and 06:17.
Surveyor 6.	Common pipistrelle.	NA.	No bat activity recorded.
Start time: 05:20.	Sunrise: 06:51.		End time: 06:45.
Conditions: Dry and calm to begin with. Light rain from 06:25, becoming heavy from 06:35.			
Temperature: 14`C increasing to 15.3`C. Humidity: 87% decreasing to 85%.			

10.3.44 On the dusk emergence survey, the earliest detected common pipistrelle (**ES Volume 3, Appendix 10.4: Bat Survey Report 2021)** was at 15 minutes after sunset. This indicates that a roost or roosts are likely nearby, although not detected within the Site itself. Surveyor 3 observed a single bat flying in from off-Site from the west, but overall activity was very low in this area. Surveyors 1 and 2 observed foraging activity during the survey in courtyards and around vegetated areas. Surveyor 2 also observed foraging over the buildings. No emergences were observed during the dusk surveys.

10.3.45 The dawn re-entry surveys recorded much less activity. It had rained during the night, but this had subsided at least one hour prior to the commencement of survey and did not, therefore, influence the survey results. Only Surveyor 5 detected bat activity in the form of faint common pipistrelle calls, however, the bats were not seen. Heavy rain began at 06:35, 16 minutes before sunrise, and the survey was ended at 06:45 after only three faint bat calls had been heard by Surveyor 5 and nothing had been detected by the other surveyors.

10.3.46 The single tree with 'low' bat roost potential (Target Note 3 on **Figure 10.1**) showed no evidence of being used by bats on any of the activity surveys.

Autumn and Winter Bat Surveys 2019 / 2020

Aerial Inspection

10.3.47 The roost inspection confirmed bat roosting within three adjacent shallow crevices clustered together on the southern wall of Block D (refer to **Figure 10.1**). The roost locations were confirmed by the presence of droppings in all three locations. DNA testing of dropping samples collected from one of the crevices confirmed their use by common pipistrelle (*Pipistrellus pipistrellus)* (refer to **ES Volume 3, Appendix 10.5: Autumn and Winter Bat Surveys**). These roosts were considered to be summer day roosts as they are so shallow as to provide minimal protection from weather and temperature variations.

10.3.48 The cavity walls inspected were considered to be suitable for winter hibernation, although no winter roosts were found during the inspection. Due to the extensive size of the Site, locating winter roosts is very difficult and, therefore, hibernation within the buildings could not be ruled out.

Static Detector Survey

10.3.49 The first phase of static detector survey was aimed at identifying autumn swarming behaviour of bats by recording bat activity. The results of the survey from three separate detectors are presented in **Table 10.13**.

10.3.50 To investigate winter use of the Site by bats, static detector recordings from two separate winter survey periods were collected. The results are presented in **Table 10.14** and **Table 10.15**, with two detectors being deployed on each survey. The location of the detectors for each survey is presented in **Figure 10.4**.

Figure 10.4 Winter Bat Survey (2019)

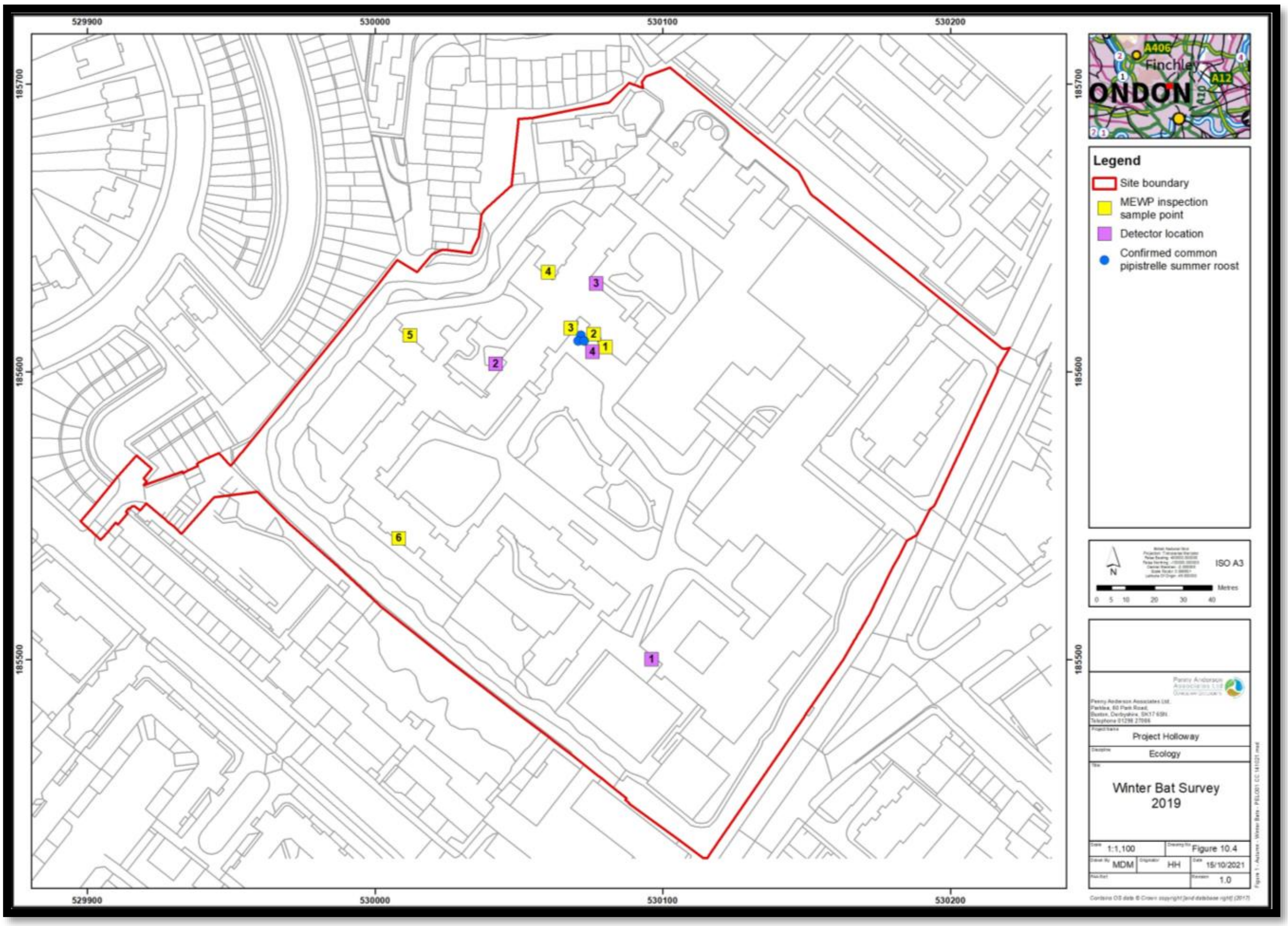


Table 10.13: Results of Static Detector Survey, Autumn (Oct/Nov 2019)

Detector	Number of Nights Bat Activity Detected	Peak Daily Number of Calls	Activity Levels on Site
Location 1.	1.	1.	A single passing common pipistrelle call was detected on 26/10. Activity very low in this area.
Location 2.	0.	0.	No bat call activity detected.
Location 3.	6.	71.	All calls were of common pipistrelle. Activity on average began at 18:30, ceasing 22:48 at latest. Social calls were picked up on three nights from 01/11 onwards.
		Overnight temp:	Min 0.3°C / Average 7.1°C / Maximum 14.8°C.
		Daytime temp:	Min 1.3°C / Average 9.4°C / Maximum 16.5°C.

Table 10.14: Results of Static Detector Survey, Early Winter (Dec 2019)

Detector	Number of Nights Bat Activity Detected	Peak Daily Number of Calls	Activity Levels on Site
Location 3.	3.	10.	This detector picked up a lot of static noise, creating hundreds of noise files. Calls analysed were of common pipistrelle. Earliest calls ranged from 16:31-17:59. The latest detected calls were between 16:45-19:07.
Location 4.	4.	7.	All calls were of common pipistrelle. Earliest call ranged from 16:46 to 17:07 and latest at 16:52-19:05.
		Overnight temp:	Min 0.3°C / Average 5.3°C / Maximum 10.1°C.
		Daytime temp:	Min 0.8°C / Average 6.3°C / Maximum 11.5°C.

Table 10.15: Results of Static Detector Survey, Late Winter (Jan / Feb 2020)

Detector	Number of Nights Bat Activity Detected	Peak Daily Number of Calls	Activity Levels on Site
Location 3.	4.	36.	All calls were of common pipistrelle. When present, evening activity typically commenced at 17:06-17:40 and ceased shortly after at 18:11-18:57. Frequent night time calls were picked up on 01/02 from 01:00 to 02:47.
Location 4.	3.	32.	All calls were of common pipistrelle. When present, evening activity typically commenced at 17:04-17:47 and ceased shortly after at 18:23-18:42. Night time calls were picked up on 01/02 from 00:58 to 02:42.
Overnight temp: Min 2.3°C / Average 6.6`C / Maximum 11.2`C.			
Daytime temp: Min 2.3°C / Average 8`C / Maximum 12.3`C .			

10.3.51 Common pipistrelle was the only bat species recorded on Site throughout the autumn and winter surveys. Example sonograms are presented in **ES Volume 3, Appendix 10.5: Autumn and Winter Bat Survey Report**.

10.3.52 Calls were typically grouped together, occurring within constrained time periods on particular nights. However, overall, these clusters of calls were infrequent across the number of days and nights monitored. It is presumed that these moments of activity amongst days of inactivity are when a bat or bats have chosen to become active due to improved weather and environmental conditions.

10.3.53 Groups of calls were indicative of one or two bats only at any one time and appeared consistent with previous assessments of the Site as supporting activity by low numbers of bats.

10.3.54 When activity was present, it was largely consistent with typical common pipistrelle emergence behaviour; with the first recordings roughly 20-40 minutes after sunset, usually ceasing 60 to 90 minutes later, with few outliers. The only anomalous recording was a period of frequent calls between 01:00 and 02:47 on the morning of 1st February 2020, probably indicating a lone bat foraging in this area. Emergence at 20-40 minutes after sunset is typical common pipistrelle behaviour, with 32 minutes being considered a median time (Jones and Rydell, 1994[25]). The findings of the monitoring programme, therefore, appear to indicate a roost in the close vicinity of the detectors, with a high possibility of this being within the Site.

10.3.55 With three summer day roosts of common pipistrelle having been found on Site, it seems likely that the Site is used in the active bat survey season by low numbers of common pipistrelle bats, for roosting, commuting and foraging.

Update Dusk Transect Survey 2021

10.3.56 The dusk bat activity transect survey undertaken on 2nd August 2021 followed the route detailed in **Figure 10.5**. The findings of the survey are summarised in **Table 10.16**.

Table 10.16: Bat Activity Transect Results, 2nd August 2021

Species	First Heard	Potential Emergence on Site	Activity Levels on Site
Common pipistrelle.	21:10.	NA.	Low to Moderate.
Start time: 21:10.	Sunset: 20:47.		End time: 22:40.
Conditions: Dry with light wind and >90% cloud cover.			
Temperature: 18`C decreasing to 15`C. Humidity: 45% decreasing to 40%.			

10.3.57 Common pipistrelle were already active when the survey commenced. This was the only bat species encountered during the transect survey. The transect survey confirmed a low to moderate amount of common pipistrelle activity throughout the site, with most sightings made in the central courtyard of the site nearby the confirmed roosts and groupings of mature trees. Feeding buzzes and foraging swoops were recorded frequently in this courtyard. The most common pipistrelle observed at the same time was three, in the central courtyard.

[25] J ones, G. and Rydell, J. Foraging Strategy and Predation Risk as Factors Influencing Emergence Time in Echolocating Bats. Philosophical Transactions of The Royal Society B Biological Sciences 346(1318):445-455. 1994.

Update Dusk Emergence and Dawn Re-Entry Surveys 2021

10.3.58 The dusk emergence and dawn re-entry surveys were undertaken on the 1st July (dusk emergence), 13th July (dawn re-entry) and 2nd August (dusk emergence) 2021 with details of the surveys presented in **Table 10.17**, **Table 10.18** and **Table 10.19**. **Figure 10.5** shows the location of surveyors and observations made during the surveys.

Table 10.17: Bat Dusk Emergence Survey Results, 1st July 2021

Location of Surveyor (see Map in Figure 10.5)	Species	First Recorded	Notes
Immediately south of roost locations.	Common pipistrelle (CP).	21:28.	First CP heard/seen at 21:28 flying in from south-west but not seen to emerge. Proceeds to forage courtyard and joined by second CP at 21:32 and a third at 21:36. Re-entry and re-emergence by one CP at 21:42 on east elevation. Courtyard then foraged by up to three CP for rest of survey.
Start time: 20:55.	Sunset: 21:21.		End time: 22:30.
Conditions: Dry and calm. 20-30% cloud cover.			
Temperature: 20`C decreasing to 18`C. Humidity: 41% increasing to 57%.			

Table 10.18: Bat Dawn Re-Entry Survey Results, 13th July 2021

Location of Surveyor (see Map in Figure 10.5)	Species	First Recorded	Notes
Immediately south of roost locations.	CP.	03:36.	First recorded at 03:36, heard not seen (HNS). First seen 04:07, single CP now foraging courtyard. 04:37 re-entry on eastern elevation above ledge of top window. 04:45 re-entry into mortar gap on north elevation near upper of building.
Start time: 03:30.	Sunrise: 04:57.		End time: 05:05.
Conditions: Dry and calm to begin with 70-90% cloud cover.			
Temperature: 18`C decreasing to 16.5`C. Humidity: 69% increasing to 93%.			

Table 10.19 Bat Dusk Emergence Survey Results, 2nd August 2021

Location of Surveyor (see Map in Figure 10.5) and Surveyor Initials	Species	First Recorded	Notes
Immediately south of roost locations.	CP.	20:59.	2x CP emerged from known roost locations at 20:59. These bats foraged the courtyard area nearby the roosts. A third CP then joined from the south, not seen to emerge from the known roost locations.
Start time: 20:30.	Sunset: 20:47.		End time: 21:10.
Conditions: Dry with light wind and >90% cloud cover.			
Temperature: 18`C decreasing to 15`C. Humidity: 45% decreasing to 40%.			

10.3.59 Common pipistrelle was the only species recorded across the three activity surveys. The surveys confirmed the continued use of crevice features as summer day roosts by common pipistrelle, as previously identified in 2019.

10.3.60 Based on the findings and the observations by all surveyors across the three surveys, there were three common pipistrelle foraging in this courtyard area each night shortly after emerging. At least two were using the features which were the subject of these surveys, with a third bat usually joining from elsewhere, emergence unseen.

10.3.61 The update surveys confirmed that the three summer roosts were still present in the same location as during the 2019/2020 surveys and still in active use by a low number of common pipistrelle bats. In addition, the presence of a third bat recorded at emergence time during the final visit on 2nd August 2021 suggests that a further summer roost may be present nearby.

Dusk Emergence Survey 2021

10.3.62 The dusk emergence survey results for the garages within the west of the Site were undertaken on the 6th October 2021 are presented in **Table 10.18** and illustrated in **Figure 10.5.**

Figure 10.5 Bat Transect and Activity Surveys (2021)

Table 10.18: Dusk Emergence Survey Results, 6th October 2021

Location of Surveyor (see Map in Figure 10.5)	Species	First Recorded	Notes
Immediately east and west of garages.	Common pipistrelle (CP).	18:58.	Activity was very low, with only brief CP calls heard 30-35m after sunset by both surveyors. No bats or emergences/interactions with the structure were observed.
Start time: 18:08.	Sunset: 18:27.		End time: 19:30.
Conditions: Dry with light wind and >90% cloud cover.			
Temperature: 18`C decreasing to 15`C. Humidity: 45% decreasing to 40%.			

10.3.63 Although the survey was conducted outside of the optimal survey season the weather conditions and temperature were suitable for bat survey and bat activity, albeit at low levels, was recorded. The garages were noted to be well lit at night and this was considered a likely deterrent to use for roosting.

Bat Habitat Connectivity

10.3.64 The combined results of all bat activity surveys from 2019 and 2021 were used to inform an overall plan of off-Site bat habitat connectivity illustrated in **Figure 10.6.** This plan was collated from the observations made during surveys when bats were recorded flying onto and off-Site from/to adjoining habitat. It shows where the key off-Site bat habitat connectivity linkage is located.

Figure 10.6 Bat Transect and Activity Surveys (2021)

Other Protected Species

10.3.65 No other protected species were noted and the Site was considered to have negligible potential to support protected species other than breeding birds which were likely to nest and forage within trees and shrub vegetation across the Site. The lack of potential for other species is due to the lack of semi-natural habitat, small scale of habitats present, degree of disturbance that would have occurred when the Site was operational and complete isolation of the interior of the Site from adjacent habitats by the presence of the secure perimeter wall which is a complete barrier to the movement of species other than bats and birds.

Invasive Species

10.3.66 Japanese knotweed was recorded on Site. This species is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as a non-native invasive plant which is illegal to plant or otherwise cause to grow in the wild. It is also a London Invasive Species Initiative (LISI[26]) category 3 species; considered to be a plant of high impact or concern which is widespread in London and requires concerted, coordinated and extensive action to control/eradicate. Such species are species currently causing large scale impacts across London and LISI supports area or catchment wide partnership working to ensure their effective management.

10.3.67 In addition, wall cotoneaster was also recorded during the update survey in 2021. This species is also listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

10.4 Baseline Summary and Evaluation

Summary of Ecological Receptors and Level of Importance

10.4.1 Each ecological feature (receptor) identified during baseline surveys and desk study is summarised in **Table 10.20** with a corresponding Level of Importance allocated in accordance with the criteria in **Table 10.3.** Further details are provided in the paragraphs that follow.

Table 10.20 Summary of Ecological Receptors and Level of Importance

Ecological Receptor	Summary Description	Level of Importance (in accordance with criteria in Table 10.3)
Epping Forest SAC.	European Designated Site designated for its internationally important habitats and associated species located approximately 9km from the Site.	Very High.
Lee Valley SPA.	European Designated Site designated for its internationally important populations of bird species located approximately 9km from the Site.	Very High.
Tufnell Park Primary School Gardens SINC.	Locally designated site supporting a pond and common frog located 160m to the west.	Medium.
Royal Northern Hospital SINC.	Locally designated site supporting a diversity of habitats located 625m to the north-east.	Medium.

[26] http://www.londonisi.org.uk/

Ecological Receptor	Summary Description	Level of Importance (in accordance with criteria in Table 10.3)
Habitats within the Site.	Essentially man-made habitats comprising buildings, hardstanding and ornamental landscape planting.	Low.
Roosting and foraging bats.	Three small summer roosts of low numbers of common pipistrelle bat in shallow crevices of Block D and potential for hibernation use by common pipistrelle in cavity walls throughout the Site.	Very High.
Nesting and foraging birds.	None confirmed but ornamental shrubs and trees likely to provide some nesting and foraging opportunities.	Low.

Statutory Protected Sites

10.4.2 The two European Sites located closest to the Site are:

- The Lee Valley Special Protection Area (SPA). Located approximately 5 km north-east of the Site, this SPA is notified for supporting overwintering populations of Eurasian bittern bittern (Botuarus stellaris), Shoveler (Anas clypeata), and Gadwall (A. strepera).
- The Epping Forest Special Area of Conservation (SAC). Located approximately 9 km north-east of the Site, this SAC is primarily notified for its Atlantic beech forest and for supporting Northern Atlantic wet heaths, European dray heaths and assemblages of Stag beetles (*Lucanus cervus*).

10.4.3 No statutory protected sites are present within the 1km desk study search area and there is no habitat connectivity between the Site and these European Sites. A separate 'shadow' HRA was prepared which sets out a formal screening exercise in respect of the Lee Valley SPA and Epping Forest SAC **(refer to ES Volume 3, Appendix 10.8: Shadow Habitat Assessment Regulations Report).**

Evaluation

10.4.4 European sites are evaluated as having 'Very High' importance.

Non-Statutory Protected Sites

10.4.5 In terms of non-statutory protected sites, there are nine SINC within the study area, the nearest of which are:

- Tufnell Park Primary School Gardens located 160m to the west of the Site and which supports a pond with common frog.

- The Royal Northern Hospital SINC is located approximately 625m north-east of the Site - cited as a park with a good diversity of habitats including amenity grassland, ornamental shrubberies and scattered trees.

10.4.6 There is no habitat connectivity between these SINC and the Site due to the presence of existing built development.

Evaluation

10.4.7 Local wildlife sites such as SINC are evaluated as having 'Medium' importance.

Habitats

10.4.8 No Priority Habitats were identified in the desk study as being located within the Site or immediately adjacent.

10.4.9 This was confirmed by the habitat survey, which found that habitats on Site were all man-made and lacking semi-natural characteristics. They comprised hardstanding, buildings, introduced trees and shrubs, amenity grassland and ephemeral short perennial vegetation. Species were typical of urban landscape planting and amenity areas and included a number of exotic and ornamental trees and shrubs. Due to a lack of recent management the habitats had become overgrown with patches of ephemeral short perennial vegetation established in areas of former hardstanding.

Evaluation

10.4.10 Habitats were evaluated together as having value within the Site, and thus given 'Low' importance.

Bats

10.4.11 Five species of bats were reported within the search area from the desk study, with records of common (*Pipistrellus pipistrellus*), soprano (*P. pygmaeus*) and Nathusius pipistrelle (*P. nathusii*), noctule (*Nyctalus noctula*), Leisler’s (*N. leisleri*) and non-specific bat species reported between 2008 and 2019. These range from *c*.260m to *c*.1km distance from Site.

10.4.12 On Site, only common pipistrelle was recorded across all surveys. In 2019/2020 this included a series of three late season activity surveys (September 2019) and three periods of autumn/winter static detector surveys (total 42 nights with dates from October 2019 through to February 2020), which recorded commuting, foraging and social calls. Update surveys in 2021 also recorded only common pipistrelle.

10.4.13 Three summer day roosts for common pipistrelle bats were confirmed from the aerial inspections, in shallow crevices on the southern wall of Block D in 2019 and were confirmed as still present and in active use by low numbers of common pipistrelle during dusk/dawn activity surveys in summer 2021. The crevices are so small that each could only support a single bat. The presence of other summer roosts in similar features elsewhere on site cannot be ruled out based on the observation of a common pipistrelle bat at emergence time but from another, nearby location during dusk survey in August 2021.

10.4.14 The aerial inspection also assessed other cavity wall spaces accessed through the mortar slots as being suitable for winter hibernation. The single tree with 'low' bat roost potential showed no evidence of being used by bats on any of the activity surveys. With this and the confirmed common pipistrelle activity recorded during autumn and winter at typical emergence times, there is sufficient evidence to indicate a high probability of common pipistrelle hibernation roost(s) being present on site. Given the levels of activity recorded during autumn and winter, the Site appears to support only low numbers of bats.

10.4.15 Common pipistrelle is listed in Matthews *et al* (2018)[27] as having a favourable conservation status in England, although roost counts show consistent and significant declines. The species is considered to be very adaptable, occurring from urban centres to rural human settlements across almost all habitats (Dietz et al 2009)[28]. It roosts in a variety of crevice like spaces on buildings, such as behind building cladding and under roof coverings, with winter roosts probably also in buildings. It is the UK's commonest bat species, and the most likely bat to find in city centre and suburban locations. The presence of any bat roost, no matter how small, is considered to be of importance in Islington (LBI Ecologist, pers. comm.).

10.4.16 The desk study shows that a diverse range of bat species are present in the locality, but the field surveys indicate that the Site itself is used only by common pipistrelles. This is most likely a reflection of the overall low quality habitat currently on Site, and its limited offer of invertebrate prey and roosting sites.

Evaluation

10.4.17 Bats are European protected species, and evaluated as having 'Very High' importance.

Birds

10.4.18 The desk study reported over thirty bird species from within the study area between 1989 and 2019, though none from the Site itself. These comprised a diverse range of species including red and amber Birds of Conservation Concern (BOU 2015[29]), Schedule 1 birds (Wildlife and Countryside Act 1981) and 'Priority' species (Section 41 of the NERC Act 2006). Recent records exist for swift, swallow, house martin, grey wagtail, house sparrow and starling which (among other birds) could potentially use habitats on site.

10.4.19 The Site itself showed potential to provide habitats a range of suburban garden birds, including breeding activity - especially within trees and shrub areas.

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[27] Mathews F., Kubasiewicz L. M., Gurnell J., Harrower C. A., McDonald R. A., Shore R. F. (2018) *A Review of the Population and Conservation Status of British Mammals*. The Mammal Society.
[28] Dietz, C., von Helversen, O., Nill, D. (2009). *Bats of Britain, Europe and Northwest Africa.* A&C Black.
[29] British Ornithologists' Union. The British List: A Checklist of Birds of Britain (9th edition). *Ibis*, 160, **190-240**. 2017.

Evaluation

10.4.20 The current bird fauna is considered to be of value only within the Site itself, a 'Low' level of importance.

Other species

10.4.21 Other records in the study area included common toad and common frog approximately 400m to the north and hedgehog recorded 230m to the south. At present the Site is isolated from nearby colonisation areas and physically inaccessible for these species due to the perimeter security wall of the prison.

10.4.22 No other protected species were found and the Site is considered to have negligible potential to support them at present.

10.4.23 Japanese knotweed and wall cotoneaster were recorded on Site. These species are listed on Schedule 9 of the WCA, which lists invasive plants and it is illegal to plant or otherwise cause to grow in the wild any plant listed.

10.4.24 These species are not evaluated.

10.5 Likely Effects of the Development and their Significance

The Works

10.5.1 The following likely significant effects that are considered are:

- The loss and / or displacement of on-Site habitats during the Works.
- The potential displacement and risk of injury / killing / disturbance of protected nesting birds during the Works.
- The potential displacement and risk of injury / killing / disturbance of protected bats during the Works.
- Disturbance to non-statutory SINCs in proximity to the Site and relevant European Sites during the Works.

10.5.2 Each of these effects is described and assessed in more detail below.

Inherent Mitigation within the Works

10.5.3 The Applicant has committed to implementing a Construction Environmental Management Plan (CEMP) during the Works, details of which are included within **Chapter 6: The Works**. An Outline CEMP is submitted as a stand-alone supporting document to the planning application and following the grant of detailed planning permission and once the Principal Contractor has been appointed, the CEMP would be further developed to include details of the proposed methodologies, programme, method statements and detailed mitigation measures. The contents of the CEMP would then be discussed and agreed with planning and environmental health officers of the LBI. It is anticipated that the CEMP would be secured by planning condition. Specific measures relating to ecology that would be included in the CEMP are:

- Phasing of specific sections of the demolition works to ensure that they are undertaken in accordance with the bat licence to be obtained from Natural England prior to the commencement of demolition works. The CEMP would include the detailed method statements that set out timing and methods for demolition including measures such as on-Site ecological supervision and sensitive, soft-strip of roost features as well as the avoidance of demolition of buildings that have hibernation roost potential during the core hibernation period.
- Undertaking the clearance of vegetation with the potential to support nesting birds outside the nesting season which is March to August inclusive. If that is not possible, a check for nesting birds would be undertaken immediately beforehand. Should any active nests be found, then they would be provided with a buffer of at least 5m until the young have fully fledged and left the nest.
- Measures to protect retained trees including the erection of tree protection fencing around the root zones of retained trees in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'[30] and NJUG 4 Guidelines[31] to prevent effects associated with the encroachment of construction vehicles and plant. Further detail on this is included with the Arboricultural Impact Assessment which is submitted as a stand-alone document in support of the planning application.
- Measures to minimise vibration and dust arisings, including when necessary, regular damping down of the Site by spraying with water and covering stockpiled material within a contained area, where required, to enable run-off to be treated.
- Measures to minimise noise across the Site including selection of the quietest working equipment available where practical (for example, electric / battery powered equipment which is generally quieter than petrol / diesel powered equipment) and the use of hydraulic construction methods and demolition 'munchers' in preference to impact techniques where practical.
- Pollution prevention measures including procedures for oils, chemicals and other potentially contaminative construction material storage designed to prevent the release of any accidental spillages and effects associated with contaminated surface run-off.

Loss of / Disturbance to on-Site Habitats

10.5.4 The Works would result in the removal of existing habitats which essentially comprise man-made habitats of ornamental landscape planting as well as buildings and hardstanding. A substantial number of trees would be retained as an inherent part of the Development (29 individual trees including a London Plane Category A tree, three tree groups and 3 trees would be translocated) and incorporated into the proposed areas of greenspace. Disturbance to retained trees would be avoided through the adoption of best practice tree protection measures

30 The British Standards Institution. BS 5837:2012: Trees in Relation to Design, Demolition and Construction – Recommendations. 2012.

31 National Joint Utilities Group (NJUG). Guidance for the planning, installation and maintenance of utility apparatus in proximity to trees NJUG Volume 4. 2007.

as noted above during the Works. The removal and disposal of invasive non-native species, namely Japanese knotweed and wall cotoneaster would be controlled through best practice measures implemented by a suitable contractor. It is recognised that ample replacement habitat would be provided by the completed and operational Development (refer to later in this Chapter). However, to ensure a worst-case assessment, and recognising that there would likely be a time-lag to replace the habitat loss and that habitat lost would not be exactly replicated, the likely effect is judged to be **permanent**. Thus, the loss of habitats would be a **direct, local, permanent** effect on features of **Low** importance. As such, the effect would be of **minor adverse significance**.

Potential Displacement / Harm to Bird Species

10.5.5 The Works would result in the removal of existing habitats, in particular ornamental tree and shrub planting, that have the potential to be used by urban breeding bird species. All wild breeding birds and their nests are protected by the Wildlife and Countryside Act 1981 (as amended). As noted above, whilst a substantial number of trees would be retained, it is likely that the levels of disturbance during the Works would be a deterrent to nesting and that birds would be temporarily displaced from those parts of the Site where the Works were taking place. This disturbance effect would be mitigated by phasing of the Works such that not all parts of the Site would be subject to disturbance at the same time (refer to **ES Volume 1, Chapter 6: The Works**). In addition, as noted above, the risk of harm to more tolerant species of nesting birds that may still attempt to nest during the phased demolition process would be avoided through the adoption of best practice measures during vegetation clearance, by making sure that all vegetation clearance takes place outside of the nesting season March to August inclusive, or is undertaken subject to checks by an ecologist.

10.5.6 Whilst bird nesting and foraging habitat would ultimately be replaced (refer to assessment of effects of completed and operational Development later in this Chapter) this assessment is based on a worst-case scenario which acknowledges that there will be a time-lag before suitable habitats for birds are replaced and that they will not be exactly replicated. In view of the above, the risk of disturbance to birds during the Works would be, at worst, an **indirect, local, permanent** effect on a feature of **Low** importance only. This would be an effect of **minor adverse significance.**

Potential Displacement / Harm to Bats

10.5.7 The Works would result in the removal of three confirmed summer roosts for low numbers of common pipistrelle bat located in Block D as well as the removal of ornamental landscape planting which provides foraging habitat for common pipistrelle bats and connectivity to other, off-Site habitats. The Works would also result in the removal of buildings that are likely to contain hibernation roost potential, specifically those which contain cavity walls and ventilation slots that allow access to the cavity. This comprises the main former Prison blocks (Block 1 and Block 2, and Blocks A-D) as well as the adjoining Works and Maintenance Building. It is not possible to avoid the loss of the roost / potential roost features through design since they are contained within the existing buildings that must be removed.

10.5.8 The substantial number of trees that would be retained would provide on-Site foraging habitat and habitat connectivity but would be subject to disturbance during the Works which would likely result in the temporary displacement of bats. This disturbance effect would be mitigated by phasing of the Works such that not all parts of the Site would be subject to disturbance at the same time. In addition, the risk of harm to bats would be avoided, as noted above, through obtaining a licence from Natural England prior to commencement of demolition. The bat licence would contain a detailed Method Statement that would set out timing and methods for demolition, including measures such as on-Site ecological supervision and sensitive, soft-strip of roost features as well as avoidance of demolition of buildings that have hibernation roost potential during the core hibernation period. Guidance on hibernation roost times state use from November to March (Mitchell-Jones 2004[32]). However, given the southerly, milder location of the Site, located within the Greater London conurbation, it may be possible to reduce the core winter period within the licence to December to February.

10.5.9 It is expected that there would be no timing restrictions in relation to the three summer roosts as these are non-breeding roosts used by low numbers of non-breeding common pipistrelle and, as such, could be removed at any time, under ecological supervision.

10.5.10 In addition to the three confirmed summer roosts it is also possible that other (as yet undetected) summer roosts associated with similar roost features may be present elsewhere across the Site. This comprises the same buildings as for hibernation potential i.e. the main former Prison blocks (Block 1 and Block 2, and Blocks A-D) as well as the adjoining Works and Maintenance Building. A suitably precautionary approach to demolition would be adopted in respect of potential for summer roosts as follows:

- A toolbox talk carried out by a licenced bat ecologist.
- Contractors to remain vigilant for bats during all demolition phases of works.
- Carrying out demolition during the active bat season when bats are least vulnerable to disturbance.
- Demolition to be overseen by a licenced bat ecologist.

10.5.11 Taking into account the above ‘embedded’ and tertiary mitigation, the only remaining effects on bats during the Works would be the loss of foraging habitats and habitat connectivity and the loss of the roosts themselves as well as disturbance to retained habitats (trees). The loss of habitats for bats and the bat roosts themselves would be a direct, local effect on a feature of **Very High** importance by virtue of bats being a European Protected Species. However, this effect should be placed in the context of the bat species involved i.e. common pipistrelle which are relatively widespread in the UK as whole but considered important at the Borough level, and the numbers of bats involved which the surveys have confirmed are low, including during the winter hibernation period.

[32] Mitchell-Jones, A.J. Bat Mitigation Guidelines*.* English Nature. 2004.

10.5.12 It is recognised that ample replacement foraging habitat and roosting provision for bats would be provided by the completed and operational Development (refer to later in this Chapter). However, to ensure a worst-case assessment, and recognising that there would likely be a time-lag to replace the foraging habitat and roosting provision loss and that the existing habitat/roost features would not be exactly replicated, the likely **direct, local** effect of **major adverse significance** is judged to be **permanent.**

Disturbance to Designated Sites

10.5.13 The nearest SINC is Tufnell Primary School located 160m to the west of the Site. It is separated from the Site by existing built development with no direct habitat connectivity. It is therefore concluded that the Works would have no effect on this SINC. All other SINC are greater than 600m from the Site with no direct habitat connectivity and, again, it is concluded that there would be no effect on these SINC arising from the Works.

10.5.14 The likely significant effects of the Works in relation to European Sites is considered in detail in the Shadow HRA (**ES Volume 3, Appendix 10.8: Shadow Habitat Regulations Assessment Report**). In summary, it is concluded that the Works would not give risk to any likely significant effect in relation to European Sites.

10.5.15 To conclude, there would be an **insignificant** effect on non-statutory SINCs or European Sites.

The Completed and Operational Development

10.5.16 The following likely significant effects that are considered are:

- The long-term change in habitat type and ecological value on-Site as a result of any ecological enhancements associated with the completed and operational Development.
- The long-term change in provision for protected species, namely nesting birds, bats and invertebrates.
- Disturbance to non-statutory SINCs in proximity to the Site and relevant European Sites resulting from activities associated with the completed and operational Development.

10.5.17 Each of these effects is described and assessed in more detail below.

Long Term Change in Habitat Type

10.5.18 The completed and operational Development includes a substantial amount of greenspace with ecologically sensitive landscape planting which seeks to address the Urroofsban Greening Factor (UGF) requirements of Policy G5 'Urban Greening' of the London Plan 2021[33] which would provide new habitats suitable for use by urban nesting bird species and foraging / commuting bats. The Development would have an UGF of 0.42. Further details on the

[33] Greater London Authority, 2021. *The London Plan – The Spatial Development Strategy for Greater London March 2021.* GLA, London.

Development's UGF and the associated calculations are set out in the Open Space and Recreation Assessment and Landscape Design Strategy which is submitted as a stand-alone supporting document to the planning application.

10.5.19 A substantial number of existing trees would be retained and further habitats and ecological features have been included in the Development.

10.5.20 A key ecological consideration has been the replacement of bat foraging habitat and the maintenance of off-Site habitat connectivity to ensure that the common pipistrelle bat population is sustained, if not enhanced.

10.5.21 In summary, the key habitat provision within the Development would comprise:

- Retained trees and provision of 350 new trees including native species and non-native species of wildlife value to provide nectar-rich flowers, fruit, nuts and berries as a foraging resource for invertebrates, bird and bats. Species include apple (*Malus domestica*), pear (*Pyrus communis*), plum (*Prunus domestica*), rowan (*Sorbus aucuparia*), common lime (*Tilia x europaea*), wild cherry *(Prunus avium) and juneberry (Amelanchier lamarkii).*
- Species-rich lawns within communal courtyards. These would comprise rolled lawns with a diverse mix of grass species to encourage invertebrates and, in turn, increase foraging value for birds and bats.
- Diverse, perennial and shrub planting comprising native and non-native wildlife beneficial species that have been selected to suit the sunny or shaded positions that they will occupy e.g. wood anemone (*Anemone nemorosa and* wild garlic (*Allium ursinum in* shaded areas and blackberry (*Rubus fruticosus),* gooseberry (*Ribes uva-crispa)* and lavender (*Lavendula angustifolium)* in sunnier locations.
- Filtration garden/raingarden areas with native and non-native species suited to the damper conditions e.g. purple loosestrife *(Lythrum salicaria),* pendulous sedge *(Carex pendula),* great wood rush (*Luzula sylvatica)*, native ferns and *veronicastrum* spp.
- Biodiverse roof terraces on all Plots comprising areas of brown roof sedum planting and / or species-rich green roof planting.

10.5.22 Further detail of habitat provision is provided on the Landscape Plans and in the Open Space and Recreation Assessment and Landscape Design Strategy which was submitted as a stand-alone document in support of the detailed planning application.

10.5.23 The overall objective has been to ensure that the Development provides a biodiversity net gain (BNG) in terms of both habitat extent and condition, as well as ensuring that the Site continues to support urban nesting birds and both summer and winter roosting / foraging common pipistrelle and links to off-Site habitats.

10.5.24 It is considered that the design has successfully achieved this objective. The biodiversity net gain has been calculated and quantified using the Defra Metric version 3.0 with the detailed results presented in the update Preliminary Ecological Appraised (PEA) report (**ES Volume 3, Appendix 10.6: Updated PEA Report 2021**). In summary the Development results in a net gain of +16.98%.

10.5.25 In conclusion the effect of the operational and completed Development on habitats (and the protected species which these habitat support) would be **direct, local, long-term** on a feature of **Low** importance. This effect would be of **minor beneficial significance** at the year of completion with the expectation that the biodiversity value of the new habitat provision would increase over time. As such the assessment is considered to represent a worst-case.

Long-Term Change in Provision for Protected Species

10.5.26 The completed and operational Development would include features specifically targeted at maintaining and enhancing provision for protected species, namely urban breeding bird species, roosting / foraging bats (both summer and winter use) and the introduction of features for invertebrate species. The features that have been included in the Development are:

- 8 no. of summer bat roosts integrated within buildings in Plots A, B and D.
- 8 no. of hibernation bat roosts integrated within buildings in Plots A, B, D and E.
- On-Site bat foraging habitat and off-Site habitat connectivity through the inclusion of substantial areas of new landscape planting which reflect the existing habitat location and extent.
- Adoption of best practice lighting to minimise disturbance to wildlife in accordance with Bat Conservation Trust and Institution of Lighting Professionals (2018)34 . In particular this would avoid direct illumination of artificial bat roost features.
- 7 no. of starling boxes installed on retained trees in the Public Garden and the Trecastle Connection.
- 7 no. of swift nest boxes integrated within buildings in Plots A and B.
- 4 no. of bug hotels, located across the Development.

10.5.27 The Development would therefore result in a net increase in available roost provision for common pipistrelle bats, coupled with strategically located habitats to maintain on-Site and off-Site foraging and habitat connectivity. The location of off-Site bat flight routes recorded during baseline bat surveys is illustrated in **Figure 10.6**. It is anticipated that the provision for bats would be sufficient to not only maintain but potentially increase the local common pipistrelle bat population. The specification of lighting in accordance with best practice guidance, as noted above, to minimise disturbance to wildlife would also ensure that the Development would not adversely impact on bat roosting and foraging activity. In any case, the only bat species recorded using the Site, namely common pipistrelle, is tolerant of lighting provided this avoids direct illumination of roosts.

[34] Bat Conservation Trust and Institution of Lighting Professionals. Bats and Artificial Lighting in UK – Bats and the Built Environment Series Guidance Note 08/18. 2018.

10.5.28 For bird species, there is currently no evidence on-Site of use by starling or swift and the Development would therefore result in a net increase in provision for these urban bird species. In addition, it is anticipated that areas of proposed landscape planting would maintain provision for other tree / shrub nesting species that may currently use the Site for example house sparrow, ensuring no net loss of these species.

10.5.29 Similarly, the Site is currently of low value for invertebrates due to the lack of semi-natural habitat and structural habitat diversity. This would be addressed via the provision of diverse landscape planting including species of value for invertebrates and the inclusion of bug hotels across the Development.

10.5.30 To maximise the potential for proposed new landscape planting for wildlife it would include plant species that are native or non-native but of beneficial wildlife value that have been selected specifically for their nectar, seed and berry bearing properties. This would include a diverse range trees and shrubs such as apple, pear and blackberry as well as species-rich lawns and perennial planting selected for shaded, sunny and damper locations according to their position within the Site.

10.5.31 In addition to the above, tertiary mitigation inherent to the Works would comprise adherence to best practice timing and methods for vegetation removal and demolition to avoid risk of harm to nesting birds and roosting bats (the latter to be controlled by a European Protected Species Licence for bats to be obtained from Natural England) and to safeguard the Root Protection Zone (RPZ) of retained trees and avoid the spread of invasive non-native plant species.

10.5.32 There would remain a risk of temporary disturbance to and displacement of nesting birds and roosting/foraging and commuting bats during the Works. This risk would be mitigated to an extent by the retention of a substantial number of trees and the phasing of demolition such that not all parts of the site would be disturbed at the same time.

10.5.33 Thus, the time lag between loss of habitat and its subsequent replacement as construction and landscaping is completed would be limited at any one time. The same applies for the provision of bird nest boxes, bat roosts and bug hotels which would be installed as part of landscaping as each Plot is completed.

10.5.34 To minimise the disruption to the local common pipistrelle bat population it is proposed that replacement summer bat roost provision is incorporated into the first Plot due for completion anticipated to be Plot D.

10.5.35 Similarly, replacement hibernation roost provision would be provided within Plot D (as well as across the remaining Plots).

10.5.36 In conclusion, the effect of the operational and completed Development on long term provision for protected species would be **direct, local** and **long term** on a feature of **Low** importance (nesting birds) and **Very High** importance (bats). This effect would be of **minor beneficial significance** at the year of completion with the expectation that the biodiversity value of the new habitat provision would increase over time. As such it is considered to represent a worst case assessment.

Disturbance to Designated Sites

10.5.37 The nearest SINC is Tufnell Primary School located 160m to the west of the Site. It is separated from the Site by existing built development with no direct habitat connectivity and no intention to provide increased pedestrian or cycle access to the SINC. It is therefore concluded that the completed and operational Development would have no effect on this SINC. All other SINC are greater than 600m from the Site with no direct habitat connectivity and, again, with no intention to provided increased pedestrian or cycle access. it is concluded that there would be no effect on these SINC arising from the completed and operational development.

10.5.38 The likely significant effects of the completed and operational Development in relation to European Sites is considered in detail in the Shadow HRA (**ES Volume 3, Appendix 10.8**). In summary, it is concluded that the completed and operational Development would not give risk to any likely significant effect in relation to European Sites.

10.5.39 To conclude, there would be an **insignificant** effect on non-statutory SINCs or European Sites.

10.6 Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance

The Works

10.6.1 No additional mitigation is considered necessary or proposed in respect of habitats, nesting birds or bats over and above that already embedded in the design and phasing and/or controlled by tertiary measures.

10.6.2 Nevertheless, it is anticipated that an unavoidable residual risk would remain which cannot be mitigated. The residual effect is likely to result in the displacement of nesting birds and foraging/commuting bats into the surrounding area for the duration of Works which would be approximately 5 years in total, but with individual Plots being completed sequentially during this period.

10.6.3 In conclusion, it is anticipated that the likely worst-case residual effects of the completed and operational Development would remain as per the likely effects:

- Loss of / disturbance to on-Site Habitats: **direct, local, permanent effect of minor adverse significance**.
- Potential displacement / harm to Bird Species: **indirect, local, permanent effect of minor adverse significance**.
- Potential displacement / harm to bats: **direct, local, permanent effect of major adverse significance.**
- Disturbance to Designates Sites: **Insignificant**.

The Completed and Operational Development

10.6.4 Additional mitigation is required to ensure that appropriate measures are put in place to appropriately manage and maintain the ecological value of the Site in the long-term. It is anticipated that this would be addressed with a Habitat Management Plan to be secured via a suitably worded planning condition.

10.6.5 Broadly, the habitat management would comprise a programme of watering, remedial pruning, weeding, mulching and replacement of defects coupled with regular monitoring by a Landscape Management Advisor. Further detail of habitat management is provided in the Open Space and Recreation Assessment and Landscape Design Strategy which was submitted as a stand-alone document in support of the detailed planning application.

10.6.6 To ensure a conservative worst-case assessment, the likely residual effects of the completed and operational Development would remain as per the likely effects:

- Long-term change in habitat type: **direct, local, long-term effect of minor beneficial significance**.
- Long-term change in provision for protected species: **direct, local, long-term effect of minor beneficial significance**.
- Disturbance to Designated sites: **Insignificant**.

10.7 Likely Residual Cumulative Effects and their Significance

Approved Projects

The Works

10.7.1 Should the Development be approved, all necessary mitigation is incorporated into the Development and no further measures are necessary. it is reasonable to assume that all embedded and tertiary mitigation / enhancement set out in this assessment will be implemented. On this basis, only the likely residual effects of the Works have been considered cumulatively with other relevant Cumulative Schemes.

10.7.2 In this case the only anticipated residual effects are in relation to nesting birds and bats which are expected to be displaced from the Site due to a combination of habitat loss coupled with disturbance of retained habitats during the Works. In practice the duration of displacement would be less as the Works would be implemented in phases with replacement habitat and nesting/roosting provision provided within the first phase due for completion by 2025 (as well as in later phases across the rest of the Development).

The Approved Projects that have been considered are set out in **ES Volume 1, Chapter 2: EIA Methodology**.

10.7.3 The sites of these Approved Projects contain very little existing habitat and so they are highly unlikely to offer bird nesting or bat foraging opportunities. A search of the LBI planning portal confirmed that a bat survey had been completed at 65 – 69 Parkhurst Road (site of the Former Territorial Army Centre) which confirmed no roosting bats were present. No bat survey reports were available on the LBI planning portal for the other Approved Projects.

Furthermore the update desk study conducted in August 2021 confirmed no known bat roosts within the desk study search area which included the sites of the Approved Projects.

10.7.4 It is concluded that there are unlikely to be any cumulative effects with the Approved Projects on the basis that there appears to be limited potential for use by nesting birds and bats associated with the Approved Projects, nor is there scope for the Approved Projects to accommodate protected species that could be displaced from the Site during the Works.

The Completed and Operational Development

10.7.5 It is anticipated that there would be minor beneficial residual effects in respect of change of habitats and provision for protected/notable species associated with the completed and operational Development, and an insignificant effect for disturbance to designated sites. It is concluded that the Development is unlikely to act together with other Approved Projects due to the lack of habitat connectivity that would allow for species to move readily between them.

Approved Projects plus Developments that have a Planning Status in the Development Plan Process

10.7.6 The Approved Projects plus Developments that have a Planning Status in the Development Plan Process are set out in **ES Volume 1, Chapter 2: EIA Methodology** and comprise Islington's Local Plan Site Allocations (2013[35]), the Islington Local Plan Site Allocations (2019[36]) and Islington Site Allocations Modifications for Consultation (2021[37]).

The Works

10.7.7 There are no additional developments identified in these Local Plan allocations documents over and above the Approved Projects (discussed above) which are anticipated to have the potential to act cumulatively with the Development.

The Completed and Operational Development

10.7.8 There are no additional developments identified in these Local Plan allocations documents over and above the Approved Projects (discussed above) which are anticipated to have the potential to act cumulatively with the Development.

[35] London Borough of Islington. Local Plan Site Allocations June 2013.
[36] London Borough of Islington. Local Plan Site Allocations September 2019.
[37] London Borough of Islington. Site Allocations Modifications for Consultation 2021.

10.8 Conclusions

10.8.1 The likely significant ecological effects resulting from the Development were assessed in accordance with published guidelines. A survey of the Site was undertaken comprising a survey of habitats and an assessment of the potential for buildings and trees to support nesting birds and roosting bats. Further emergence and dawn re-entry surveys, bat activity transects and winter hibernation surveys were conducted for bats during 2019/2020. The emergence/dawn re-entry surveys were updated in 2021 focussing on the location of confirmed bat roosts.

10.8.2 The Site was found to have relatively limited ecological value. It comprised man-made habitats of ornamental landscape planting, buildings and hardstanding. There was limited potential for nesting birds and no potential for other species such as amphibians and reptiles due to the lack of suitable habitat and lack of connectivity with nearby habitat due to the barrier formed by the walls of the Prison building. The key ecological feature of value was the presence of the three summer roosts for a small number of common pipistrelle bats which were found in crevices in the external wall of one of the Prison buildings.

10.8.3 A number of structures were also considered highly likely to provide winter hibernation roost potential for small numbers of common pipistrelle bats, particularly the former Prison blocks and adjoining structures which contain cavity walls with ventilation slots allowing access into the cavity.

10.8.4 The habitats on-Site also provide foraging opportunities bats including connectivity with off-Site habitats.

10.8.5 Mitigation has been embedded in the design to retain a substantial number of existing trees as well as landscape planting that would be of benefit to wildlife. Artificial bird nest boxes, bat roost features and bug hotels would be incorporated into the Development. Overall, the new landscape planting will provide a biodiversity net gain of 16.98%.

10.8.6 Best practice measures would be adopted during the demolition and construction works to avoid harm and disturbance to nesting birds and bats. This would include sensitive timing, methods and ecological supervision. A licence would be obtained from Natural England to allow for removal of the bat roosts without risk of harm to bats. Best practice measures would also be adopted to safeguard the retained trees and to remove and dispose of the invasive non-native species Japanese knotweed and wall cotoneaster. These measures would be implemented under a Construction Environment Management Plan (CEMP).

10.8.7 There would be risk of disturbance to and displacement of nesting birds and bats during the Works. This would be limited as far as possible by the phasing of the Works to minimise disturbance at any one time and by ensuring that bat roosting provision is included within the first Plot to be completed (anticipated to be Plot D) as well as across the rest of the Site in due course.

10.8.8 In the long-term it is anticipated that the Development would result in the continued provision of habitats for the local common pipistrelle bat population and may result in increased numbers of bats through a net gain in the number of bat roost features to be provided. Off-site habitat linkage would ensure that nesting birds and bats could continue to move between the Site and the surrounding area and sensitively designed lighting that avoids direct illumination of bat roosts would ensure that there is no impact on bat roosting and foraging activity. New landscape planting has been selected to include plant species that provide nectar and berries for wildlife and there would be an overall increase in provision of nest sites for starling and swifts and habitat for invertebrates.

10.8.9 The long-term ecological value of habitats would be assured via a commitment to management in perpetuity.

10.8.10 Finally, the Development accords with relevant national and local planning policy by virtue of providing publicly accessible greenspace, substantial urban greening, a net gain in biodiversity and the retention and safeguarding of as many of the existing trees as possible.

10.8.11 There are no other nearby developments that would result in a cumulative effect on ecology during the Works or in the long-term.

11. Wind Microclimate

11.1 Introduction

11.1.1 This Chapter, prepared by RWDI, presents an assessment of the likely significant local wind microclimate effects of the Development.

11.1.2 This Chapter provides a description of the methods used in the assessment. This is followed by a description of the relevant baseline conditions of the Site and surrounding area, together with an assessment of the likely effects of the Development during the Site preparation, demolition and construction works (the 'Works') and once the Development is completed and operational. The significance of such effects is highlighted.

11.1.3 Where appropriate, additional mitigation measures are identified to avoid, reduce or offset any likely significant adverse effects. Taking account of the additional mitigation measures, the nature and significance of the likely residual effects are described. The cumulative local wind microclimate effects of the Development and other relevant Cumulative Schemes are also considered.

11.1.4 This Chapter is supplemented by the following document:

- **ES Volume 3, Appendix 11.1: Pedestrian Level Wind Microclimate Assessment, October 2021.**
- **ES Volume 3, Appendix 11.2: Interim Pedestrian Level Wind Microclimate Assessment, August 2021.**
- **ES Volume 3, Appendix 11.3: Wind Microclimate Consultation.**

11.2 Assessment Methodology and Significance Criteria

Assessment Methodology

Defining the Baseline

Current Baseline Conditions

11.2.1 The existing, or baseline, conditions across the Site and the surrounding area have been defined using wind tunnel testing to provide a detailed, quantitative assessment. The baseline conditions are reflected within the wind scenario – 'Configuration 1: Existing Site with Existing Surrounding Buildings' also referred as the 'Baseline Scenario'). The methodology for the wind tunnel testing and assessment criteria used are set out later in this Chapter with further details within **ES Volume 3, Appendix 11.1: Pedestrian Level Wind Microclimate Assessment**.

11.2.2 The results of the wind tunnel testing 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 Section 11.3 Baseline Conditions and shown as a 'wind rose' in Figure 2 of **ES Volume 3, Appendix 11.1**.

11.2.3 Existing pedestrian level wind conditions in and immediately around the Site are expected to be dictated by the Site's exposure to prevailing south-westerly winds. The existing Site is currently occupied by the buildings of the closed Holloway Women's Prison which comprises a series of blocks ranging in heights from one to six storeys. The surrounding buildings are of a similar height or lower and are unlikely to create any significant localised wind effects.

Consultation

11.2.4 The EIA Scoping Opinion (refer to **ES Volume 3, Appendix 2.2: EIA Scoping Opinion**) issued by the London Borough of Islington (LBI) in July 2020 reviewed the proposed approach of the wind microclimate assessment set out in the EIA Scoping Report (refer to **ES Volume 3, Appendix 2.1: EIA Scoping Report**). The EIA Scoping Opinion agreed with the proposed scope of the assessment but requested that Interim Wind Tunnel Testing be conducted to ensure that the "*mitigation by design of the Development is suitable*". It also requested that anemometer points (probe locations) for the wind tunnel testing be agreed with LBI prior to testing commencing. Correspondence with LBI is included within **ES Volume 3, Appendix 11.3: Wind Microclimate Consultation**.

11.2.5 The interim assessment of the Development was undertaken using wind tunnel testing. Probe locations were agreed with LBI on 20th July 2021 and the Interim Pedestrian Level Wind Microclimate Assessment report was submitted to LBI on 13th August 2021 (**ES Volume 3: Appendix 11.2**).

11.2.6 It was agreed with LBI on 18th August 2021 that the Irwin probe measurement locations would be the same for the Completed and Operational Development assessment as those used for interim wind tunnel testing, except where changes appeared between the interim scheme (assessed in the interim wind tunnel testing) and final scheme submitted for planning approval which necessitated some alterations. Where there were changes in the scheme, RWDI would make amendments ensuring appropriate coverage across the Development.

11.2.7 Subject to any planning approval, as set out in the EIA Scoping Opinion, further assessment using computational fluid dynamic (CFD) techniques will be secured through a suitably worded planning condition to inform the final scheme design, and the Development of any necessary wind mitigation to ensure an appropriate wind environment for the intended pedestrian uses.

Impact Assessment Methodology

Assessment Scenarios

11.2.8 Wind conditions during the Works as a whole have been assessed qualitatively, as detailed below, based on the expected change in wind conditions between the existing Site and the completed Development. Phasing has not been directly assessed as a part of this assessment.

11.2.9 Wind conditions at the Development have been quantitatively assessed for the completed and operational Development as this would be expected to be the worst case (i.e. windiest) scenario.

11.2.10 It is not considered necessary or appropriate to undertake a Future Years assessment. Immature landscaping would represent a likely reasonable worst-case scenario, and so the above approach is considered to be the most robust way forward.

The Works

11.2.11 The potential microclimate impacts during demolition and construction 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 Development is constructed. The potential impacts of the Development during the construction are qualitatively assessed using the professional judgement of an experienced wind engineer, based on an assessment of the background wind climate at the Site, the results of the tested configurations for the baseline and the completed development scenarios and an understanding of the likely effects based on RWDI's experience of assessing wind in the built environment. This approach was agreed within the EIA Scoping Opinion (**ES Volume 3, Appendix 2.2: EIA Scoping Opinion**).

11.2.12 This approach is 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 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 though a Construction Environmental Management Plan (CEMP) to ensure that the construction workers were adequately protected.

11.2.13 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 'Assumptions and Limitations' section below).

Completed Development

11.2.14 To predict the local wind environment associated with the completed Development and the resulting pedestrian comfort within and surrounding the Site, wind tunnel testing of the Development has been undertaken.

11.2.15 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 at and surrounding the Site to be quantified and classified in accordance with the accepted criteria (refer to the 'Assessment Criteria' section of this Chapter).

11.2.16 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 Development with regards to its intended uses.

11.2.17 The Development will give rise to a new Site layout and massing which has the potential to alter building induced wind conditions. In particular, the overall increased massing (and particularly height) of built form within the Site may give rise to downdraughts and subsequent corner acceleration and channelling of pedestrian level winds around and between the buildings, creating areas of locally accelerated winds.

11.2.18 The Development will give rise to a new pedestrian usage of the Site, with pedestrian routes, public open spaces and private amenity spaces. Recreational uses in particular, will require relatively calm wind conditions in order for the intended pedestrian activity to be comfortable, usable and safe during appropriate times of the year. The achievement of a suitable wind microclimate both in and surrounding the Site is therefore paramount to good design.

Wind Tunnel Testing Methodology

11.2.19 The methodology for quantifying the pedestrian level wind environment is outlined below within four steps. Full details of the assessment methodology are included within **ES Volume 3, Appendix 11.1: Pedestrian Level Wind Microclimate Assessment**:

- Step 1: The 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 the 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 speeds for the appropriate configuration(s) and at the appropriate pedestrian levels(s).
- 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 the appropriate test configuration(s)) to 'grade/score' the conditions within and around the Site.

11.2.20 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 on a 2.4m diameter disc allowing for the surrounding area within a 360 metre (m) radius of the centre of the Site (the radius is determined based on the scale model and due to the physical constraints of the modelling in the wind tunnel). This radius is considered large enough scale to ensure all likely wind effects are captured. Other developments outside of 360m radius of the Site would not individually be expected to modify the wind approaching the Site and as such have not been included within the analysis of the surrounding terrain.

11.2.21 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 used in the wind tunnel in order to create a 'boundary layer' that is representative of the urban location of the Site. In addition, the wind tunnel included relevant buildings and other topographical features with regard to wind flow up to the distance of 360m radius from the centre of the Site (referred to above).

11.2.22 Wind speed measurements around the Site for the tested configurations were established using Irwin probes. These measure the mean and gust (peak) wind speeds at selected locations on the ground floor level and on elevated levels to represent sensitive locations such as entrances, amenity areas including balconies and roof terraces and thoroughfares, at a full-scale height of approximately 1.5m above the surface upon which the probe is located.

11.2.23 The wind speed was measured at up to 489 locations for the Development 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).

Model Configurations Assessed

11.2.24 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.

11.2.25 The wind microclimate across the Site was tested for the following configurations:

- Configuration 1: Existing Site with existing landscaping and existing surrounding buildings (Baseline Scenario).
- Configuration 2: The Development with existing landscaping and existing surrounding buildings.
- Configuration 3: The Development with existing and proposed landscaping and existing surrounding buildings.
- Configuration 4: The Development with existing landscaping and Cumulative Schemes
- Configuration 5: The Development with existing and proposed landscaping and existing surrounding buildings plus proposed mitigation measures.
- Configuration 6: The Development with existing and proposed landscaping and cumulative schemes plus proposed mitigation measures

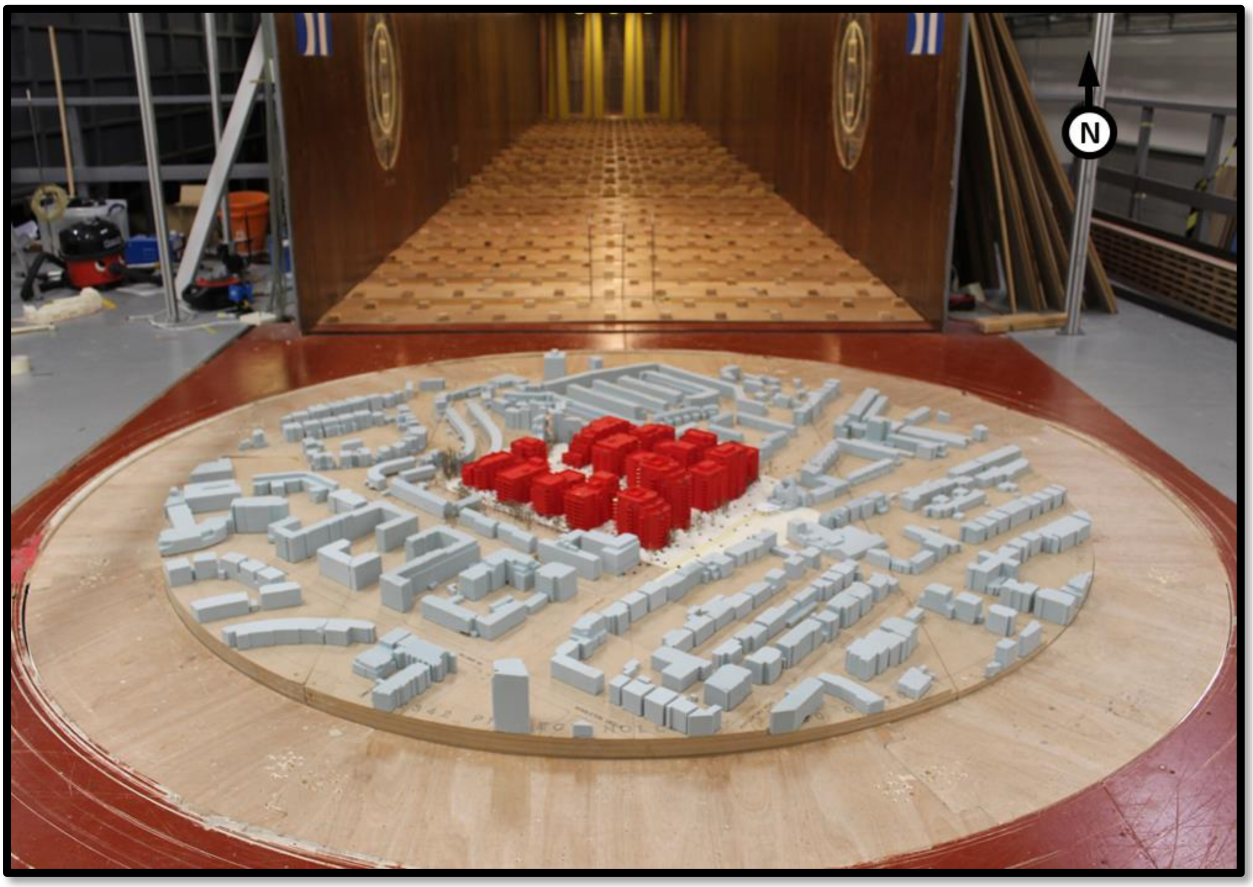
11.2.26 The above will determine the likely pedestrian level wind conditions in and around the Site at specific locations such as main pedestrian routes, building entrances and amenity spaces for all three scenarios.

11.2.27 Relevant Cumulative Schemes within the 360m radius of the Site assessed in the wind tunnel model (Configuration 3) are as follows:

- 2 Parkhurst Road and 2A Parkhurst Road, Islington Arts Factory (Planning Ref: P2016/5054/LBC and P2015/0330/FUL).
- 65-69 Parkhurst Road, Former Territorial Army Centre (Planning Ref: P2020/0648/FUL).
- 392A Camden Road and 1 Hillmarton Road (Planning Ref: P121287, as amended by P2015/4073/s73).

11.2.28 In addition, a qualitative assessment of developments / sites that have a planning status within the development plan process due to their potential to influence cumulative effects has been undertaken.

Figure 11.1 View from the South of the 1:300 physical model of the Development + all significant existing features within 360m of the centre of the Site



Assessment Criteria

Lawson Comfort Criteria

11.2.29 The assessment of the wind conditions requires a standard against which the measurements can be compared. This assessment of the wind tunnel results presented in this Chapter adopts the Lawson Comfort Criteria ('the Lawson Criteria') (LDDC version)[1], which have been established for over thirty years and are widely used in the industry.

11.2.30 The Lawson Criteria define a scale for assessing the suitability of wind conditions in the urban environment based upon threshold values of wind speed and frequency of occurrence. They are presented in **Table 11.1** set out four pedestrian activities (comfort categories) and reflect the fact that less active pursuits require more benign wind

[1] Building Aerodynamics, (2001); Lawson T.

conditions. The coloured key in **Table 11.1** corresponds to the presentation of wind tunnel test results included later in this Chapter and in **ES Volume 3, Appendix 11.1**.

Table 11.1 Lawson Comfort Criteria

Key	Comfort Category	Threshold	Threshold
	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

11.2.31 For a mixed-use urban environment, such as the Site and surrounding area, the desired wind microclimate for the Development would typically need to have areas suitable for sitting, standing use and strolling (refer to **Table 11.1**).

11.2.32 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.

11.2.33 The assessment was conducted on a seasonal basis, to determine worst-case wind speeds, expected to be encountered during the winter season (December, January and February) in the UK, in areas that will be used year-round. Additional consideration has been made for summer wind conditions due to the presence of ground floor and above ground amenity spaces. This complies with the standard methodology set out by Lawson[3] for wind microclimate assessments.

11.2.34 The target condition for seating in residential amenity areas is a wind microclimate that is suitable for sitting during the summer season. This is because these areas are more likely to be frequently used during the summer when

[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.
[3] Building Aerodynamics, (2001); Lawson T.

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.

11.2.35 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.

11.2.36 The target wind conditions for balconies are wind microclimate that is suitable for standing use or calmer during the summer season.

11.2.37 For 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.

11.2.38 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.

11.2.39 Entry points to a building which are not primary entrances and used for alternative purposes, such as fire entrances or emergency exits, a wind environment for strolling or calmer is desired. The assessment for these uses focuses on the windiest season.

11.2.40 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.

11.2.41 Localised occurrence 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.

11.2.42 As areas where pedestrians may be expected to linger for extended periods, the Lawson Criteria specifies that a wind environment suitable for standing use would be required at public transport stops. As these facilities would be used throughout the year, the focus is on the windiest season result.

Strong Winds

11.2.43 The Lawson Criteria also specify a strong wind threshold when winds exceed 15m/s for more than 0.025% of the time (approximately 2.2 hours of the year) which would have the potential to cause distress to pedestrians and cyclists – referred to as ‘S15 Exceeded’. Exceedance of this threshold may indicate a need for remedial measures or a careful assessment of the expected use of that location; for example is it reasonable to expect older adults or young children to be present at the location on the windiest day of the year?

11.2.44 Wind speeds that exceed 20m/s for more than 0.025% of the time (approximately 2.2 hours of the year) represent a safety issue for all members of the population, which would require mitigation to provide an appropriate wind microclimate environment – referred to as 'S20 Exceeded'.

11.2.45 Strong winds are generally associated with areas which would be classified as acceptable for walking or conditions considered uncomfortable. As mentioned above, 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.

11.2.46 The Lawson Criteria do not specify criteria for acceptable wind conditions for cyclists; however, the occurrence of winds exceeding the strong winds threshold (as described above) would be considered unsuitable for cyclists. The assessment for roads and car parks focusses on annual strong winds.

Significance Criteria

Receptor Sensitivity

11.2.47 The sensitivity of a receptor at the Site in the presence of the Development is high and equal for all measurement locations. This is because the significance criteria for the wind assessment are 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 Development, as well as at the existing buildings and their surroundings. 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.

11.2.48 The following 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:
    - Pedestrian Thoroughfares: includes areas that are immediately adjacent to the Development (i.e. within 5m of the building line). This also includes thoroughfares within the Development;
    - Entrances: includes entrances at ground level;
    - Amenity areas: ground floor and roof terrace (includes balconies and terraces located on the upper levels of the buildings);
    - Crossings, Bus stops and Roads; and
- Off-Site locations:
    - All receptors falling outside the definition of the boundary of the Site, such as along roadways, car parks, surrounding building entrances and amenity areas.

Magnitude of Impact

11.2.49 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 **Table 11.1**. 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.

Effect Significance

11.2.50 The assessment of the likely scale of effect is based on the comparison of the predicted wind conditions at a particular measurement location with the desired pedestrian use of the Site as defined in the Lawson Comfort Criteria and set out in **Table 11.1**. Where appropriate, wind conditions experienced across the Site are also compared against the baseline conditions.

11.2.51 In line with Lawson's overall methodology strong winds 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 regardless of its scale.

Table 11.2 Significance Criteria

Key	Comfort Category
Wind conditions are 3-steps calmer than those desired	Major Beneficial Significance
Wind conditions are 2-steps calmer than those desired	Moderate Beneficial Significance
Wind conditions are 1-step calmer than those desired	Minor Beneficial Significance
Wind conditions are as desired	Insignificant
Wind conditions are 1-step windier than those desired	Minor Adverse Significance
Wind conditions are 2-steps windier than those desired	Moderate Adverse Significance
Wind conditions are 3-steps windier than those desired	Major Adverse Significance

11.2.52 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 being of 'minor adverse significance'.

11.2.53 Any adverse effect has a wind microclimate that is unsuitable for the desired use of that area. On this basis, effects that are adverse need mitigating.

11.2.54 The 'Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance' section of this Chapter describes the remedial measures expected to mitigate the effect in the event of adverse effects occurring.

11.2.55 The residual effects reported during demolition / construction of the Development are considered to be direct, temporary, short to medium-term and local, whereas effects outlined in the assessment for the completed and occupied Development are direct, long-term and local.

11.2.56 In terms of off-Site areas, wind conditions are compared to the baseline scenario and the intended use. If wind conditions remain consistent or calmer than the baseline scenario or remain suitable for the intended use, this would represent an Insignificant effect. However, if wind conditions around the Site are windier than the baseline scenario and unsuitable for the intended use, the effect would be of adverse significance.

11.2.57 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 completed and operational Development. If conditions are windier than the baseline, but remain suitable for the intended use, this would remain an insignificant effect.

Assumptions and Limitations

11.2.58 It is assumed that there will be restricted access (i.e. not accessible to the general public) across the Site during the demolition and construction works. As the area would not typically be for pedestrian use windier conditions would be tolerable.

11.2.59 The usage of outdoor amenity spaces, balcony and terrace level amenity spaces have 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.

11.2.60 This assessment has been undertaken void of any proposed landscaping details in order to present a worst-case scenario to assess the influence of the Development on the wind microclimate at and around the Development.

11.3 Relevant Baseline Conditions

Meteorological Data

11.3.1 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 11.1**.

11.3.2 The meteorological data obtained for London indicates that the prevailing winds throughout the year are from the south-west (i.e. 210-240 degrees on the compass). This is typical for many areas of the southern England, with wind speeds being greater in the winter months when the most frequent strong winds blow from the west-south-west. Wind speeds are generally lower during the summer season. Winds from the north-east are common during the spring season but are not as strong as the prevailing winds from the south-west.

11.3.3 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[4].

Configuration 1: Existing Site with Existing Landscaping and Existing Surrounding Buildings (Baseline Scenario)

11.3.4 Wind conditions for Configuration 1 (Baseline Scenario) are presented in **Figure 11.2** for the windiest season and **Figure 11.3** for the summer season. Occurrences of annual strong winds are presented in **Figure 11.4**.

Pedestrian Comfort

Thoroughfares

11.3.5 All thoroughfares on-Site and off-Site have wind conditions suitable for sitting and standing use during the windiest season.

Entrances

11.3.6 Entrances to the existing surrounding buildings (measurement locations 1, 11, 13, 16, 26, 30, 75, 357, 358, 352-368) are suitable for sitting use during the windiest season.

Bus Stops

11.3.7 The bus-stop on Parkhurst Road (measurement location 55) is suitable for sitting use during the windiest season.

Amenity Spaces

11.3.8 Residential gardens in the vicinity of the Site (measurement locations 312, 317, 318, 340, 347 and 348) have wind conditions suitable for sitting use during the summer season.

[4] ESDU International, Computer program for wind speeds and turbulence properties; flat or hilly sites in terrain with roughness changes, ESDU 01008, 2001 01008.

Strong Winds

11.3.9 There are no instances of strong winds exceeding 15m/s for more than 0.025% of the time (approximately 2.2 hours per year) at any measurement locations at and around the Site in the baseline scenario.

Figure 11.2: Configuration 1- Existing Site with Existing Landscaping and Existing Surrounding Buildings Ground Level - Windiest Season

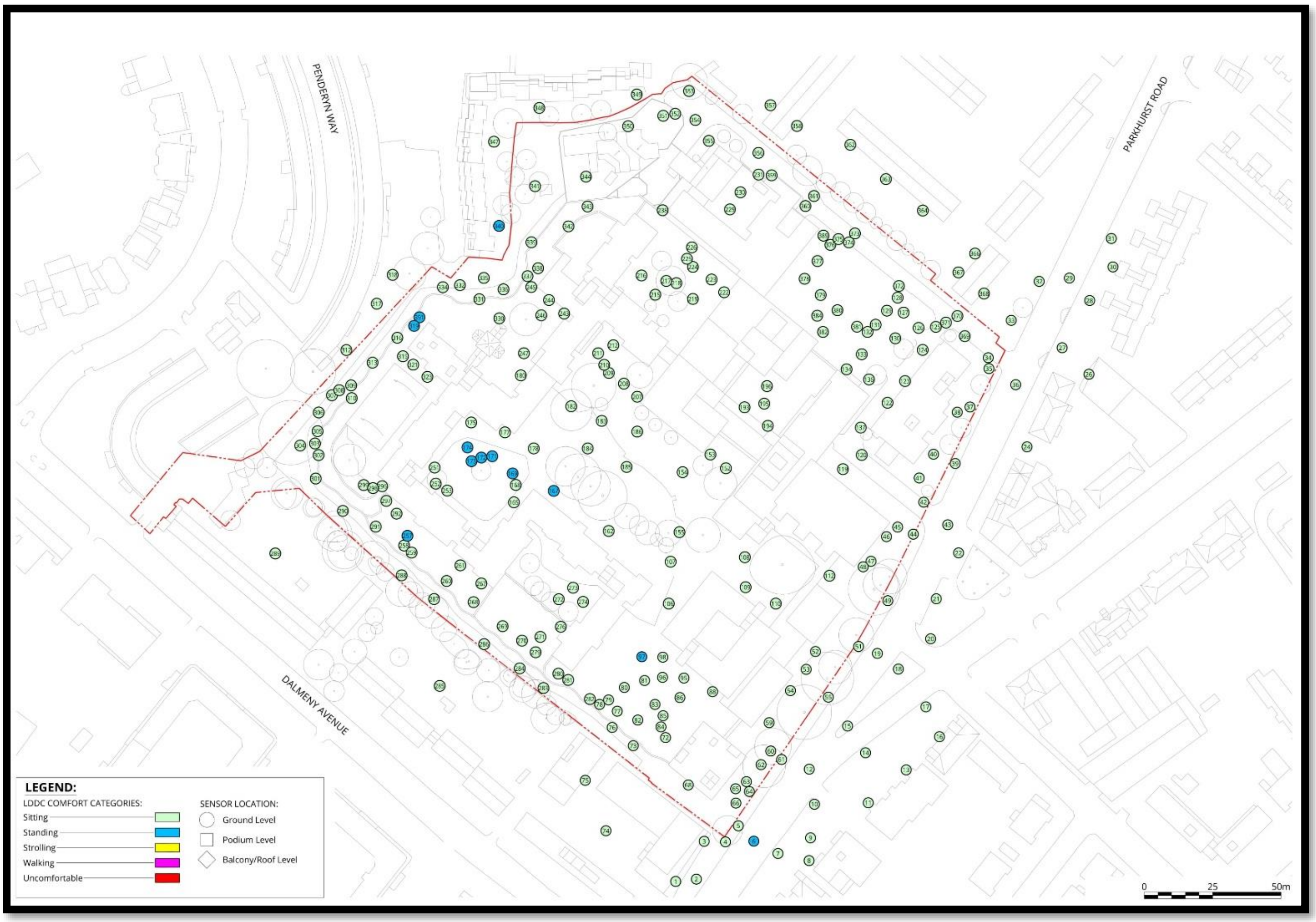


Figure 11.3: Configuration 1- Existing Site with Existing Landscaping and Existing Surrounding Buildings Ground Level – Summer Season

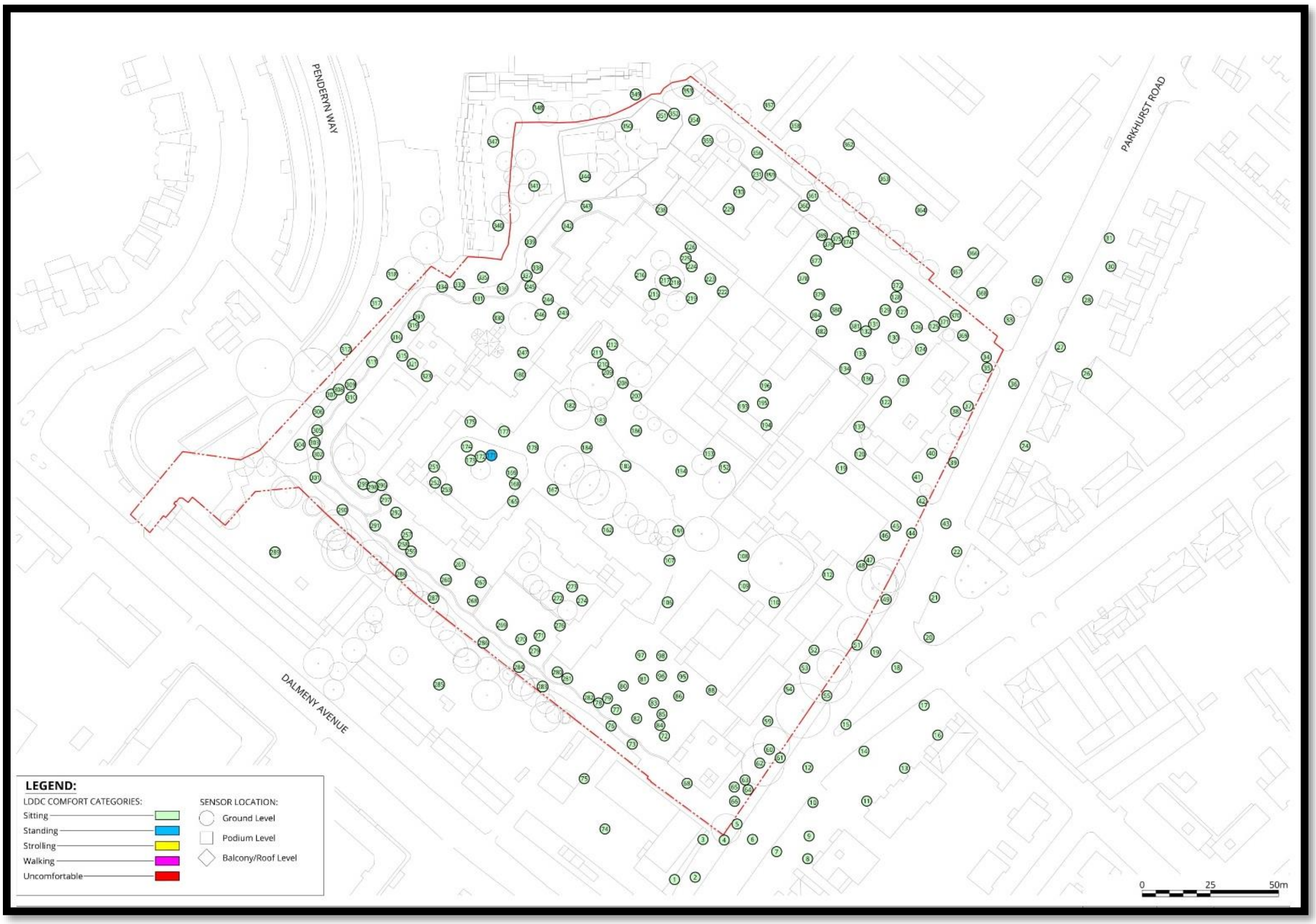
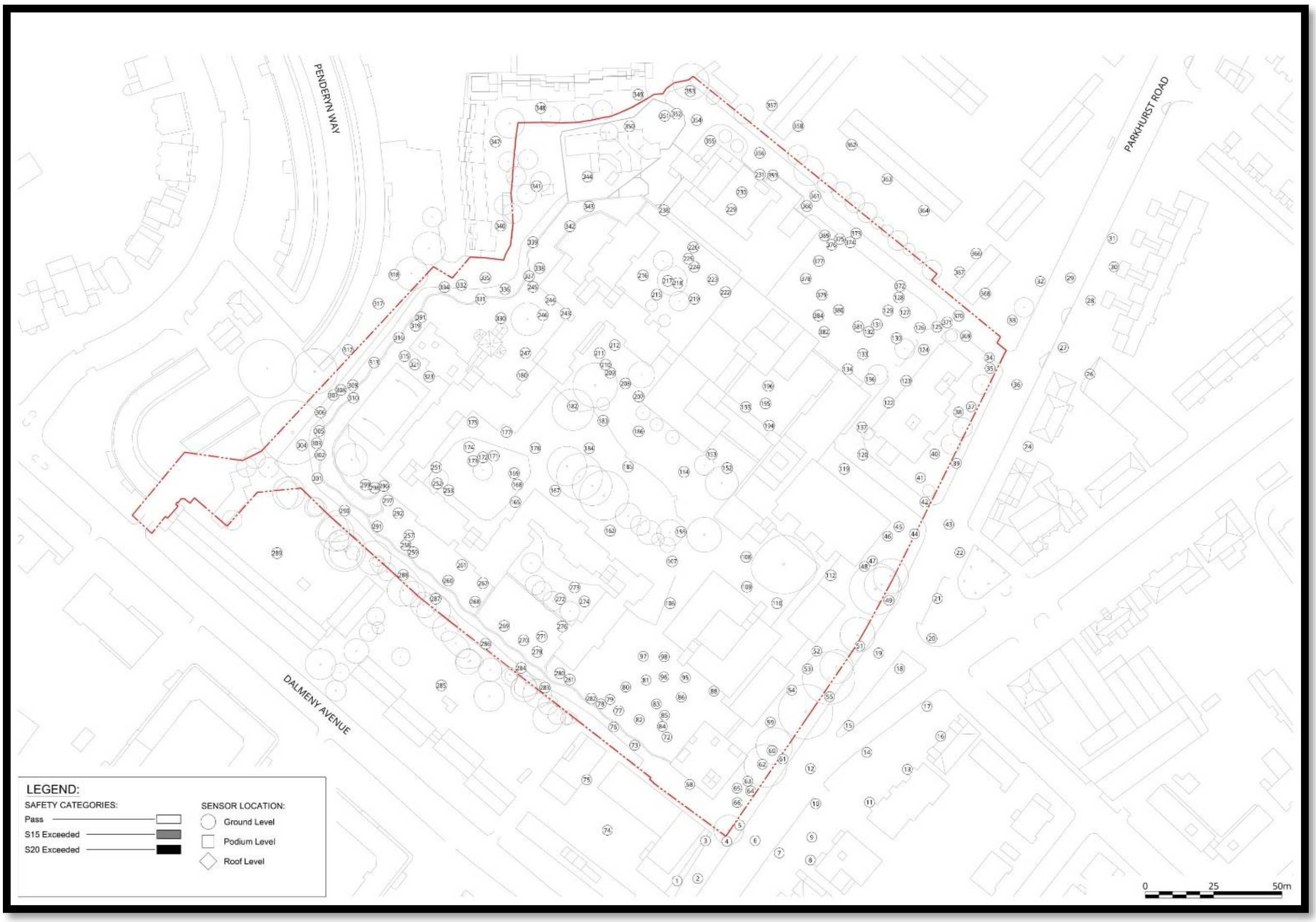


Figure 11.4: **Configuration 1- Existing Site with Existing Landscaping and Existing Surrounding Buildings Ground Level – Occurrences of Annual Strong Winds**



11.4 Likely Effects of the Development and their Significance

The Works

11.4.1 Based on the description of the baseline environment (Configuration 1), it would be expected that conditions at the existing Site during the Works would be suitable for a working construction site, and pedestrian thoroughfares around the Site would also be suitable (with the hoarding in place). Therefore, the likely effect is expected to be **Insignificant** and no design and/or management measures are considered necessary during the demolition and construction of the Development.

11.4.2 During the Works 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 the likely effect is expected to be **Insignificant**.

11.4.3 As construction of the Proposed Development proceeds, wind conditions at the Site would gradually adjust from those of the existing Site to those of the completed Development, as described in the following section 'The

Completed and Operational Development' The Completed Development results are considered to be a worst-case assessment for the likely wind environment during construction works.

The Completed and Operational Development

Configuration 2: The Development with Existing Landscaping and Existing Surrounding Buildings

11.4.4 Wind conditions for Configuration 2 are presented in **Figure 11.5** and **Figure 11.6** for the windiest and summer seasons respectively for ground floor level and **Figure 11.7** for elevated levels during the summer season. Safety exceedances are presented in **Figure 11.8** and **Figure 11.9** respectively for ground and elevated levels.

Pedestrian Comfort

Thoroughfares

11.4.5 All the on-Site thoroughfares at the Development would be suitable for sitting and standing use during the windiest season, suitable for the intended use. Therefore, the likely effect is expected to be **direct, long-term, local and** of **moderate beneficial** to **minor beneficial significance**; no mitigation measures would be required.

11.4.6 All the off-Site thoroughfares would be suitable for sitting to strolling use during the windiest season, suitable conditions for the intended use. The likely effects expected to be **insignificant** and no mitigation measures would be required.

Entrances

11.4.7 The majority of entrances to the Development would be suitable for sitting to standing use during the windiest season, suitable conditions for the intended use. Therefore, the likely effect is expected to be **insignificant** to **direct, long-term, local** and of **minor beneficial significance;** no mitigation measures would be required at these entrances.

11.4.8 Strolling conditions on the entrance to Plot C (measurement location 67) would be acceptable for the intended use as this is a secondary entrance used for a substation and would not be accessible to the general public. Therefore, the likely effect is expected to be **insignificant** and no mitigation measures would be required.

Bus Stops

11.4.9 The bus-stop on Parkhurst Road would be suitable for sitting use during the windiest season. Therefore, the likely effect is expected to be **insignificant** and no mitigation measures would be required.

Ground Level Amenity Spaces

11.4.10 Play areas and other mixed-use amenity spaces on-Site would be suitable for sitting and standing use during the summer season. This would represent **insignificant** to **direct, Long-term** and **local** effects of **minor beneficial significance** and no mitigation measures would be required.

11.4.11 The majority of seating provisions on-Site would be suitable for sitting use during the summer season. This would represent **insignificant** effects**,** and no mitigation measures would be required.

11.4.12 Standing conditions at seating provisions situated north of Plot C (measurement location 104) and in the Extra-Care Garden in Plot E (measurement location 322) would be one category windier than suitable for the intended use. This would therefore represent a **direct, long-term** and **local** effect of **minor adverse significance,** and mitigation measures would be required.

11.4.13 All off-Site amenity spaces would be suitable for sitting use during the summer season, this would represent **insignificant** effects**,** and no mitigation measures would be required.

Elevated Level Amenity Spaces

11.4.14 All the balcony amenity spaces within the Development would be suitable for sitting and standing use during the summer season, suitable conditions for the intended use. This would represent **insignificant** to **direct, long-term** and **local** effects which are **minor beneficial significance,** and no mitigation measures would be required.

11.4.15 The majority of terrace level amenity spaces would be suitable for sitting and standing use during the summer season, suitable conditions for mixed-use terrace spaces provided any proposed seating provisions are allocated in areas suitable for sitting use. This would represent **insignificant** effects**,** and no mitigation measures would be required.

11.4.16 Strolling conditions on the roof terrace of Plot C, at level 11, would be one category windier than suitable for the intended use during the summer season and would represent a **direct, long-term** and **local** effect of **minor adverse significance**. Therefore, mitigation measures would be required.

Strong Winds

11.4.17 There would be no instances of strong winds which would pose a safety concern for pedestrians and occupants in Configuration 2.

Figure 11.5: Configuration 2 - The Development with Existing Landscaping and Existing Surrounding Buildings Ground Level - Windiest Season

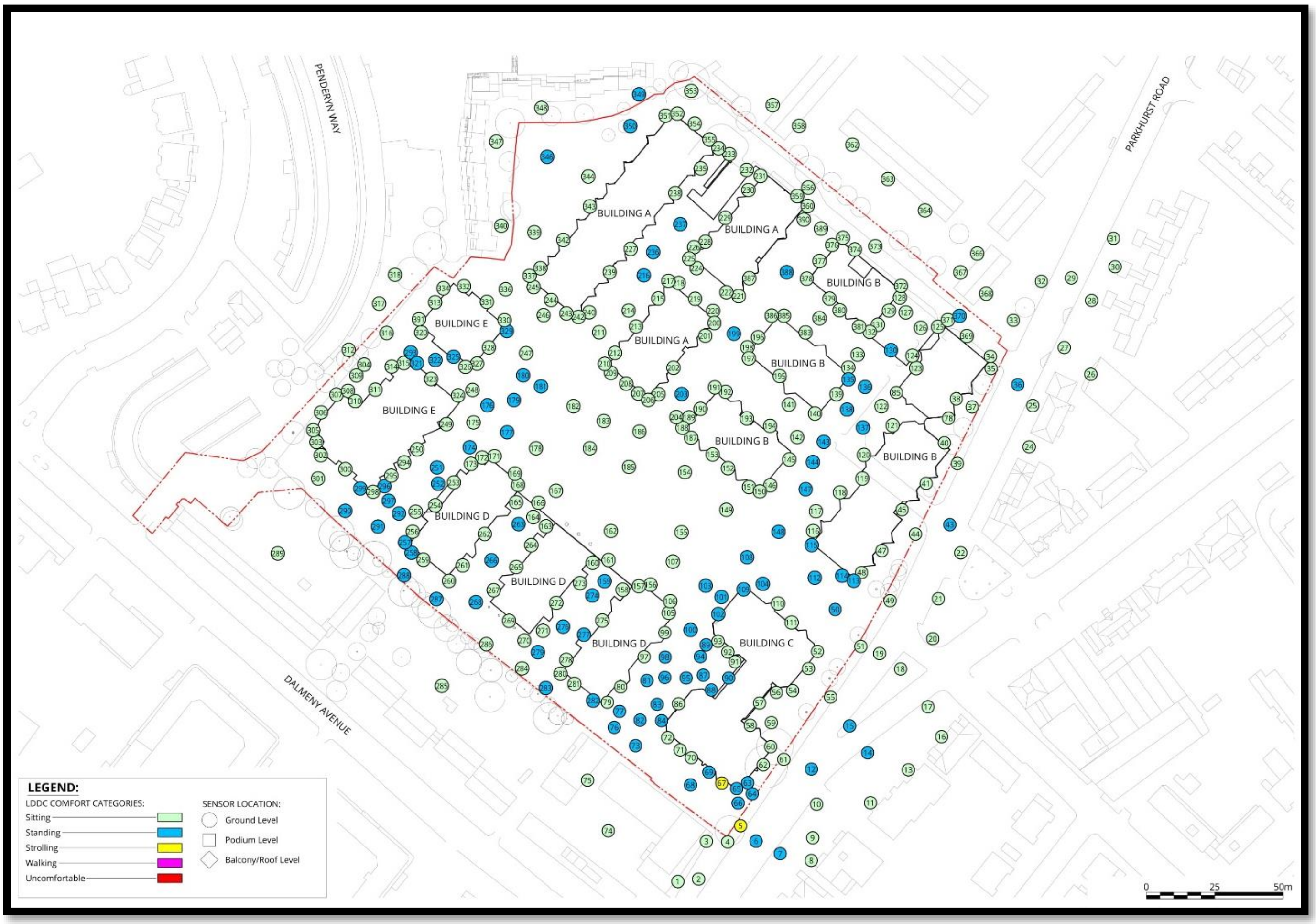


Figure 11.6: Configuration 2 - The Development with Existing Landscaping and Existing Surrounding Buildings Ground Level - Summer Season

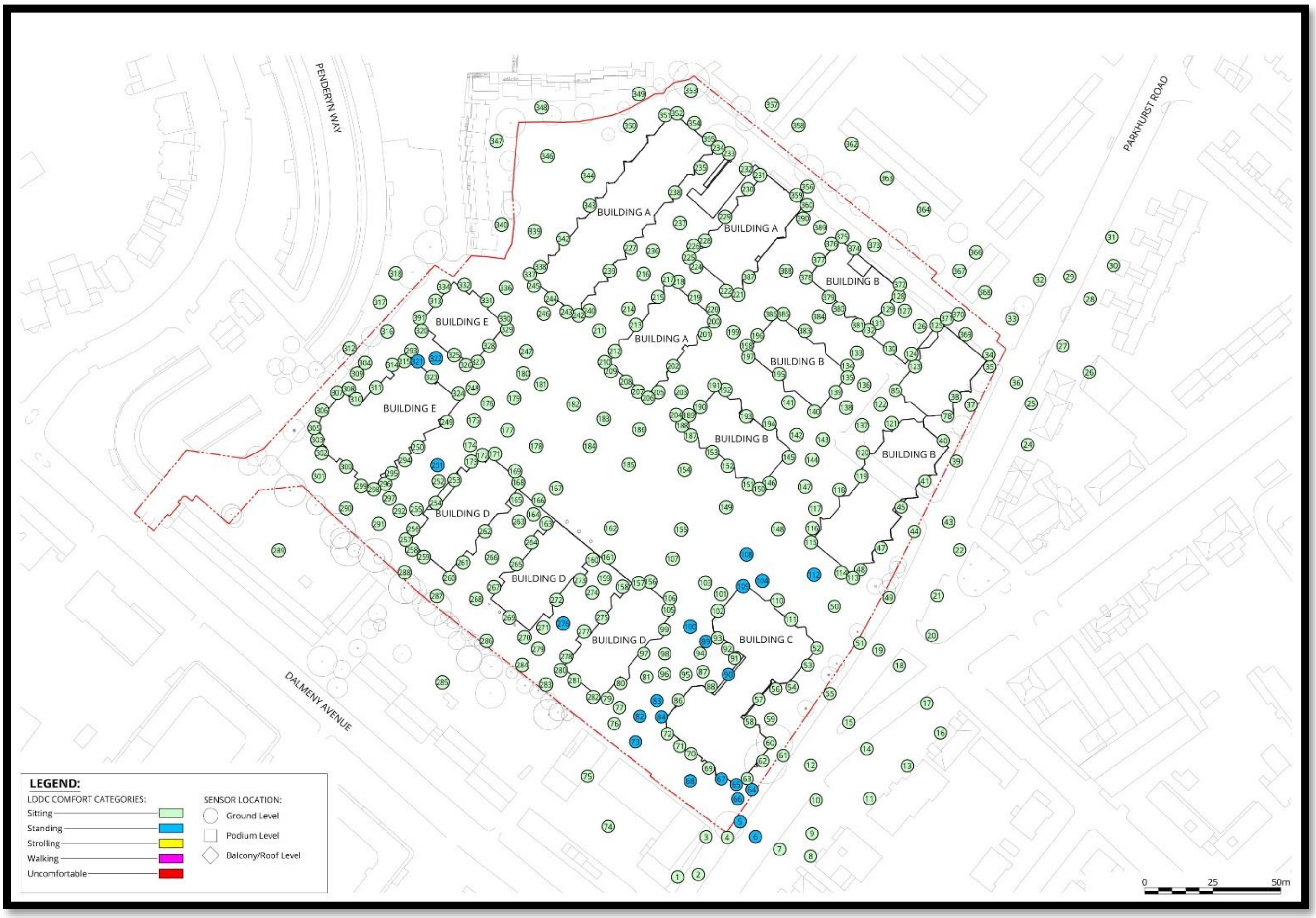


Figure 11.7: Configuration 2 - The Development with Existing Landscaping and Existing Surrounding Buildings Elevated Levels - Summer Season

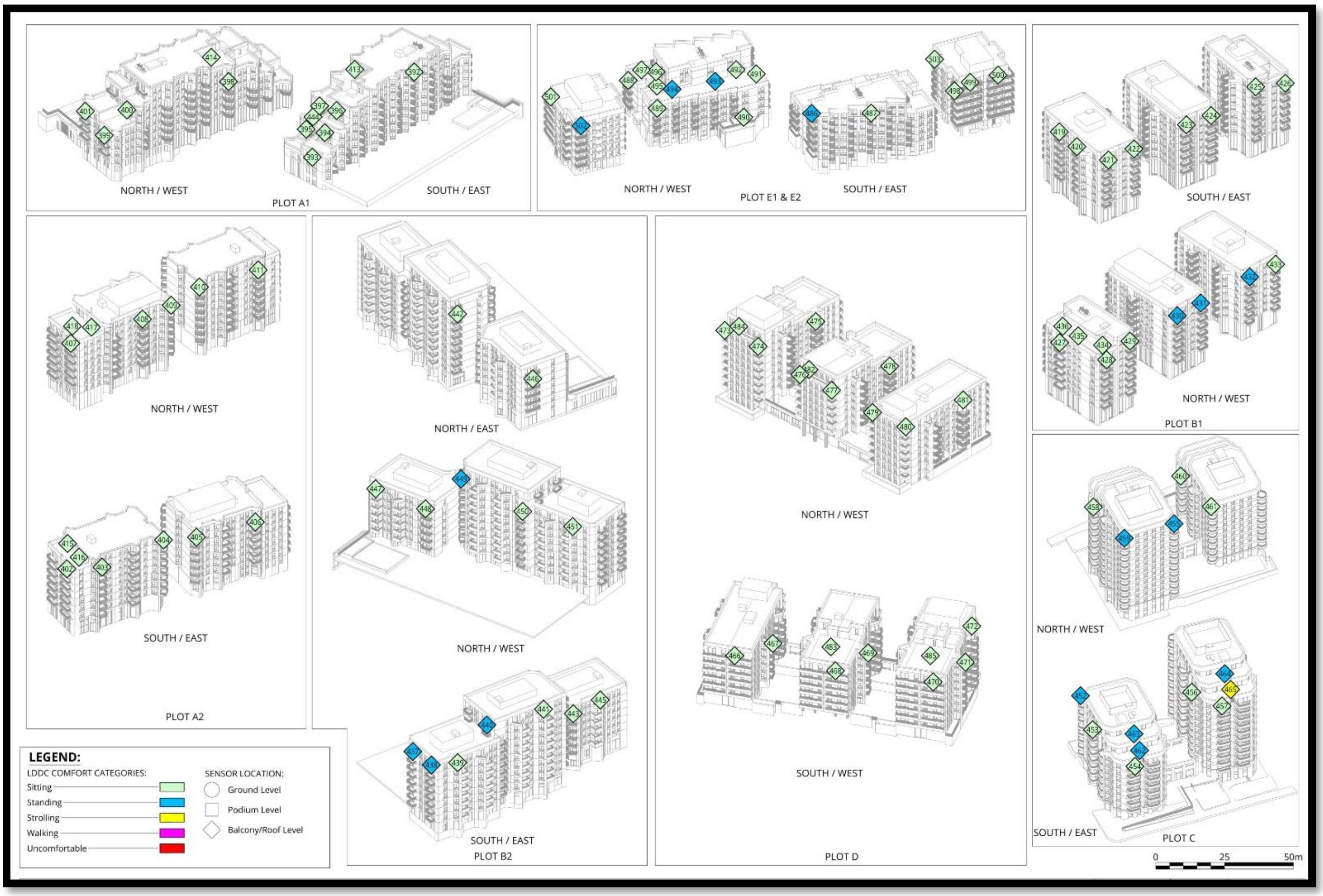


Figure 11.8: Configuration 2 - The Development with Existing Landscaping and Existing Surrounding Buildings – Ground Floor Wind Safety Conditions

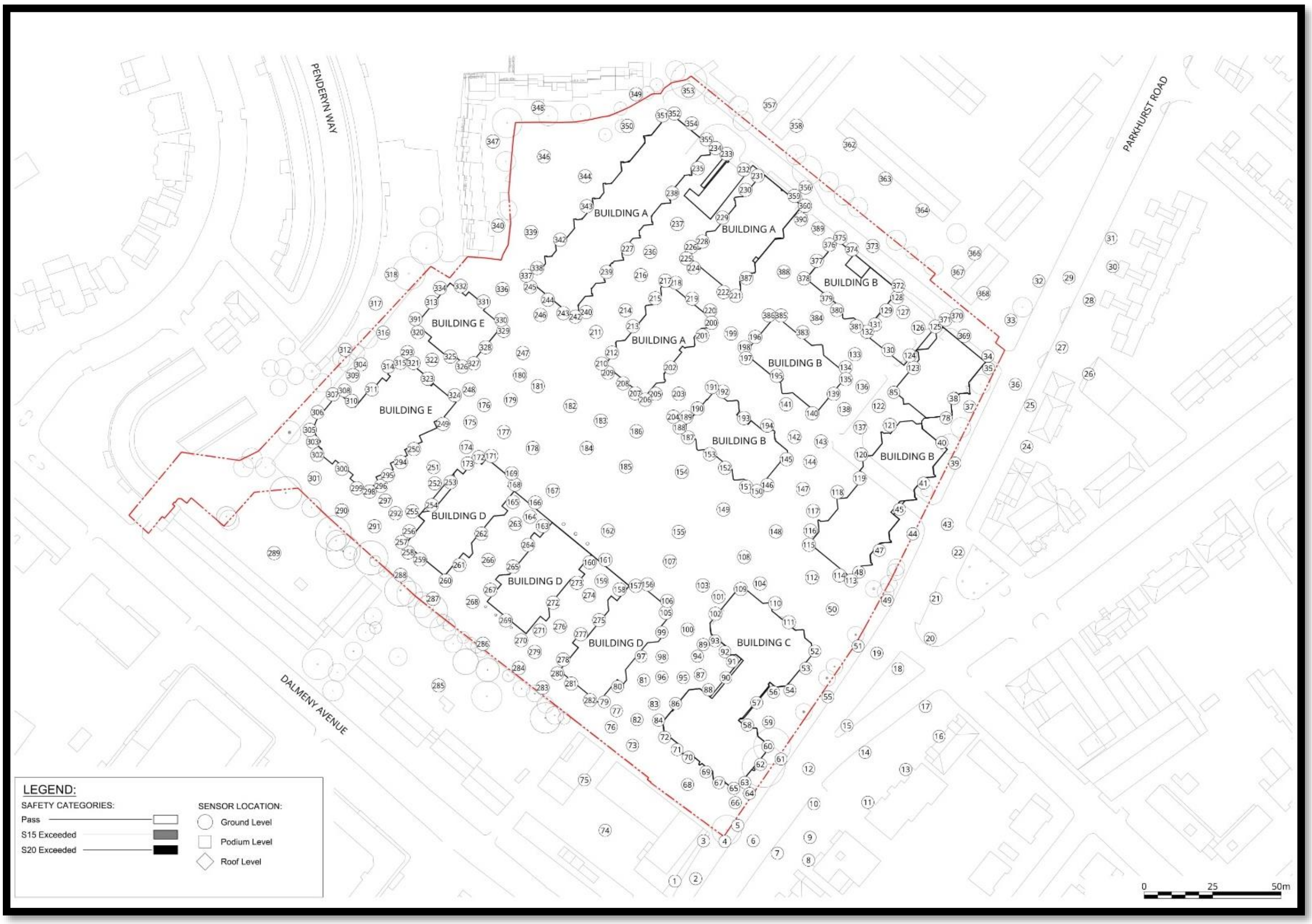
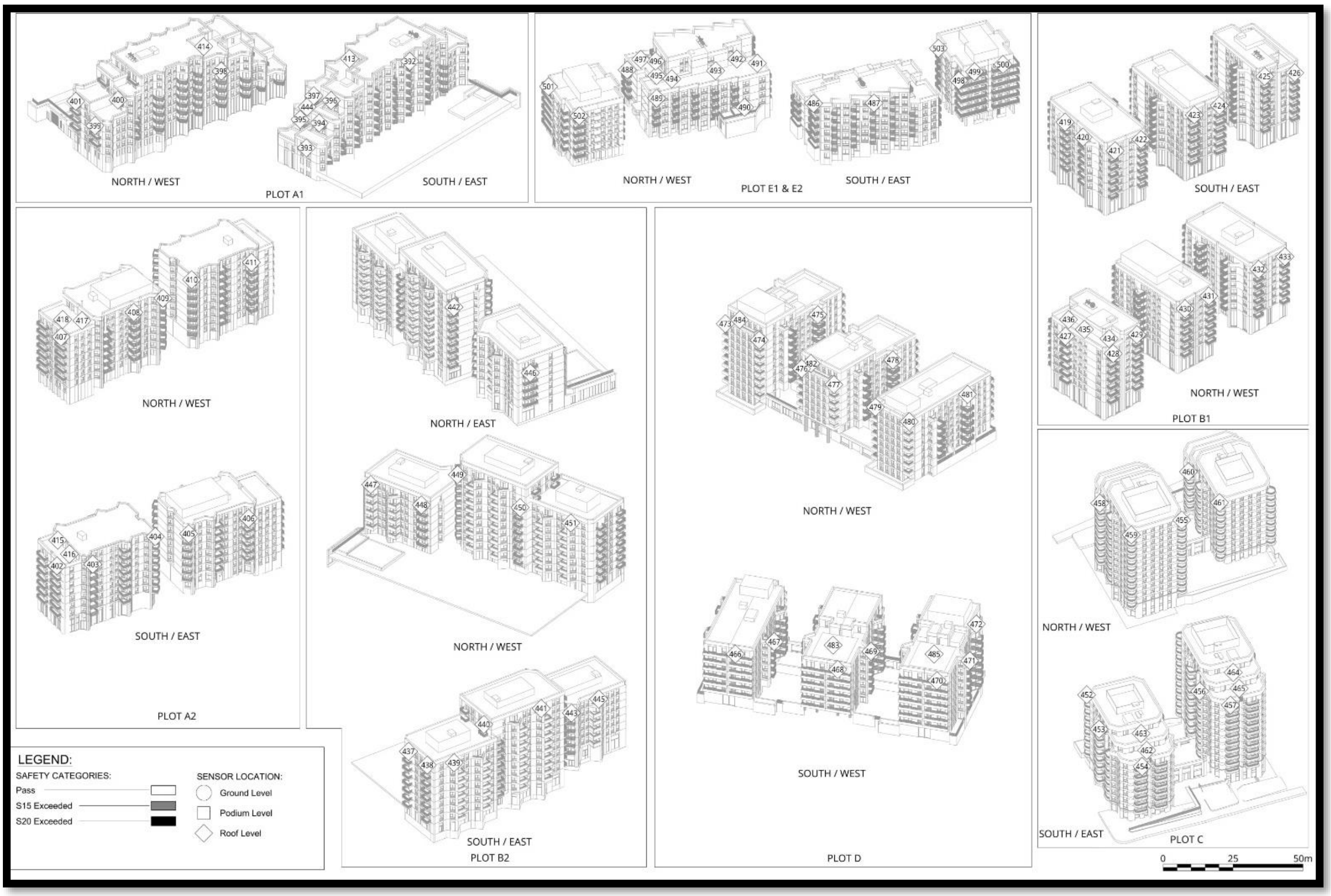


Figure 11.9: Configuration 2 - The Development with Existing Landscaping and Existing Surrounding Buildings – Elevated Wind Safety Conditions



Configuration 3: The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings

11.4.18 Wind conditions for Configuration 3 are presented in **Figure 11.10** and **Figure 11.11** for the windiest and summer seasons respectively for ground floor level and **Figure 11.12** for elevated levels during the summer season. Safety exceedances are presented in **Figure 11.13** and **Figure 11.14** respectively for ground and elevated levels.

11.4.19 The proposed landscaping plan is presented in Figure 11 of **ES Volume 3, Appendix 11.1**.

Pedestrian Comfort

11.4.20 Inclusion of the proposed landscaping measures would provide beneficial shelter to the ground level and terrace level amenity spaces.

Thoroughfares

11.4.21 All the on-Site thoroughfares at the Development would be suitable for sitting and standing use during the windiest season, suitable for the intended use. Therefore, the likely effect would be **direct, long-term, local** and of **moderate beneficial** to **minor beneficial significance** and no mitigation measures would be required.

11.4.22 All the off-Site thoroughfares would be suitable for sitting to standing use during the windiest season, suitable conditions for the intended use. The likely effects would be **insignificant** and no mitigation measures would be required.

Entrances

11.4.23 All the main entrances to the Development would be suitable for sitting to standing use during the windiest season, suitable conditions for the intended use. Therefore, the likely effects are expected to be **insignificant** to **direct, long-term, local** and be of **minor beneficial significance** and no mitigation measures would be required.

11.4.24 Strolling conditions at the secondary entrance to Plot C (measurement location 67) would remain in Configuration 3 and would represent an **insignificant** effect and no mitigation measures would be required.

Bus Stops

11.4.25 The bus-stop on Parkhurst Road would be suitable for sitting use during the windiest season. Therefore, the likely effect is expected to be **insignificant** and no mitigation measures would be required.

Ground Level Amenity Spaces

11.4.26 Play areas and other mixed-use amenity spaces on-Site would be suitable for sitting and standing use during the summer season. This would represent **insignificant** to **direct, long-term** and **local** effects of **minor beneficial significance** and no mitigation measures would be required.

11.4.27 The majority of seating provisions on-Site would be suitable for sitting use during the summer season. This would represent **insignificant** effects**,** and no mitigation measures would be required.

11.4.28 Similar to Configuration 2, the standing conditions at seating provisions situated north of Plot C (measurement location 104) and in the Extra-Care Garden in Plot E (measurement location 322) would be one category windier than suitable for the intended use. Therefore, this would represent a **direct, long-term** and **local** effect of **minor adverse significance,** and mitigation measures would be required.

11.4.29 All off-Site amenity spaces would be suitable for sitting use during the summer season; this would represent **insignificant** effects**,** and no mitigation measures would be required.

Elevated Level Amenity Spaces

11.4.30 All the balcony amenity spaces of the Development would be suitable for sitting and standing use during the summer season, suitable conditions for the intended use. This would represent insignificant to **direct, long-term** and **local** effects which are of **minor beneficial significance,** and no mitigation measures would be required.

11.4.31 The majority of terrace level amenity spaces would be suitable for sitting and standing use during the summer season, suitable conditions for mixed-use terrace spaces provided any proposed seating provisions are allocated in areas suitable for sitting use. This would represent **insignificant** effects**,** and no mitigation measures would be required.

11.4.32 Similar to Configuration 2, strolling conditions on the roof terrace of Plot C, at level 11 (measurement location 465), would be one category windier than suitable for the intended use during the summer season and would represent a **direct, long-term** and **local** effect of **minor adverse significance**. Therefore, mitigation measures would be required.

Strong Winds

11.4.33 There would be no instances of strong winds which would pose a safety concern for the pedestrians or occupants in Configuration 3.

Figure 11.10: Configuration 3 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings – Ground Level Windiest Season

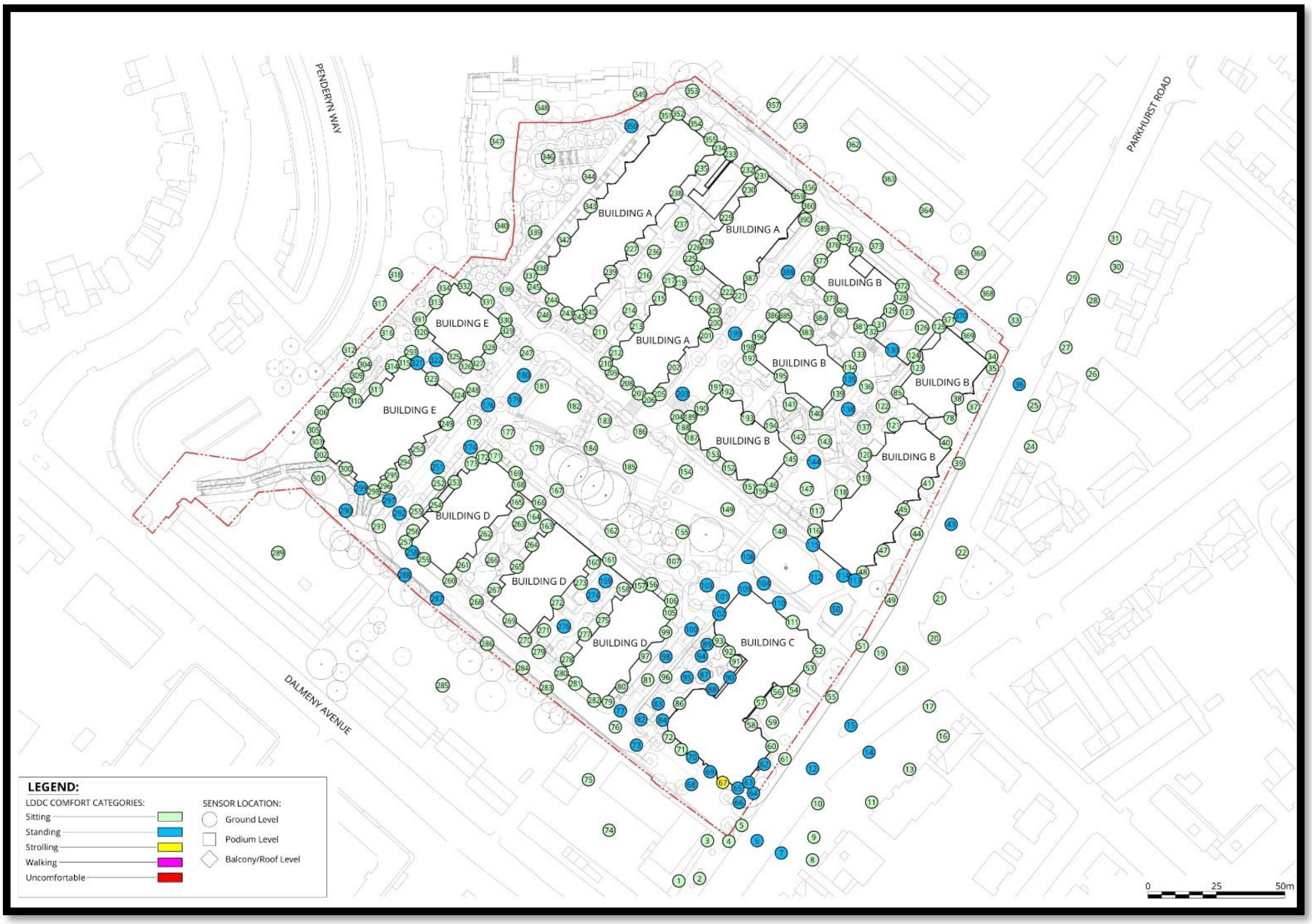


Figure 11.11: Configuration 3 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings – Ground Level Summer Season

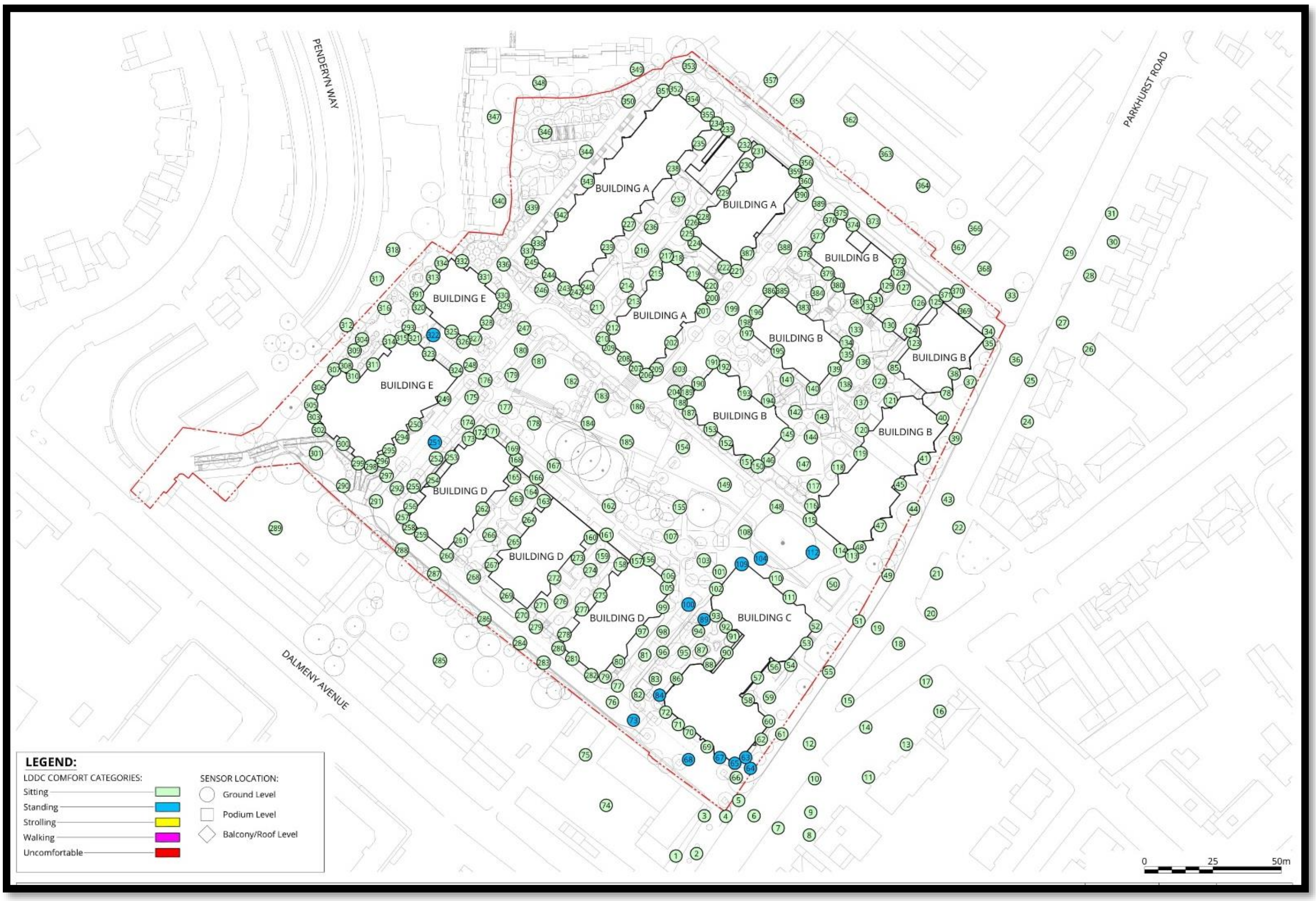


Figure 11.12: Configuration 3 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings – Elevated Level Summer Season

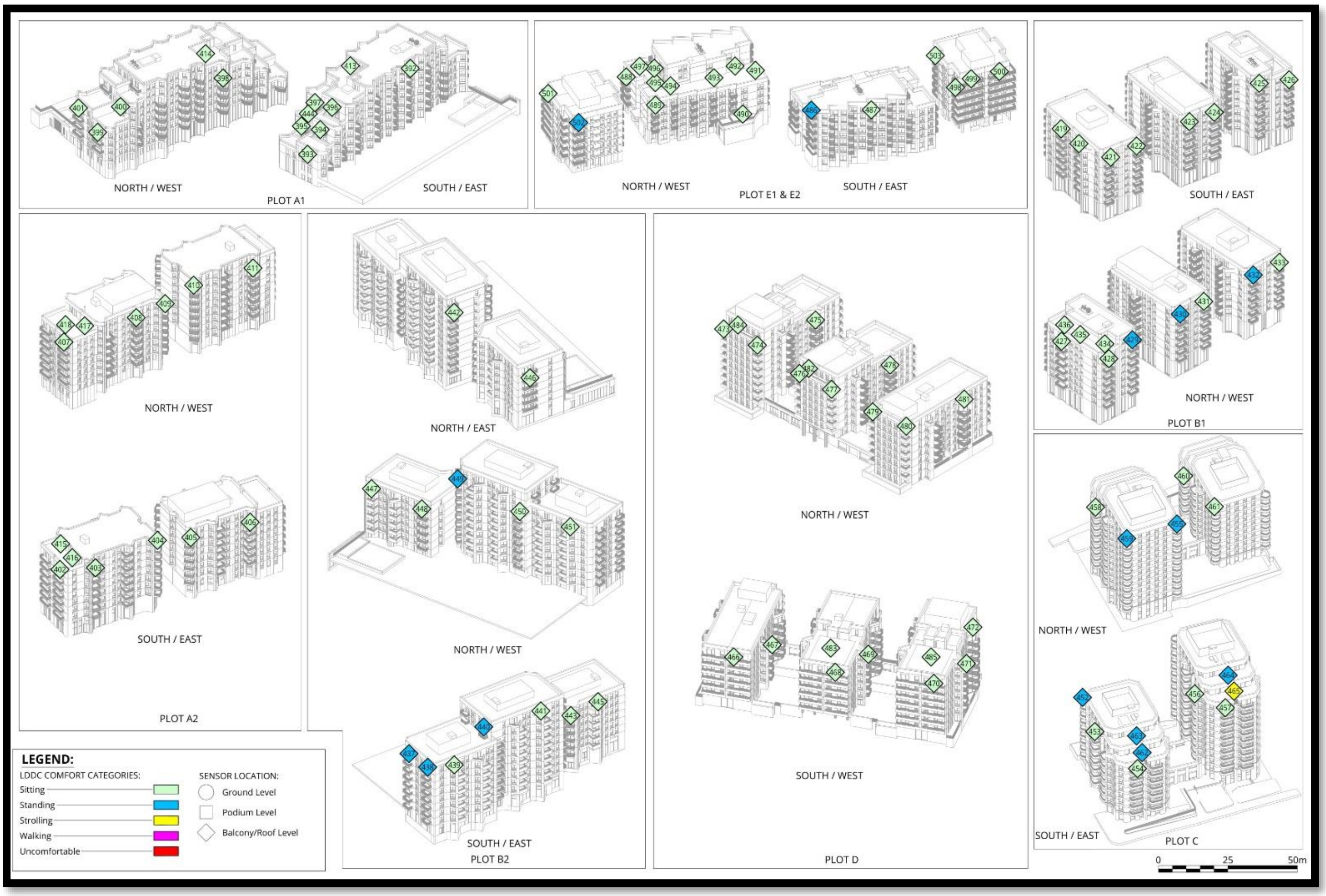


Figure 11.13: Configuration 3 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings – Ground Floor Wind Safety Conditions

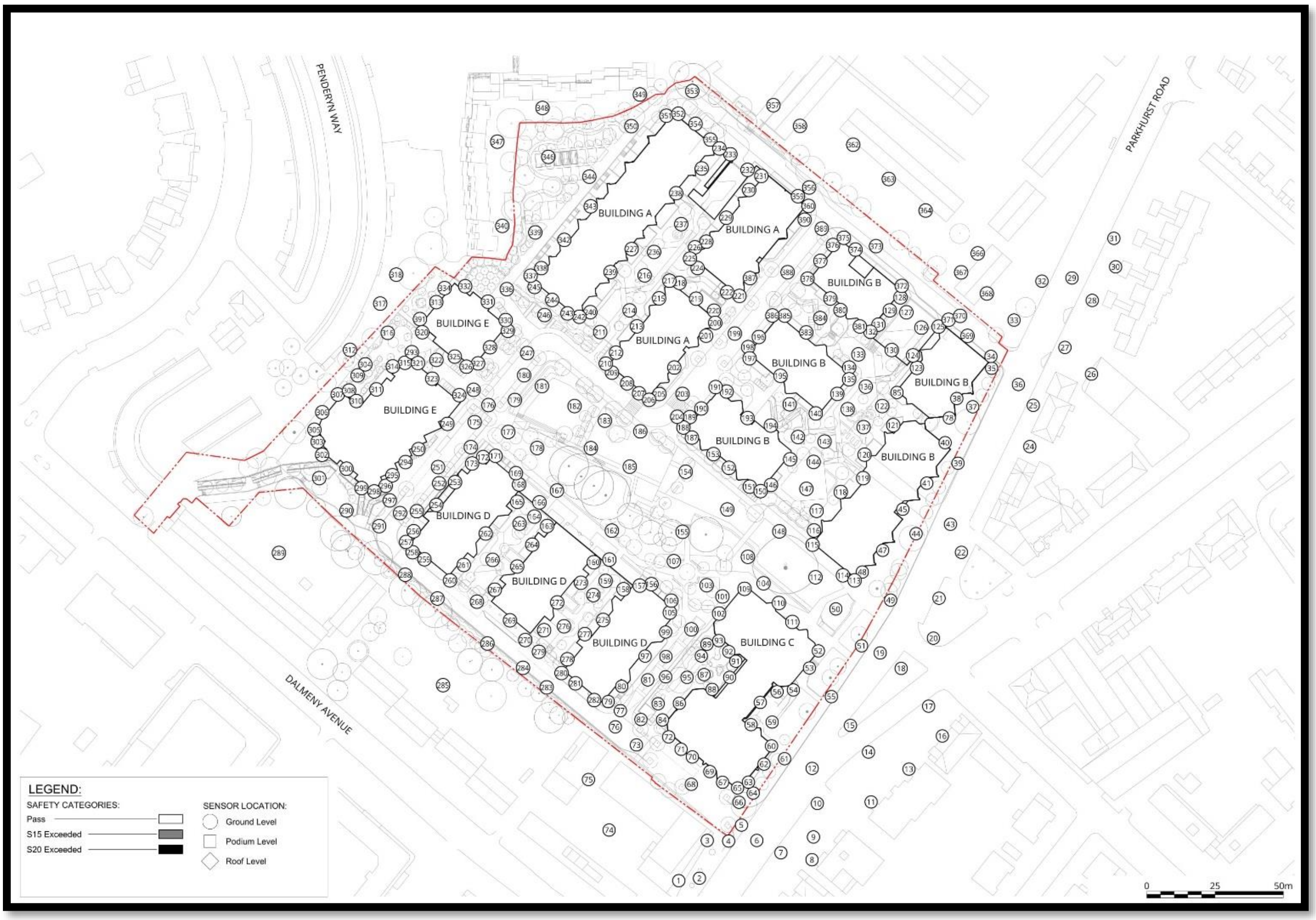
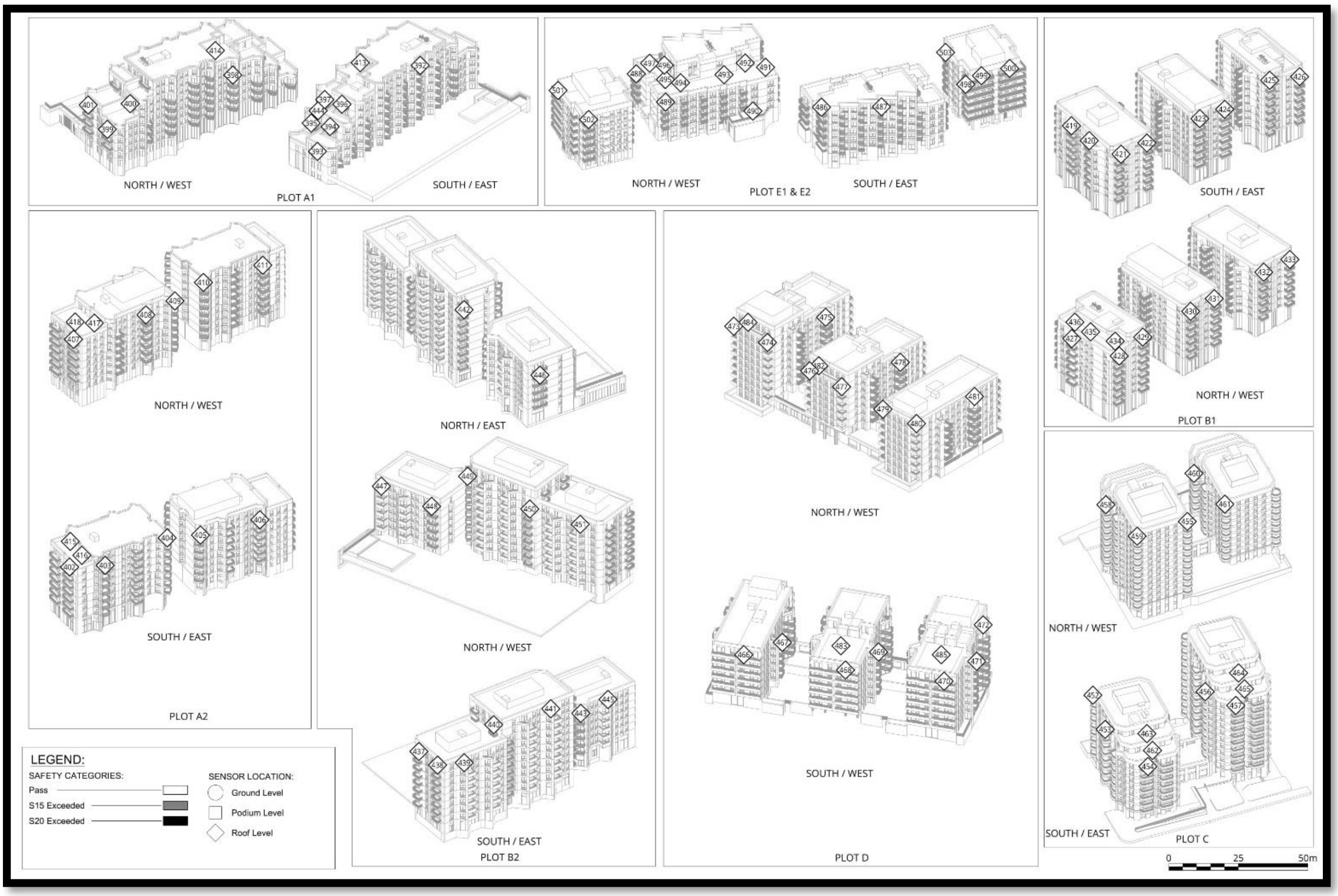


Figure 11.14: Configuration 3 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings – Elevated Levels Wind Safety Conditions



Configuration 5: The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings Plus Proposed Mitigation Measures

11.4.34 The following locations in the Development were identified as requiring mitigation to improve the wind conditions such that they would be suitable for the intended use:

- Plot C spill out seating area with standing conditions during the summer season (measurement location 104).
- Spill out seating provisions in the Extra-Care Garden with standing conditions during the summer season (measurement location 322).
- Level 11 roof terrace amenity space of Plot C with strolling conditions during the summer season (measurement location 465).

11.4.35 Therefore, the following amendments to the scheme usages and wind mitigation measures were developed which were tested as part of a mitigation workshop and were incorporated into the final landscaping strategy as shown on the planning drawings.

- Changing the usage at Plot C from spill out seating to mixed use amenity (measurement location 104).

- Relocating the seating provisions in the Extra-care Garden (measurement location 322) to the north-east corner of Building E1 (measurement location 324) or to the south-east corner of Building E2 (measurement location 326).
- Addition of 1.1m high planter with additional 0.9m high 50% porous screen on the boundary line between the communal and the two private roof top amenity on either side on the level 11 roof terrace of Building C1.

11.4.36 Wind conditions for Configuration 5 are presented in **Figure 11.20** and **Figure 11.21** for the windiest and summer seasons respectively for ground floor level and **Figure 11.22** for elevated levels during the summer season. Safety exceedances are presented in **Figure 11.23** and **Figure 11.24** respectively for ground and elevated levels.

Pedestrian Comfort

11.4.37 Wind conditions on thoroughfares, entrances at and around the Development and the bus-stop on Parkhurst Road would have wind conditions consistent to that in Configuration 3, suitable for the intended use during the windiest season. This would represent **insignificant** effects.

Ground Level Amenity Spaces

11.4.38 Play areas and other mixed-use amenity spaces on-Site would be suitable for sitting and standing use during the summer season. This would represent **insignificant** to **direct, long-term** and **local** effects of **minor beneficial significance** and no mitigation measures would be required.

11.4.39 All assessed seating provisions on-Site would be suitable for sitting use during the summer season. This would represent **insignificant** effects**,** and no mitigation measures would be required.

11.4.40 New proposed seating provisions at the north-east corner of Building E1 (measurement location 324) and at the south-east corner of Building E2 (measurement location 326) would be suitable for sitting use during the summer season. This would represent **insignificant** effects.

Elevated Level Amenity Spaces

11.4.41 Consistent with Configuration 3, all the balcony amenity spaces of the Development would be suitable for sitting and standing use during the summer season, suitable conditions for the intended use. This would represent **insignificant** to **direct, long-term** and **local** effects which are of **minor beneficial significance,** and no mitigation measures would be required.

11.4.42 With the inclusion of the wind mitigation measures, the roof terrace at level 11 of Building C1 (measurement location 326) would have wind conditions suitable for sitting use during the summer season. This would represent **insignificant** effects, and no additional mitigation measures would be required.

11.4.43 Consistent with Configuration 3, all other terrace level amenity spaces would be suitable for sitting and standing use during the summer season, suitable conditions for mixed-use terrace spaces provided any proposed seating provisions are allocated in areas suitable for sitting use. This would represent **insignificant** effects**,** and no mitigation measures would be required.

Strong Winds

11.4.44 There would be no instances of strong winds which would pose a safety concern for the pedestrians or occupants in Configuration 5.

Figure 11.20: Configuration 5 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings Plus Proposed Mitigation Measures – Ground Floor Windiest Season

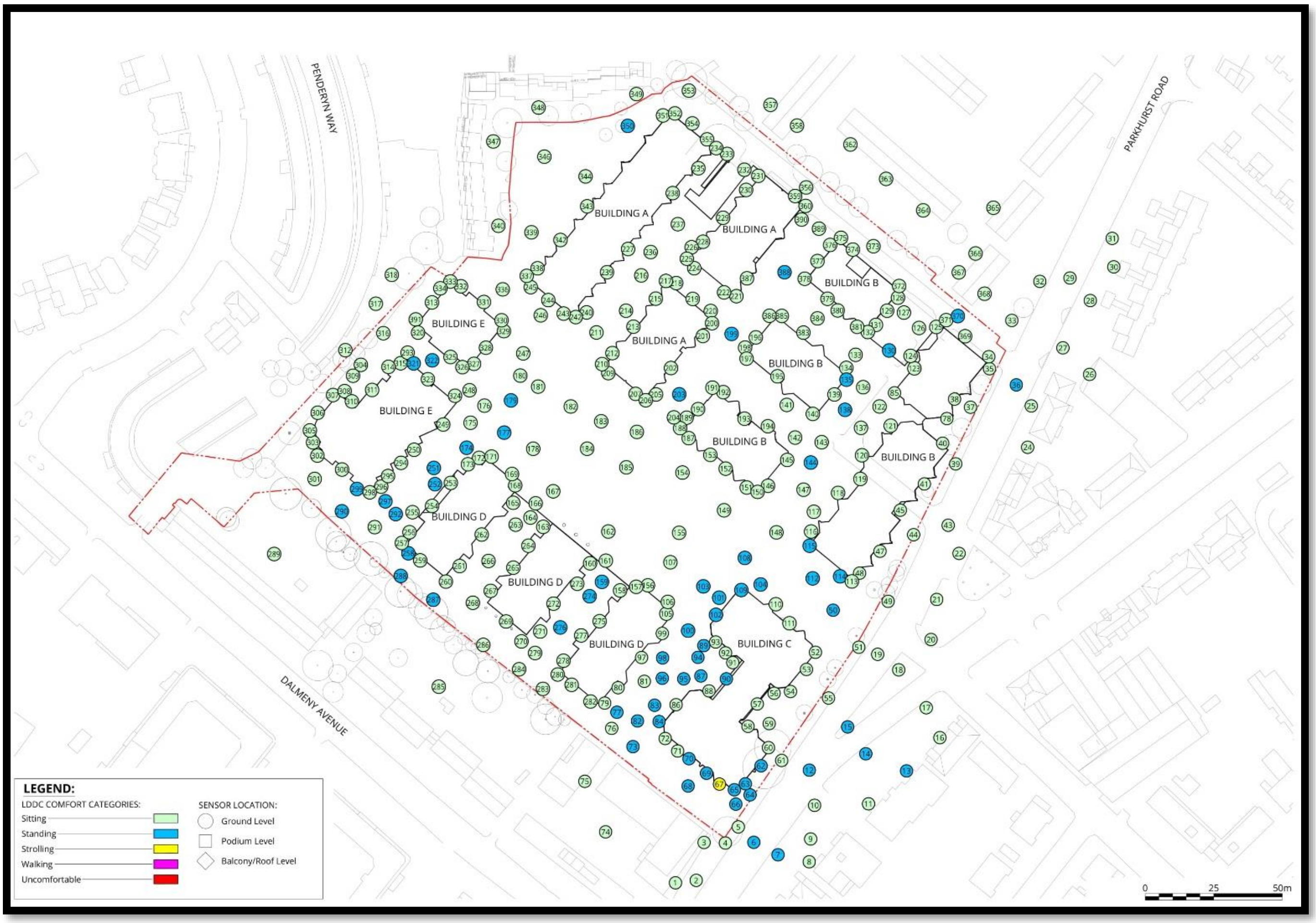


Figure 11.21: Configuration 5 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings Plus Proposed Mitigation Measures – Ground Floor Summer Season

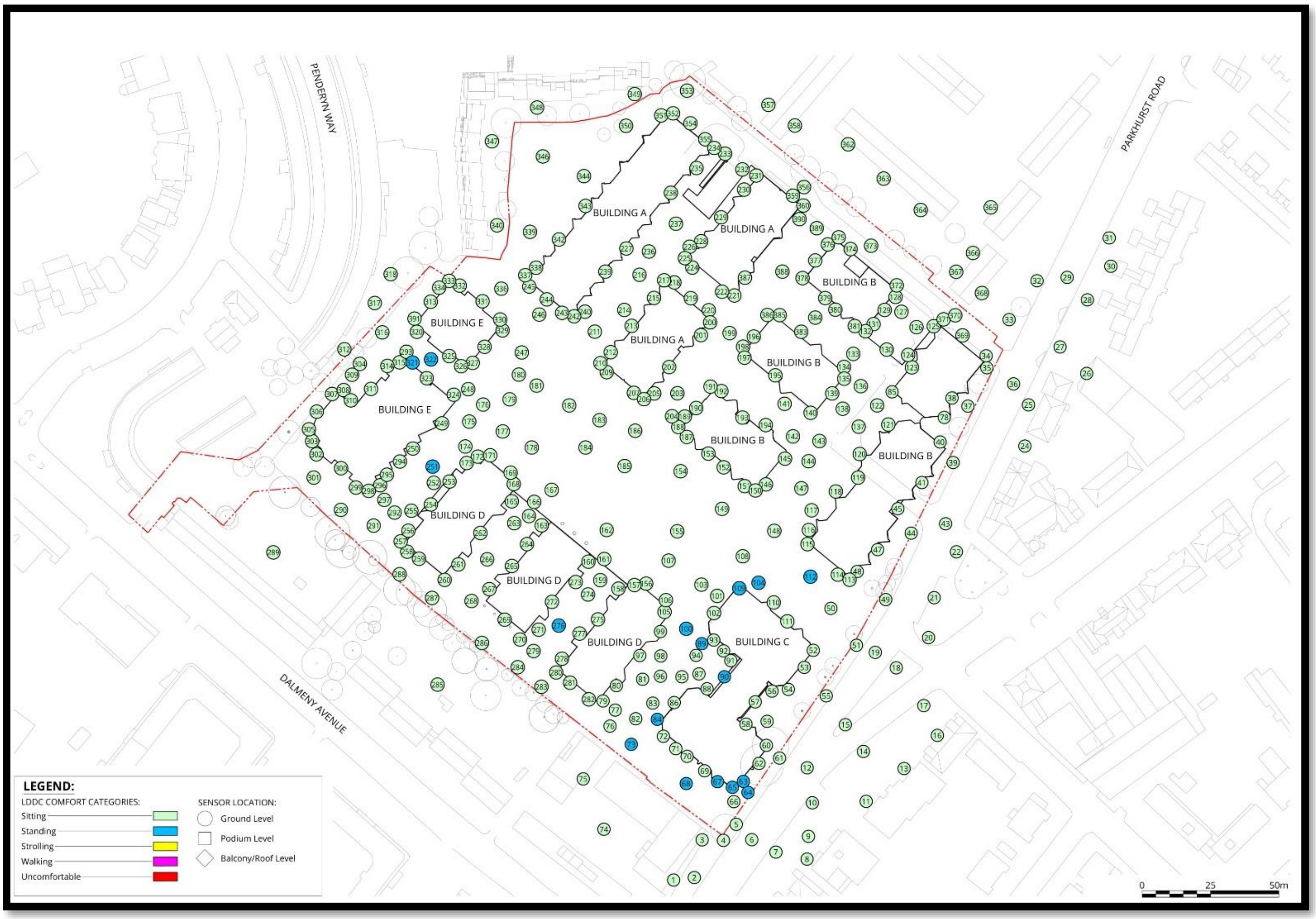


Figure 11.22: Configuration 5 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings Plus Proposed Mitigation Measures – Elevated Levels Summer Season

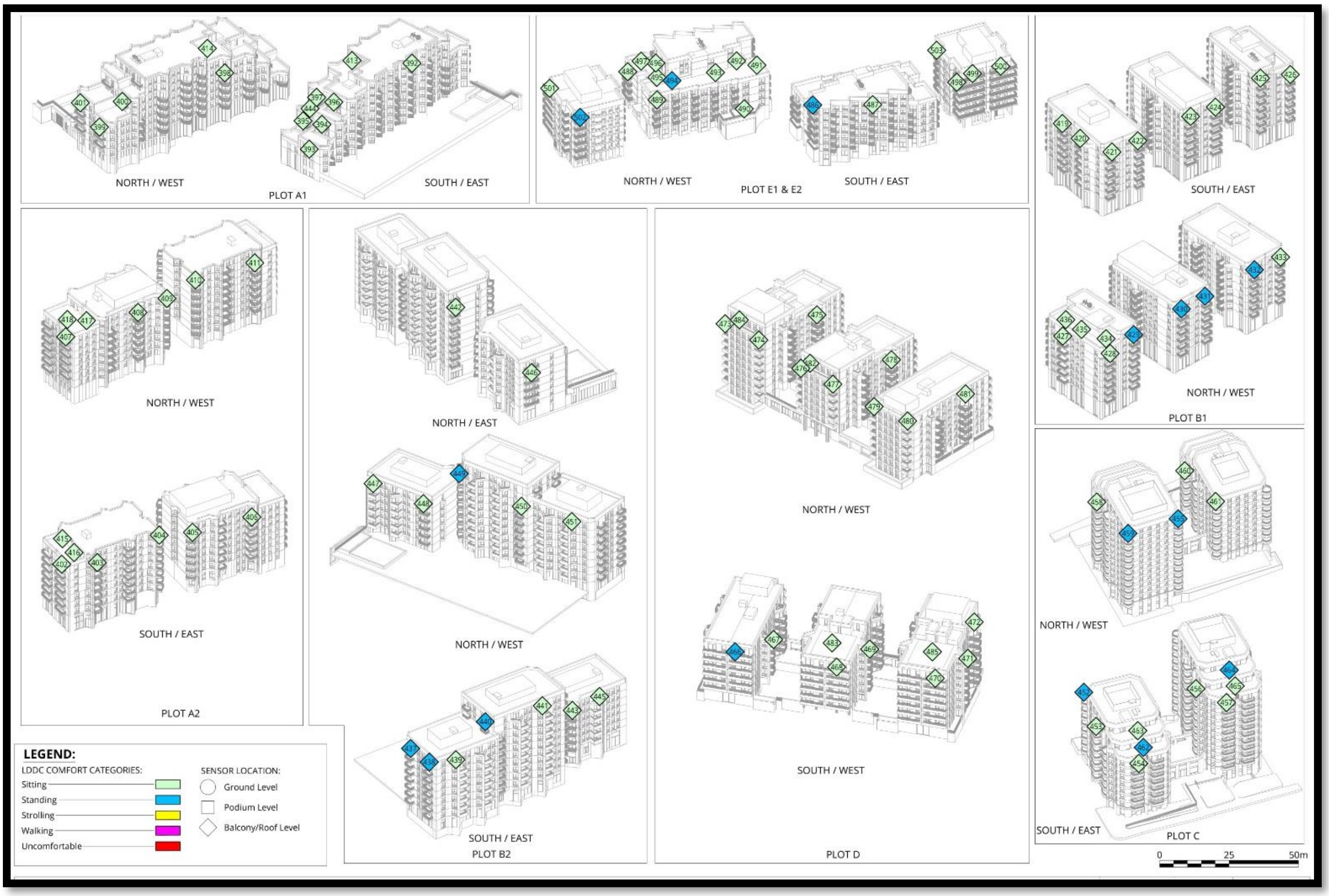


Figure 11.23: Configuration 5 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings Plus Proposed Mitigation Measures – Ground Floor Level Wind Safety Conditions

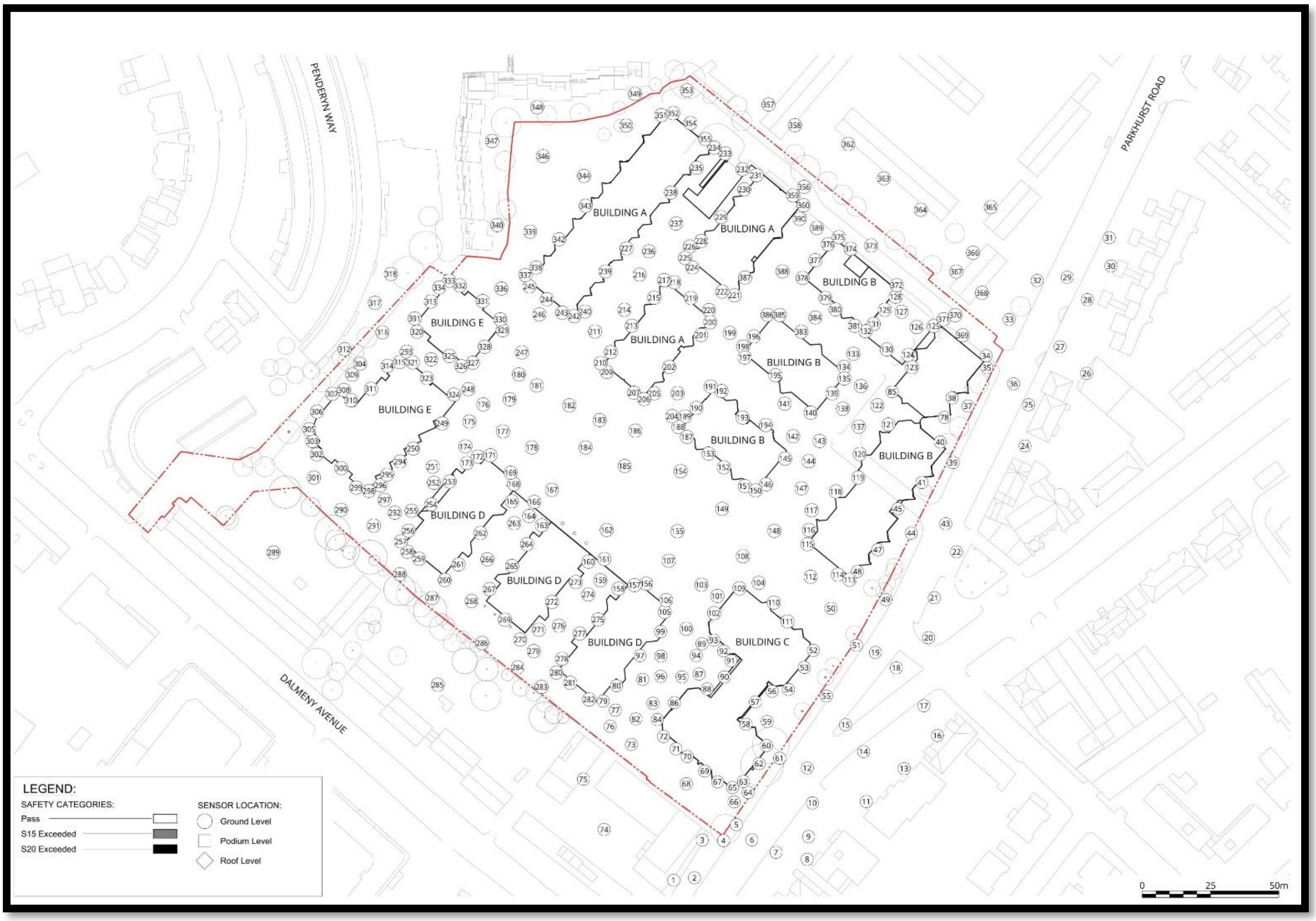
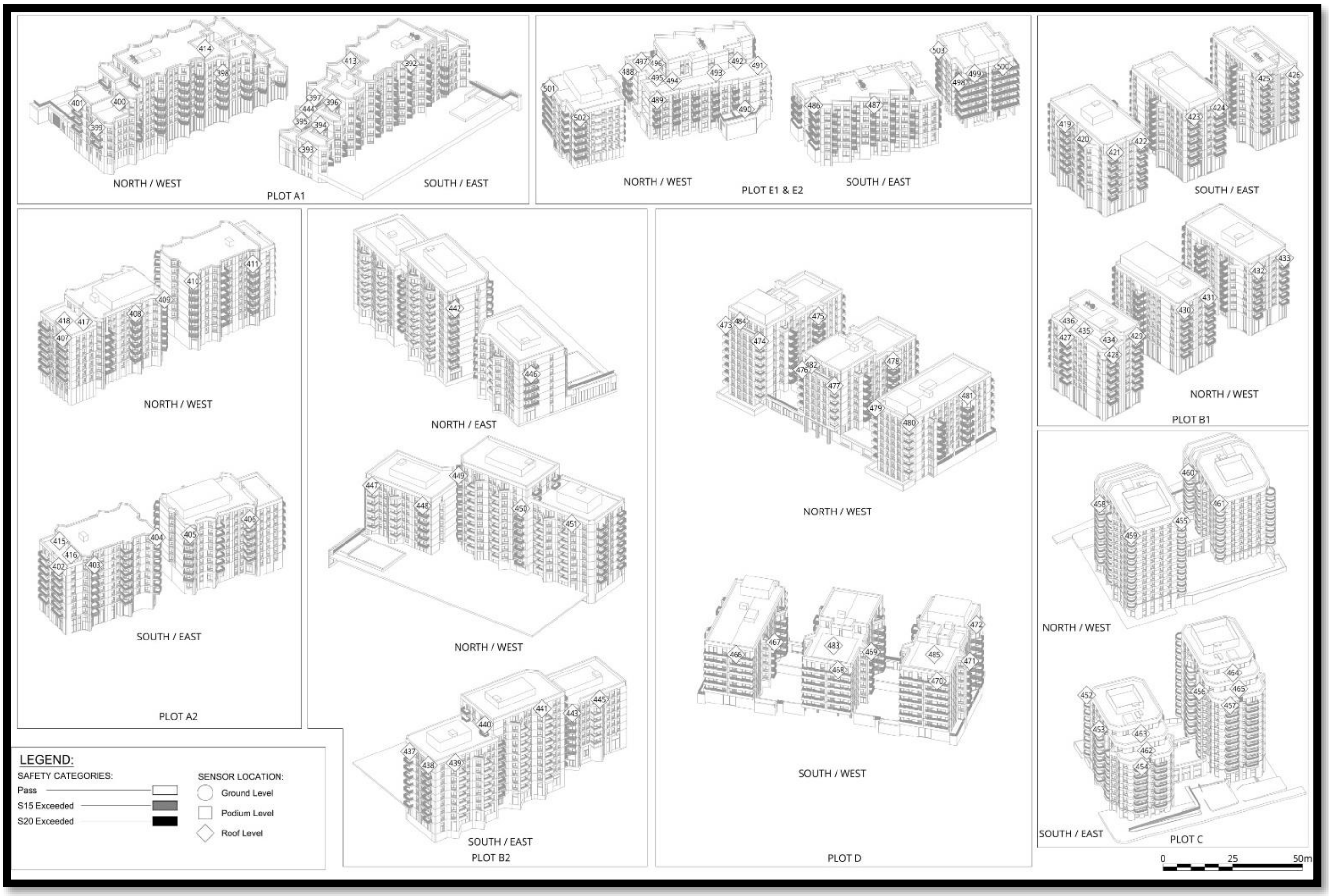


Figure 11.24: Configuration 5 - The Development with Proposed and Existing Landscaping and Existing Surrounding Buildings Plus Proposed Mitigation Measures – Elevated Levels Wind Safety Conditions



11.5 Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance

The Works

11.5.1 During the Works, the area under construction would be surrounded by hoarding until the point at which the landscaping measures have been incorporated and the construction of the buildings are completed, which would provide some shelter to the Site. The landscaping tested within the wind tunnel would need to be put in place prior to the completion and occupation of the Development, which is proposed.

11.5.2 Furthermore, the Works would be expected to have lesser effect on the suitability of wind conditions in and around the Site, than for the completed and operational Development, which is considered the critical scenario. Therefore, pedestrians and workers on-Site would be more likely to tolerate temporary adverse conditions and therefore no additional mitigation measures would be required. The likely residual effect of the Works would therefore remain as per the likely effects, that is **Insignificant**.

The Completed and Operational Development

11.5.3 The wind conditions around all areas of the Development and surrounding area would give rise to either insignificant or beneficial effects. As such, no additional mitigation is required at any area around the Development or surrounding area and the likely residual effects would remain as per the likely effects.

11.6 Likely Residual Cumulative Effects and their Significance

Approved Projects

11.6.1 With reference to **ES Volume 1, Chapter 2: EIA Methodology**, the assessment of the cumulative effects has been carried out including the following cumulative schemes identified within a 360m radius of the centre of the Site, a distance where it is expected that there could be some cumulative effects on the local wind microclimate around the Development:

- 2 Parkhurst Road and 2A Parkhurst Road, Islington Arts Factory (Planning Ref: P2016/5054/LBC and P2015/0330/FUL).
- 65-69 Parkhurst Road, Former Territorial Army Centre (Planning Ref: P2020/0648/FUL).
- 392A Camden Road and 1 Hillmarton Road (Planning Ref: P121287, as amended by P2015/4073/s73).

The Works

11.6.2 During the Works, the Approved Projects are not considered likely to have a material impact on the wind microclimate at the Site due to their massing and as they are not located in the prevailing wind direction. Therefore, the likely residual cumulative effects during the Works would be **Insignificant**.

The Completed and Operational Development

Configuration 4: The Development with Existing Landscaping and Cumulative Schemes

11.6.3 Wind conditions for Configuration 4 are presented in **Figure 11.15** and **Figure 11.16** for the windiest and summer seasons respectively for ground floor level and **Figure 11.17** for elevated levels during the summer season. Safety exceedances are presented in **Figure 11.18** and **Figure 11.19** respectively for ground and elevated levels.

Pedestrian Comfort

11.6.4 Due to the location and the massing of the Approved Projects, these would not be expected to provide beneficial shelter to the Development.

Thoroughfares

11.6.5 All the on-Site thoroughfares at the Development would be suitable for sitting to standing use during the windiest season, suitable for the intended use. Therefore, the likely effects would be **direct, long-term, local** and of **moderate beneficial** to **minor beneficial significance** and no mitigation measures would be required.

11.6.6 All the off-Site thoroughfares would be suitable for sitting to strolling use during the windiest season, suitable conditions for the intended use. The likely effects would be **insignificant** and no mitigation measures would be required.

Entrances

11.6.7 Similar to Configuration 3, all the entrances on-Site would be suitable for the intended use during the windiest season, ranging from sitting to strolling use (with strolling conditions at the secondary entrance to Plot C (measurement location 67)). Therefore, the likely effects would be **insignificant** to **direct, long-term, local** and of **minor beneficial significance** and no mitigation measures would be required.

11.6.8 Furthermore, all the off-Site entrances would have wind conditions suitable for sitting use during the windiest season, suitable conditions for the intended use. The likely effects would be **insignificant** and no mitigation measures would be required.

Bus Stops

11.6.9 The bus-stop on Parkhurst Road would be suitable for sitting use during the windiest season. Therefore, the likely effect would be **insignificant** and no mitigation measures would be required.

Ground Level Amenity Spaces

11.6.10 Sitting and standing conditions on the on-Site mixed use amenity spaces would represent **insignificant** to **direct, long-term, local** effects that are of **minor beneficial significance** and no mitigation measures would be required.

11.6.11 The majority of seating provisions on-Site would be suitable for sitting use during the summer season. This would represent **insignificant** effects**,** and no mitigation measures would be required.

11.6.12 However, similar to the previous configurations the standing conditions at spill out seating provisions situated north of Plot C (measurement location 104) and in the Extra-Care Garden in Plot E (measurement location 322) would be one category windier than suitable for the intended use. This would therefore represent direct, long-term and local effects that are of minor adverse significance, and mitigation measures would be required. With the proposed wind mitigation measures in place as noted earlier in the Chapter and adjustments to the uses of some areas, the spill out space to the north of Plot C (measurement location 104) and the new proposed seating provisions (measurement locations 324 and 326) would have wind conditions suitable for the intended use, therefore this would represent **insignificant** effects, and no additional mitigation measures would be required.

11.6.13 All off-Site amenity spaces would be suitable for sitting use during the summer season, this would represent **insignificant** effects**,** and no mitigation measures would be required.

Elevated Level Amenity Spaces

11.6.14 All the balcony amenity spaces of the Development would be suitable for sitting and standing use during the summer season, suitable conditions for the intended use. This would represent **insignificant** to **direct, long-term** and **local** effects that are **minor beneficial significance,** and no mitigation measures would be required.

11.6.15 The majority of terrace level amenity spaces would be suitable for sitting and standing use during the summer season, suitable conditions for mixed-use terrace spaces provided any proposed seating provisions are allocated in areas suitable for sitting use. This would represent **insignificant** effects**,** and no mitigation measures would be required.

11.6.16 Similar to the previous configurations, strolling conditions on the roof terrace of Building C1, at level 11 (measurement location 465), would be one category windier than suitable for the intended use during the summer season and would represent a direct, long-term and local effect that is of minor adverse significance. Therefore, mitigation measures would be required. However, with the inclusion of the proposed wind mitigation measures as noted earlier in the Chapter, this terrace would be suitable for sitting use during the summer season. This would represent **insignificant** effects and no additional mitigation would be required.

Strong Winds

11.6.17 There would be no instances of strong winds which would pose a safety concern for the pedestrians and occupants in Configuration 4.

Figure 11.15: Configuration 4 - The Development with Existing Landscaping and Cumulative Schemes – Ground Floor Windiest Season

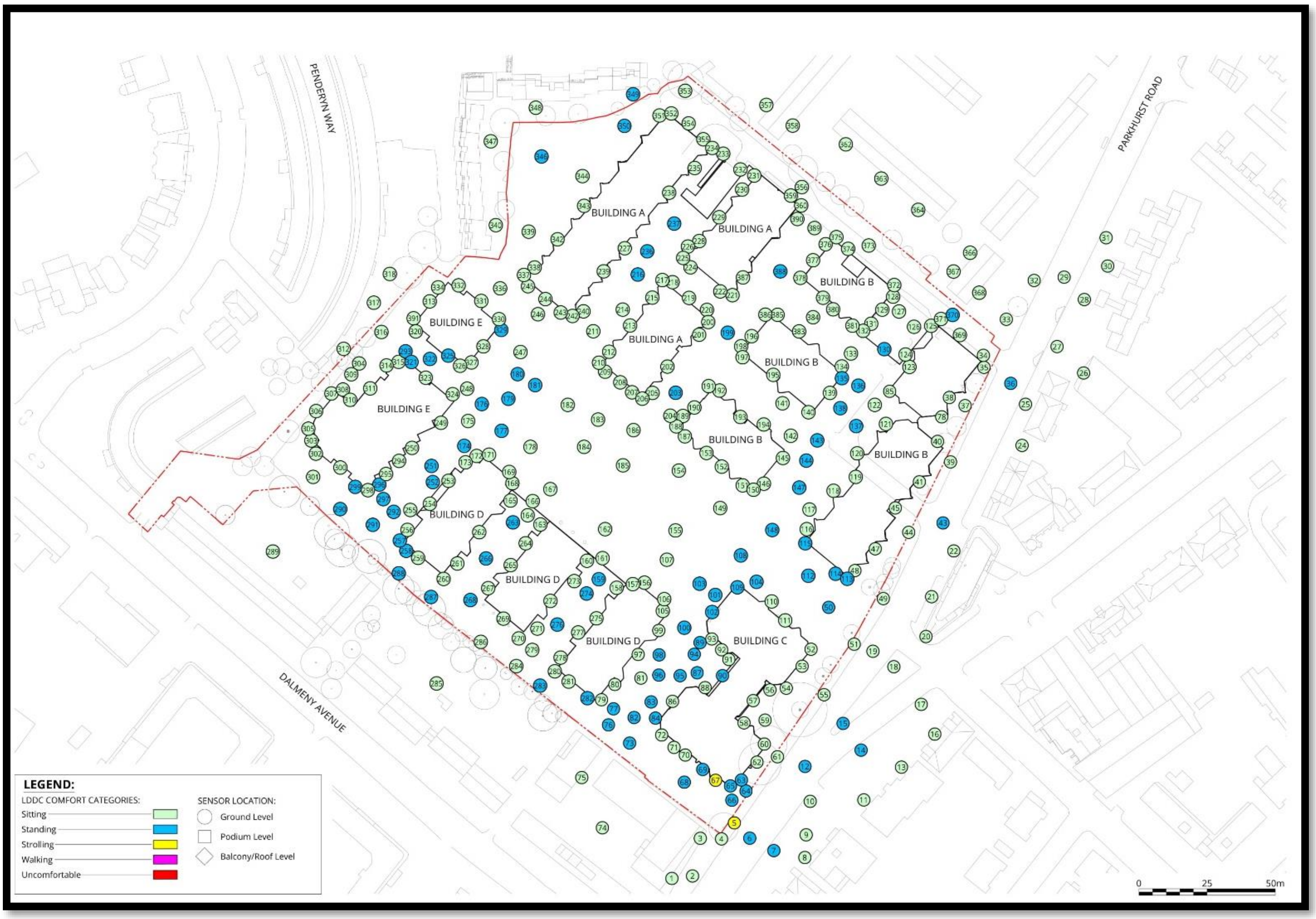


Figure 11.16: Configuration 4 - The Development with Existing Landscaping and Cumulative Schemes – Ground Floor Summer Season

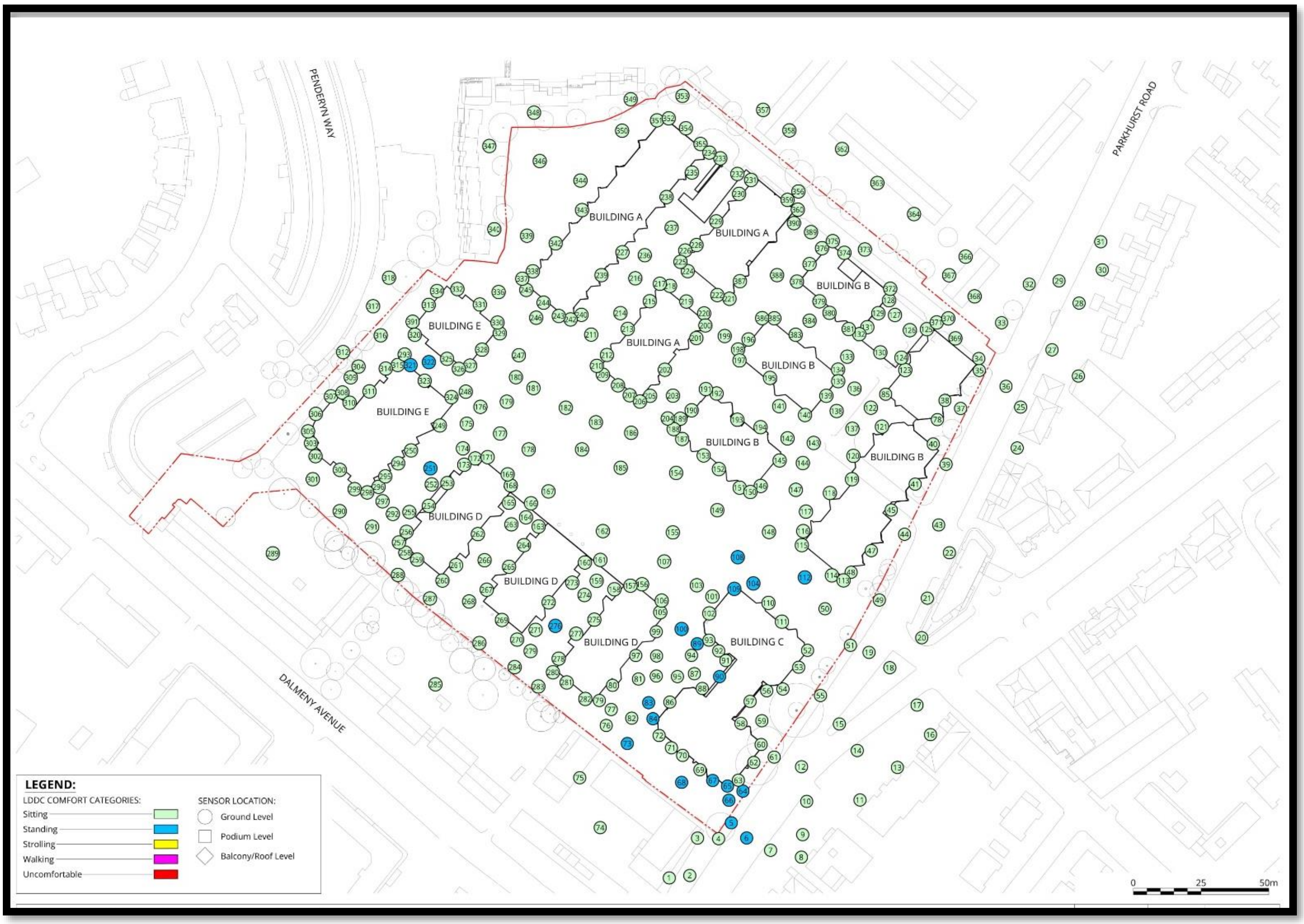


Figure 11.17: Configuration 4 - The Development with Existing Landscaping and Cumulative Schemes – Elevated Levels Summer Season

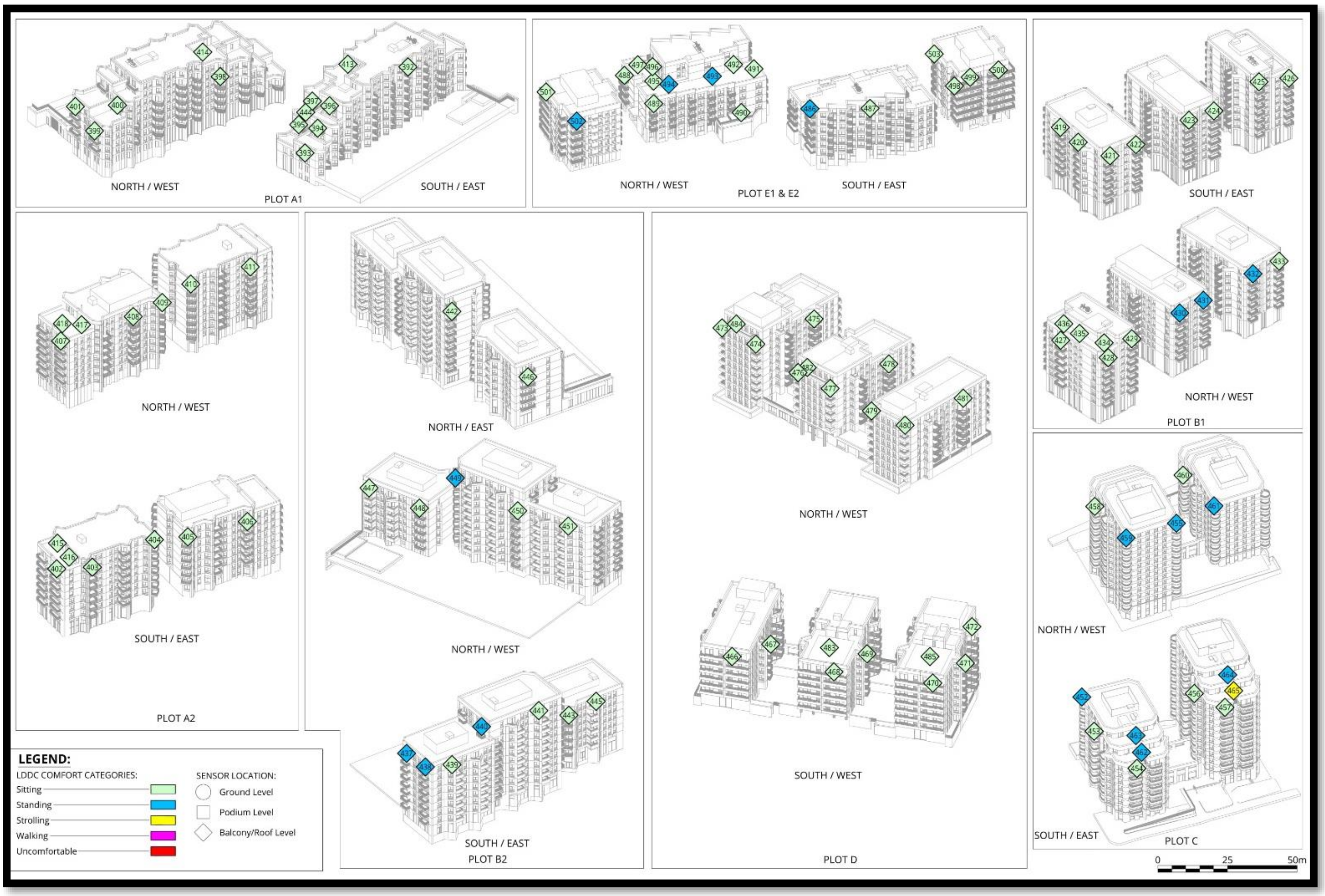


Figure 11.18: Configuration 4 - The Development with Existing Landscaping and Cumulative Schemes - Ground Floor Level Wind Safety Conditions

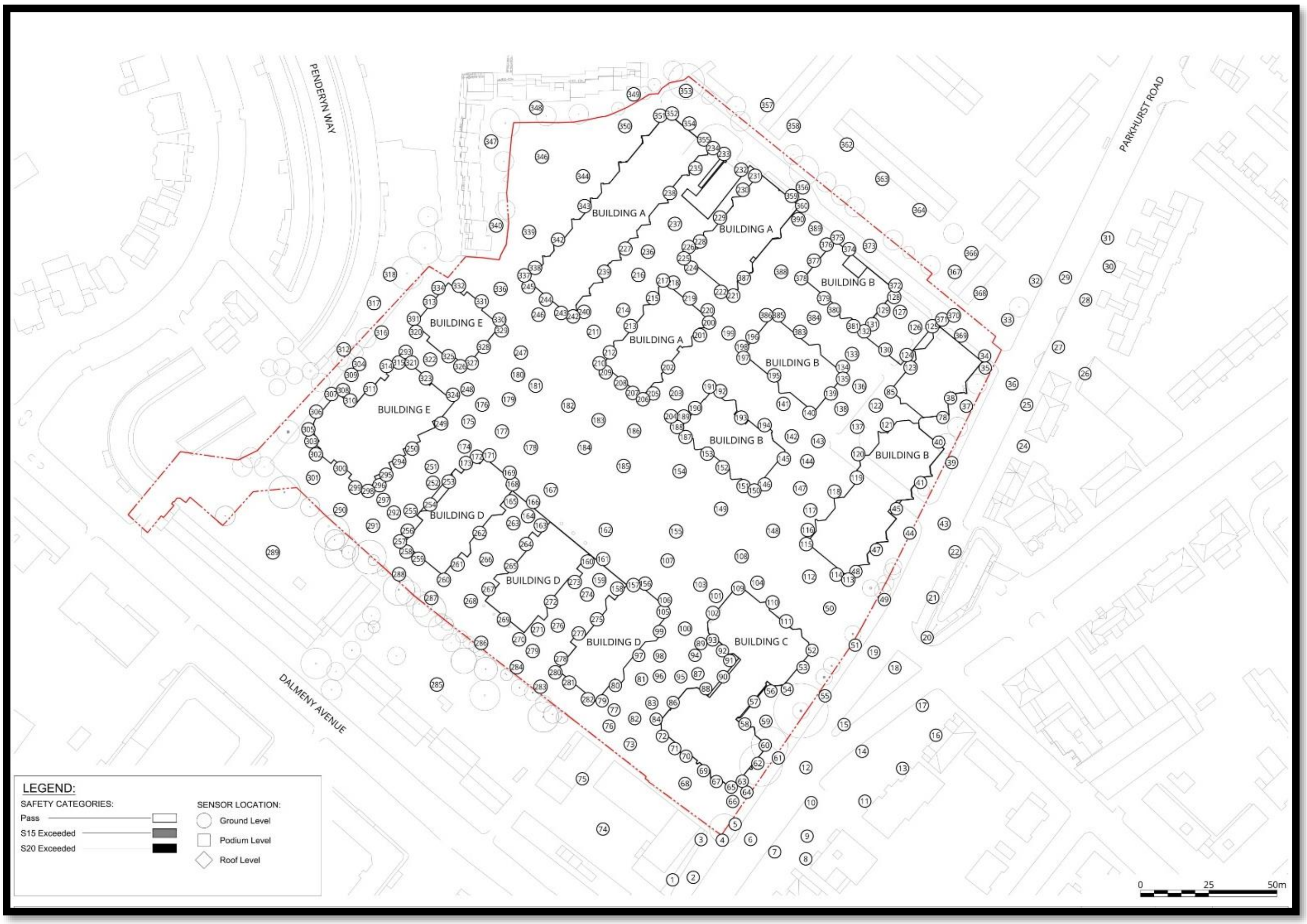
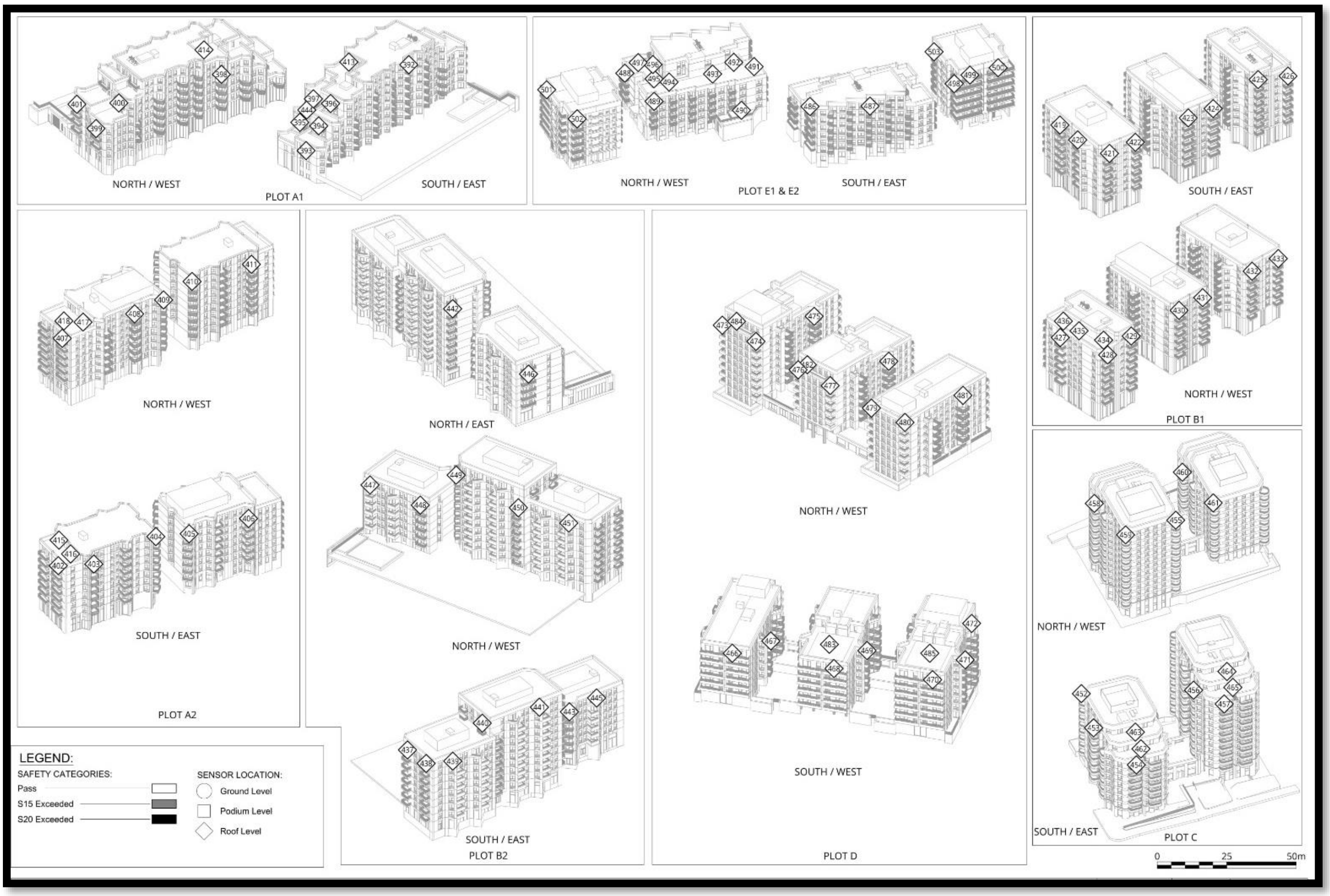


Figure 11.19: Configuration 4 - The Development with Existing Landscaping and Cumulative Schemes - Elevated Levels Wind Safety Conditions



Configuration 6: The Development with Proposed and Existing Landscaping and Cumulative Schemes plus Proposed Mitigation Measures

11.6.18 Wind conditions for Configuration 6 are presented in **Figure 11.25** and **Figure 11.26** for the windiest and summer seasons respectively for ground floor level and **Figure 11.27** for elevated levels during the summer season. Safety exceedances are presented in **Figure 11.28** and **Figure 11.29** respectively for ground and elevated levels.

Pedestrian Comfort

11.6.19 Due to the location and the massing of the cumulative schemes, these would not be expected to provide beneficial shelter to the Development. Therefore, wind conditions at and around the Development would be consistent to that reported in Configuration 5.

Thoroughfares

11.6.20 All the on-Site thoroughfares at the Development would be suitable for sitting to standing use during the windiest season, suitable for the intended use. Therefore, the likely effects would be **direct, long-term, local** and of **moderate beneficial** to **minor beneficial significance** and no mitigation measures would be required.

11.6.21 All the off-Site thoroughfares would be suitable for sitting to standing use during the windiest season, suitable conditions for the intended use. The likely effects would be **insignificant,** and no mitigation measures would be required.

Entrances

11.6.22 Similar to Configuration 5, all the entrances on-Site would be suitable for the intended use during the windiest season, ranging from sitting to strolling use (with strolling conditions at the secondary entrance to Plot C (measurement location 67)). Therefore, the likely effects would be **insignificant** to **direct, long-term, local** and of **minor beneficial significance** and no mitigation measures would be required.

11.6.23 Furthermore, all the off-Site entrances would have wind conditions suitable for sitting use during the windiest season, suitable conditions for the intended use. The likely effects would be **insignificant,** and no mitigation measures would be required.

Bus Stops

11.6.24 The bus-stop on Parkhurst Road would be suitable for sitting use during the windiest season. Therefore, the likely effect would be **insignificant,** and no mitigation measures would be required.

Ground Level Amenity Spaces

11.6.25 Sitting and standing conditions on the on-Site mixed use amenity spaces would represent **insignificant** to **direct, long-term, local** effects that are of **minor beneficial significance** and no mitigation measures would be required.

11.6.26 All the on-Site seating provisions would be suitable for sitting use during the summer season. This would represent **insignificant** effects**,** and no mitigation measures would be required.

11.6.27 All off-Site amenity spaces would be suitable for sitting use during the summer season, this would represent **insignificant** effects**,** and no mitigation measures would be required.

Elevated Level Amenity Spaces

11.6.28 All the balcony amenity spaces of the Development would be suitable for sitting and standing use during the summer season, suitable conditions for the intended use. This would represent **insignificant** to **direct, long-term** and **local** effects that would be of **minor beneficial significance,** and no mitigation measures would be required.

11.6.29 All the terrace level amenity spaces would be suitable for sitting and standing use during the summer season, suitable conditions for mixed-use terrace spaces provided any proposed seating provisions are allocated in areas suitable for sitting use. This would represent **insignificant** effects**,** and no mitigation measures would be required.

Strong Winds

11.6.30 There would be no instances of strong winds which would pose a safety concern for the pedestrians and occupants in Configuration 6.

Figure 11.25: Configuration 6 - The Development with Proposed and Existing Landscaping and Cumulative Schemes Plus Proposed Mitigation Measures – Ground Floor Windiest Season

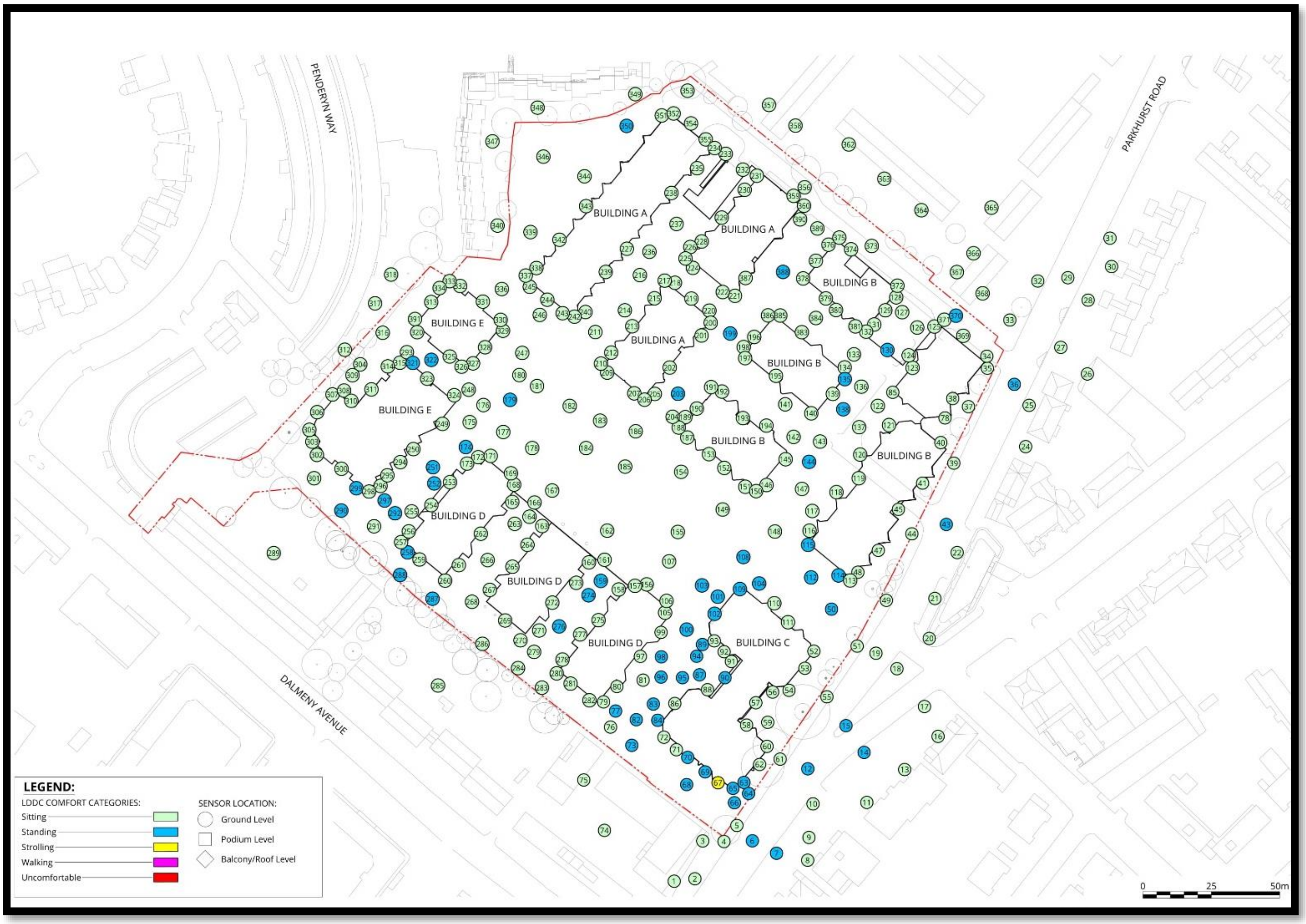


Figure 11.26: Configuration 6 - The Development with Proposed and Existing Landscaping and Cumulative Schemes Plus Proposed Mitigation Measures – Ground Floor Summer Season

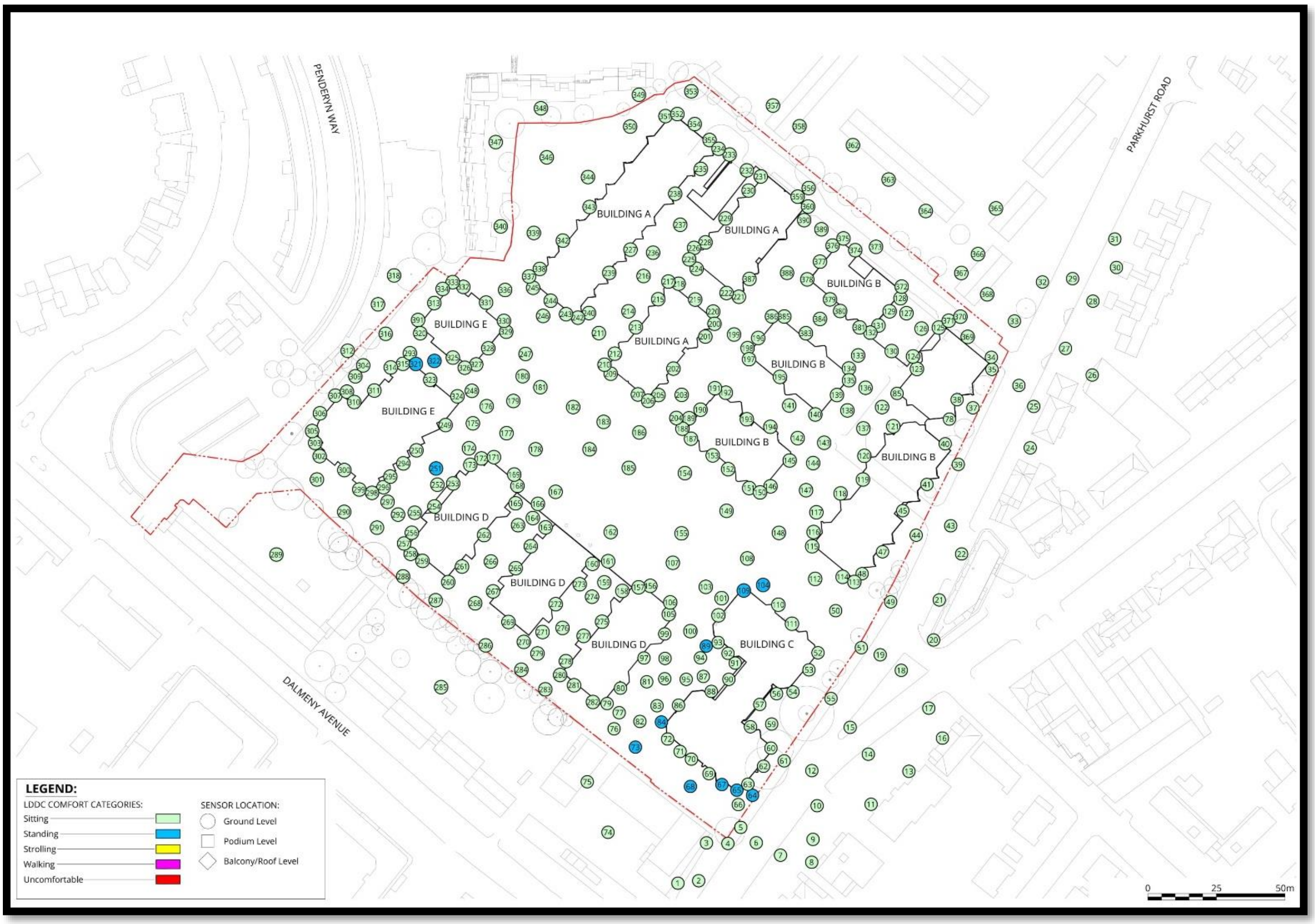


Figure 11.27: Configuration 6 - The Development with Proposed and Existing Landscaping and Cumulative Schemes Plus Proposed Mitigation Measures – Elevated Levels Summer Season

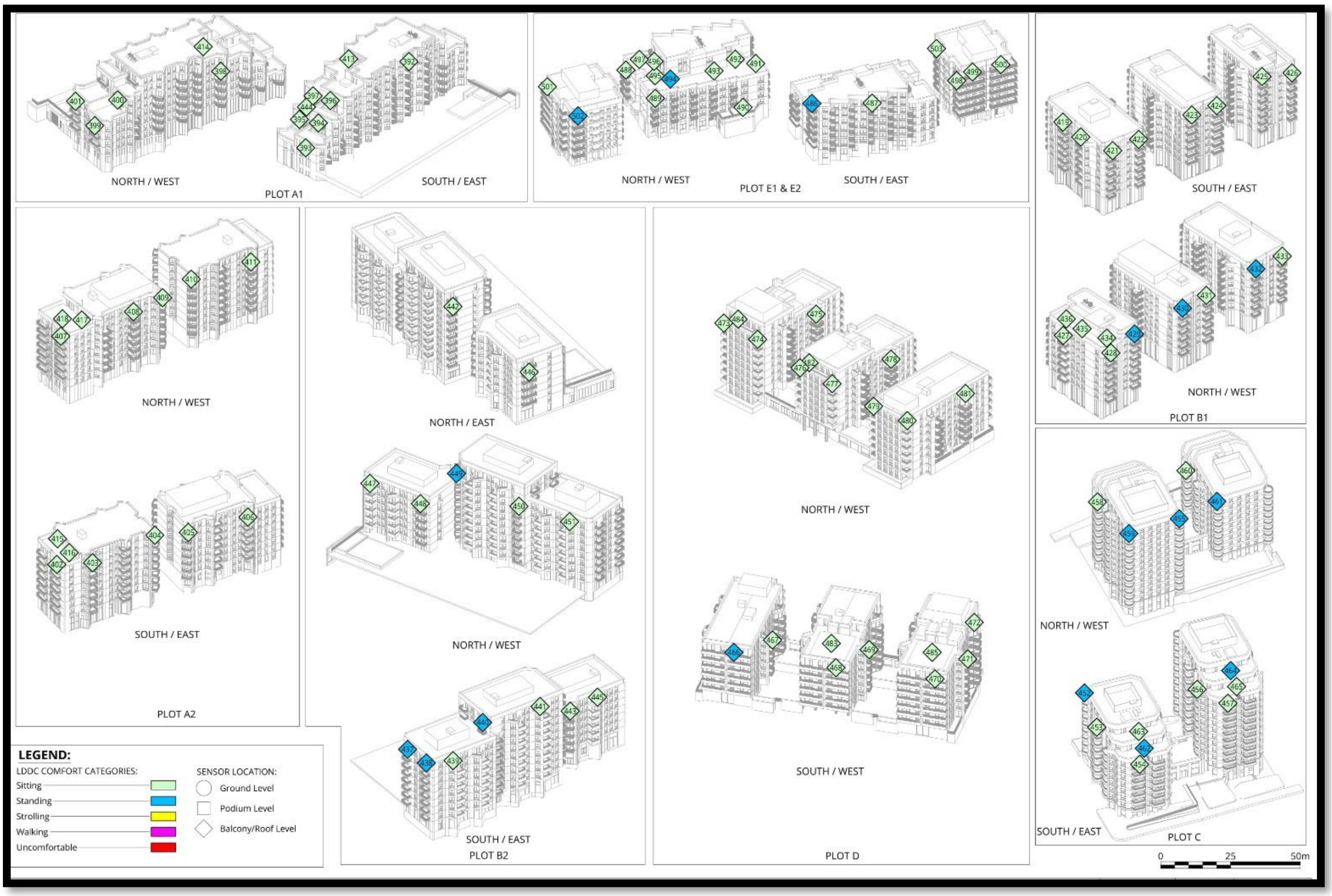


Figure 11.28: Configuration 6 - The Development with Proposed and Existing Landscaping and Cumulative Schemes Plus Proposed Mitigation Measures – - Ground Floor Level Wind Safety Conditions

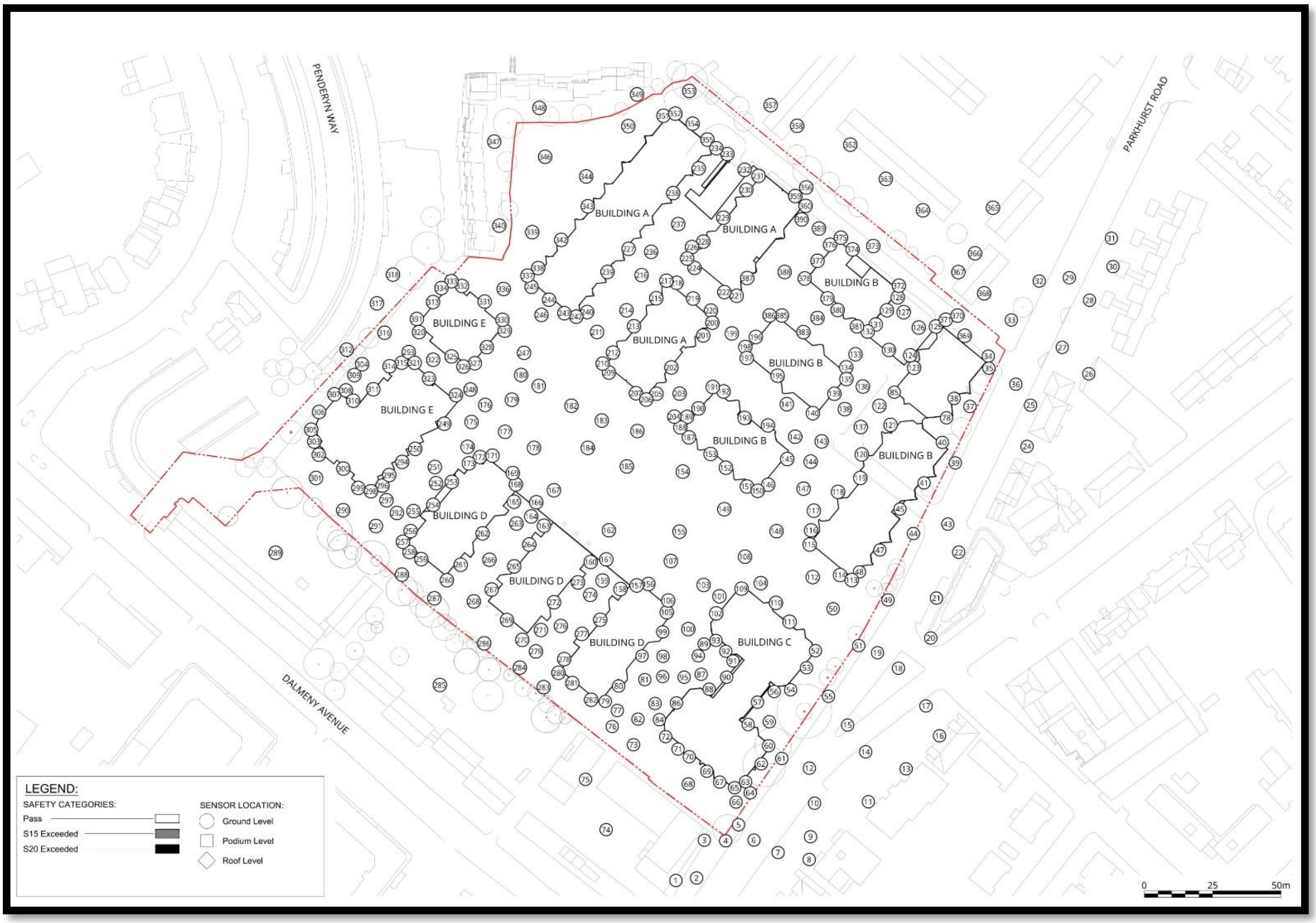
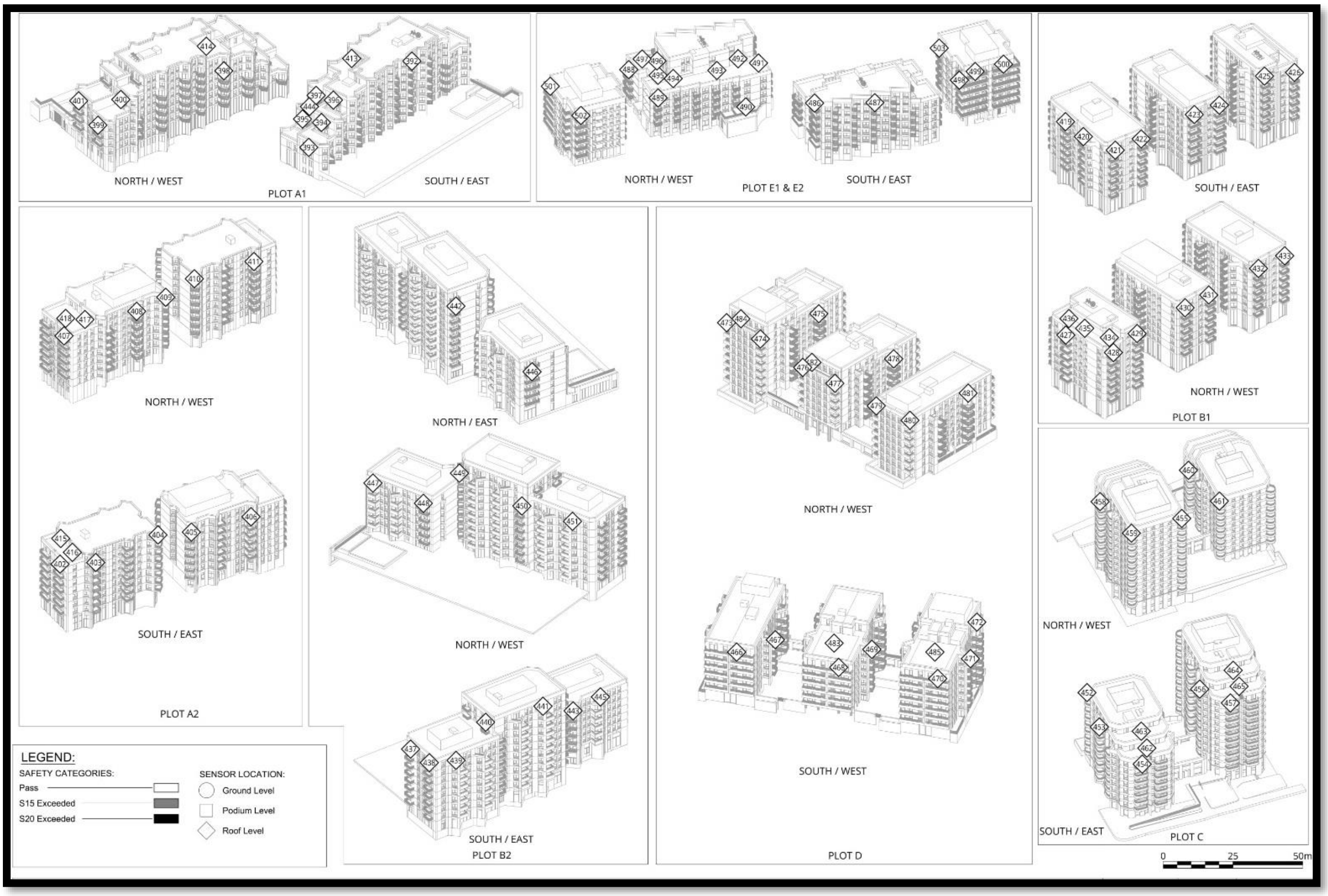


Figure 11.29: Configuration 6 - The Development with Proposed and Existing Landscaping and Cumulative Schemes Plus Proposed Mitigation Measures – - Elevated Levels Wind Safety Conditions



Approved Projects plus Developments that have a Planning Status in the Development Plan Process

11.6.31 Three sites have been identified as having proposed massing which could result in potential significant effects in combination with the Approved Projects and the Development:

- NH1: Morrison's supermarket and adjacent car park, 10 Hertslet Road, and 8-32 Seven Sisters Road, N7 6AG; this site allocation includes a building of up to 15 residential storeys at the junction of Holloway Road and Seven Sisters Road.
- NH2: 368-376 Holloway Road (Argos and adjoining shops), N7 6PN; this site allocation includes a building of up to 15 residential storeys at the junction of Holloway Road and Tollington Road.
- NH12: 379-391 Camden Road and 341-345 Holloway Road; this site allocation includes a building of up to 13 residential storeys at the junction of Holloway Road and Camden Road.

The Works

11.6.32 As per the Development with Approved Projects, should the construction of the Development overlap with the three above developments that have a planning status in the Development Plan process, a combined wind microclimate effect is not anticipated due to the distance of the above sites from the Holloway Prison Site. The residual effects would therefore remain as per Configuration 6, that is **insignificant**.

The Completed and Operational Development

11.6.33 The three sites are considered too far from the Holloway Prison Site to result in any cumulative effects. The residual effects would therefore remain as per Configuration 6, that is **insignificant**.

11.7 Conclusions

11.7.1 An assessment of the likely wind conditions as a result of the Development and the suitability of these in terms of pedestrian comfort and safety were undertaken. The assessment has been informed by appropriate meteorological data and detailed wind tunnel testing.

11.7.2 Meteorological data for the Site shows prevailing winds blow from the south-west throughout the year with a secondary peak from the north-east, mainly during the spring months.

11.7.3 The baseline scenario has wind conditions typical of a low-rise suburban area. The wind microclimate at the existing Site and in the surrounding area is relatively calm. The conditions are suitable for standing use (at worst), and predominantly suitable for sitting, during the windiest season.

11.7.4 The wind effects during the Works have been assessed using professional judgement, and informed by an analysis of the background windiness of the Site based on the meteorological data. The demolition of the existing buildings would not be expected to have a significant effect on the wind conditions within, and immediately surrounding, the Site. As construction of the Development proceeds, the wind conditions of the Site would gradually adjust to the conditions of the completed Development. On-Site and off-Site effects during the works are expected to be **Insignificant** and no design and/or management measures are considered necessary during the demolition and construction of the Development.

11.7.5 Following the incorporation of inherent mitigation measures, wind tunnel testing when the Development is complete, with the inclusion of the proposed landscaping scheme, all conditions within the Site would be suitable for the corresponding intended uses throughout the year. The likely effects at the Site would be expected to be **insignificant** to **direct, long-term, local** and be of **moderate beneficial significance.**

11.7.6 Testing was undertaken for the Development and relevant Approved Projects. This concluded that the Development together with other relevant Cumulative Schemes would not give rise to any materially different wind microclimate effects over and above those identified for the Development in isolation.

12. Daylight, Sunlight and Overshadowing

12.1 Introduction

12.1.1 This Chapter, prepared by Point 2 Surveyors Limited (Point 2), presents an assessment of likely significant effects of the Development on the daylight and sunlight amenity to the occupiers of neighbouring sensitive properties and overshadowing to existing amenity areas in the vicinity of the Site.

12.1.2 The Chapter provides a description of the methods used to assess the effects and a description of the relevant baseline conditions of the Site and surrounding area. This is followed by an assessment of the likely significant effects of the Development during the Works and once the Development is complete and operational. Where appropriate, mitigation measures are identified to avoid, reduce or offset any adverse effects identified. Taking into account the mitigation measures, a description is provided of the nature and significance of likely residual effects. The cumulative daylight, sunlight and overshadowing effects of the Development and other relevant Cumulative Schemes to sensitive receptors surrounding the Site are also considered.

12.1.3 This Chapter is supported by further detailed information contained within the following appendices:

- **ES Volume 3, Appendix 12.1: Baseline and Development Drawings.**
- **ES Volume 3, Appendix 12.2: Baseline and Development Daylight and Sunlight Results.**
- **ES Volume 3, Appendix 12.3: Baseline and Development Overshadowing Results.**
- **EX Volume 3, Appendix 12.4: Baseline and Development Transient Overshadowing Plots.**
- **ES Volume 3, Appendix 12.5: Cumulative and Development Drawings.**
- **ES Volume 3, Appendix 12.6: Cumulative and Development Daylight and Sunlight Results.**
- **ES Volume 3, Appendix 12.7: Future Baseline and Development Daylight and Sunlight Results.**
- **ES Volume 3, Appendix 12.8: Window Maps.**
- **ES Volume 3, Appendix 12.9: HM Holloway Prison Daylight Wide Area Assessment.**

12.1.4 A standalone Daylight, Sunlight and Overshadowing Report submitted in support of the planning application, which should be read in parallel with this Chapter, has also been produced. It includes the text contained within **Appendix 12.9** that further explains the significant effects of the Development upon daylight, sunlight and overshadowing.

12.1.5 The above standalone report, which sits outside of this Environmental Statement, also considered the quality of daylight and sunlight within the Development itself.

12.2 Assessment Methodology and Significance Criteria

Assessment Guidelines

12.2.1 The guidance set out in the Building Research Establishment (BRE) 'Site Layout Planning for Daylight and Sunlight – A guide to good practice' (hereafter the BRE Guidelines[1]) suggest that residential properties have the highest requirement for daylight and sunlight and state, in paragraph 2.2.2 that "*the guidelines …. are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed*". The Guidelines may also be applied to any non-domestic building where the occupants have a reasonable expectation of daylight. The only non-residential property surrounding the Site that has been considered a sensitive receptor is 2 Parkhurst Road and 291 A-C Camden Road which is in use as the Islington Arts Factory. All other sensitive receptors are in residential use.

12.2.2 Additionally, in line with the BRE Guidelines, public and private amenity areas surrounding the Site which have the potential to be affected by the Development are considered within this Chapter. Paragraph 13 Appendix I of the BRE Guidelines states that "*adverse impacts occur when there is a significant decrease in the… amount of sunlight reaching an open space*".

12.2.3 The BRE Guidelines are the industry recognised standard for assessing all matters related to daylight, sunlight and overshadowing, and are the primary reference within all national and local policy.

12.2.4 When determining whether changes in light conditions are in line with policy and guidance, it is important to consider other contextual matters, such as instances where the existing light levels within neighbouring properties are already low, or where the proposed residual values are commensurate with those that would be expected in urban areas of similar density. Furthermore, daylight and sunlight impacts of a development should be balanced against the improvements and benefits which the scheme will bring to the area.

Defining the Baseline

Current Baseline Conditions

12.2.5 The assessment of daylight and sunlight amenity is governed principally by the extent that the sky is obscured by the existing and proposed structures (obstructions) which surround a sensitive receptor. Using professional judgement, the extent of the study area has been established by assessing the number of properties and open spaces within and surrounding the Site which may be affected by any additional obstruction of the sky as a result

[1] Building Research Establishment (BRE) Guidelines: Site Layout Planning for Daylight and Sunlight 2011, A Guide to Good Practice, Second Edition, 2011.

of the construction of the Development. The location of the sensitive receptors can be seen within drawings P2104/01-03 (Baseline) and P2104/219-221 (Development) within **ES Volume 3, Appendix 12.1** and in **Figure 12.1**.

12.2.6 The current Baseline Conditions are defined as the existing Site conditions at the time of the planning submission. A detailed land survey was undertaken by Point 2 (April 2019) which surveyed each of the existing buildings and structures on the Site, as well as the surrounding area considered to be relevant for the assessment of daylight, sunlight and overshadowing effects. The survey also measured the ground level topography across the Site and within the wider surrounding area.

12.2.7 Since the date of the original survey, regular Site visits have been undertaken to ensure that the contextual model is kept up to date. Point 2's most recent Site visit was undertaken in May 2021.

Impact Assessment

Identification of Receptors and Receptor Sensitivity

12.2.8 The uses of the properties surrounding the Site have been established using external observations during Site visits in 2019 and 2021 and data from the Valuation Office Agency (VOA) website.

12.2.9 As mentioned above, residential receptors/properties are usually the most sensitive to daylight and sunlight availability. This assessment therefore considers the effects upon the residential properties surrounding the Site and any external private and public amenity spaces.

12.2.10 Commercial and light industrial properties are generally deemed to have a greater reliance upon supplementary electric lighting and have therefore not been included within the assessment. This is also supported by the BRE Guidelines which advises that non-domestic properties need not be analysed unless they are considered to have a greater expectation for natural daylight and sunlight, such as churches, schools, hospitals and some workshops.

Receptors - Assumptions

12.2.11 Best efforts have been made to obtain internal room layout information, however where this was not available, reasonable assumptions have been made regarding the likely use and internal configuration of rooms behind the fenestration observed.

12.2.12 Assumptions have been made where necessary as to the use, for example bedroom or living room, and internal configuration of the rooms (from external observations) behind the fenestration observed. In such cases room depths have generally been assumed to be between 4-4.5m, however this is not prescriptive and is dictated by the building form. This is common practice where access to buildings for surveying is unavailable. Where room layouts were available, precise evaluation of the diffuse levels of daylight within each of the rooms via the No Sky Line (NSL) has been established.

12.2.13 Floor levels were 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, as the results may differ slightly if the assessment was carried out based on the true layouts, however this was not considered to affect the overall significance of the effect.

Scenarios Assessed

12.2.14 The following scenarios were considered and are reported within this Chapter:

- Baseline (the existing Site + all relevant existing features surrounding the Site).
- The Completed Development (+ all relevant existing features surrounding the Site).
- The Completed Development + all relevant Cumulative Schemes and remaining existing features surrounding the Site.
- The Future Baseline (effect of the Completed Development on the neighbouring Approved Projects).

Baseline

12.2.15 The Baseline scenario considers the existing conditions at the Site and at surrounding sensitive receptors. The baseline daylight and sunlight results can be found within **ES Volume 3, Appendix 12.2.**

12.2.16 For overshadowing, all neighbouring amenity areas in close enough proximity to experience potential overshadowing from the Development were considered. Following the review of the study area, amenity areas that were included in the assessment as shown on **Figure 12.2**.

The Complete and Operational Development

12.2.17 This scenario consists of the complete and operational Development fully built out at the Year of Opening (2027) in the context of the surrounding environment. This scenario assesses the potential daylight, sunlight and overshadowing effects of the Development on the surrounding residential receptors and amenity spaces. In ascertaining the likely effects, comparisons are made with the baseline scenario.

12.2.18 This scenario is illustrated on drawings within **ES Volume 3, Appendix 12.1** and the results of the effects with the Development in place are included in **ES Volume 3, Appendix 12.2** and **ES Volume 3, Appendix 12.3**.

Cumulative Assessment

12.2.19 This scenario consists of the assessment of the Development together with relevant Cumulative Schemes, as described in **ES Volume 1, Chapter 2: Environmental Impact Assessment Methodology**, to determine the potential daylight, sunlight and overshadowing effects on surrounding residential receptors and amenity spaces.

12.2.20 This includes 2 and 2A Parkhurst Road (the Islington Arts Factory site) to the east of the Site. The massing and layouts where necessary for these properties has been based upon the approved planning drawings. The other Approved Projects were considered too distant from the Site to result in cumulative effects.

12.2.21 Consideration is also given in Section 12.6 of the cumulative effects resulting from sites or developments that have a planning status within the development plan process due to their potential to result in cumulative effects.

12.2.22 This scenario is illustrated on drawings within **ES Volume 3, Appendix 12.5** and the results of the effects with the Development in place are included in **ES Volume 3, Appendix 12.6.**

Future Baseline Assessment

12.2.23 This scenario consists of the assessment of the Development upon any neighbouring Approved Projects, namely 2 and 2A Parkhurst Road (the Islington Arts Factory site) which would include residential accommodation if implemented.

12.2.24 Consideration has therefore been given to the daylight and sunlight effects upon the new residential accommodation as a result of the Development. It is important to note that because this Approved Project is not yet implemented, a direct comparison to the existing baseline daylight and sunlight levels has not been considered necessary. Instead, the analysis has focussed on the levels of daylight and sunlight that would be retained within the Approved Project following completion of the Development.

12.2.25 This scenario is illustrated on drawings within **ES Volume 3, Appendix 12.6** and the results of the effects with the Development in place are included in **ES Volume 3, Appendix 12.7.**

Future Years Assessment

12.2.26 It was not considered appropriate or necessary to undertake a Future Years Assessment as the daylight, sunlight and overshadowing effects of the complete and operational Development will remain as per the Year of Opening for the life span of the completed and operational Development.

Assessment Methodology

The Works

12.2.27 Owing to the evolving and changing nature of demolition and construction activities, the assessment of potential effects during demolition works and construction of the Development on levels of daylight, sunlight and overshadowing to surrounding properties, amenity spaces and receptors have not been modelled and analysed. The resultant effects experienced by sensitive receptors are no greater than those occurring as a result of the completed and operational Development, as described within Section 12.4 of this Chapter titled ‘Likely Effects of the Development and their Significance’.

Complete and Operational Development

12.2.28 A technical analysis was undertaken to establish the potential impacts of the proposed Development with regard to daylight, sunlight and overshadowing enjoyed by the sensitive receptors. The analysis was based on a 3D computer model, created in AutoCAD, of the baseline situation on the Site, the neighbouring properties and use of the following information:

- Photographs taken during the Site visit.
- Full measured survey.
- Information obtained from public records on London Borough Islington's (LBI) website.
- Information obtained from online property sources (i.e. Rightmove, Zoopla etc.).
- Drawings and models produced by the Applicant's appointed Architects which form part of the planning application for which consent is sought.

12.2.29 A specialist computer programme (SOL) was used to undertake the required technical analysis of Vertical Sky Component (VSC), No Sky Line (NSL), Annual Probable Sunlight Hours (APSH) and overshadowing in accordance with the BRE Guidelines. This process used Waldram diagrams[2], in line with industry best practice, to quantify the levels of daylight and sunlight in both the baseline condition and with the complete and operational Development in place.

12.2.30 The uses of neighbouring receptors, in terms of commercial and residential, were established using external observations and VOA data. Only those adjacent residential properties, which have windows facing towards the Site were included in the assessment, in accordance with BRE Guidelines recommendations and industry best practice.

12.2.31 The daylight and sunlight assessments comprised the following:

- Identifying the neighbouring receptors that would be impacted by the Development.
- Through detailed modelling, determining the effects that the Development would have on the daylight and sunlight compared with the Baseline scenario and consider the results against numerical targets.
- Assessing the combined effect of the Development and Cumulative Schemes on the daylight and sunlight amenity of the neighbouring receptors and the daylight and sunlight amenity of the Cumulative Schemes.

12.2.32 The overshadowing assessment comprised the following:

- Identifying the neighbouring external amenity areas that could be impacted by the Development.
- Through detailed modelling, determining the effects that the Development would have on the sunlight availability to these amenity areas compared with the Baseline scenario and consider the results against numerical targets.

[2] Waldram Diagrams are used to calculate the percentage of sky that a building allows to the street below.

Daylight and Sunlight

12.2.33 As noted above, the BRE Guidelines suggest that residential properties have the greatest need for good daylight and sunlight and that key habitable rooms should be considered. The BRE Guidelines state *"the guidelines are intended for use for rooms in adjoining dwellings where light is required, including living rooms, kitchens and bedrooms"*. Bedrooms are considered less important as they are mainly occupied at night-time. The Guidelines also highlight other property types which may be considered as 'sensitive receptors' such as schools, hospitals, hotels and hostels, small workshops and some offices, if they have a reasonable expectation for daylight.

12.2.34 The results of the analysis have then been interpreted with reference to the BRE Guidelines, which are explained in detail within this Chapter.

12.2.35 The BRE Guidelines provide different methods for assessing daylight, for existing and proposed residential accommodation. These are, however, based upon the same fundamental principles. The methods relevant to daylight (only) in this assessment are the Vertical Sky Component (VSC) method and the No Sky Line (NSL) method. Annual Probable Sunlight Hours (APSH) is used to assess sunlight and Sun on Ground for overshadowing.

12.2.36 The assessment criteria for these methods is set out in **Table 12.1**.

Table 12.1: 2011 BRE Guidelines Assessment Criteria

Assessment Method	2011 BRE Criteria
Vertical Sky Component (daylight)	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 (daylight)	A room may be adversely affected if the daylight distribution (no sky line) is reduced beyond 0.8 times its existing area.
Annual Probable Sunlight Hours (sunlight)	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 APSH during the winter months (21 September to 21 March) and less than 0.8 times its former sunlight hours during either period, and (for existing neighbouring buildings), if there is a reduction in total APSH which is greater than 4%.
Sun on Ground (overshadowing)	An area of amenity space or garden may be adversely affected if more than half (50+%) of the area would be prevented by buildings from receiving two hours of sunlight on the 21st March and the area which can receive some sun on the 21st March is less than 0.8 times its former value.

12.2.37 Details on each of the methods is provided below.

Vertical Sky Component (VSC)

12.2.38 The VSC analysis establishes the amount of available daylight received directly from the sky for each individual window that is assessed. The reference point for the analysis is the centre of the window, on the plane of the outer window wall.

12.2.39 This is the ratio of the direct sky illuminance falling on the vertical wall at a reference point, to the simultaneous horizontal illuminance under an unobstructed sky. The VSC does not include reflected light.

12.2.40 To maintain good levels of daylight, the BRE Guidelines recommend a VSC of 27% or greater. However, this is predicated on more traditional suburban environments and the BRE Guidelines recognise that a lower VSC may be acceptable in more urban environments. Point 2 have undertaken research into what a more appropriate alternative target for the Development could be in response to a site marked for comprehensive redevelopment and intensification within LBI. This is set out in greater detail within **paragraphs 12.2.70-12.2.80**.

12.2.41 In certain instances, it may not be possible to meet the BRE or suggested alternative target values. Paragraphs 2.2.11 and 2.2.12 of the BRE Guidelines state:

"Existing windows with balconies above them typically receive less daylight. Because the balcony cuts out light from the part of the sky, even a modest obstruction opposite may result in a large relative impact on the VSC, and on the area receiving direct skylight [NSL]. One way to demonstrate this would be to carry out an additional calculation of the VSC and area receiving direct skylight, for both the existing and proposed situations, without the balcony in place. For example, if the proposed VSC with the balcony was under 0.8 times the existing value with the balcony, but the same ratio for the value without the balcony was well over 0.8, this would show that the presence of the balcony, rather than the size of the new obstruction, was the main factor in the relative loss of light….A larger relative reduction in VSC may also be unavoidable if the existing window has projecting wings on one or both sides of it, or is recessed into the building so that it is obstructed on both sides as well as above."

12.2.42 A number of neighbouring receptors have overhanging balconies, access decks or roof eaves. In these instances, an additional assessment was undertaken without the overhanging obstructions in place in accordance with the BRE Guidelines and is set out within this Chapter.

No Sky Line (NSL)

12.2.43 As well as calculating the VSC, the assessment for surrounding receptors has also considered the distribution of the daylight within the neighbouring residential properties by plotting the NSL. This is the point within the room that at desk top level can see no sky and the BRE Guidelines recommend that a significant portion of the room (80%) or at least 0.8 times the existing area is in front of this line.

12.2.44 Concerning the neighbouring residential properties, no access has been obtained to measure the internal arrangements and, therefore, where possible, plans obtained from online planning records have been used. Where this has not been possible, assumptions have been made as previously set out.

12.2.45 Paragraph 2.2.8 of the BRE Guidelines states that *"where room layouts are known, the impact on the daylighting distribution in the existing building can be found by plotting the 'no sky line' in each of the main rooms. For houses this would include living rooms, dining rooms and kitchens; bedrooms should be analysed although they are less important."*

12.2.46 Furthermore, paragraph 2.2.10 of the BRE Guidelines states that "*if an existing building contains rooms lit from one side only and greater than 5 m deep, then a greater movement of the no sky line may be unavoidable.*"

Average Daylight Factor (ADF)

12.2.47 ADF is a measure of the daylight within a room, and accounts for factors such as the number of windows and their size in relation to the size of the room. Clearly a small room with a large window will be better illuminated by daylight than a large room with a small window. It also accounts for window transmittance and the reflectance of the internal walls, floor and ceiling. The general idea is that the daylight which reaches each of the windows is first calculated. Then, allowing for the window size, the daylight which then enters the room through the windows is determined. The light is then imagined to bounce around within the room, controlled by the reflectance of the internal surfaces. The ADF is detailed in both British Standard 8206 Part 2:2008[3] and Appendix C of the BRE Report. The BRE report provides guidance for acceptable values in the presence of supplementary electric lighting, depending on the room use. These are 1.0% for a bedroom, 1.5% for a living room and 2.0% for a kitchen.

12.2.48 It should be noted that the ADF methodology set out in British Standard 8206 has technically been superseded by a more up to date climate based analysis set out in British Standard EN17037:2018[4], however as the BRE Guidelines still reference the ADF methodology, both methods of assessment are currently considered acceptable.

12.2.49 The BRE Guidelines recommend that VSC and NSL are the primary assessments in considering the effects to a neighbouring receptor. However, there are instances where the use of ADF is appropriate and Appendix F, paragraph F8 (ii) stating it may be applicable when:

> *"Where the existing building is proposed but not built. A typical situation might be where the neighbouring building has received planning permission but not yet been constructed."*

12.2.50 In these instances, such as the Future Baseline analysis, ADF has been used to consider the effects.

Annual Probable Sunlight Hours (APSH)

12.2.51 The BRE has produced sunlight templates for London, Manchester and Edinburgh which indicate the APSH for these regions. For this study, the London template has been used.

[3] The British Standards Institution: BS 8206-2:2008 Lighting for buildings – Part 2: Code of practice for daylighting, Second Edition, 2008.
[4] The British Standards Institution: BS EN 17037:2018, Daylight in buildings, 2019.

12.2.52 A sunlight analysis is undertaken using a similar method for calculating the VSC. Within residential accommodation, the BRE Guidelines, under paragraph 3.2.3, state that the criteria for a sunlight analysis is that the main windows that are "*within 90 degrees of due south*" should be assessed by measuring the APSH. Windows more than 90 degrees from due south do not therefore need to be analysed. Within residential accommodation, sunlight is mainly required for living rooms and is regarded as less important in bedrooms and kitchens, although the BRE Guidelines advise that care should be taken not to block out too much sun.

12.2.53 The APSH is defined as the total number of hours in the year that sun is expected to shine on unobstructed ground.

12.2.54 The BRE Guidelines suggest that a window enjoys adequate sunlight if it receives at least 25 % APSH throughout the year, with at least 5% during the winter months; 21 September to 21 March. Where this is not achieved, if the difference between the baseline and the assessment of the proposed scheme is less than 4 % or the total APSH including the winter months is within 0.8 times the existing, the window would not be adversely affected.

12.2.55 In a similar way to daylight, paragraph 3.2.9 of the BRE Guidelines states:

"balconies and overhangs above an existing window tend to block sunlight, especially in summer. Even a modest obstruction opposite may result in a large relative impact on the sunlight received. One way to demonstrate this would be to carry out an additional calculation of the APSH, for both the existing and proposed situations, without the balcony in place…this would show the presence of the balcony, rather than the size of the obstruction, was the main factor in the relative loss of sunlight."

12.2.56 Where balconies, access decks and overhanging roof eaves are present, this additional analysis was undertaken without the overhanging obstructions in place in accordance with the BRE Guidelines and is set out within this Chapter.

Overshadowing

Sun on Ground

12.2.57 The BRE Guidelines acknowledge that sunlight in the space between buildings has an important influence on the overall appearance and ambience of a development. They state in paragraph 3.3.1 that:

"…good site layout planning for daylight and sunlight should not limit itself to providing good natural light inside buildings. Sunlight in the spaces between buildings has an important effect on the overall appearance and ambience of a development."

12.2.58 The method for assessing sun on the ground is the 'sun-on-ground indicator'. The BRE Guidelines recommend that the Spring Equinox (March 21st) is a suitable date for the assessment.

12.2.59 The BRE Guidelines suggest that for a garden or amenity area to appear adequately sunlit throughout the year, no more than half (50%) of the area should be prevented by buildings from receiving two hours of sunlight on March 21st.

12.2.60 Using specialist software (SOL), the path of the sun was tracked to determine where the sun would reach the ground and where it would not. This assessment reviewed the total percentage of an area that receives at least two hours of direct sunlight on March 21st.

12.2.61 If an existing amenity space is already heavily obstructed, the BRE Guidelines recommend that further loss of sunlight should be kept to a minimum. In these instances, if the relative reduction between existing baseline and proposed Development conditions exceeds 20% then this may appear significant.

Transient Shadow Plots

12.2.62 The BRE Guidelines suggest that where large buildings are proposed which may affect a number of gardens or open spaces, it may be helpful to plot a shadow plan to illustrate the location of shadows at different times of the day and year. For the purpose of this assessment, overshadowing was mapped for the following three key dates in the year:

- 21st March (Spring Equinox).
- 21st June (Summer Solstice).
- 21st December (Winter Solstice).

12.2.63 September 21st (Autumn Equinox) provides the same overshadowing images as March 21st (Spring Equinox) as the sun follows the same path at these corresponding times of year.

12.2.64 For each of these dates, the overshadowing is calculated at hourly intervals throughout the day from 08:00 to 19:00. Some images are not included within **ES Volume 3: Appendix 12.4** because the sun would not be present during these times (e.g. from approximately 16:00 onwards on 21st December) and thus no shadow can be cast. The indicators are calculated for different latitudes, London being at 51.5° north. Southern orientation is critically important, as are the heights of the existing and proposed buildings.

12.2.65 A supplementary series of transient overshadowing assessments have been undertaken. These provide a snapshot of the amount of direct sunlight (and shadow) reaching each of the gardens at hourly intervals at specified test dates.

12.2.66 The drawings attached at **ES Volume 3, Appendix 12.4** provide the visual results of these assessments, with tests undertaken at hourly intervals on March 21st and June 21st. The drawings show the area receiving direct sunlight at the specified time of day shaded in yellow, with the area in shade shown in grey. For ease of comparison, on each test date both the existing and proposed overshadowing snapshots have been provided.

12.2.67 **Table 12.2** shows the sunset and sunrise times for 21st March, 21st June and 21st December. It also shows the maximum altitude of the sun and the time at which the sun reaches the altitude of 10° which is the altitude at which the BRE Guidelines specifies overshadowing should be assessed. Receipt of sunlight can be disregarded when it is lower than this altitude.

Table 12.2: Sun Altitude Time and Dates

London, UK - Greenwich Mean Time (Accurate to nearest 10 minutes)					
Date	**Sunrise Time**	**Time at 10° Altitude Rising**	**Maximum (degrees)**	**Time at Setting 10° Altitude**	**Sunset Time**
21 March	06:10	07:10	39.4	17:10	18:10
21 June	03:50	05:10	62.4	19:00	20:10
21 December	08:10	09:50	15.6	14:10	16:00

Defining Significance

Significance Criteria

Receptor Sensitivity

12.2.68 Residential receptors/properties and private gardens/public amenity spaces are usually most sensitive to daylight and sunlight availability. These properties/areas of open space are, therefore, considered to be of a high sensitivity level.

12.2.69 Non-residential receptors/properties that have still been considered are considered to be of a low sensitivity level.

Magnitude of Impact

Daylight and Sunlight

12.2.70 The results of each assessment are compared against the criteria set out in the BRE Guidelines.

12.2.71 However, the BRE Guidelines are predicated upon a suburban environment based upon minimum VSC values being based upon obstruction angles of 25°. Therefore, as suggested in the BRE Guidelines, a degree of flexibility can be applied when assessing the significance of daylight and sunlight effects in urban locations.

12.2.72 The Site in its existing layout could be considered underdeveloped which means that the existing levels of daylight within the surrounding residential properties with unencumbered windows looking over the Site are higher than usual for an urban location; particularly on a site such as this where there is an expectation of delivering a development with a greater density than that of the current surrounding context as identified within the Holloway Prison Site SPD – A plan for the future of Holloway Prison Site[5].

12.2.73 It is widely accepted that the numerical parameters offered by the BRE Guidelines are predicated upon a lower-rise suburban environment, as opposed to city centre locations or opportunity areas. In situations such as for this Site, where the Site is currently underdeveloped, the typical numerical parameters suggested in the BRE Guidelines (which are predicated simply on a 20% relative effect) are unrealistic. This is because it is perfectly possible for a building with high existing levels of daylight and sunlight amenity to experience an effect notably in excess of the typical 20% relative change, but still to retain daylight and sunlight levels in absolute terms that are reasonable and commensurate with other properties in similar contexts.

12.2.74 The BRE itself acknowledges that the typical numerical parameters it offers are not mandatory and need to be applied flexibly in different contexts. For example, the introductory Summary of the BRE Guidelines states:

"This guide as a comprehensive revision of the 1991 edition of site layout planning for daylight and sunlight. It is purely advisory and a numerical target value may be varied to meet the needs of the development and its location. Appendix F explains how this can be done in a logical way while retaining consistency with the British Standard Recommendations on interior lighting."

12.2.75 In Section 1: Introduction, at paragraph 1.6 it states:

"the guide is intended for building designers and their clients, consultants and planning officials. ***The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy****; its aim is to help rather than constrain the designer.* ***Although it gives numerical guidelines, these should be interpreted flexibly*** *since natural lighting is only one of the many factors in site layout design****. In special circumstances the developer or planning authority may wish to use different target values. For example, in historic city centres or in an area with modern high rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings.****"*

12.2.76 Finally, in Appendix F it states at section F1:

"Sections 2.1 and 2.2 and 2.3 give numerical target values in assessing how much light from the sky is blocked by obstructing buildings. ***These values are purely advisory and different targets may be used on special requirements of the Proposed Development or its location.*** *Such alternative targets may be generated from the layout dimensions of existing development, or they may be derived from considering the internal layout and daylighting needs of the Proposed Development itself."*

[5] Holloway Prison Site Supplementary Planning Document (SPD) – A plan for the future of Holloway Prison site, 2018.

12.2.77 Therefore, whilst the BRE Guidelines provide a useful methodology from which to undertake assessments to quantify the change in light both before and after a new building has been constructed, it is clear that the numerical advice offered by the BRE Guidelines is not mandatory and that a practical application of the target values is required as natural lighting is only one of many factors that should be considered.

12.2.78 Where appropriate, the BRE Guidelines promote the use of alternative target values to those discussed in the main body of the document and the BRE Guidelines cite the example of areas of modern high-rise buildings and city centres as an appropriate situation in which to explore their use. A logical extension to *"special circumstance"* could be considered to include an area undergoing transformational regeneration, such as the Holloway Prison Site; a sentiment evidently shared by the GLA. Indeed, the Mayor of London's *'Housing' Supplementary Planning Guidance*[6] states the following:

*"Policy 7.6Bd requires new development to avoid causing 'unacceptable harm' to the amenity of surrounding land and buildings, particularly in relation to privacy and overshadowing and where tall buildings are proposed. An appropriate degree of flexibility needs to be applied when using BRE guidelines to assess the daylight and sunlight impacts of new development on surrounding properties.... **Guidelines should be applied sensitively to higher density development, especially in opportunity areas, town centres, large sites and accessible locations, where BRE advice suggests considering the use of alternative targets.** This should take into account local circumstances; the need to optimise housing capacity; and scope for the character and form of an area to change over time."*

*"The degree of harm on adjacent properties.... Should be assessed drawing on broadly comparable residential typologies within the area and of a similar nature across London. Decision makers should recognise that fully optimising housing potential on large **sites may necessitate standards which depart from those presently experienced but which still achieve satisfactory levels of residential amenity and avoid unacceptable harm."***

12.2.79 Following the recommendations of the BRE Guidelines and the Mayor of London, to better understand the daylight and sunlight effects to the surrounding properties to this Site, where more significant effects in daylight and sunlight levels are to be expected, it is necessary to also consider what alternative target values might be appropriate for this locality. Point 2 have undertaken an extensive review of the existing higher density sites in this locality and elsewhere within LBI's jurisdiction to identify the typical levels of absolute retained daylight potential in these contexts. This forms an evidence-based research paper that explores the daylight standards approved in similar contexts to this Site. The research paper is entitled 'HM Holloway Prison Daylight Wide Area Assessment' and is included within **ES Volume 3, Appendix 12.9.**

12.2.80 It is therefore important to note that where daylight and sunlight reductions to individual windows and rooms do not meet the typical BRE numerical parameters, it is necessary to not only consider the effect on daylight, but to

[6] Mayor of London. Housing Supplementary Planning Guidance, 2016.

also consider the retained levels to ascertain the overall magnitude, scale and significance of effect. In the process of this more detailed consideration of the retained daylight levels, the values identified by the research paper provide a helpful reference point as to what levels might be considered commensurate for this area of LBI.

Overshadowing (Sun on Ground)

12.2.81 The results of the sun on ground analysis are compared against the criteria set out in the BRE Guidelines, as discussed further above.

12.2.82 The BRE Guidelines are predicated upon a suburban environment with typical obstruction angles of 25°. However, on 21st March, which is the principal point of assessment recommended by the BRE, the sun does not rise above 40° in London. In more urban environments, where buildings are taller and the obstruction angles between properties are regularly already in excess of 40°, sunlight penetration is harder to achieve, particularly in the winter months as the lower angles of sun are easily obstructed by modest obstructions.

12.2.83 It is therefore necessary to apply some degree of flexibility to the BRE numerical targets for overshadowing in more urban environments, where naturally, sunlight levels can be lower, particularly during the winter months given the often tighter building to building relationships that exist.

Overshadowing (Transient)

12.2.84 The BRE Guidelines do not provide any criteria for the significance of transitory overshadowing, other than to suggest that by establishing the different times of day and year when shadow would be cast over adjacent areas, an indication is given as to the significance of the effect of the Development.

12.2.85 The assessment of transient overshadowing effects is, therefore, based on professional judgement, taking into consideration the effect of the existing buildings upon the Site and comparing it with the likely transient overshadowing effect of the Development.

Scale of Effect Criteria

12.2.86 The BRE Guidelines have been used to produce significance criteria to assess the likely effects of the Development. Within Appendix I of the Guidelines it states:

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

"Where the loss of skylight or sunlight fully meets the guidelines in this book, the impact is assessed as negligible or minor adverse. Where the loss of light is well within the guidelines, or only a small number of windows or limited area of open space lose light (within the guidelines), a classification of negligible impact is more appropriate. Where the loss of light is only just within the guidelines, and a larger number of windows or open space area are affected, a minor adverse impact

would be more appropriate, especially if there is a particularly strong requirement for daylight and sunlight in the affected building or open space."

"Where the loss of skylight or sunlight does not meet the guidelines 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 or limited area of open space are affected;*
- *the loss of light is only marginally outside the guidelines;*
- *an affected room has other sources of skylight or sunlight;*
- *the affected building or open space only has a low-level requirement for skylight or sunlight; and*
- *there are particular reasons why an alternative, less stringent, guideline should be applied"*

"Factors tending towards a major adverse impact include:

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

"Beneficial impacts occur when there is a significant increase in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space. Beneficial impacts should be worked out using the same principles as adverse impacts. Thus, a tiny increase in light would be classified as a negligible impact, not a minor beneficial impact."

12.2.87 The significance of the effect has been based on the effect of the Development compared with the Baseline conditions using the significance criteria set out below. This is primarily based on the reductions of daylight/sunlight that are likely to occur but also, to some extent and as set out in the BRE guidelines, other factors such as the use of the room.

12.2.88 The significance of the effect is established using the relevant tests and criterion set out in the BRE guidelines. These tests allow for consideration as to whether the Development is likely to create an 'adverse', or 'notable' effect, on the surrounding properties.

12.2.89 Where a beneficial or insignificant effect is concluded, based upon the significance criteria, mitigation measures are not considered necessary. Where a minor, moderate or major adverse effect is concluded, the need for mitigation is dependent on a second qualitative assessment which considers whether the effects, whilst adverse, can still be considered acceptable. Where it is deemed that the effects can be considered acceptable, mitigation measures are not required.

12.2.90 The second qualitative assessment considers whether the effects can be considered acceptable given the Site's urban location and factors such as:

- the retained levels of daylight or sunlight compared to the alternative target values (established within the Research Paper).
- The room's use, whether the room is served by more than one window and/or the effect on the main window.
- Whether existing balconies/overhangs restrict the existing levels of daylight and/or sunlight.
- Whether the windows are set back from the main elevation such that lower levels of daylight and/or sunlight are enjoyed in the baseline condition.

12.2.91 Whether acceptable levels of daylight or sunlight would be retained is based on an alternative set of target values which has been established using the research referred to as the Research Paper. The Research Paper is entitled 'HM Holloway Prison Daylight Wide Area Assessment' and is included within **ES Volume 3, Appendix 12.9**.

12.2.92 Overall, therefore, whilst conclusion of the first stage of the assessment may suggest that a 'minor adverse', 'moderate adverse' or 'major adverse' effect would occur (because the reduction in daylight/sunlight compared to the baseline levels would be significant), the second assessment may then indicate that it may be reasonable to consider the effects are acceptable given the retained levels of daylight/sunlight and other relevant factors.

12.2.93 The classification of the scale of effect is based upon several factors. As an initial guide, reference is made to the numerical criteria summarised in **Table 12.3** and **Table 12.4**. Where effects occur that fall beyond the Minor Adverse parameters identified in **Table 12.3** and **Table 12.4** further evaluation is undertaken using professional judgement.

Table 12.3: Daylight and Sunlight – Impact Magnitude, Scale and Nature of Effect

Scale and Nature of Effect	2011 BRE Criteria (Impact Magnitude)
Insignificant[7]	A small alteration from the existing baseline scenario which is within the numerical levels suggested in the BRE Guidelines i.e. less than 20% change from baseline conditions or meets BRE target values.
Minor Adverse / Beneficial Significance	Marginal alterations of the numerical values suggested in the BRE Guidelines - between 20 - 29.9% of the baseline conditions, which should be viewed in context.

[7] In order to remain consistent with other chapters within the ES, the term Insignificant has been adopted for effects that would be described as Negligible within the BRE Guidelines, albeit some minor adverse effects when taking into account all factors, could still be considered insignificant in some instances.

Scale and Nature of Effect	2011 BRE Criteria (Impact Magnitude)
Moderate Adverse / Beneficial Significance	Moderate alterations of the numerical values suggested in the BRE Guidelines - between 30 - 30.9% of the baseline conditions, which should be viewed in context.
Major Adverse / Beneficial Significance	Major alterations of the numerical values suggested in the BRE Guidelines - 40%+ of the baseline conditions, which should be viewed in context.

Table 12.4: Sun on Ground – Impact Magnitude, Scale and Nature of Effect

Scale and Nature of Effect	2011 BRE Criteria (Impact Magnitude)
Insignificant	Over 50% of amenity area will receive 2 hours of direct sunlight or less than 20% alteration from baseline conditions in area which receive 2 hours of direct sunlight.
Minor Adverse / Beneficial Significance	Marginal alterations of the numerical values suggested in the BRE Guidelines - between 20 - 29.9% in the area which receives 2 hours of direct sunlight (and below 50% retained area)
Moderate Adverse / Beneficial Significance	Moderate alterations of the numerical values suggested in the BRE Guidelines - between 30 - 39.9% in the area which receives 2 hours of direct sunlight (and below 50% retained area)
Major Adverse / Beneficial Significance	Major alterations of the numerical values suggested in the BRE Guidelines - 40%+ in the area which receives 2 hours of direct sunlight (and below 50% retained area)

Daylight and Sunlight

12.2.94 As set out at **paragraphs 12.2.70-12.2.80** above, in addition to the effect parameters identified in **Table 12.3** above, it is also necessary to consider the retained levels of daylight and sunlight with the Development in place to ascertain the overall magnitude of impact and resultant, scale and nature of effect. In the process of this more detailed consideration of the retained daylight levels, the values identified by the Research Paper included as **ES Volume 3, Appendix 12.9** provide a helpful reference point as to what levels might be considered to be commensurate.

12.2.95 Insignificant Adverse/Beneficial effects are considered not to be significant, particularly when viewed in the context of a development of an underdeveloped Site that is earmarked as an important opportunity site by LBI. Significant effects are considered to be Minor, Moderate or Major Adverse/Beneficial. It is, however, possible that some minor adverse effects could be considered insignificant when taking into account all factors and applying professional judgment. Daylight and Sunlight effects must be viewed holistically and in the context of the setting, having an appreciation for the sensitivity of the affected areas, the uses of the spaces and the overall building form in coming to an overall conclusion about the significance of any effects.

12.2.96 As set out earlier, there are a number of receptors that include windows that are overhung by balconies, access decks or roof eaves and an additional assessment has been undertaken which considers the effects of the Development without these features in place. If the BRE criteria is met in this scenario, the significance of effects is considered to be Insignificant as this would demonstrate that it is the presence of the balcony (or overhangs), rather than the size of the new obstruction, which is the main factor in the relative loss of light.

12.2.97 When considering the overall significance in daylight and sunlight effects to a sensitive receptor, it is important to review all of the BRE tests to form a holistic view, rather than individual tests in isolation.

Overshadowing (Sun on Ground)

12.2.98 By reference to the BRE methodology for assessing Sun on Ground effects using the two-hour Sun on Ground assessment, any overshadowing effects are considered to be insignificant if an area continues to receive at least two hours of direct sunlight to over 50% of its area on March 21st, or any alteration is within 20% of its existing baseline level.

12.2.99 Insignificant Adverse/Beneficial effects are considered not to be significant particularly when viewed in the context of a development of an underdeveloped Site that is earmarked as an important opportunity site by LBI. Significant effects are considered to be those which are Minor, Moderate or Major Adverse/Beneficial. It is, however, possible that some minor adverse effects could be considered insignificant when taking into account all factors and applying professional judgment. Overshadowing effects must be viewed holistically and in the context of the setting, having an appreciation for the sensitivity of the affected areas and the uses of the spaces in coming to an overall conclusion about the significance of any effects.

Transient Overshadowing

12.2.100 The BRE Guidelines do not provide any criteria for the significance of transitory overshadowing, other than to suggest that by establishing the different times of day and year when shadow would be cast over adjacent areas, an indication is given as to the significance of the effect of the Development.

12.2.101 The assessment of transient overshadowing effects is, therefore, based on professional judgement, taking into consideration the effect of the existing buildings on the Site and comparing it with the likely transient overshadowing effect of the Development. The effects are defined as being of Insignificant, Minor, Moderate or Major significance and either Beneficial or Adverse.

12.2.102 Insignificant Adverse/Beneficial effects are considered not to be significant particularly when viewed in the context of a development of an underdeveloped Site that is earmarked as an important opportunity site by LBI. Significant effects are considered to be Minor, Moderate or Major Adverse/Beneficial. It is, however, possible that some minor adverse effects could be considered insignificant when taking into account all factors and applying professional judgment. Transient Overshadowing effects must be viewed holistically and in the context of the setting, having an appreciation for the sensitivity of the affected areas and the uses of the spaces in coming to an overall conclusion about the significance of any effects.

12.3 Relevant Baseline Conditions

Existing Baseline

12.3.1 The Site comprises a number of connected buildings ranging between one to six storeys in height.

12.3.2 The Site is predominantly bound by residential properties the north, east, south and west which are all considered to be high sensitivity receptors. The only property considered that is not in residential use in the Baseline condition is 2 Parkhurst Road & 291 A-C Camden Road which is currently in use as the Islington Arts Factory so is considered to be a low sensitivity receptor.

12.3.3 The Site is considered to be underdeveloped for its urban location and does not cause significant daylight and sunlight obstructions to surrounding receptors.

12.3.4 However, there are instances where access to daylight and sunlight is obstructed by features such as balconies, access decks and roof eaves. In these instances, it is not unusual for neighbouring properties to receive lower levels of daylight and sunlight, despite the underdeveloped nature of the Site.

Sensitive Receptors

Daylight and Sunlight

12.3.5 The location of the existing sensitive receptors for daylight, sunlight and overshadowing in relation to the Site can be seen in the drawings within **ES Volume 3, Appendix 12.1.** They are also listed in **Table 12.5** below and shown in **Figure 12.1**. **Table 12.5** also indicates whether the properties have been assessed for daylight, sunlight or both.

Figure 12.1: Location of Daylight and Sunlight Sensitive Receptors

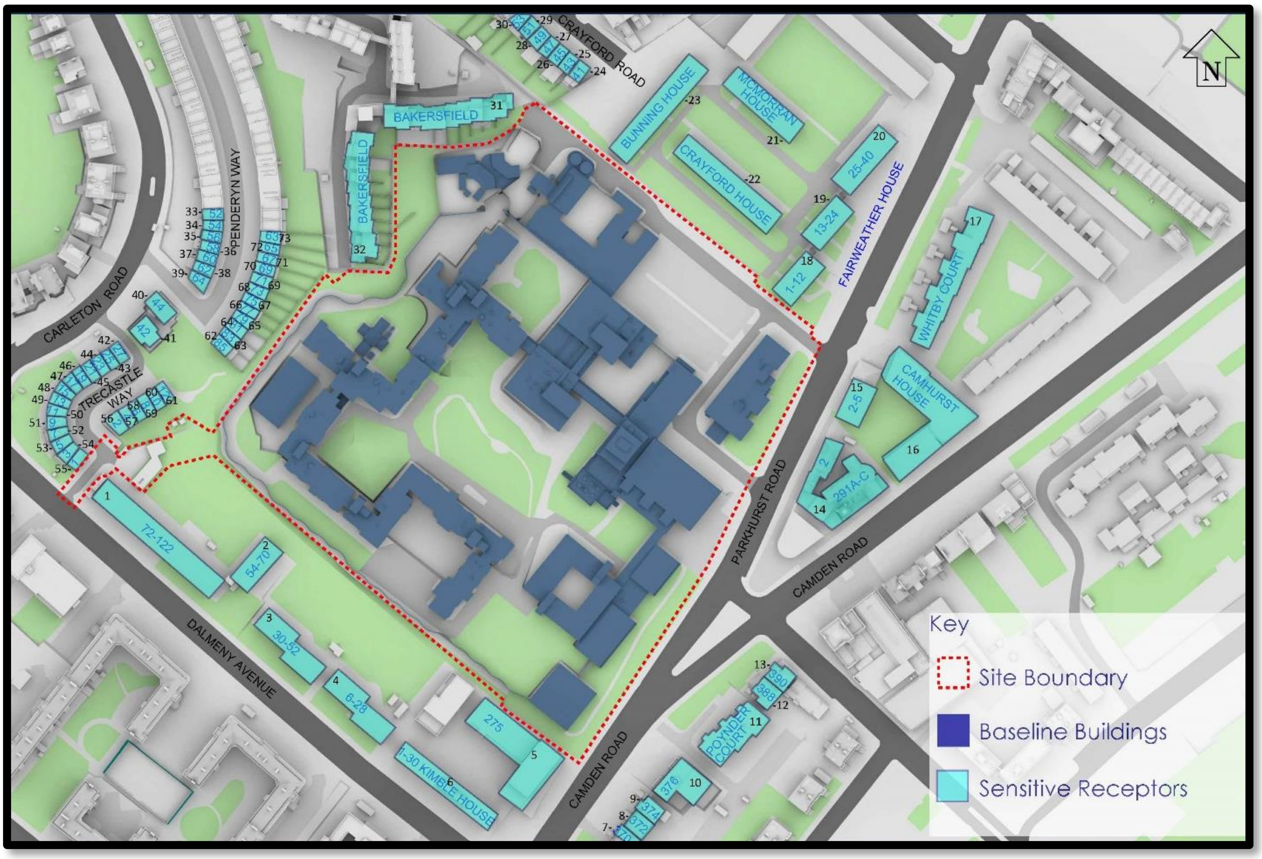


Table 12.5: List of Daylight and Sunlight Sensitive Receptors

Map Ref. No. on Fig 12.1	Receptor	Approximate Distance from Nearest Site Boundary (rounded to nearest 5m)	Assessed for Daylight?	Assessed for Sunlight?
1	72-122 Dalmeny Avenue	40	✓	✓
2	54-70 Dalmeny Avenue	10	✓	✓
3	30-52 Dalmeny Avenue	40	✓	×
4	6-28 Dalmeny Avenue	40	✓	×
5	275 Camden Road above library)	5	✓	✓
6	1-30 Kimble House	40	✓	×
7	370 Camden Road	45	✓	×
8	372 Camden Road	40	✓	×
9	374 Camden Road	30	✓	×
10	376 Camden Road	40	✓	✓
11	Poynder Court, Camden Road	45	✓	×
12	388 Camden Road	50	✓	×
13	390 Camden Road	40	✓	×

Map Ref. No. on Fig 12.1	Receptor	Approximate Distance from Nearest Site Boundary (rounded to nearest 5m)	Assessed for Daylight?	Assessed for Sunlight?
14	2 Parkhurst Road & 291 A & C Camden Road	20	✓	✓
15	2-5 Prospect Place	20	✓	×
16	Camhurst House	35	✓	✓
17	Whitby Court	50	✓	×
18	1-12 Fairweather House	5	✓	✓
19	13-24 Fairweather House	35	✓	✓
20	25-40 Fairweather House	60	✓	✓
21	McMorran House	65	✓	✓
22	Crayford House	20	✓	✓
23	Bunning House	5	✓	✓
24	41 Crayford Road	15	✓	✓
25	43 Crayford Road	20	✓	✓
26	45 Crayford Road	25	✓	✓
27	47 Crayford Road	25	✓	✓
28	49 Crayford Road	35	✓	✓
29	51 Crayford Road	40	✓	✓
30	53 Crayford Road	40	✓	✓
31	Bakersfield - Block 1, Crayford Road	15	✓	✓
32	Bakersfield - Block 2, Crayford Road	5	✓	✓
33	52 Penderyn Way	50	✓	✓
34	54 Penderyn Way	45	✓	✓
35	56 Penderyn Way	40	✓	✓
36	58 Penderyn Way	40	✓	✓
37	60 Penderyn Way	40	✓	✓
38	62 Penderyn Way	35	✓	✓
39	64 Penderyn Way	35	✓	✓
40	44 Carleton Road	35	✓	✓
41	42 Carleton Road	35	✓	✓
42	27 Trecastle Way	40	✓	✓
43	25 Trecastle Way	40	✓	✓
44	23 Trecastle Way	40	✓	✓
45	21 Trecastle Way	35	✓	✓
46	19 Trecastle Way	35	✓	✓
47	17 Trecastle Way	35	✓	✓

Map Ref. No. on Fig 12.1	Receptor	Approximate Distance from Nearest Site Boundary (rounded to nearest 5m)	Assessed for Daylight?	Assessed for Sunlight?
48	15 Trecastle Way	35	✓	✓
49	13 Trecastle Way	35	✓	✓
50	11 Trecastle Way	30	✓	✓
51	9 Trecastle Way	25	✓	×
52	7 Trecastle Way	25	✓	×
53	5 Trecastle Way	20	✓	×
54	3 Trecastle Way	20	✓	×
55	1 Trecastle Way	10	✓	×
56	2 Trecastle Way	10	✓	✓
57	4 Trecastle Way	10	✓	✓
58	6 Trecastle Way	10	✓	✓
59	8 Trecastle Way	10	✓	✓
60	10 Trecastle Way	10	✓	✓
61	12 Trecastle Way	10	✓	✓
62	85 Penderyn Way	10	✓	✓
63	83 Penderyn Way	10	✓	✓
64	81 Penderyn Way	10	✓	✓
65	79 Penderyn Way	10	✓	✓
66	77 Penderyn Way	10	✓	✓
67	75 Penderyn Way	10	✓	✓
68	73 Penderyn Way	15	✓	✓
69	71 Penderyn Way	15	✓	✓
70	69 Penderyn Way	15	✓	✓
71	67 Penderyn Way	20	✓	✓
72	65 Penderyn Way	20	✓	✓
73	63 Penderyn Way	25	✓	✓

12.3.6 All other neighbouring properties within the vicinity of the Development have been confirmed by VOA search as being non-residential and with no special requirement for daylight and sunlight so have not been assessed. This is in accordance with BRE Guidelines recommendations. Any properties further afield are considered too far away from the Site to experience a potential significant effect from the Development.

Overshadowing

12.3.7 There are a number of gardens / amenity areas surrounding the Site that are considered sensitive in relation to overshadowing. These are shown on **Figure 12.2** and listed in **Table 12.6**.

Figure 12.2: Location of Amenity Area Receptors included in Overshadowing Assessment

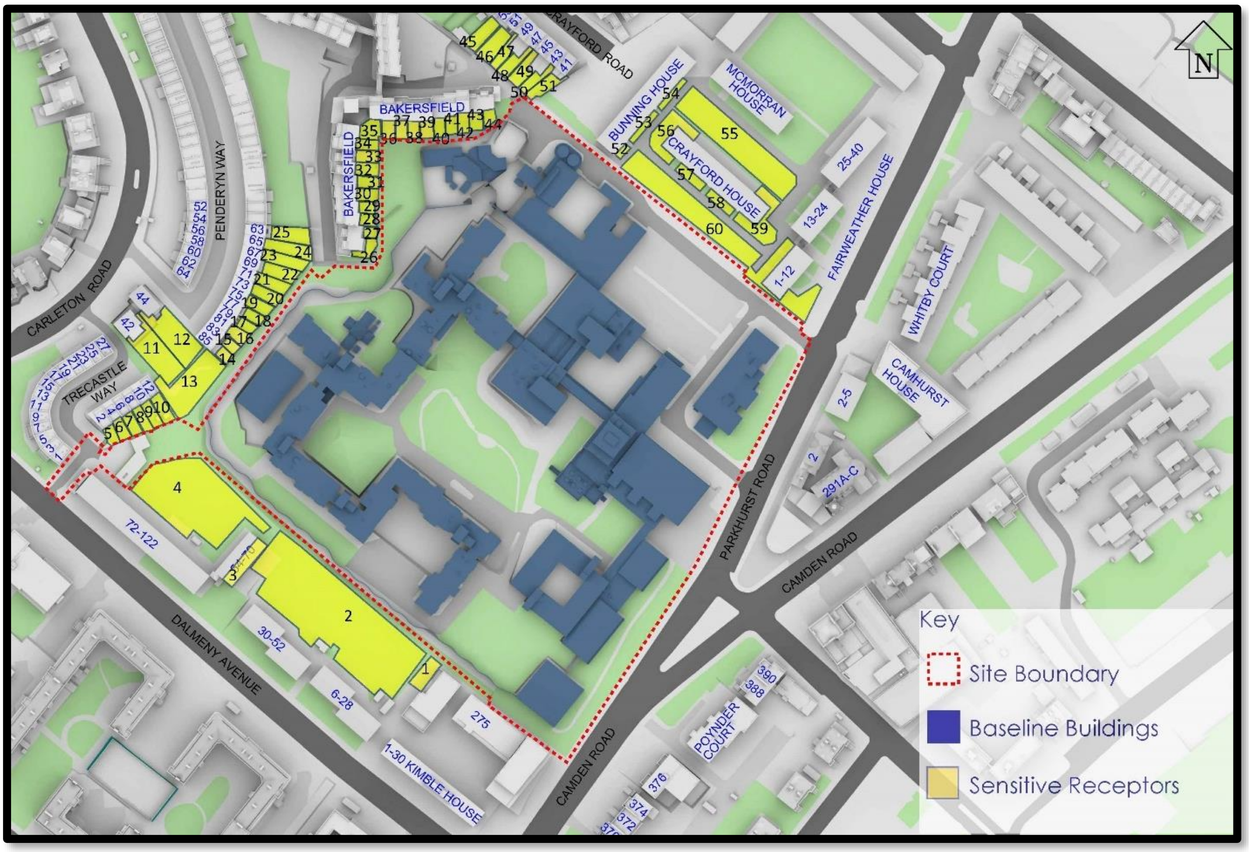


Table 12.6 List of Overshadowing Receptors

Map Ref. No. on Figure 12.2	Receptor
1	Communal garden for nos. 6-28 Dalmeny Avenue
2	Communal garden for nos. 30-52 Dalmeny Avenue
3	Communal garden for nos. 54-70 Dalmeny Avenue
4	Communal gardens for nos. 72-122 Dalmeny Avenue
5	Private garden of 2 Trecastle Way
6	Private garden of 4 Trecastle Way
7	Private garden of 6 Trecastle Way
8	Private garden of 8 Trecastle Way
9	Private garden of 10 Trecastle Way
10	Private garden of 12 Trecastle Way
11	Garden of 42 Carleton Road
12	Garden of 44 Carleton Road

Map Ref. No. on Figure 12.2	Receptor
13	Communal Trecastle Way Play Area
14	Private garden of 85 Penderyn Way
15	Private garden of 83 Penderyn Way
16	Private garden of 81 Penderyn Way
17	Private garden of 79 Penderyn Way
18	Private garden of 77 Penderyn Way
19	Private garden of 75 Penderyn Way
20	Private garden of 73 Penderyn Way
21	Private garden of 71 Penderyn Way
22	Private garden of 69 Penderyn Way
23	Private garden of 67 Penderyn Way
24	Private garden of 65 Penderyn Way
25	Private garden of 63 Penderyn Way
26	Private garden of 45 Bakersfield Estate
27	Private garden of 44 Bakersfield Estate
28	Private garden of 43 Bakersfield Estate
29	Private garden of 42 Bakersfield Estate
30	Private garden of 41 Bakersfield Estate
31	Private garden of 40 Bakersfield Estate
32	Private garden of 39 Bakersfield Estate
33	Private garden of 38 Bakersfield Estate
34	Private garden of 37 Bakersfield Estate
35	Private gardens of 35 & 36 Bakersfield Estate
36	Private garden of 34 Bakersfield Estate
37	Private garden of 33 Bakersfield Estate
38	Private garden of 32 Bakersfield Estate
39	Private garden of 31 Bakersfield Estate
40	Private garden of 30 Bakersfield Estate
41	Private garden of 29 Bakersfield Estate
42	Private garden of 28 Bakersfield Estate
43	Private garden of 27 Bakersfield Estate
44	Private garden of 26 Bakersfield Estate
45	Private garden of 53 Crayford Road
46	Private garden of 51 Crayford Road
47	Private garden of 49 Crayford Road
48	Private garden of 47 Crayford Road
49	Private garden of 45 Crayford Road

Map Ref. No. on Figure 12.2	Receptor
50	Private garden of 43 Crayford Road
51	Private garden of 41 Crayford Road
52	Communal amenity area for Bunning House (1)
53	Communal amenity area for Bunning House (2)
54	Communal amenity area for Bunning House (3)
55	Communal amenity area for Crayford House (1)
56	Communal amenity area for Crayford House (2)
57	Communal amenity area for Crayford House (3)
58	Communal amenity area for Crayford House (4)
59	Communal amenity area for Crayford House (5)
60	Communal amenity area for Crayford & Fairweather House

Baseline Daylight and Sunlight Results

Daylight

12.3.8 The existing baseline VSC and NSL daylight conditions were assessed. Full detailed results can be found in **ES Volume 3, Appendix 12.2**. The baseline VSC conditions are summarised in **Table 12.7** and NSL conditions are summarised in **Table 12.8**.

12.3.9 A total of 1,422 windows serving 951 rooms within 73 residential buildings were assessed for daylight.

Table 12.7: Summary of Existing Baseline VSC Results

Map Reference No. on Fig 12.1	Receptor	No. of windows	No. of windows that meet VSC criteria
1	72-122 Dalmeny Avenue	58	32
2	54-70 Dalmeny Avenue	51	13
3	30-52 Dalmeny Avenue	27	26
4	6-28 Dalmeny Avenue	24	23
5	275 Camden Road	37	25
6	1-30 Kimble House	30	0
7	370 Camden Road	4	4
8	372 Camden Road	12	10
9	374 Camden Road	5	4
10	376 Camden Road	32	21
11	Poynder Court, Camden Road	23	19
12	388 Camden Road	8	8
13	390 Camden Road	9	8

Map Reference No. on Fig 12.1	Receptor	No. of windows	No. of windows that meet VSC criteria
14	2 Parkhurst Road & 291 A & C Camden Road	55	38
15	2-5 Prospect Place	12	9
16	Camhurst House	20	20
17	Whitby Court	8	8
18	1-12 Fairweather House	68	64
19	13-24 Fairweather House	43	32
20	25-40 Fairweather House	40	32
21	McMorran House	41	41
22	Crayford House	60	60
23	Bunning House	84	83
24	41 Crayford Road	9	6
25	43 Crayford Road	10	6
26	45 Crayford Road	13	7
27	47 Crayford Road	12	5
28	49 Crayford Road	9	5
29	51 Crayford Road	9	7
30	53 Crayford Road	7	4
31	Bakersfield - Block 1, Crayford Road	202	74
32	Bakersfield - Block 2, Crayford Road	207	70
33	52 Penderyn Way	4	2
34	54 Penderyn Way	4	3
35	56 Penderyn Way	5	4
36	58 Penderyn Way	6	5
37	60 Penderyn Way	4	2
38	62 Penderyn Way	4	3
39	64 Penderyn Way	5	3
40	44 Carleton Road	17	10
41	42 Carleton Road	16	8
42	27 Trecastle Way	3	2
43	25 Trecastle Way	3	2
44	23 Trecastle Way	3	2
45	21 Trecastle Way	3	2
46	19 Trecastle Way	3	2
47	17 Trecastle Way	3	2
48	15 Trecastle Way	3	2

Map Reference No. on Fig 12.1	Receptor	No. of windows	No. of windows that meet VSC criteria
49	13 Trecastle Way	3	2
50	11 Trecastle Way	3	2
51	9 Trecastle Way	3	2
52	7 Trecastle Way	3	2
53	5 Trecastle Way	3	2
54	3 Trecastle Way	3	2
55	1 Trecastle Way	3	2
56	2 Trecastle Way	3	2
57	4 Trecastle Way	3	2
58	6 Trecastle Way	3	2
59	8 Trecastle Way	3	2
60	10 Trecastle Way	3	2
61	12 Trecastle Way	3	2
62	85 Penderyn Way	5	2
63	83 Penderyn Way	5	3
64	81 Penderyn Way	5	2
65	79 Penderyn Way	7	6
66	77 Penderyn Way	5	4
67	75 Penderyn Way	5	2
68	73 Penderyn Way	5	2
69	71 Penderyn Way	5	2
70	69 Penderyn Way	9	8
71	67 Penderyn Way	5	2
72	65 Penderyn Way	5	2
73	63 Penderyn Way	7	6
	TOTAL	**1,422**	**885**

Table 12.8: Summary of Existing Baseline NSL Results

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet NSL criteria
1	72-122 Dalmeny Avenue	58	30
2	54-70 Dalmeny Avenue	38	26
3	30-52 Dalmeny Avenue	27	27
4	6-28 Dalmeny Avenue	24	24
5	275 Camden Road	25	23
6	1-30 Kimble House	30	0
7	370 Camden Road	4	4

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet NSL criteria
8	372 Camden Road	11	11
9	374 Camden Road	5	4
10	376 Camden Road	20	20
11	Poynder Court, Camden Road	23	23
12	388 Camden Road	8	8
13	390 Camden Road	9	9
14	2 Parkhurst Road & 291 A & C Camden Road	15	15
15	2-5 Prospect Place	11	11
16	Camhurst House	13	13
17	Whitby Court	8	8
18	1-12 Fairweather House	36	36
19	13-24 Fairweather House	23	23
20	25-40 Fairweather House	23	23
21	McMorran House	30	30
22	Crayford House	42	42
23	Bunning House	66	65
24	41 Crayford Road	7	7
25	43 Crayford Road	9	8
26	45 Crayford Road	8	6
27	47 Crayford Road	9	8
28	49 Crayford Road	7	6
29	51 Crayford Road	6	6
30	53 Crayford Road	7	5
31	Bakersfield - Block 1, Crayford Road	102	101
32	Bakersfield - Block 2, Crayford Road	105	101
33	52 Penderyn Way	3	3
34	54 Penderyn Way	3	3
35	56 Penderyn Way	3	3
36	58 Penderyn Way	3	2
37	60 Penderyn Way	3	3
38	62 Penderyn Way	3	3
39	64 Penderyn Way	4	4
40	44 Carleton Road	8	8
41	42 Carleton Road	16	15
42	27 Trecastle Way	3	2

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet NSL criteria
43	25 Trecastle Way	3	2
44	23 Trecastle Way	3	2
45	21 Trecastle Way	3	2
46	19 Trecastle Way	3	2
47	17 Trecastle Way	3	2
48	15 Trecastle Way	3	2
49	13 Trecastle Way	3	2
50	11 Trecastle Way	3	2
51	9 Trecastle Way	3	2
52	7 Trecastle Way	3	2
53	5 Trecastle Way	3	2
54	3 Trecastle Way	3	3
55	1 Trecastle Way	3	2
56	2 Trecastle Way	3	3
57	4 Trecastle Way	3	3
58	6 Trecastle Way	3	3
59	8 Trecastle Way	3	3
60	10 Trecastle Way	3	3
61	12 Trecastle Way	3	3
62	85 Penderyn Way	3	3
63	83 Penderyn Way	3	3
64	81 Penderyn Way	3	3
65	79 Penderyn Way	3	3
66	77 Penderyn Way	3	2
67	75 Penderyn Way	3	3
68	73 Penderyn Way	3	3
69	71 Penderyn Way	3	3
70	69 Penderyn Way	3	3
71	67 Penderyn Way	3	3
72	65 Penderyn Way	3	3
73	63 Penderyn Way	3	3
	TOTAL	**951**	**849**

12.3.10 The existing baseline daylight results show that 62 % of the surrounding windows receive in excess of 27 % VSC and 89 % of the rooms within the surrounding properties receive direct skylight at working plane height to at least 80 % of the room area. Whilst the Site is relatively underdeveloped in its current state, the baseline results demonstrate a relatively low rate of compliance suggesting a number of windows and rooms would have their access to daylight obstructed by other features such as balconies, access decks, overhanging roof eaves etc.

12.3.11 An additional analysis was undertaken which does not take into consideration the limiting effects of these architectural features. In this scenario, the baseline VSC conditions are summarised in **Table 12.9** and NSL conditions are summarised in **Table 12.10** and full detailed results can be found in **ES Volume 3, Appendix 12.2**.

Table 12.9 Summary of Existing Baseline VSC Results (No Overhangs)

Map Reference No. on Fig 12.1	Receptor	No. of windows	No. of windows that meet VSC criteria
1	72-122 Dalmeny Avenue	58	57
2	54-70 Dalmeny Avenue	51	42
3	30-52 Dalmeny Avenue	27	26
4	6-28 Dalmeny Avenue	24	23
5	275 Camden Road	37	33
6	1-30 Kimble House	30	27
7	370 Camden Road	4	4
8	372 Camden Road	12	10
9	374 Camden Road	5	4
10	376 Camden Road	32	21
11	Poynder Court, Camden Road	23	19
12	388 Camden Road	8	8
13	390 Camden Road	9	8
14	2 Parkhurst Road & 291 A & C Camden Road	55	38
15	2-5 Prospect Place	12	11
16	Camhurst House	20	20
17	Whitby Court	8	8
18	1-12 Fairweather House	68	64
19	13-24 Fairweather House	43	32
20	25-40 Fairweather House	40	32
21	McMorran House	41	41
22	Crayford House	60	60
23	Bunning House	84	83
24	41 Crayford Road	9	6
25	43 Crayford Road	10	6
26	45 Crayford Road	13	7
27	47 Crayford Road	12	5
28	49 Crayford Road	9	5
29	51 Crayford Road	9	7

Map Reference No. on Fig 12.1	Receptor	No. of windows	No. of windows that meet VSC criteria
30	53 Crayford Road	7	4
31	Bakersfield - Block 1, Crayford Road	202	106
32	Bakersfield - Block 2, Crayford Road	207	103
33	52 Penderyn Way	4	3
34	54 Penderyn Way	4	3
35	56 Penderyn Way	5	4
36	58 Penderyn Way	6	5
37	60 Penderyn Way	4	2
38	62 Penderyn Way	4	3
39	64 Penderyn Way	5	3
40	44 Carleton Road	17	10
41	42 Carleton Road	16	8
42	27 Trecastle Way	3	3
43	25 Trecastle Way	3	3
44	23 Trecastle Way	3	3
45	21 Trecastle Way	3	3
46	19 Trecastle Way	3	3
47	17 Trecastle Way	3	3
48	15 Trecastle Way	3	3
49	13 Trecastle Way	3	3
50	11 Trecastle Way	3	3
51	9 Trecastle Way	3	3
52	7 Trecastle Way	3	3
53	5 Trecastle Way	3	3
54	3 Trecastle Way	3	3
55	1 Trecastle Way	3	3
56	2 Trecastle Way	3	3
57	4 Trecastle Way	3	3
58	6 Trecastle Way	3	3
59	8 Trecastle Way	3	3
60	10 Trecastle Way	3	3
61	12 Trecastle Way	3	3
62	85 Penderyn Way	5	2
63	83 Penderyn Way	5	3
64	81 Penderyn Way	5	3
65	79 Penderyn Way	7	6

Map Reference No. on Fig 12.1	Receptor	No. of windows	No. of windows that meet VSC criteria
66	77 Penderyn Way	5	4
67	75 Penderyn Way	5	3
68	73 Penderyn Way	5	4
69	71 Penderyn Way	5	4
70	69 Penderyn Way	9	8
71	67 Penderyn Way	5	4
72	65 Penderyn Way	5	4
73	63 Penderyn Way	7	6
	TOTAL	**1422**	**1072**

Table 12.10: Summary of Existing Baseline NSL Results (No Overhangs)

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet NSL criteria
1	72-122 Dalmeny Avenue	58	30
2	54-70 Dalmeny Avenue	38	38
3	30-52 Dalmeny Avenue	27	27
4	6-28 Dalmeny Avenue	24	24
5	275 Camden Road	25	23
6	1-30 Kimble House	30	30
7	370 Camden Road	4	4
8	372 Camden Road	11	11
9	374 Camden Road	5	4
10	376 Camden Road	20	20
11	Poynder Court, Camden Road	23	23
12	388 Camden Road	8	8
13	390 Camden Road	9	9
14	2 Parkhurst Road & 291 A & C Camden Road	15	15
15	2-5 Prospect Place	11	11
16	Camhurst House	13	13
17	Whitby Court	8	8
18	1-12 Fairweather House	36	36
19	13-24 Fairweather House	23	23
20	25-40 Fairweather House	23	23
21	McMorran House	30	30
22	Crayford House	42	42
23	Bunning House	66	65
24	41 Crayford Road	7	7

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet NSL criteria
25	43 Crayford Road	9	8
26	45 Crayford Road	8	6
27	47 Crayford Road	9	8
28	49 Crayford Road	7	6
29	51 Crayford Road	6	6
30	53 Crayford Road	7	5
31	Bakersfield - Block 1, Crayford Road	102	101
32	Bakersfield - Block 2, Crayford Road	105	101
33	52 Penderyn Way	3	3
34	54 Penderyn Way	3	3
35	56 Penderyn Way	3	3
36	58 Penderyn Way	3	2
37	60 Penderyn Way	3	3
38	62 Penderyn Way	3	3
39	64 Penderyn Way	4	4
40	44 Carleton Road	8	8
41	42 Carleton Road	16	15
42	27 Trecastle Way	3	2
43	25 Trecastle Way	3	2
44	23 Trecastle Way	3	2
45	21 Trecastle Way	3	2
46	19 Trecastle Way	3	2
47	17 Trecastle Way	3	2
48	15 Trecastle Way	3	2
49	13 Trecastle Way	3	2
50	11 Trecastle Way	3	2
51	9 Trecastle Way	3	2
52	7 Trecastle Way	3	2
53	5 Trecastle Way	3	2
54	3 Trecastle Way	3	3
55	1 Trecastle Way	3	2
56	2 Trecastle Way	3	3
57	4 Trecastle Way	3	3
58	6 Trecastle Way	3	3
59	8 Trecastle Way	3	3
60	10 Trecastle Way	3	3

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet NSL criteria
61	12 Trecastle Way	3	3
62	85 Penderyn Way	3	3
63	83 Penderyn Way	3	3
64	81 Penderyn Way	3	3
65	79 Penderyn Way	3	3
66	77 Penderyn Way	3	2
67	75 Penderyn Way	3	3
68	73 Penderyn Way	3	3
69	71 Penderyn Way	3	3
70	69 Penderyn Way	3	3
71	67 Penderyn Way	3	3
72	65 Penderyn Way	3	3
73	63 Penderyn Way	3	3
	TOTAL	**951**	**891**

12.3.12 The existing baseline daylight results when balconies are not considered show that 75 % of the windows in surrounding properties tested receive in excess of 27 % VSC and 94 % of the rooms within the surrounding properties receive direct skylight at working plane height to at least 80 % of the room area. This is an increase from 62% and 89% respectively when the overhangs are considered and demonstrates the limiting effect such overhangs have on the availability of daylight within the existing baseline conditions.

Sunlight

12.3.13 A total of 606 rooms southerly orientated rooms within 57 residential buildings were assessed for sunlight.

12.3.14 The existing baseline APSH conditions were also assessed for any properties that have southerly orientated rooms facing towards the Site. This excludes the 16 properties marked with a cross (x) in **Table 12.5** in the Assessed for Sunlight column. Detailed results can be found in **ES Volume 3, Appendix 12.2** and are summarised in **Table 12.11**.

Table 12.11 Summary of Existing Baseline APSH Results

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet APSH criteria
1	72-122 Dalmeny Avenue	6	6
2	54-70 Dalmeny Avenue	23	16
5	275 Camden Road	9	7
10	376 Camden Road	6	3
14	2 Parkhurst Road & 291 A & C Camden Road	8	8

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet APSH criteria
16	Camhurst House	10	10
18	1-12 Fairweather House	24	24
19	13-24 Fairweather House	11	11
20	25-40 Fairweather House	11	10
21	McMorran House	30	30
22	Crayford House	42	42
23	Bunning House	42	42
24	41 Crayford Road	7	6
25	43 Crayford Road	9	9
26	45 Crayford Road	7	6
27	47 Crayford Road	9	9
28	49 Crayford Road	7	6
29	51 Crayford Road	6	6
30	53 Crayford Road	7	7
31	Bakersfield - Block 1, Crayford Road	102	84
32	Bakersfield - Block 2, Crayford Road	105	99
33	52 Penderyn Way	1	0
34	54 Penderyn Way	3	3
35	56 Penderyn Way	3	3
36	58 Penderyn Way	3	3
37	60 Penderyn Way	3	2
38	62 Penderyn Way	3	2
39	64 Penderyn Way	4	3
40	44 Carleton Road	8	8
41	42 Carleton Road	16	14
42	27 Trecastle Way	3	2
43	25 Trecastle Way	3	2
44	23 Trecastle Way	3	2
45	21 Trecastle Way	3	2
46	19 Trecastle Way	3	2
47	17 Trecastle Way	3	2
48	15 Trecastle Way	3	2
49	13 Trecastle Way	3	2
50	11 Trecastle Way	3	2
56	2 Trecastle Way	3	3

Map Reference No. on Fig 12.1	Receptor	No. of rooms	No. of rooms that meet APSH criteria
57	4 Trecastle Way	3	3
58	6 Trecastle Way	3	3
59	8 Trecastle Way	3	3
60	10 Trecastle Way	3	3
61	12 Trecastle Way	3	3
63	85 Penderyn Way	3	2
63	83 Penderyn Way	3	3
64	81 Penderyn Way	3	3
65	79 Penderyn Way	3	3
66	77 Penderyn Way	3	3
67	75 Penderyn Way	3	3
68	73 Penderyn Way	3	3
69	71 Penderyn Way	3	3
70	69 Penderyn Way	3	3
71	67 Penderyn Way	3	3
72	65 Penderyn Way	3	3
73	63 Penderyn Way	3	3
	Total	**606**	**550**

12.3.15 The baseline sunlight results show that currently 91 % of the neighbouring southerly orientated rooms receive at least 25 % total APSH with at least 5 % APSH in the winter months. This demonstrates that the neighbouring properties with southerly orientated rooms will receive good levels of sunlight in the Baseline conditions.

12.3.16 Again, the existing baseline APSH conditions have also been assessed, negating the effects of balconies, access decks and roof eaves. Detailed results can be found in **ES Volume 3, Appendix 12.2** and are summarised in **Table 12.12**.

Table 12.12 Summary of Existing Baseline APSH Results (Without Overhangs)

Map Reference No. on Figure 12.1	Receptor	No. of rooms	No. of rooms that meet APSH criteria
1	72-122 Dalmeny Avenue	6	6
2	54-70 Dalmeny Avenue	23	23
5	275 Camden Road	9	8
10	376 Camden Road	6	3
14	2 Parkhurst Road & 291 A & C Camden Road	8	8
16	Camhurst House	10	10
18	1-12 Fairweather House	24	24

Map Reference No. on Figure 12.1	Receptor	No. of rooms	No. of rooms that meet APSH criteria
19	13-24 Fairweather House	11	11
20	25-40 Fairweather House	11	10
21	McMorran House	30	30
22	Crayford House	42	42
23	Bunning House	42	42
24	41 Crayford Road	7	7
25	43 Crayford Road	9	9
26	45 Crayford Road	7	6
27	47 Crayford Road	9	9
28	49 Crayford Road	7	6
29	51 Crayford Road	6	6
30	53 Crayford Road	7	7
31	Bakersfield - Block 1, Crayford Road	102	93
32	Bakersfield - Block 2, Crayford Road	105	105
33	52 Penderyn Way	1	1
34	54 Penderyn Way	3	3
35	56 Penderyn Way	3	3
36	58 Penderyn Way	3	3
37	60 Penderyn Way	3	3
38	62 Penderyn Way	3	3
39	64 Penderyn Way	4	4
40	44 Carleton Road	8	8
41	42 Carleton Road	16	14
42	27 Trecastle Way	3	3
43	25 Trecastle Way	3	3
44	23 Trecastle Way	3	3
45	21 Trecastle Way	3	3
46	19 Trecastle Way	3	3
47	17 Trecastle Way	3	3
48	15 Trecastle Way	3	3
59	13 Trecastle Way	3	3
50	11 Trecastle Way	3	3
56	2 Trecastle Way	3	3
57	4 Trecastle Way	3	3
58	6 Trecastle Way	3	3
59	8 Trecastle Way	3	3

Map Reference No. on Figure 12.1	Receptor	No. of rooms	No. of rooms that meet APSH criteria
60	10 Trecastle Way	3	3
61	12 Trecastle Way	3	3
62	85 Penderyn Way	3	3
63	83 Penderyn Way	3	3
64	81 Penderyn Way	3	3
65	79 Penderyn Way	3	3
66	77 Penderyn Way	3	3
67	75 Penderyn Way	3	3
68	73 Penderyn Way	3	3
69	71 Penderyn Way	3	3
70	69 Penderyn Way	3	3
71	67 Penderyn Way	3	3
72	65 Penderyn Way	3	3
73	63 Penderyn Way	3	3
	Total	**606**	**588**

12.3.17 When the effects of the overhanging features is not taken into consideration, the baseline sunlight results show that currently 97 % of the neighbouring southerly orientated rooms would receive at least 25 % total APSH with at least 5 % APSH in the winter months. This is an increase from 91% when the overhangs are considered and demonstrates the limiting effect such overhangs have on the availability of sunlight within the existing baseline conditions.

Overshadowing

12.3.18 **ES Volume 3, Appendix 12.3** provides the detailed results of the baseline overshadowing (Sun on Ground) modelling exercise that was undertaken. A summary of results is presented in **Table 12.13**.

Table 12.13 Summary of Existing Baseline Sun on Ground Results

Map Reference No on Figure 12.2	Receptor	Does the Amenity Space Achieve at least 2 Hours of Sunlight to at least 50 % of the area on 21st March? (%)
1	Communal garden for nos. 6-28 Dalmeny Avenue	Yes (68.2%)
2	Communal garden for nos. 30-52 Dalmeny Avenue	Yes (98.5%)
3	Communal garden for nos. 54-70 Dalmeny Avenue	Yes (88.4%)
4	Communal gardens for nos. 72-122 Dalmeny Avenue	Yes (92.2%)
5	Private garden of 2 Trecastle Way	No (47.6%)
6	Private garden of 4 Trecastle Way	Yes (54.7%)
7	Private garden of 6 Trecastle Way	Yes (56.8%)
8	Private garden of 8 Trecastle Way	Yes (76.9%)

Map Reference No on Figure 12.2	Receptor	Does the Amenity Space Achieve at least 2 Hours of Sunlight to at least 50 % of the area on 21st March? (%)
9	Private garden of 10 Trecastle Way	Yes (71.1%)
10	Private garden of 12 Trecastle Way	Yes (59.5%)
11	Garden of 42 Carleton Road	Yes (84.2%)
12	Garden of 44 Carleton Road	Yes (82.6%)
13	Communal Trecastle Way Play Area	Yes (89.5%)
14	Private garden of 85 Penderyn Way	Yes (55.3%)
15	Private garden of 83 Penderyn Way	Yes (60.5%)
16	Private garden of 81 Penderyn Way	Yes (64.7%)
17	Private garden of 79 Penderyn Way	Yes (64.6%)
18	Private garden of 77 Penderyn Way	Yes (64.0%)
19	Private garden of 75 Penderyn Way	Yes (58.1%)
20	Private garden of 73 Penderyn Way	Yes (75.3%)
21	Private garden of 71 Penderyn Way	Yes (68.4%)
22	Private garden of 69 Penderyn Way	Yes (80.1%)
23	Private garden of 67 Penderyn Way	Yes (81.9%)
24	Private garden of 65 Penderyn Way	Yes (78.2%)
25	Private garden of 63 Penderyn Way	Yes (67.6%)
26	Private garden of 45 Bakersfield Estate	Yes (52.5%)
27	Private garden of 44 Bakersfield Estate	No (46.8%)
28	Private garden of 43 Bakersfield Estate	No (44.4%)
29	Private garden of 42 Bakersfield Estate	No (46.8%)
30	Private garden of 41 Bakersfield Estate	Yes (54.4%)
31	Private garden of 40 Bakersfield Estate	Yes (53.8%)
32	Private garden of 39 Bakersfield Estate	Yes (59.0%)
33	Private garden of 38 Bakersfield Estate	Yes (58.5%)
34	Private garden of 37 Bakersfield Estate	Yes (62.4%)
35	Private gardens of 35 & 36 Bakersfield Estate	Yes (76.4%)
36	Private garden of 34 Bakersfield Estate	Yes (77.3%)
37	Private garden of 33 Bakersfield Estate	Yes (77.2%)
38	Private garden of 32 Bakersfield Estate	Yes (73.8%)
39	Private garden of 31 Bakersfield Estate	No (31.6%)
40	Private garden of 30 Bakersfield Estate	No (28.7%)
41	Private garden of 29 Bakersfield Estate	No (32.5%)
42	Private garden of 28 Bakersfield Estate	No (35.2%)
43	Private garden of 27 Bakersfield Estate	No (34.3%)
44	Private garden of 26 Bakersfield Estate	No (45.7%)

Map Reference No on Figure 12.2	Receptor	Does the Amenity Space Achieve at least 2 Hours of Sunlight to at least 50 % of the area on 21st March? (%)
45	Private garden of 53 Crayford Road	Yes (54.7%)
46	Private garden of 51 Crayford Road	Yes (70.5%)
47	Private garden of 49 Crayford Road	No (44.6%)
48	Private garden of 47 Crayford Road	No (27.2%)
49	Private garden of 45 Crayford Road	No (46.8%)
50	Private garden of 43 Crayford Road	Yes (56.7%)
51	Private garden of 41 Crayford Road	Yes (51.5%)
52	Communal amenity area for Bunning House (1)	Yes (100.0%)
53	Communal amenity area for Bunning House (2)	Yes (100.0%)
54	Communal amenity area for Bunning House (3)	Yes (100.0%)
55	Communal amenity area for Crayford House (1)	Yes (97.8%)
56	Communal amenity area for Crayford House (2)	Yes (97.7%)
57	Communal amenity area for Crayford House (3)	Yes (100.0%)
58	Communal amenity area for Crayford House (4)	Yes (100.0%)
59	Communal amenity area for Crayford House (5)	Yes (90.5%)
60	Communal amenity area for Crayford & Fairweather House	Yes (100.0%)
	Total	47 of 60 (78 %)

12.3.19 **Table 12.13** demonstrates that 78 % of existing amenity spaces assessed achieve at least two hours of sunlight to at least 50 % of the area on 21st March which, according to the BRE Guidelines, would provide an adequate level of direct sunlight amenity. Therefore, 22% of gardens currently receive less than the recommended levels of direct sunlight in the baseline conditions, owing to either the form of the existing site structures, the form of the sensitive receptor, or a combination of both.

12.4 Likely Effects of the Development and their Significance

The Works

12.4.1 Effects in relation to daylight, sunlight and overshadowing would vary throughout the demolition and construction stage.

12.4.2 Upon demolition, daylight and sunlight levels would increase across the Site and at surrounding receptors resulting in beneficial effects, although the effects would be limited due to the low rise nature of the buildings on Site. However, this would gradually change during construction of the Development until it reaches full height, which would cause the maximum effect to the identified receptors.

12.4.3 The effects of construction equipment, such as cranes, would not be significant as light can pass through their structures. They also move when in operation so any minor effects would be fleeting.

12.4.4 Accordingly, the likely effects presented during The Works will gradually increase to the effects described below for the Completed and Operational Development.

The Completed and Operational Development

Daylight and Sunlight Amenity to Surrounding Receptors

Baseline and Development Daylight and Sunlight Summary Tables

12.4.5 There are 1422 windows serving 951 residential rooms in 73 properties surrounding the Site. These were all assessed in terms of both VSC and NSL. Detailed results can be found in **ES Volume 3, Appendix 12.2**. These are summarised in **Table 12.14** and **Table 12.15** respectively.

Table 12.14 Summary of Development VSC Results

Ref. No in Fig 12.1	Receptor	Total no. Windows that Meet BRE Guidelines	No. Windows Below BRE Guidelines				Total No. of Windows Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
1	72-122 Dalmeny Avenue	47	11	0	0	11	58
2	54-70 Dalmeny Avenue	48	3	0	0	3	51
3	30-52 Dalmeny Avenue	26	1	0	0	1	27
4	6-28 Dalmeny Avenue	13	11	0	0	11	24
5	275 Camden Road	19	3	1	14	18	37
6	1-30 Kimble House	0	0	1	29	30	30
7	370 Camden Road	4	0	0	0	0	4
8	372 Camden Road	12	0	0	0	0	12
9	374 Camden Road	5	0	0	0	0	5
10	376 Camden Road	27	5	0	0	5	32
11	Poynder Court, Camden Road	4	17	2	0	19	23
12	388 Camden Road	7	1	0	0	1	8
13	390 Camden Road	8	1	0	0	1	9
14	2 Parkhurst Road & 291 A & C Camden Road	37	2	0	16	18	55
15	2-5 Prospect Place	1	0	1	10	11	12

Ref. No in Fig 12.1	Receptor	Total no. Windows that Meet BRE Guidelines	No. Windows Below BRE Guidelines				Total No. of Windows Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
16	Camhurst House	20	0	0	0	0	20
17	Whitby Court	8	0	0	0	0	8
18	1-12 Fairweather House	57	1	0	10	11	68
19	13-24 Fairweather House	40	3	0	0	3	43
20	25-40 Fairweather House	40	0	0	0	0	40
21	McMorran House	41	0	0	0	0	41
22	Crayford House	0	0	49	11	60	60
23	Bunning House	80	4	0	0	4	84
24	41 Crayford Road	7	1	1	0	2	9
25	43 Crayford Road	8	2	0	0	2	10
26	45 Crayford Road	13	0	0	0	0	13
27	47 Crayford Road	12	0	0	0	0	12
28	49 Crayford Road	9	0	0	0	0	9
29	51 Crayford Road	9	0	0	0	0	9
30	53 Crayford Road	7	0	0	0	0	7
31	Bakersfield - Block 1, Crayford Road	123	52	14	13	79	202
32	Bakersfield - Block 2, Crayford Road	111	37	30	29	96	207
33	52 Penderyn Way	4	0	0	0	0	4
34	54 Penderyn Way	4	0	0	0	0	4
35	56 Penderyn Way	4	0	1	0	1	5
36	58 Penderyn Way	5	0	1	0	1	6
37	60 Penderyn Way	4	0	0	0	0	4
38	62 Penderyn Way	4	0	0	0	0	4
39	64 Penderyn Way	5	0	0	0	0	5
40	44 Carleton Road	17	0	0	0	0	17
41	42 Carleton Road	16	0	0	0	0	16
42	27 Trecastle Way	2	1	0	0	1	3
43	25 Trecastle Way	2	0	0	1	1	3
44	23 Trecastle Way	2	0	1	0	1	3
45	21 Trecastle Way	2	0	1	0	1	3
46	19 Trecastle Way	3	0	0	0	0	3
47	17 Trecastle Way	3	0	0	0	0	3

Ref. No in Fig 12.1	Receptor	Total no. Windows that Meet BRE Guidelines	No. Windows Below BRE Guidelines				Total No. of Windows Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
8	15 Trecastle Way	3	0	0	0	0	3
49	13 Trecastle Way	3	0	0	0	0	3
50	11 Trecastle Way	3	0	0	0	0	3
51	9 Trecastle Way	3	0	0	0	0	3
52	7 Trecastle Way	3	0	0	0	0	3
53	5 Trecastle Way	3	0	0	0	0	3
54	3 Trecastle Way	3	0	0	0	0	3
55	1 Trecastle Way	2	1	0	0	1	3
56	2 Trecastle Way	3	0	0	0	0	3
57	4 Trecastle Way	3	0	0	0	0	3
58	6 Trecastle Way	3	0	0	0	0	3
59	8 Trecastle Way	3	0	0	0	0	3
60	10 Trecastle Way	3	0	0	0	0	3
61	12 Trecastle Way	3	0	0	0	0	3
62	85 Penderyn Way	1	0	2	2	4	5
63	83 Penderyn Way	1	0	1	3	4	5
64	81 Penderyn Way	1	0	2	2	4	5
65	79 Penderyn Way	4	0	2	1	3	7
66	77 Penderyn Way	2	0	3	0	3	5
67	75 Penderyn Way	1	0	2	2	4	5
68	73 Penderyn Way	1	0	2	2	4	5
69	71 Penderyn Way	1	1	1	2	4	5
70	69 Penderyn Way	1	3	5	0	8	9
71	67 Penderyn Way	2	1	1	1	3	5
72	65 Penderyn Way	3	1	1	0	2	5
73	63 Penderyn Way	7	0	0	0	0	7
	TOTAL	**986**	**163**	**125**	**148**	**436**	**1,422**

Table 12.15 Summary of Development NSL Results

Ref No, in Figure 12.1	Receptor	Total No. Rooms that Meet BRE Guidelines	No. Rooms Below BRE Guidelines				Total No. of Rooms assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
1	72-122 Dalmeny Avenue	57	1	0	0	1	58

Ref No, in Figure 12.1	Receptor	Total No. Rooms that Meet BRE Guidelines	No. Rooms Below BRE Guidelines				Total No. of Rooms assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
2	54-70 Dalmeny Avenue	38	0	0	0	0	38
3	30-52 Dalmeny Avenue	27	0	0	0	0	27
4	6-28 Dalmeny Avenue	24	0	0	0	0	24
5	275 Camden Road	11	4	1	9	14	25
6	1-30 Kimble House	30	0	0	0	0	30
7	370 Camden Road	4	0	0	0	0	4
8	372 Camden Road	11	0	0	0	0	11
9	374 Camden Road	5	0	0	0	0	5
10	376 Camden Road	20	0	0	0	0	20
11	Poynder Court, Camden Road	23	0	0	0	0	23
12	388 Camden Road	8	0	0	0	0	8
13	390 Camden Road	9	0	0	0	0	9
14	2 Parkhurst Road & 291 A & C Camden Road	11	0	0	4	4	15
15	2-5 Prospect Place	3	1	3	4	8	11
16	Camhurst House	13	0	0	0	0	13
17	Whitby Court	8	0	0	0	0	8
18	1-12 Fairweather House	36	0	0	0	0	36
19	13-24 Fairweather House	23	0	0	0	0	23
20	25-40 Fairweather House	23	0	0	0	0	23
21	McMorran House	30	0	0	0	0	30
22	Crayford House	28	5	4	5	14	42
23	Bunning House	66	0	0	0	0	66
24	41 Crayford Road	6	1	0	0	1	7
25	43 Crayford Road	6	3	0	0	3	9
26	45 Crayford Road	8	0	0	0	0	8
27	47 Crayford Road	8	1	0	0	1	9
28	49 Crayford Road	6	1	0	0	1	7
29	51 Crayford Road	6	0	0	0	0	6
30	53 Crayford Road	7	0	0	0	0	7

Ref No, in Figure 12.1	Receptor	Total No. Rooms that Meet BRE Guidelines	No. Rooms Below BRE Guidelines				Total No. of Rooms assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
31	Bakersfield - Block 1, Crayford Road	75	8	9	10	27	102
32	Bakersfield - Block 2, Crayford Road	80	5	5	15	25	105
33	52 Penderyn Way	3	0	0	0	0	3
34	54 Penderyn Way	3	0	0	0	0	3
35	56 Penderyn Way	3	0	0	0	0	3
36	58 Penderyn Way	3	0	0	0	0	3
37	60 Penderyn Way	3	0	0	0	0	3
38	62 Penderyn Way	3	0	0	0	0	3
39	64 Penderyn Way	4	0	0	0	0	4
40	44 Carleton Road	8	0	0	0	0	8
41	42 Carleton Road	16	0	0	0	0	16
42	27 Trecastle Way	3	0	0	0	0	3
43	25 Trecastle Way	2	0	0	1	1	3
44	23 Trecastle Way	2	0	0	1	1	3
45	21 Trecastle Way	2	1	0	0	1	3
46	19 Trecastle Way	3	0	0	0	0	3
47	17 Trecastle Way	3	0	0	0	0	3
48	15 Trecastle Way	3	0	0	0	0	3
49	13 Trecastle Way	3	0	0	0	0	3
50	11 Trecastle Way	3	0	0	0	0	3
51	9 Trecastle Way	3	0	0	0	0	3
52	7 Trecastle Way	3	0	0	0	0	3
53	5 Trecastle Way	3	0	0	0	0	3
54	3 Trecastle Way	3	0	0	0	0	3
55	1 Trecastle Way	3	0	0	0	0	3
56	2 Trecastle Way	3	0	0	0	0	3
57	4 Trecastle Way	3	0	0	0	0	3
58	6 Trecastle Way	3	0	0	0	0	3
59	8 Trecastle Way	3	0	0	0	0	3
60	10 Trecastle Way	3	0	0	0	0	3
61	12 Trecastle Way	3	0	0	0	0	3
62	85 Penderyn Way	0	1	1	1	3	3
63	83 Penderyn Way	1	1	0	1	2	3
64	81 Penderyn Way	1	1	1	0	2	3

Ref No, in Figure 12.1	Receptor	Total No. Rooms that Meet BRE Guidelines	No. Rooms Below BRE Guidelines				Total No. of Rooms assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
65	79 Penderyn Way	2	1	0	0	1	3
66	77 Penderyn Way	3	0	0	0	0	3
67	75 Penderyn Way	3	0	0	0	0	3
68	73 Penderyn Way	3	0	0	0	0	3
69	71 Penderyn Way	3	0	0	0	0	3
70	69 Penderyn Way	1	1	1	0	2	3
71	67 Penderyn Way	3	0	0	0	0	3
72	65 Penderyn Way	3	0	0	0	0	3
73	63 Penderyn Way	3	0	0	0	0	3
	TOTAL	**839**	**36**	**25**	**51**	**112**	**951**

12.4.6 There are 606 residential rooms surrounding the Site, which have a southerly orientation (i.e. at least one window that is orientated within 90 degrees of due south) and are therefore a material consideration in sunlight terms. These were all assessed in terms of both winter and annual APSH. Full detailed results are available within **ES Volume 3: Appendix 12.2** and are summarised in **Table 12.16** below.

Table 12.16 Summary of Development APSH Results

Re. No, on Figure 12.2	Address	Total No. Rooms that Meet BRE Guidelines	No. of Rooms below the APSH stated in BRE Guidelines								Total No. Rooms Assessed
			% Below threshold for Winter APSH				% Below threshold for Total APSH				
			20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Tota l	
1	72-122 Dalmeny Avenue	6	0	0	0	0	0	0	0	0	6
2	54-70 Dalmeny Avenue	23	0	0	0	0	0	0	0	0	23
5	275 Camden Road	9	0	0	0	0	0	0	0	0	9
10	376 Camden Road	6	0	0	0	0	0	0	0	0	6
14	2 Parkhurst Road & 291 A & C Camden Road	8	0	0	0	0	0	0	0	0	8
16	Camhurst House	10	0	0	0	0	0	0	0	0	10
18	1-12 Fairweather House	24	0	0	0	0	0	0	0	0	24
19	13-24 Fairweather House	9	0	0	2	2	2	0	0	2	11
20	25-40 Fairweather House	11	0	0	0	0	0	0	0	0	11
21	McMorran House	30	0	0	0	0	0	0	0	0	30

Re. No, on Figure 12.2	Address	Total No. Rooms that Meet BRE Guidelines	No. of Rooms below the APSH stated in BRE Guidelines								Total No. Rooms Assessed
			% Below threshold for Winter APSH				% Below threshold for Total APSH				
			20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total	
22	Crayford House	42	0	0	0	0	0	0	0	0	42
23	Bunning House	42	0	0	0	0	0	0	0	0	42
24	41 Crayford Road	7	0	0	0	0	0	0	0	0	7
25	43 Crayford Road	8	0	0	1	1	1	0	0	1	9
26	45 Crayford Road	7	0	0	0	0	0	0	0	0	7
27	47 Crayford Road	9	0	0	0	0	0	0	0	0	9
28	49 Crayford Road	7	0	0	0	0	0	0	0	0	7
29	51 Crayford Road	6	0	0	0	0	0	0	0	0	6
30	53 Crayford Road	7	0	0	0	0	0	0	0	0	7
31	Bakersfield - Block 1, Crayford Road	71	2	3	20	25	5	5	15	25	102
32	Bakersfield - Block 2, Crayford Road	91	0	1	13	14	1	2	11	14	105
33	52 Penderyn Way	1	0	0	0	0	0	0	0	0	1
34	54 Penderyn Way	3	0	0	0	0	0	0	0	0	3
35	56 Penderyn Way	3	0	0	0	0	0	0	0	0	3
36	58 Penderyn Way	3	0	0	0	0	0	0	0	0	3
37	60 Penderyn Way	3	0	0	0	0	0	0	0	0	3
38	62 Penderyn Way	3	0	0	0	0	0	0	0	0	3
39	64 Penderyn Way	4	0	0	0	0	0	0	0	0	4
40	44 Carleton Road	8	0	0	0	0	0	0	0	0	8
41	42 Carleton Road	16	0	0	0	0	0	0	0	0	16
42	27 Trecastle Way	3	0	0	0	0	0	0	0	0	3
43	25 Trecastle Way	3	0	0	0	0	0	0	0	0	3
44	23 Trecastle Way	3	0	0	0	0	0	0	0	0	3
45	21 Trecastle Way	3	0	0	0	0	0	0	0	0	3
46	19 Trecastle Way	3	0	0	0	0	0	0	0	0	3
47	17 Trecastle Way	3	0	0	0	0	0	0	0	0	3
48	15 Trecastle Way	3	0	0	0	0	0	0	0	0	3
49	13 Trecastle Way	3	0	0	0	0	0	0	0	0	3
50	11 Trecastle Way	3	0	0	0	0	0	0	0	0	3
56	2 Trecastle Way	3	0	0	0	0	0	0	0	0	3
57	4 Trecastle Way	3	0	0	0	0	0	0	0	0	3
58	6 Trecastle Way	3	0	0	0	0	0	0	0	0	3
59	8 Trecastle Way	3	0	0	0	0	0	0	0	0	3

Re. No, on Figure 12.2	Address	Total No. Rooms that Meet BRE Guidelines	No. of Rooms below the APSH stated in BRE Guidelines								Total No. Rooms Assessed
			% Below threshold for Winter APSH				% Below threshold for Total APSH				
			20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total	
60	10 Trecastle Way	3	0	0	0	0	0	0	0	0	3
61	12 Trecastle Way	3	0	0	0	0	0	0	0	0	3
62	85 Penderyn Way	2	0	0	1	1	0	0	1	1	3
63	83 Penderyn Way	3	0	0	0	0	0	0	0	0	3
64	81 Penderyn Way	2	0	0	1	1	0	0	1	1	3
65	79 Penderyn Way	3	0	0	0	0	0	0	0	0	3
66	77 Penderyn Way	3	0	0	0	0	0	0	0	0	3
67	75 Penderyn Way	2	0	0	1	1	0	0	1	1	3
68	73 Penderyn Way	2	0	0	1	1	0	0	1	1	3
69	71 Penderyn Way	2	0	0	1	1	0	0	1	1	3
70	69 Penderyn Way	3	0	0	0	0	0	0	0	0	3
71	67 Penderyn Way	2	0	0	1	1	0	1	0	1	3
72	65 Penderyn Way	2	0	0	1	1	0	0	1	1	3
73	63 Penderyn Way	3	0	0	0	0	0	0	0	0	3
	Total	**551**	**2**	**4**	**43**	**49**	**9**	**8**	**32**	**49**	**606**

Baseline and Development Daylight and Sunlight Summary Tables (Without Overhangs)

12.4.7 An additional assessment was also undertaken which did not consider the effect of the overhanging balconies, access decks, eaves etc. Properties were all assessed in terms of both VSC and NSL. Detailed results can be found in **ES Volume 3, Appendix 12.2** and these are summarised in **Table 12.17** and **Table 12.18** respectively.

Table 12.17 Summary of Development VSC Results (Without Overhangs)

Ref. No on Figure 12.1	Receptor	Total No. Windows that Meet BRE Guidelines	No. Windows Below BRE Guidelines				Total No. of Windows Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
1	72-122 Dalmeny Avenue	58	0	0	0	0	58
2	54-70 Dalmeny Avenue	51	0	0	0	0	51
3	30-52 Dalmeny Avenue	26	1	0	0	1	27
4	6-28 Dalmeny Avenue	13	11	0	0	11	24
5	275 Camden Road	19	3	1	14	18	37
6	1-30 Kimble House	30	0	0	0	0	30

Ref. No on Figure 12.1	Receptor	Total No. Windows that Meet BRE Guidelines	No. Windows Below BRE Guidelines				Total No. of Windows Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
7	370 Camden Road	4	0	0	0	0	4
8	372 Camden Road	12	0	0	0	0	12
9	374 Camden Road	5	0	0	0	0	5
10	376 Camden Road	27	5	0	0	5	32
11	Poynder Court, Camden Road	4	17	2	0	19	23
12	388 Camden Road	7	1	0	0	1	8
13	390 Camden Road	8	1	0	0	1	9
14	2 Parkhurst Road & 291 A & C Camden Road	37	2	0	16	18	55
15	2-5 Prospect Place	1	0	6	5	11	12
16	Camhurst House	20	0	0	0	0	20
17	Whitby Court	8	0	0	0	0	8
18	1-12 Fairweather House	57	1	0	10	11	68
19	13-24 Fairweather House	40	3	0	0	3	43
20	25-40 Fairweather House	40	0	0	0	0	40
21	McMorran House	41	0	0	0	0	41
22	Crayford House	0	0	49	11	60	60
23	Bunning House	80	4	0	0	4	84
24	41 Crayford Road	9	0	0	0	0	9
25	43 Crayford Road	8	2	0	0	2	10
26	45 Crayford Road	13	0	0	0	0	13
27	47 Crayford Road	12	0	0	0	0	12
28	49 Crayford Road	9	0	0	0	0	9
29	51 Crayford Road	9	0	0	0	0	9
30	53 Crayford Road	7	0	0	0	0	7
31	Bakersfield - Block 1, Crayford Road	137	58	4	3	65	202
32	Bakersfield - Block 2, Crayford Road	121	39	31	16	86	207
33	52 Penderyn Way	4	0	0	0	0	4
34	54 Penderyn Way	4	0	0	0	0	4
35	56 Penderyn Way	5	0	0	0	0	5
36	58 Penderyn Way	6	0	0	0	0	6

Ref. No on Figure 12.1	Receptor	Total No. Windows that Meet BRE Guidelines	No. Windows Below BRE Guidelines				Total No. of Windows Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
37	60 Penderyn Way	4	0	0	0	0	4
38	62 Penderyn Way	4	0	0	0	0	4
39	64 Penderyn Way	5	0	0	0	0	5
40	44 Carleton Road	17	0	0	0	0	17
41	42 Carleton Road	16	0	0	0	0	16
42	27 Trecastle Way	3	0	0	0	0	3
43	25 Trecastle Way	3	0	0	0	0	3
44	23 Trecastle Way	3	0	0	0	0	3
45	21 Trecastle Way	3	0	0	0	0	3
46	19 Trecastle Way	3	0	0	0	0	3
47	17 Trecastle Way	3	0	0	0	0	3
48	15 Trecastle Way	3	0	0	0	0	3
49	13 Trecastle Way	3	0	0	0	0	3
50	11 Trecastle Way	3	0	0	0	0	3
51	9 Trecastle Way	3	0	0	0	0	3
52	7 Trecastle Way	3	0	0	0	0	3
53	5 Trecastle Way	3	0	0	0	0	3
54	3 Trecastle Way	3	0	0	0	0	3
55	1 Trecastle Way	3	0	0	0	0	3
56	2 Trecastle Way	3	0	0	0	0	3
57	4 Trecastle Way	3	0	0	0	0	3
58	6 Trecastle Way	3	0	0	0	0	3
59	8 Trecastle Way	3	0	0	0	0	3
60	10 Trecastle Way	3	0	0	0	0	3
61	12 Trecastle Way	3	0	0	0	0	3
62	85 Penderyn Way	1	0	3	1	4	5
63	83 Penderyn Way	1	0	1	3	4	5
64	81 Penderyn Way	1	0	2	2	4	5
65	79 Penderyn Way	4	0	2	1	3	7
66	77 Penderyn Way	2	0	3	0	3	5
67	75 Penderyn Way	1	0	4	0	4	5
68	73 Penderyn Way	1	0	4	0	4	5
69	71 Penderyn Way	1	1	3	0	4	5
70	69 Penderyn Way	1	3	5	0	8	9
71	67 Penderyn Way	2	3	0	0	3	5

Ref. No on Figure 12.1	Receptor	Total No. Windows that Meet BRE Guidelines	No. Windows Below BRE Guidelines				Total No. of Windows Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
72	65 Penderyn Way	4	1	0	0	1	5
73	63 Penderyn Way	7	0	0	0	0	7
	TOTAL	**1,064**	**156**	**120**	**82**	**358**	**1,422**

Table 12.18 Summary of Development NSL Results (Without Overhangs)

Ref No. on Figure 12.1	Receptor	Total No. Rooms that Meet BRE Guidelines	No. Rooms Below BRE Guidelines				Total No. of Rooms Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
1	72-122 Dalmeny Avenue	57	1	0	0	1	58
2	54-70 Dalmeny Avenue	38	0	0	0	0	38
3	30-52 Dalmeny Avenue	27	0	0	0	0	27
4	6-28 Dalmeny Avenue	24	0	0	0	0	24
5	275 Camden Road	11	4	1	9	14	25
6	1-30 Kimble House	30	0	0	0	0	30
7	370 Camden Road	4	0	0	0	0	4
8	372 Camden Road	11	0	0	0	0	11
9	374 Camden Road	5	0	0	0	0	5
10	376 Camden Road	20	0	0	0	0	20
11	Poynder Court, Camden Road	23	0	0	0	0	23
12	388 Camden Road	8	0	0	0	0	8
13	390 Camden Road	9	0	0	0	0	9
14	2 Parkhurst Road & 291 A & C Camden Road	11	0	0	4	4	15
15	2-5 Prospect Place	3	1	4	3	8	11
16	Camhurst House	13	0	0	0	0	13
17	Whitby Court	8	0	0	0	0	8
18	1-12 Fairweather House	36	0	0	0	0	36
19	13-24 Fairweather House	23	0	0	0	0	23

Ref No. on Figure 12.1	Receptor	Total No. Rooms that Meet BRE Guidelines	No. Rooms Below BRE Guidelines				Total No. of Rooms Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
20	25-40 Fairweather House	23	0	0	0	0	23
21	McMorran House	30	0	0	0	0	30
22	Crayford House	28	5	4	5	14	42
23	Bunning House	66	0	0	0	0	66
24	41 Crayford Road	7	0	0	0	0	7
25	43 Crayford Road	6	3	0	0	3	9
26	45 Crayford Road	8	0	0	0	0	8
27	47 Crayford Road	8	1	0	0	1	9
28	49 Crayford Road	6	1	0	0	1	7
29	51 Crayford Road	6	0	0	0	0	6
30	53 Crayford Road	7	0	0	0	0	7
31	Bakersfield - Block 1, Crayford Road	75	9	8	10	27	102
32	Bakersfield - Block 2, Crayford Road	80	6	4	15	25	105
33	52 Penderyn Way	3	0	0	0	0	3
34	54 Penderyn Way	3	0	0	0	0	3
35	56 Penderyn Way	3	0	0	0	0	3
36	58 Penderyn Way	3	0	0	0	0	3
37	60 Penderyn Way	3	0	0	0	0	3
38	62 Penderyn Way	3	0	0	0	0	3
39	64 Penderyn Way	4	0	0	0	0	4
40	44 Carleton Road	8	0	0	0	0	8
41	42 Carleton Road	16	0	0	0	0	16
42	27 Trecastle Way	3	0	0	0	0	3
43	25 Trecastle Way	2	0	0	1	1	3
44	23 Trecastle Way	2	0	0	1	1	3
45	21 Trecastle Way	2	1	0	0	1	3
46	19 Trecastle Way	3	0	0	0	0	3
47	17 Trecastle Way	3	0	0	0	0	3
48	15 Trecastle Way	3	0	0	0	0	3
49	13 Trecastle Way	3	0	0	0	0	3
50	11 Trecastle Way	3	0	0	0	0	3
51	9 Trecastle Way	3	0	0	0	0	3
52	7 Trecastle Way	3	0	0	0	0	3

Ref No. on Figure 12.1	Receptor	Total No. Rooms that Meet BRE Guidelines	No. Rooms Below BRE Guidelines				Total No. of Rooms Assessed
			20-29.9% Loss	30-39.9% Loss	>=40% Loss	Total	
53	5 Trecastle Way	3	0	0	0	0	3
54	3 Trecastle Way	3	0	0	0	0	3
55	1 Trecastle Way	3	0	0	0	0	3
56	2 Trecastle Way	3	0	0	0	0	3
57	4 Trecastle Way	3	0	0	0	0	3
58	6 Trecastle Way	3	0	0	0	0	3
59	8 Trecastle Way	3	0	0	0	0	3
60	10 Trecastle Way	3	0	0	0	0	3
61	12 Trecastle Way	3	0	0	0	0	3
62	85 Penderyn Way	0	0	2	1	3	3
63	83 Penderyn Way	1	1	0	1	2	3
64	81 Penderyn Way	1	1	1	0	2	3
65	79 Penderyn Way	2	1	0	0	1	3
66	77 Penderyn Way	3	0	0	0	0	3
67	75 Penderyn Way	3	0	0	0	0	3
68	73 Penderyn Way	3	0	0	0	0	3
69	71 Penderyn Way	3	0	0	0	0	3
70	69 Penderyn Way	1	1	1	0	2	3
71	67 Penderyn Way	3	0	0	0	0	3
72	65 Penderyn Way	3	0	0	0	0	3
73	63 Penderyn Way	3	0	0	0	0	3
	TOTAL	**840**	**36**	**25**	**50**	**111**	**951**

12.4.8 An additional analysis was also undertaken which does not take the effects of any overhangs (balconies, access decks, roof eaves etc.) into consideration for the 606 southerly orientated residential rooms surrounding the Site for sunlight. These room were all assessed in terms of both winter and annual APSH. Full detailed results are available within **ES Volume 3, Appendix 12.2** and are summarised in **Table 12.19** below.

Table 12.19 Summary of Development APSH Results (Without Overhangs)

Ref. No. on Figure 12.1	Address	Total No. Rooms that Meet BRE Guidelines	No. of rooms below the APSH stated in BRE Guidelines								Total No. Rooms Assessed
			% Below threshold for Winter APSH				% Below threshold for Total APSH				
			20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total	
1	72-122 Dalmeny Avenue	6	0	0	0	0	0	0	0	0	6

Ref. No. on Figure 12.1	Address	Total No. Rooms that Meet BRE Guidelines	No. of rooms below the APSH stated in BRE Guidelines								Total No. Rooms Assessed
			% Below threshold for Winter APSH				% Below threshold for Total APSH				
			20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total	
2	54-70 Dalmeny Avenue	23	0	0	0	0	0	0	0	0	23
5	275 Camden Road	9	0	0	0	0	0	0	0	0	9
10	376 Camden Road	6	0	0	0	0	0	0	0	0	6
14	2 Parkhurst Road & 291 A & C Camden Road	8	0	0	0	0	0	0	0	0	8
16	Camhurst House	10	0	0	0	0	0	0	0	0	10
18	1-12 Fairweather House	24	0	0	0	0	0	0	0	0	24
19	13-24 Fairweather House	9	0	0	2	2	2	0	0	2	11
20	25-40 Fairweather House	11	0	0	0	0	0	0	0	0	11
21	McMorran House	30	0	0	0	0	0	0	0	0	30
22	Crayford House	42	0	0	0	0	0	0	0	0	42
23	Bunning House	42	0	0	0	0	0	0	0	0	42
24	41 Crayford Road	7	0	0	0	0	0	0	0	0	7
25	43 Crayford Road	8	0	0	1	1	1	0	0	1	9
26	45 Crayford Road	7	0	0	0	0	0	0	0	0	7
27	47 Crayford Road	9	0	0	0	0	0	0	0	0	9
28	49 Crayford Road	7	0	0	0	0	0	0	0	0	7
29	51 Crayford Road	6	0	0	0	0	0	0	0	0	6
30	53 Crayford Road	7	0	0	0	0	0	0	0	0	7
31	Bakersfield - Block 1, Crayford Road	82	1	0	14	15	2	7	5	14	102
32	Bakersfield - Block 2, Crayford Road	105	0	0	0	0	0	0	0	0	105
33	52 Penderyn Way	1	0	0	0	0	0	0	0	0	1
34	54 Penderyn Way	3	0	0	0	0	0	0	0	0	3
35	56 Penderyn Way	3	0	0	0	0	0	0	0	0	3
36	58 Penderyn Way	3	0	0	0	0	0	0	0	0	3

Ref. No. on Figure 12.1	Address	Total No. Rooms that Meet BRE Guidelines	No. of rooms below the APSH stated in BRE Guidelines								Total No. Rooms Assessed
			% Below threshold for Winter APSH				% Below threshold for Total APSH				
			20-30%	30-40%	>40%	Total	20-30%	30-40%	>40%	Total	
37	60 Penderyn Way	3	0	0	0	0	0	0	0	0	3
38	62 Penderyn Way	3	0	0	0	0	0	0	0	0	3
39	64 Penderyn Way	4	0	0	0	0	0	0	0	0	4
40	44 Carleton Road	8	0	0	0	0	0	0	0	0	8
41	42 Carleton Road	16	0	0	0	0	0	0	0	0	16
42	27 Trecastle Way	3	0	0	0	0	0	0	0	0	3
43	25 Trecastle Way	3	0	0	0	0	0	0	0	0	3
44	23 Trecastle Way	3	0	0	0	0	0	0	0	0	3
45	21 Trecastle Way	3	0	0	0	0	0	0	0	0	3
46	19 Trecastle Way	3	0	0	0	0	0	0	0	0	3
47	17 Trecastle Way	3	0	0	0	0	0	0	0	0	3
48	15 Trecastle Way	3	0	0	0	0	0	0	0	0	3
49	13 Trecastle Way	3	0	0	0	0	0	0	0	0	3
50	11 Trecastle Way	3	0	0	0	0	0	0	0	0	3
56	2 Trecastle Way	3	0	0	0	0	0	0	0	0	3
57	4 Trecastle Way	3	0	0	0	0	0	0	0	0	3
58	6 Trecastle Way	3	0	0	0	0	0	0	0	0	3
59	8 Trecastle Way	3	0	0	0	0	0	0	0	0	3
60	10 Trecastle Way	3	0	0	0	0	0	0	0	0	3
61	12 Trecastle Way	3	0	0	0	0	0	0	0	0	3
62	85 Penderyn Way	2	0	0	1	1	0	0	1	1	3
63	83 Penderyn Way	3	0	0	0	0	0	0	0	0	3
64	81 Penderyn Way	3	0	0	0	0	0	0	0	0	3
65	79 Penderyn Way	3	0	0	0	0	0	0	0	0	3
66	77 Penderyn Way	3	0	0	0	0	0	0	0	0	3
67	75 Penderyn Way	3	0	0	0	0	0	0	0	0	3
68	73 Penderyn Way	3	0	0	0	0	0	0	0	0	3
69	71 Penderyn Way	3	0	0	0	0	0	0	0	0	3
70	69 Penderyn Way	3	0	0	0	0	0	0	0	0	3
71	67 Penderyn Way	3	0	0	0	0	0	0	0	0	3
72	65 Penderyn Way	3	0	0	0	0	0	0	0	0	3
73	63 Penderyn Way	3	0	0	0	0	0	0	0	0	3
	Total	**582**	**1**	**0**	**18**	**19**	**5**	**7**	**6**	**18**	**606**

12.4.9 In situations where the construction of the Development would result in VSC and NSL alterations to the windows and rooms within a property where levels are all within the BRE Guidelines, the effect of the Development upon the daylight amenity to that property would be **Insignificant**.

12.4.10 Of the 73 properties assessed, the effect of the Development on the daylight amenity of the 33 properties listed within **Table 12.20** would be **Insignificant** even when the effects of the overhangs are considered.

Table 12.20 Properties Experiencing an Insignificant Daylight Effect

Address	Address
370 Camden Road	19 Trecastle Way
372 Camden Road	17 Trecastle Way
374 Camden Road	15 Trecastle Way
Camhurst House	13 Trecastle Way
Whitby Court	11 Trecastle Way
25-40 Fairweather House	9 Trecastle Way
McMorran House	7 Trecastle Way
45 Crayford Road	5 Trecastle Way
51 Crayford Road	3 Trecastle Way
53 Crayford Road	2 Trecastle Way
52 Penderyn Way	4 Trecastle Way
54 Penderyn Way	6 Trecastle Way
60 Penderyn Way	8 Trecastle Way
62 Penderyn Way	10 Trecastle Way
64 Penderyn Way	12 Trecastle Way
44 Carleton Road	63 Penderyn Way
42 Carleton Road	

12.4.11 A further 8 properties would meet the BRE Guidelines criteria when the effects of the balconies are removed. As set out in paragraph 12.2.96, the effects to these properties would be **Insignificant** as this demonstrates that it is the overhangs, rather than the presence of the Development which is the main factor in the relative light loss. These properties are listed within **Table 12.21**.

Table 12.21 Properties Experiencing an Insignificant Daylight Effect (Without Overhangs)

Address	Address
54-70 Dalmeny Avenue	58 Penderyn Way
1-30 Kimble House	27 Trecastle Way
41 Crayford Road	21 Trecastle Way
56 Penderyn Way	1 Trecastle Way

12.4.12 The remaining 32 properties experience some daylight effects that are considered to be of minor, moderate or major adverse significance and are, therefore, discussed below in more detail from paragraph 12.4.17 below.

12.4.13 For sunlight, where the winter and total APSH results are all within the BRE Guidelines, the effect of the Development upon the sunlight amenity to that property would be considered to be **Insignificant**.

12.4.14 Of the 57 properties assessed with southerly orientated windows serving the rooms, the effect to the sunlight amenity of the 46 properties listed within **Table 12.23** would be **Insignificant**. This is when the effects of the overhangs are considered.

Table 12.22 Properties Experiencing an Insignificant Sunlight Effect

Address	Address
72-122 Dalmeny Avenue	64 Penderyn Way
54-70 Dalmeny Avenue	44 Carleton Road
275 Camden Road	42 Carleton Road
376 Camden Road	27 Trecastle Way
2 Parkhurst Road & 291 A-C Camden Road	25 Trecastle Way
Camhurst House	23 Trecastle Way
1-12 Fairweather House	21 Trecastle Way
25-40 Fairweather House	19 Trecastle Way
McMorran House	17 Trecastle Way
Crayford House	15 Trecastle Way
Bunning House	13 Trecastle Way
41 Crayford Road	11 Trecastle Way
45 Crayford Road	2 Trecastle Way
47 Crayford Road	4 Trecastle Way
49 Crayford Road	6 Trecastle Way
51 Crayford Road	8 Trecastle Way
53 Crayford Road	10 Trecastle Way
52 Penderyn Way	12 Trecastle Way
54 Penderyn Way	83 Penderyn Way
56 Penderyn Way	79 Penderyn Way
58 Penderyn Way	77 Penderyn Way
60 Penderyn Way	69 Penderyn Way
62 Penderyn Way	63 Penderyn Way

12.4.15 A further 7 properties would meet the BRE Guidelines APSH criteria when the effects of the balconies are not taken into consideration. The effects to these properties would be **Insignificant** as this demonstrates that it is the overhangs, rather than the size of the Development which is the main factor in the relative light loss. These properties are listed within **Table 12.24**.

Table 12.23 Properties Experiencing an Insignificant Sunlight Effect (Without Overhangs)

Address	Address
Bakersfield – Block 2	71 Penderyn Way
81 Penderyn Way	67 Penderyn Way
75 Penderyn Way	65 Penderyn Way
73 Penderyn Way	

12.4.16 The remaining 4 properties experience some sunlight effects of minor, moderate or major adverse significance and are, therefore, discussed below in more detail.

72-122 Dalmeny Avenue

Daylight

12.4.17 There are 58 windows serving 58 habitable rooms in this property that overlook the Site.

12.4.18 Each of the ground and 2nd floor windows assessed are overhung by access decks which materially limit the access to daylight to these windows. For example, the 2nd floor windows that are overhung receive c. 12% VSC in the baseline conditions, whereas the 1st floor windows that are at a lower level where less daylight is theoretically available receive over 35% VSC. This property has therefore been subject to an additional assessment which does not take the limiting effects of the access decks into consideration.

12.4.19 When the access decks are considered, as reported in **Table 12.14**, of the 58 windows assessed, 47 would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect. All of the remaining 11 windows would experience relative reductions of between 20 and 29.9% and thus a **direct**, **long-term**, **local** likely effect of **minor adverse significance**. Each of these windows are located at ground and 2nd floor so are overhung by access decks.

12.4.20 For NSL, **Table 12.15** shows that 57 of the 58 rooms tested would satisfy the typical BRE Guideline recommendations so would experience **Insignificant** effects. The remaining room would be considered to experience **direct, long term, local** likely effects of **minor adverse significance**.

12.4.21 When the limiting effects of the access decks are not considered, as shown in **Table 12.17**, all 58 windows would satisfy the typical BRE Guideline recommendations and so would experience **insignificant** effects in this scenario. Therefore, the overall effect on VSC to this property is considered **insignificant** as this additional analysis demonstrates that it is the presence of the access decks rather than the scale of the Development which is the main factor in the relative light loss to these windows.

12.4.22 Therefore, this property would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** to 1 room only. The overall effect upon this property in daylight terms would, therefore, be considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.23 As reported in **Table 12.16**, all 6 southerly orientated rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant. The effect upon this property in sunlight terms would, therefore, be considered to be **insignificant**.

6-28 & 30-52 Dalmeny Avenue

Daylight

12.4.24 There are 51 windows serving 51 habitable rooms in these two apartment blocks that overlook the Site.

12.4.25 As reported in **Table 12.14**, of the 51 windows assessed, 39 would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect. All of the remaining 12 windows would experience relative reductions of between 20 and 29.9% and thus a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.26 For NSL, **Table 12.15** shows that all 51 rooms would meet the typical BRE Guideline recommendations and so would experience an **insignificant** effect.

12.4.27 These properties would experience **direct**, **long-term**, **local** likely effects of **minor adverse significance** to 12 windows. The overall effect upon these properties in daylight terms would, therefore, be considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.28 None of the rooms within these properties are served by southerly orientated windows and therefore the sunlight effect to these properties was not considered.

275 Camden Road

Daylight

12.4.29 There are 37 windows serving 25 habitable rooms in this property that overlook the Site.

12.4.30 As shown on the results included within **Appendix 12.2**, a window that serves this property (W9/551) is overhung by a deep access deck which materially limits the access to daylight to this window. For example, it only receives 9.2% VSC in the existing condition despite having predominantly unobstructed access to daylight across the Site. This property has therefore been subject to an additional assessment which does not take the limiting effects of the access decks into consideration.

12.4.31 When the effects of the access decks are taken into consideration, as reported in **Table 12.14**, of the 37 windows assessed, 19 would satisfy the typical BRE Guideline VSC recommendations so experience an **Insignificant** effect. Of the remaining windows, 3 would be considered to experience **direct, long term, local** likely effects of **minor adverse significance**, 1 would be considered to experience **direct, long term, local** likely effects of **moderate adverse significance** and 14 would be considered to experience **direct, long term, local** likely effects of **major adverse significance**.

12.4.32 For NSL, **Table 12.15** shows that 11 rooms would satisfy the typical BRE Guideline recommendations so would experience **Insignificant** effects. Of the remaining rooms, 4 would be considered to experience **direct, long term, local** likely effects of **minor adverse significance**, 1 would experience a **direct, long term, local** likely effect of **moderate adverse significance** and 9 would experience **direct, long term, local** likely effects of **major adverse significance**.

12.4.33 When the access decks are not considered, as reported in **Table 12.17** and **Table 12.18**, whilst the overall relative changes reduce to the overhung windows, the significance of the effects are the same as described above for both VSC and NSL.

12.4.34 Of the 15 windows to experience effects of **moderate** or **major adverse significance** both with and without the effects of the access decks being considered, 2 would serve living/kitchen/dining rooms (LKDs) whereas the remaining 13 serve bedrooms for which the BRE acknowledge daylight is less important. 1 of the LKD windows (W3/551) would retain 21.49 % VSC which the research paper included within **ES Volume 3, Appendix 12.9** suggests is a level commonly seen in the surrounding context of the Site. It also serves a dual aspect space that meets the BRE criteria for NSL. The remaining LKD window (W9/551) is a small secondary window and is heavily overhung by the access deck. The bedroom windows that experience significant effects would retain between 12.11-23.76 % VSC.

12.4.35 For NSL, all but 1 of the rooms that do not satisfy the BRE Guideline recommendations would be in use as bedrooms which are recognised as being ‘less important’ for NSL. The remaining room (R7/551) is the same LKD served by the small secondary window which is overhung by the access deck. The primary window that serves this space faces away from the Site and would not experience any light loss.

12.4.36 Overall, whilst the Development would cause significant effects to this property, these are partly attributable to there being windows directly overlooking the Holloway Site which is identified in the Holloway Prison Site SPD as a key development site within the LBI, where a significant development was always likely to come forward. Windows positioned close to a neighbouring boundary can be considered to be taking more than their fair share of light, with the Guidelines at paragraph 2.2.3 defining a ‘good neighbour’ as a building “standing a reasonable distance from the boundary and taking no more than its fair share of light.” These are also partly attributable to the inherit design features of 275 Camden Road (access decks) which limits the access to daylight to some of the windows/rooms assessed.

12.4.37 Despite this, the majority of main living areas experience insignificant or minor adverse effects with the more significant effects primarily occurring to less important single-aspect bedrooms. The only exception is a living area that is heavily overhung by the access decks where significant effects are more likely to occur, but where the overall effect is arguably unlikely to be perceptible as the occupants would almost certainly require the use of supplementary artificial lighting in the baseline condition due to the building's poor design. Therefore, on balance, the daylight effect to this property is considered to experience **direct**, **long-term**, **local** likely effects of **moderate adverse significance**.

Sunlight

12.4.38 As reported in **Table 12.16**, all 9 rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant. The effect upon this property in sunlight terms would, therefore, be considered to be **insignificant**.

376 Camden Road

Daylight

12.4.39 There are 32 windows serving 20 habitable rooms in this property that overlook the Site.

12.4.40 As reported in **Table 12.14**, of the 32 windows assessed, 27 would satisfy the typical BRE Guideline VSC recommendations so experience an **Insignificant** effect. Of the remaining windows, 5 would be considered to experience **direct, long term, local** likely effects of **minor adverse significance**.

12.4.41 For NSL, **Table 12.15** reports that all 20 rooms would meet the typical BRE Guideline recommendations and so would experience an **insignificant** effect.

12.4.42 This property would experience **direct**, **long-term**, **local** likely effects of **minor adverse significance** to just 5 windows. The overall effect upon this property in daylight terms would, therefore, be considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.43 All 6 rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant, as shown in **Table 12.16**. The effect upon this property in sunlight terms would, therefore, be considered to be **insignificant**.

Poynder Court

Daylight

12.4.44 There are 23 windows serving 23 habitable rooms in this property that overlook the Site.

12.4.45 A number of windows serving this property are recessed and therefore have their access to daylight obstructed by adjacent projecting walls. As set out earlier in the Chapter, the BRE Guidelines recognise the limiting effect these features have on access to daylight.

12.4.46 Of the 23 windows assessed, **Table 12.14** reports that 4 would satisfy the typical BRE Guideline VSC recommendations so experience an **Insignificant** effect. Of the remaining windows, 17 would be considered to experience **direct, long term, local** likely effects of **minor adverse significance** and 2 would experience **direct, long term, local** likely effects of **moderate adverse significance**.

12.4.47 For NSL, as shown in **Table 12.15**, all 23 rooms would not experience any change from the Baseline conditions so comfortably satisfy the typical BRE Guideline recommendations and so would experience an **insignificant** effect.

12.4.48 For the windows that fall short of the BRE criteria, the vast majority experience effects of **minor adverse** significance. Nevertheless, each of the windows that are less obstructed by the projections would retain at least 22 % VSC which the Research Paper (**ES Volume 3, Appendix 12.9**) demonstrates is a good level of daylight that is commonly seen within the local context. The more obstructed windows would retain slightly lower levels (no lower than. 17.7 % VSC), which is still a level commonly seen in the local context despite their access to daylight being obstructed on both sides by projections.

12.4.49 Overall, whilst some effects of moderate adverse significance are caused, these are attributable to the inherent design features of Poynder Court. Therefore, on balance, with respect to daylight, this property is considered to experience **direct**, **long-term**, **local** likely effects of **minor adverse significance**.

Sunlight

12.4.50 None of the rooms within this property are served by southerly orientated windows and therefore the sunlight effect to this property was not considered.

388 & 390 Camden Road

Daylight

12.4.51 There are 17 windows in total serving 17 habitable rooms in these two properties that overlook the Site. The effects to these properties have been considered together due to their similar architectural style and locations.

12.4.52 Of the 17 windows assessed, **Table 12.14** reports that 15 would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect. The remaining 2 windows would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.53 For NSL, all 17 rooms would meet the typical BRE Guideline recommendations and so would experience an **insignificant** effect, as reported in **Table 12.15**.

12.4.54 These properties would experience **direct**, **long-term**, **local** likely effects of **minor adverse significance** to 2 windows only. The overall effect upon these properties in daylight terms would, therefore, be considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.55 None of the rooms within this property are served by southerly orientated windows and therefore the sunlight effect to this property was not considered.

2 Parkhurst Road & 291 A-C Camden Road

Daylight

12.4.56 There are 55 windows serving 15 habitable rooms in this property that overlook the Site.

12.4.57 The property is currently in use as the Islington Arts Factory which is a multi-arts community centre. Despite not being in residential use, it has still been considered a sensitive receptor, albeit it is considered to be of low sensitivity rather than high sensitivity.

12.4.58 The conclusions reached within the Research Paper **(ES Volume 3, Appendix 12.9)** are entirely focussed on residential receptors rather than lower sensitivity receptors so a direct comparison is not possible for this property. Whilst the windows that overlook the Site receive unobstructed access to daylight in the baseline scenario (therefore receiving some instances of high levels of daylight) there are multiple windows that do not directly face the Site, but have been considered within the assessment as they contribute to the light entering some dual-aspect spaces. The technical assessments have indicated that these non-Site facing windows receive between 14.41 % to 18.04 % VSC in the baseline scenario. This demonstrates that this lower level of VSC may be a sufficient level of daylight for the purposes of this building and where Site-facing windows receive comparable levels of VSC after the Development, then this should be considered acceptable.

12.4.59 Of the 55 windows assessed, as reported in **Table 12.14**, 37 would satisfy the typical BRE Guideline VSC recommendations so would experience an **insignificant** effect. Of the remaining windows, 2 would be considered to experience **direct**, **long-term**, **local** likely effects of **minor adverse significance** and 16 would experience **direct**, **long-term**, **local** likely effects of **major adverse significance**.

12.4.60 For NSL, 11 rooms would satisfy the typical BRE Guideline recommendations so would experience an **insignificant** effect, as reported in **Table 12.15**. The remaining 4 rooms would experience **direct**, **long-term**, **local** likely effects of **major adverse significance**.

12.4.61 The 2 windows that experience **minor adverse** effects serve the former church building (291 A-C Camden Road) and would each retain over 21 % VSC that the Research Paper **(ES Volume 3, Appendix 12.9),** demonstrates is a level of daylight commonly seen in the local area. These are also served by at least 9 other windows that meet the BRE Guidelines for VSC and the rooms as a whole experience no change in relation to NSL.

12.4.62 The remaining 16 windows to experience significant effects serve the 2 Parkhurst Road building and experience effects of **major adverse significance** for VSC. As can be seen on the results included within **Appendix 12.2,** 10 of these windows serve spaces that are served by multiple windows or are dual aspect and meet the BRE Guidelines for NSL. These would therefore experience **insignificant** effects in relation to the daylight distribution within the room. This includes the two main studio spaces.

12.4.63 The remaining 6 windows serve 4 rooms that experience effects of **major adverse significant** for both VSC and NSL. Whilst the effects to these spaces will be significant, as shown on the NSL contour drawings included within **Appendix 12.2** they are understood to be in use as smaller ancillary spaces rather than the primary studio areas. They also retain 12.96 % to 14.56 % VSC which is not materially below levels seen in the baseline conditions for long established windows which have been considered sufficient throughout this time.

12.4.64 Overall, the Development would cause significant effects to this property, with a number of windows/rooms experiencing effects of **major significance** within the 2 Parkhurst Road building. Within this part of the building, 10 of the windows to serve 3 rooms (including the main studio spaces) that meet the BRE criteria for NSL so would experience **insignificant** effects to the daylight distribution within these rooms. The remaining windows/rooms experience effects of **major adverse significance**, but are understood to be in use smaller ancillary spaces with the retained levels of VSC being comparable to baseline levels seen elsewhere in the property. Therefore, on balance, the daylight effect to this property is considered to experience **direct**, **long-term**, **local** likely effects of **moderate adverse significance**, however this should be viewed in the context of the building being a lower sensitivity receptor.

Sunlight

12.4.65 **Table 12.16** reports that all 8 rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant. The effect upon this property in sunlight terms is, therefore, considered to be **insignificant**.

2-5 Prospect Place

Daylight

12.4.66 There are 12 windows serving 11 habitable rooms in this property that overlook the Site.

12.4.67 A number of windows serving this property are overhung by either cantilevers or deep overhanging roof eaves. The effect of these features is clear when comparing the Baseline VSC levels (see **Appendix 12.2**) for the 1st floor windows (c. 35%) with the 2nd floor overhung windows (c. 30%) where more daylight should be available. This property has therefore been subject to an additional assessment which does not take the limiting effects of the overhangs into consideration.

12.4.68 Including the overhangs within the assessment, of the 12 windows assessed, 1 would satisfy the typical BRE Guideline VSC recommendations so experiences an **insignificant** effect as reported in **Table 12.14.** Of the remaining windows, 1 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 10 would experience **direct**, **long-term**, **local** likely effects of **major adverse significance**.

12.4.69 For NSL, as reported in **Table 12.15**, 3 rooms would satisfy the typical BRE Guideline recommendations so would experience an **insignificant** effect. Of the remaining rooms, 1 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 3 would experience **direct**, **long-term**, **local** likely effects of **moderate adverse significance** and 4 would experience **direct**, **long-term**, **local** likely effects of **major adverse significance.**

12.4.70 The overhanging architectural features of this building create a complex position when assessing the daylight and sunlight effect to this property. As discussed above, effects of greater significance are to be expected for these windows if the Site is to be developed in accordance with its designated context. As such, it is necessary to follow the approach recommended by the BRE and Mayor of London and also consider the retained daylight levels for each of the affected windows that would persist when the Development is in place and examine whether these are commensurate with the Site's context. However, to undertake this evaluation it is also necessary to remove the distortion to the results that occurs for those windows being overhung.

12.4.71 Therefore, initially it is relevant to establish the degree of daylight potential that the windows in this property would retain if the overhangs were not present. This follows the approach recommended by the BRE but in this case entails measuring the VSC from the edge of the façade at ground floor level and by removing the overhanging roof eaves where necessary. The results of this assessment can then be compared directly to those within the Research Paper **(ES Volume 3, Appendix 12.9)** as the daylight values within that report have been calculated in a similar manner, i.e. on the elevations of the buildings in the assessment area without distortion from façade details like balconies.

12.4.72 When the effects of the overhangs are not considered 1 would satisfy the typical BRE Guideline VSC recommendations so experiences an **insignificant** effect as reported in **Table 12.17.** Of the remaining windows, 7 would experience **direct**, **long-term**, **local** likely effects of **moderate adverse significance** and 4 would experience **direct**, **long-term**, **local** likely effects of **major adverse significance**.

12.4.73 In this scenario, 9 of the 11 windows that do not meet the BRE Guidelines will retain between 19.89 % to 24.28 % VSC which the Research Paper suggests is a level that is commonly seen in the local area and within the wider borough. The remaining windows would retain between 17.25 % and 18.76 % VSC respectively. Whilst this is slightly lower than the other windows these levels are still seen within the local area. In reality the windows would retain lower levels than this when the overhangs are considered, however it suggests that the relationship between the Development and 2-5 Prospect Place would be fully commensurate with levels already commonly seen in the local context.

12.4.74 Overall, the effects to this property are considered at worst to experience **direct**, **long-term**, **local** likely effects of **major adverse significance** which is partly attributable to the building's own inherent architectural features.

However, the retained daylight values when the effects of the overhangs is not considered are generally in line with prevalent levels within the locality of the Site and the effects should be viewed in this context.

Sunlight

12.4.75 None of the rooms within this property are served by southerly orientated windows and therefore the sunlight effect to this property was not considered.

1-12 Fairweather House

12.4.76 There are 68 windows serving 36 habitable rooms in this property that overlook the Site.

12.4.77 Of the 68 windows assessed, as reported in **Table 12.14**, 57 would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect. Of the remaining windows, 1 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** and 10 would experience **direct**, **long-term**, **local** likely effects of **major adverse significance**.

12.4.78 For NSL, all 36 rooms would not experience any change from the Baseline conditions so comfortably satisfy the typical BRE Guideline recommendations and would experience **insignificant** effects, as reported in **Table 12.15**.

12.4.79 9 of the 11 the windows that fall short of the BRE Guidelines for VSC serve dual aspect spaces as shown on the NSL contour drawings included within **Appendix 12.2**. In these instances, the westerly orientated windows that overlook the Site would experience adverse effects, whereas the northerly and southerly orientated windows would experience **insignificant** effects, albeit one of the north/south orientated windows (W9/440) would technically experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** but retains 26.9 % VSC which is only very fractionally short the BRE Guidelines. Each of the dual aspect rooms would meet the BRE Guidelines for NSL.

12.4.80 The remaining 2 windows (W7/440 and W11/441) serve small kitchens (c. 5.5 sqm) that would experience **direct**, **long-term**, **local** likely effects of **major adverse significance** with the windows retaining 13.61 % and 15.16 % VSC respectively. Whilst the window serving these spaces would experience an adverse effect, the rooms as a whole would experience **insignificant** effects when considering the NSL assessment.

12.4.81 Overall, whilst some **direct**, **long-term**, **local** likely effects of **major adverse significance** are caused in relation to VSC, these occur to either dual aspect spaces or small kitchen areas. When considering the NSL form of daylight assessment, all rooms would comfortably meet the BRE Guidelines and therefore experience **insignificant** effects. Therefore, on balance, the daylight effect to this property is considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance.**

Sunlight

12.4.82 As reported in **Table 12.16**, all 24 rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant. The effect upon this property in sunlight terms would, therefore, be considered to be **insignificant**.

13-24 Fairweather House

Daylight

12.4.83 There are 43 windows serving 23 habitable rooms in this property that overlook the Site.

12.4.84 Of the 43 windows assessed and reported in **Table 12.14**, 40 would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect. All of the remaining 3 windows will experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.85 As reported in **Table 12.15**, all 23 rooms would satisfy the typical BRE Guidelines NSL criteria so experience **insignificant** effects.

12.4.86 This property would experience **direct**, **long-term**, **local** likely effects of **minor adverse significance** to 3 windows only. Overall, the effect upon this property in daylight terms would, be considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.87 There are 11 rooms served by southerly orientated windows within this property that have been considered for sunlight and reported in **Table 12.16**.

12.4.88 9 of the rooms would satisfy the typical BRE Guideline recommendations for winter and total APSH so experience an **insignificant** effect. The remaining two rooms are understood to be in use as a bedroom and a kitchen which paragraph 3.2.3 of the BRE Guidelines recognise as being less important for sunlight.

12.4.89 These rooms would both meet the BRE Guidelines' criteria for total APSH, however would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance** in relation to winter APSH.

12.4.90 Given the use of the affected rooms and given they would meet the BRE Guidelines for total APSH, the overall effect to the sunlight received by this property is considered to experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Crayford House

Daylight

12.4.91 There are 60 windows serving 42 habitable rooms in this property that overlook the Site.

12.4.92 As reported in **Table 12.14**, of the 60 windows assessed, none would satisfy the typical BRE Guideline VSC recommendations. 49 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 11 would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.93 For NSL, **Table 12.15** reports that 28 rooms would satisfy the typical BRE Guideline recommendations so would experience an **insignificant** effect. Of the remaining rooms, 5 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 4 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 5 would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.94 As discussed earlier in the Chapter, effects of higher significance are to be expected for these windows if the Site is to be developed in accordance with the Holloway Prison Site SPD. As such, it is necessary to follow the approach recommended by the BRE and Mayor of London and also consider the retained daylight levels for the affected windows that will persist when the Development is in place and examine whether these are commensurate with the Site's context by reference to Point 2's Research Paper (**ES volume 3, Appendix 12.9**).

12.4.95 As demonstrated in the tabulated results included within **Appendix 12.2,** each of the windows to experience adverse effects would retain between 19.86 % and 23.58 % VSC which the Research Paper at **Appendix 12.9** demonstrates is a level that is commonly seen within the local context and the results should be viewed in this context.

12.4.96 In regard to NSL, as can be seen by cross referencing the tabulated results and NSL contour drawings in **Appendix 12.2**, 7 of the rooms that do not satisfy the BRE Guidelines are in use as bedrooms which paragraph 2.2.8 of the BRE Guidelines recognise as being less important for NSL and these include all the rooms that experience direct, long-term, local likely effect of major adverse significance. The remaining rooms that do not meet the BRE Guidelines are in use as living rooms and experience effects that are considered to be direct, long-term, local likely effect of **minor or moderate adverse significance**.

Overall, some **direct**, **long-term**, **local** likely effect of **minor to major adverse significance** are caused in relation to VSC and NSL. However, the results from the Research Paper demonstrate that the retained daylight potential to the unencumbered windows of this property would accord with similar levels in this local context and across the borough. Therefore, despite numerous significant effects, on balance, the daylight effect to this property is considered to be a **direct**, **long-term**, **local** likely effect of **moderate adverse significance.**

Sunlight

12.4.97 As reported in **Table 12.16**, all 42 rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant. The effect upon this property in sunlight terms is, therefore, considered to be **insignificant**.

Bunning House

Daylight

12.4.98 There are 84 windows serving 66 habitable rooms in this property that overlook the Site.

12.4.99 Of the 84 windows assessed, and reported in **Table 12.14**, 80 would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect. All of the remaining 4 windows will experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.100 For NSL, as reported in **Table 12.15**, all 66 rooms would meet the typical BRE Guideline recommendations and so would experience an **insignificant** effect.

12.4.101 This property would experience **direct**, **long-term**, **local** likely effects of **minor adverse significance** to 4 windows only. The overall effect upon these properties in daylight terms would, therefore, be considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.102 All 42 southerly orientated rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant, as reported in **Table 12.16**. The effect upon this property in sunlight terms is, therefore, considered to be **insignificant**.

43 Crayford Road

Daylight

12.4.103 There are 10 windows serving 9 habitable rooms in this property that overlook the Site.

12.4.104 As reported in **Table 12.14**, of the 10 windows assessed, 8 would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect. The remaining 2 windows would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.105 As reported in **Table 12.15**, for NSL, 6 of the rooms would satisfy the typical BRE Guidelines NSL criteria so experience **insignificant** effects and the remaining 3 would experience **direct**, **long-term**, **local** likely effect of **minor adverse significance.**

12.4.106 This property would experience minor adverse effects to 2 windows and 3 rooms only. The overall effect upon this property in daylight terms is, therefore, considered to be no more than a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.107 There are 9 rooms served by southerly orientated windows within this property that have been considered for sunlight, and this is reported in **Table 12.16**.

12.4.108 8 of the rooms would satisfy the typical BRE Guideline recommendations for winter and total APSH so experience an **insignificant** effect. The remaining room would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** in relation to total APSH which is not considered significant in the context of an opportunity site within an urban area. A **direct**, **long-term**, **local** likely effect of **major adverse significance** is caused in relation to winter APSH, however the property would still retain 4 % winter APSH which is just 1 % short of the BRE Guidelines.

12.4.109 Given the effects are located to just one room and this room would not experience changes materially beyond the BRE Guidelines, the overall effect to the sunlight received by this property is considered to be **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

47 & 49 Crayford Road

Daylight

12.4.110 There are 21 windows serving 16 habitable rooms in total in both of these properties that overlook the Site. These properties have been considered together due to their similar architectural form and locations.

12.4.111 As reported in **Table 12.14**, of the 21 windows assessed, all would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect.

12.4.112 For NSL, and as reported in **Table 12.15**, 14 rooms would meet the typical BRE Guideline recommendations and so would experience an **insignificant** effect. Both of the remaining 2 rooms (1 in each of the 2 properties) would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.113 These properties would experience **direct**, **long-term**, **local** likely effects of **minor adverse significance** to 2 rooms only. The overall effect upon these properties in daylight terms would, therefore, be considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.114 All 16 rooms assessed within these two properties for sunlight as a result of the Development would be fully BRE compliant, as reported in **Table 12.16**. The effect upon each property in sunlight terms is, therefore, considered to be **insignificant**.

Bakersfield Estate

Daylight

12.4.115 There are 409 windows serving 207 habitable rooms in these properties that overlook the Site.

12.4.116 The design of these apartment blocks incorporates numerous overhangs, setbacks and self-obstructed windows that significantly recess the glazing serving the rooms, as well as creating blinkering effects. As a result of these characteristics, the Baseline levels of daylight potential in these properties are very varied. For example, a ground floor window that is unobstructed (W41/970) would receive 27.53 % VSC in the Baseline condition, whereas an overhung window directly above this (W14/971) at 1st floor, where theoretically more daylight should be available, only receives 12.84 % VSC. This clearly demonstrates the burden posed by the obstructed windows as they achieve less daylight than the unencumbered windows enjoy, despite the fact they have are higher up with an identical orientation.

12.4.117 The additional VSC analysis which does not consider the effects of the overhangs and balconies is included within ES **Volume 3: Appendix 12.2**. For clarity, where windows are overhung by balconies, these features have been removed for the purposes of this assessment. Where windows are overhung by cantilevered floors, the VSC calculation point has been moved to be flush with the façade of the building, at an identical height and orientation to the location of the actual window.

12.4.118 It is also noted that a number of ground floor and 6th floor rooms are served by bay style windows. Paragraph 2.2.6 of the BRE Guidelines state:

"For a bay window, the centre window facing directly outwards can be taken as the main window."

12.4.119 Whilst the secondary panes of the bay windows were considered within the analysis, the effects to the central main window will be the focus when considering the significance of these effects.

12.4.120 When the effects of the overhangs are considered, of the 409 windows assessed, 234 would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect. This is reported in **Table 12.14**. In respect of the 175 windows that do not meet the typical BRE recommendations for the VSC assessment, 89 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 44 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 42 windows would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.121 155 of the 207 habitable rooms would satisfy the typical BRE recommendations in regard to the NSL assessment and thus experience an **insignificant** effect, as reported in **Table 12.15**. Of the 52 rooms that do not meet the typical BRE recommendations in respect of the NSL assessment, 13 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 14 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 25 rooms would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.122 As can be seen by cross referencing the tabulated results in **Appendix 12.2** with the window maps included within **Appendix 12.8,** 62 of the windows that do not meet the BRE Guidelines have unencumbered access to daylight. 49 of these windows would experience effects of **minor adverse significance** which is not uncommon for underdeveloped opportunity sites within central London boroughs. Whilst the remaining unencumbered windows would experience effects that are either moderate adverse or major adverse in significance, they will each retain 20.51 % to 24.56 % VSC. Point 2's Research Paper (**ES volume 3, Appendix 12.9**) demonstrates that this is a level commonly seen locally and within LBI.

12.4.123 The remaining 113 windows that do not meet the typical BRE recommendations are self-obstructed which can be broken down as follows:

- 58 are overhung.
- 15 are overhung <u>and</u> recessed.
- 14 are overhung <u>and</u> smaller secondary windows.
- 5 are recessed into the building.
- 21 are smaller secondary windows.

12.4.124 In respect of the 87 overhung windows, an additional analysis has been undertaken which does not consider the overhangs, as reported within **Table 12.17**. In this scenario, overall for the two properties, 258 windows would meet the BRE Guideline recommendations and 97 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 35 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 19 would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.125 In this scenario, of the 58 windows that are only overhung and not obstructed by projections or are secondary windows, an additional 21 windows would meet the BRE Guidelines. A further 31 windows would experience effects that would be considered **minor adverse in significance** which is not uncommon when developing large opportunity sites within London boroughs. The remaining 6 would retain between 19.12 % and 21.58 % VSC which the Research Paper suggests is a level that is commonly seen in the local area and within the wider borough. Whilst in reality the windows would retain lower levels than this when the overhangs are considered, this suggests that the relationship between the Development and Bakersfield Estate would be fully commensurate with levels already commonly seen in the local context or would only be considered effects of minor adverse significance were it not for the existing architectural features which limit the access to daylight.

12.4.126 The remaining 55 windows that are obstructed and do not meet the BRE Guidelines in this scenario still have their access to daylight obstructed by projections which paragraph 2.2.12 of the BRE Guidelines states larger relative reductions may be unavoidable for.

12.4.127 Furthermore, when considering the NSL form of daylight assessment, 50 of the 52 rooms that do not meet the BRE Guidelines are understood to be in use as bedrooms which the BRE Guidelines recognise as being less important in regard to NSL. The remaining 2 rooms are in use as living rooms which would experience **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.128 Overall, the characteristics of this building which are described at paragraph 12.4.116 create a complex position when assessing the daylight effect to this property. Those windows that are unobstructed and flush with the façade of the property all either exceed the BRE Guidelines recommendations, experience effects of **minor adverse significance** or retain VSC levels that are commensurate with levels seen in the local context (+20 % VSC). As discussed earlier in the Chapter, greater effects are to be somewhat expected for these windows if the Site is to be developed in accordance with the Holloway Prison Site SPD. As such, an additional assessment was undertaken which removed the distortion to the results that occurs for those windows that have a heavily inhibited outlook due to the overhanging obstructions, as these already have levels that are typically materially less than those for the unobstructed windows. This additional analysis demonstrates that the windows that are not further inhibited by being recessed/overhung, would either meet the BRE criteria, experience effects that are considered **minor adverse in significance** or retain levels seen in the local context (+20 % VSC). This demonstrates the relationship between the Development and Bakersfield Estate would be fully commensurate with levels already commonly seen in the local context or would only be considered effects of minor adverse significance were it not for the existing architectural features which limit the access to daylight. The remaining windows are recessed and/or small secondary windows where larger relative changes may be unavoidable as their access to daylight is limited by these inherent architectural design features.

12.4.129 Furthermore, when considering the NSL form of daylight assessment, virtually all living areas would experience **insignificant** effects (with the exception of two that would experience **minor adverse effects**). The remaining rooms are in use as bedrooms that are considered '*less important'* in relation to NSL by the BRE Guidelines.

12.4.130 When taking the above into consideration, overall, the daylight effect to this property is considered to be a **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

Sunlight

12.4.131 All 207 rooms served by southerly orientated windows within this property so have been considered for sunlight.

12.4.132 As reported in **Table 12.16**, 162 of the rooms would satisfy the typical BRE Guideline recommendations for winter and total APSH so experience an **insignificant** effect. For total APSH, 6 rooms would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 7 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 26 would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**. For winter APSH, 2 rooms would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 4 would experience **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 33 would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.133 By reference to the results included within **Appendix 12.2** that have been annotated with the room uses, the vast majority of rooms that do not meet the BRE Guidelines, 37 of the 39 rooms that fall short of either total or winter APSH are in use as bedrooms which are considered less sensitive for sunlight. The remaining 2 rooms are in use as living rooms which meet the BRE Guidelines for winter APSH. For total APSH, whilst they experience effects of moderate adverse significance, they are only left 1-2 % short of achieving the BRE Guidelines and therefore the effects are considered to be **direct**, **long-term**, **local** likely effect of **minor adverse significance.**

12.4.134 Given the effects primarily occur to less sensitive bedrooms and the 2 living rooms to fall short of the BRE Guidelines only do so fractionally, the overall effect to the sunlight received by this property is considered to be **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

23 & 25 Trecastle Way

Daylight

12.4.135 There are 6 windows serving 6 habitable rooms in these two properties that overlook the Site. These properties have been considered together due to their similar architectural form and locations.

12.4.136 A number of windows serving this property are heavily overhung and therefore have their access to daylight obstructed by an overhanging 1st floor. The limiting effect that these features have is clear as the two ground floor windows to these properties only receive 0.67 % and 1.07 % VSC in the existing condition. These properties have therefore been included in the additional assessment which does not consider the effects of these overhangs.

12.4.137 When the effects of the overhangs are considered, as reported in **Table 12.14**, of the 6 windows assessed, 4 would satisfy the typical BRE Guideline VSC recommendations so experience an **insignificant** effect. Of the remaining windows, 1 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 1 would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.138 For NSL, and as reported in **Table 12.15**, 4 rooms would satisfy the typical BRE Guideline recommendations so would experience an **insignificant** effect. Both of the remaining rooms would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.139 The two rooms and windows that do not meet the BRE Guidelines are located on the ground floor and, as described above, have their access to daylight heavily obstructed by the inherit architectural features. When the effects of the overhangs are taken out of the assessment, the VSC criteria is met which demonstrates it is these architectural features, rather than the Development which is main driver in the relative light loss.

12.4.140 For NSL, whilst the rooms would experience a large relative reduction which is considered an effect of major adverse significance, the actual loss of area with a view of sky is only between approximately 5-8 sq. ft.

12.4.141 Overall, when considering the only windows and rooms to experience effects of adverse significance within these properties are heavily overhung in the Baseline condition and the BRE Criteria would be met when these overhangs are not considered, effects of the Development at these two properties are considered to be **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.142 All 6 rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant, as reported in **Table 12.16**. The effect upon this property in sunlight terms is, therefore, considered to be **insignificant**.

85 Penderyn Way

Daylight

12.4.143 There are 5 windows serving 3 habitable rooms in this property that overlook the Site.

12.4.144 This property, along with a number of other Penderyn Way properties, have ground floor windows that are overhung and, in many instances, recessed too which obstructs access from the sides as well as above, limiting access to daylight further. As a result of these characteristics, the Baseline levels of daylight potential in this property are very varied. For example, a ground floor window that serves 79 Penderyn Way and is unobstructed (W1/230) would receive 31.02 % VSC in the Baseline condition, whereas an overhung window directly adjacent to this serving 81 Penderyn Way, only receives 12.89 % VSC. This clearly demonstrates the burden posed by the obstructed windows as they achieve less daylight than the unencumbered windows enjoy. In these instances, an additional assessment has been undertaken which negates the effects caused by the balconies.

12.4.145 The overhangs for 85 Penderyn Way are particularly deep, meaning each of the ground floor windows that face towards the Site (W1/200 and W2/200) would only receive 0.11 % and 2.55 % VSC in the Baseline conditions.

12.4.146 Of the 5 windows considered and reported in **Table 12.14**, 1 would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect, 2 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 2 windows would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.147 In respect of the NSL assessment, **Table 12.15** reports that 1 room would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 1 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 1 room would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.148 When cross referencing the tabulated results in **Appendix 12.2** with the window maps included within **Appendix 12.8,** 2 of the windows that do not meet the BRE Guidelines for VSC are unobstructed. Whilst these windows experience effects of moderate adverse significance, the retained levels exceed 20% which the Research Paper (**ES Volume 3, Appendix 12.9**) suggests is a level of daylight commonly seen within the immediate vicinity of the Site. The remaining 2 windows are located underneath the deep overhanging canopy and small absolute reductions (between 0.05 % and 2.08 % VSC) cause large relative reductions that are considered to be a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.149 When the effect of the overhang is not considered, as reported in **Table 12.17,** 1 window would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect, 3 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 1 window would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.150 In this scenario, the two ground floor windows would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and the other a **direct**, **long-term**, **local** likely effect of **major adverse significance**, however the overall relative reductions are reduced significantly. The other windows are not overhung so experience no change from the assessment which does consider the effects of the overhang.

12.4.151 Whilst effects of major adverse significance would be recorded for VSC, the ground floor room would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** when considering the NSL form of daylight assessment. The remaining rooms would experience **direct**, **long-term**, **local** likely effects of **moderate** and **major adverse significance**, however these serve bedrooms which the BRE Guidelines recognise as being less sensitive in relation to NSL.

12.4.152 Overall, whilst some effects of moderate adverse significance are caused, the windows are not overhung, they each retain c. 21% VSC which the Research Paper suggests is a level of daylight commonly seen in local context. The remaining windows are heavily overhung which limits the access to daylight of the ground floor windows, however when considering the effect on NSL to this space, the effects would only be considered minor adverse in significance. Therefore, on balance, the daylight effect to this property is considered to be a **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

Sunlight

12.4.153 All 3 rooms served by southerly orientated windows within this property so have been considered for sunlight.

12.4.154 As shown in **Table 12.16**, 2 of the rooms would satisfy the typical BRE Guideline recommendations for winter and total APSH so experience an **insignificant** effect. The remaining room is located at ground floor so the access of sunlight to this room is obstructed. This is demonstrated by the room only receiving 7 % total APSH despite the underdeveloped nature of the Site. The Development would cause a **direct**, **long-term**, **local** likely effect of **major adverse significance** to this room in this scenario, however the results have been skewed by the overhang discussed above.

12.4.155 Given it is clear that the overhanging canopy has a material effect on the ability for sunlight to reach this room an additional assessment has been undertaken which removes the effect of the canopy. In this scenario, as reported in **Table 12.19**, the room would meet the BRE Guidelines for total ASPH, resulting in an **insignificant** effect, albeit would still experience a **direct**, **long-term**, **local** likely effect of **major adverse significance** for winter APSH.

12.4.156 It is clear that the scale of the effects is partly attributable to the inherit architectural features of this building which limit the access to sunlight. When considering all rooms would meet the BRE Guidelines for total APSH when the effects of the overhangs are not considered, the effect to the sunlight received by this property is, overall, considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance.**

83 Penderyn Way

Daylight

12.4.157 There are 5 windows serving 3 habitable rooms in this property that overlook the Site.

12.4.158 As shown in **Table 12.14**, of the 5 windows considered, 1 would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect, 1 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 3 windows would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.159 In respect of the NSL assessment, **Table 12.15** shows that 1 room would meet the BRE Guidelines so experiences an **Insignificant** effect, 1 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** and 1 would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.160 2 of the windows that do not meet the BRE Guidelines for VSC experience effects of **moderate** and **major adverse significance**, however, the retained levels exceed 20% which the Research Paper suggests is a level of daylight commonly seen within the immediate vicinity of the Site. The remaining 2 windows are located at ground floor and experience **direct**, **long-term**, **local** likely effect of **major adverse significance**, however, serve a room which primarily receives its daylight from a roof light which comfortably meets the BRE criteria.

12.4.161 When considering the NSL assessment, this room would not experience any change in daylight levels so the effects in VSC may appear less significant. The remaining rooms are understood to be bedrooms which the BRE Guidelines recognise as being less important in relation to NSL.

12.4.162 Overall, whilst some effects of moderate and major adverse significance are caused, the retained levels of daylight are generally in accordance with what is commonly seen in the area and where this is not the case, the room as a whole would not experience any change in NSL levels. Therefore, on balance, the daylight effect to this property is considered to be **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

Sunlight

12.4.163 As shown on **Table 12.16**, all 3 rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant. The effect upon this property in sunlight terms is, therefore, considered to be **insignificant**.

81 Penderyn Way

Daylight

12.4.164 There are 5 windows serving 3 habitable rooms in this property that overlook the Site.

12.4.165 The ground floor windows that serve 81 Penderyn Way are overhung meaning each of the ground floor windows that face towards the Site only receive between 12.89 % and 14.92 % VSC in the Baseline conditions. An additional assessment which removes the effects of the overhangs to these windows has therefore been undertaken in accordance with the BRE Guidelines recommendations.

12.4.166 The assessment including the overhangs, as reported in **Table 12.14** shows that of the 5 windows considered, 1 would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect, 2 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 2 windows would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.167 In respect of the NSL assessment, **Table 12.15** states that 1 room would satisfy the typical BRE Guideline recommendations in terms of the NSL form of assessment and thus experience an **insignificant** effect,1 room would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** and 1 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

12.4.168 2 of the windows that do not meet the BRE Guidelines for VSC experience **direct**, **long-term**, **local** likely effect of **moderate adverse significance**, however, the retained levels exceed 20% which the Research Paper suggests is a level of daylight commonly seen within the immediate vicinity of the Site. The remaining 2 windows are the ground floor overhung windows and experience **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.169 When the effects of the overhangs is not considered, as reported in **Table 12.17** and the results included within **Appendix 12.2**, these windows would experience lesser effects for VSC but they would still be considered **direct**, **long-term**, **local** likely effect of **major adverse significance** with retained levels ranging from 13.35 % to 16.58 %.

12.4.170 Whilst this space experiences effects of major adverse significance in relation to VSC, when considering the NSL assessment, with the effects of the overhangs considered (as reported in **Table 12.15** and the results within **Appendix 12.2)**, this room would comfortably meet the BRE Guidelines so the effects in VSC may appear less significant. The remaining rooms are understood to be bedrooms which the BRE Guidelines recognise as being less important in relation to NSL.

12.4.171 Overall, whilst some effects of moderate and major adverse significance are caused, the retained levels of daylight are generally in accordance with what is commonly seen in the area and where this is not the case, the windows are overhung and the room as a whole would not experience significant effects in NSL levels. Therefore, on balance, the daylight effect to this property is considered to be **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

Sunlight

12.4.172 All 3 rooms served by southerly orientated windows within this property so have been considered for sunlight.

12.4.173 As shown on **Table 12.16**, 2 of the rooms would satisfy the typical BRE Guideline recommendations for winter and total APSH so experience an insignificant effect. The remaining room is located at ground floor so the access of sunlight to this room is obstructed by the overhang. This is demonstrated by the room only receiving 14 % total APSH despite the underdeveloped nature of the Site. The Development would cause a **direct**, **long-term**, **local** likely effect of **major adverse significance**

12.4.174 Given it is clear that the overhang has a material effect on the ability for sunlight to reach this room, an additional assessment has been undertaken which ignores the effect of the canopy. In this scenario, as reported in **Table 12.19,** the room would meet the BRE Guidelines for winter and total ASPH resulting in **insignificant** effects suggesting it is the overhang which is the primary cause for the relative light loss, rather than the size of the Development.

12.4.175 It is clear that the scale of the effects is partly attributable to the inherit architectural features of this building which limit the access to sunlight. All rooms would meet the BRE Guidelines for total and winter APSH when the effects of the overhangs are not considered, suggesting that the overhang is the primary cause of the relative light loss rather than the size of the Development, so the effect to the sunlight received by this property is considered to be **insignificant**.

77 & 79 Penderyn Way

Daylight

12.4.176 There are 12 windows serving 6 habitable rooms in these two properties that overlook the Site. These properties have been considered together owing to their similar architectural form and location.

12.4.177 As reported in **Table 12.14**, of the 12 windows considered, 6 would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect, 5 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 1 window would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.178 In respect of the NSL assessment, **Table 12.15** indicates that 5 rooms would meet the BRE Guidelines so experiences an **Insignificant** effect and 1 would experience **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.179 4 of the windows that do not meet the BRE Guidelines for VSC experience effects of moderate adverse significance, however, the retained levels exceed 21% which the Research Paper (**ES Volume 3, Appendix 12.9**) suggests is a level of daylight commonly seen within the immediate vicinity of the Site. The remaining 2 windows are located at ground floor and would experience effects of moderate or major adverse significance (retaining between 17.80 % and 18.68 % VSC). These each serve rooms which also receives its daylight from roof lights which comfortably meet the BRE criteria.

12.4.180 When considering the NSL assessment, these rooms would comfortably meet the BRE Guidelines so the effects in VSC may appear less significant. The remaining room experiences a **direct**, **long-term**, **local** likely effect of **minor adverse significance** and is understood to be in use as a bedroom which the BRE Guidelines recognises as being less important in relation to NSL.

12.4.181 Overall, whilst some effects of moderate and major adverse significance would be caused in relation to VSC, the retained levels of daylight would generally be in accordance with what is commonly seen in the area and where they are slightly below this, the rooms as a whole would not experience any change in NSL levels. Therefore, on balance, the daylight effect to these properties would be considered to be **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

Sunlight

12.4.182 As reported in **Table 12.16,** all 6 rooms assessed within these properties for sunlight as a result of the Development would be fully BRE compliant. The effect upon these properties in sunlight terms would, therefore, be considered to be i**nsignificant**.

71-75 Penderyn Way

Daylight

12.4.183 There are 15 windows serving 9 habitable rooms in these three properties that overlook the Site. The properties have been considered together owing to their similar architectural form and location.

12.4.184 Each of the ground floor windows are overhung (as demonstrated on the window maps included within **Appendix 12.8**) meaning each of the ground floor windows that face towards the Site only receive between 5.15 % and 11.78 % VSC in the Baseline conditions. An additional assessment which removes the effects of the overhangs to these windows was therefore undertaken in accordance with the BRE Guidelines recommendations.

12.4.185 When the effects of the overhangs are considered, as reported in **Table 12.14**, of the 15 windows considered, 3 would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect, 1 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 5 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 6 windows would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.186 In respect of the NSL assessment, as reported in **Table 12.15**, all rooms would meet the BRE Guidelines and therefore experience **insignificant** effects.

12.4.187 By cross referencing the tabulated results within **Appendix 12.2** and the window maps within **Appendix 12.8**, each of the 6 unencumbered windows that do not meet the BRE Guidelines for VSC experience **direct**, **long-term**, **local** likely effect of **minor** and **moderate adverse significance**, however, the retained levels exceed 22% which the Research Paper (**ES Volume 3, Appendix 12.9**) suggests is a level of daylight commonly seen within the immediate vicinity of the Site. The remaining 6 windows are the ground floor overhung windows and would experience **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.188 When the effect of the overhangs is not considered, as reported in **Table 12.17,** in total, 3 windows would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience **insignificant** effects, 1 would experience a **direct, long-term, local** and likely effect of **minor adverse significance** and 11 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

12.4.189 In this scenario, the overhung windows would experience **direct**, **long-term**, **local** likely effect of **moderate adverse significance**, however 5 of these would retain a VSC in excess of 20 % which is a level commonly seen in the local surroundings.

12.4.190 Furthermore, all rooms would meet the BRE Guidelines for NSL, even when the effects of the balconies are considered, so the effects in VSC may appear less significant.

12.4.191 Overall, whilst some effects of moderate and major adverse significance are caused in respect of VSC, the retained levels of daylight are generally in accordance with what is commonly seen in the area and where this is not the case, the windows are heavily overhung which would limit their access to daylight. Each of the rooms as a whole would not experience significant effects in NSL levels. Therefore, on balance, the daylight effect to these properties would be considered to be **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

Sunlight

12.4.192 All 9 rooms served by southerly orientated windows within these properties so have been considered for sunlight.

12.4.193 As reported in **Table 12.16**, all 6 of the unencumbered of the rooms would satisfy the typical BRE Guideline recommendations for winter and total APSH so experience an **insignificant** effect. The remaining 3 rooms are located at ground floor so the access of sunlight to these rooms is obstructed by the overhangs which limits their access to sunlight. The Development would be considered to result in a **direct**, **long-term**, **local** likely effect of **major adverse significance** on these 3 ground floor windows, one at each property.

12.4.194 Given it is clear that the overhanging canopy has a material effect on the ability for sunlight to reach each ground floor room, an additional assessment which ignores the effect of the overhangs has been undertaken as set out in **Table 12.19**. In this scenario, all 9 rooms would meet the BRE criteria for winter and total APSH so experience an **insignificant** effect.

12.4.195 It is clear that the scale of the effects is partly attributable to the inherit architectural features of these buildings which limit the access to sunlight. All rooms would meet the BRE Guidelines for total and winter APSH when the effects of the overhangs are not considered which demonstrates that it is the overhangs rather than the scale of the Development which is the main factor in the relative light loss. The effect to the sunlight received by these properties would therefore be considered to be **insignificant** as set out in **Table 12.23**.

69 Penderyn Way

Daylight

12.4.196 There are 9 windows serving 3 habitable rooms in this property that overlook the Site.

12.4.197 As reported in **Table 12.14,** of the 9 windows considered, 1 would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect, 3 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** and 5 windows would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

12.4.198 In respect of the NSL assessment, the results reported in **Table 12.15** demonstrate that 1 room would meet the BRE Guidelines so experiences an **Insignificant** effect, 1 would experience **direct**, **long-term**, **local** likely effect of **minor adverse significance** and 1 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance**.

12.4.199 Each of the windows that do not meet the BRE Guidelines for VSC experience effects of minor to moderate adverse significance, however, the retained levels each exceed 20% which the Research Paper (**ES Volume 3, Appendix 12.9**) suggests is a level of daylight commonly seen within the immediate vicinity of the Site.

12.4.200 When considering the NSL assessment, the ground floor rooms would experience an effect that would be considered to be a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and the first floor room would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

12.4.201 Overall, whilst some effects of moderate and major adverse significance would be caused in relation to VSC and NSL, the retained levels of daylight are generally in accordance with what is commonly seen in the area. Therefore, on balance, the daylight effect to this property would be considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.4.202 All 3 rooms assessed within this property for sunlight as a result of the Development would be fully BRE compliant. The effect upon this property in sunlight terms would, therefore, be considered to be **insignificant**.

65-67 Penderyn Way

Daylight

12.4.203 There are 10 windows serving 6 habitable rooms in these two properties that overlook the Site. These two properties have been considered together due to their architectural form

12.4.204 Each of the ground floor windows are overhung meaning each of the ground floor windows that face towards the Site only receive between 7.89 % and 14.24 % VSC in the Baseline conditions. An additional assessment which negates the effects of the overhangs to these windows was undertaken in accordance with the BRE Guidelines recommendations.

12.4.205 As reported in **Table 12.14**, when the balconies are not considered, of the 10 windows assessed, 5 would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience an **insignificant** effect, 2 would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, 2 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 1 window would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.206 In respect of the NSL assessment, as reported in **Table 12.15** all rooms would meet the BRE Guidelines and therefore experience **Insignificant** effects.

12.4.207 By cross referencing the tabulated results in **Appendix 12.2** with the window maps in **Appendix 12.8**, it is evident that each of the unencumbered windows serving these properties would either meet the BRE Guidelines or experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**, retaining over 25 % VSC. The remaining 4 windows are the ground floor overhung windows and would experience **direct**, **long-term**, **local** likely effects of **minor** to **major adverse significance**.

12.4.208 When the effect of the overhangs is not considered, as reported in **Table 12.17,** in total, 6 windows would satisfy the typical BRE Guideline recommendations in terms of the VSC form of assessment and thus experience **insignificant** effects and 4 would experience a **direct, long-term, local** and likely effects of **minor adverse significance.**

12.4.209 In this scenario, each window would retain a VSC in excess of 20 % which is a level commonly seen in the local surroundings.

12.4.210 Furthermore, all rooms would meet the BRE Guidelines for NSL, even when the effects of the balconies are considered, so the effects in VSC may appear less significant.

12.4.211 Overall, whilst some effects of minor to major adverse significance would be caused in respect of VSC, the retained levels of daylight would generally be in accordance with what is commonly seen in the area and where this is not the case, the windows are heavily overhung which limits their access to daylight. Each of the rooms as a whole would not experience significant effects in NSL levels. Therefore, on balance, the daylight effect to these properties would be considered to be **direct**, **long-term**, **local** likely effects of **minor adverse significance**.

Sunlight

12.4.212 All 6 rooms served by southerly orientated windows within these properties so have been considered for sunlight.

12.4.213 As reported in **Table 12.16**, all 4 of the unencumbered of the rooms would satisfy the typical BRE Guideline recommendations for winter and total APSH so experience an **insignificant** effect. The remaining 2 rooms are located at ground floor so the access of sunlight to these rooms is obstructed by the overhangs which limits their access to sunlight. The Development would cause a **direct**, **long-term**, **local** likely effect of **major adverse significance** on these ground floor rooms.

12.4.214 Given it is clear that the overhanging canopy has a material effect on the ability for sunlight to reach this room, an additional assessment which ignores the effect of the overhangs was undertaken. As reported in **Table 12.19** all 9 rooms would meet the BRE criteria for winter and total APSH so experience an **insignificant** effect.

12.4.215 As all rooms would meet the BRE Guidelines for total and winter APSH when the effects of the overhangs are not considered which demonstrates that it is the overhangs rather than the scale of the Development which is the main factor in the relative light loss. The effect to the sunlight received by these properties would therefore be considered to be **insignificant** as set out in **Table 12.23**.

Overshadowing to Surrounding Receptors (Sun on Ground and Transient)

12.4.216 Full detailed sun on the ground assessment results are available within **ES Volume 3: Appendix 12.3**.

12.4.217 As discussed at **paragraph 12.2.58** although the typical date for assessing sun on ground recommended by the BRE is 21st March, at this time of year the sun does not rise above 40°. In dense urban environments, and particularly ones undergoing transformational urban regeneration such as this, obstruction angles between buildings are frequently in excess of 40°. Subsequently, it is often challenging for amenity areas in dense urban environments to meet the BRE standards. The sun on ground results included within quantify the sunlight available to amenity spaces on 21st March.

12.4.218 An assessment of the transient shadowing cast by the Development has also been undertaken. This provides further detail of the overshadowing cast by the Development in March, June and December. The drawings illustrating the transient shadow analysis are included within **ES Volume 3: Appendix 12.4**.

12.4.219 A summary of the sun on ground results for the 60 surrounding amenity spaces relevant for assessment is presented in **Table 12.26** below. Where the space falls short of the BRE Guidelines, the date at which the space would receive 2 hours of sun on ground to 50% of its area or experience less than a 0.8 times relative change has been calculated and included within a separate column.

Table 12.24 March 21st Sun on Ground Summary

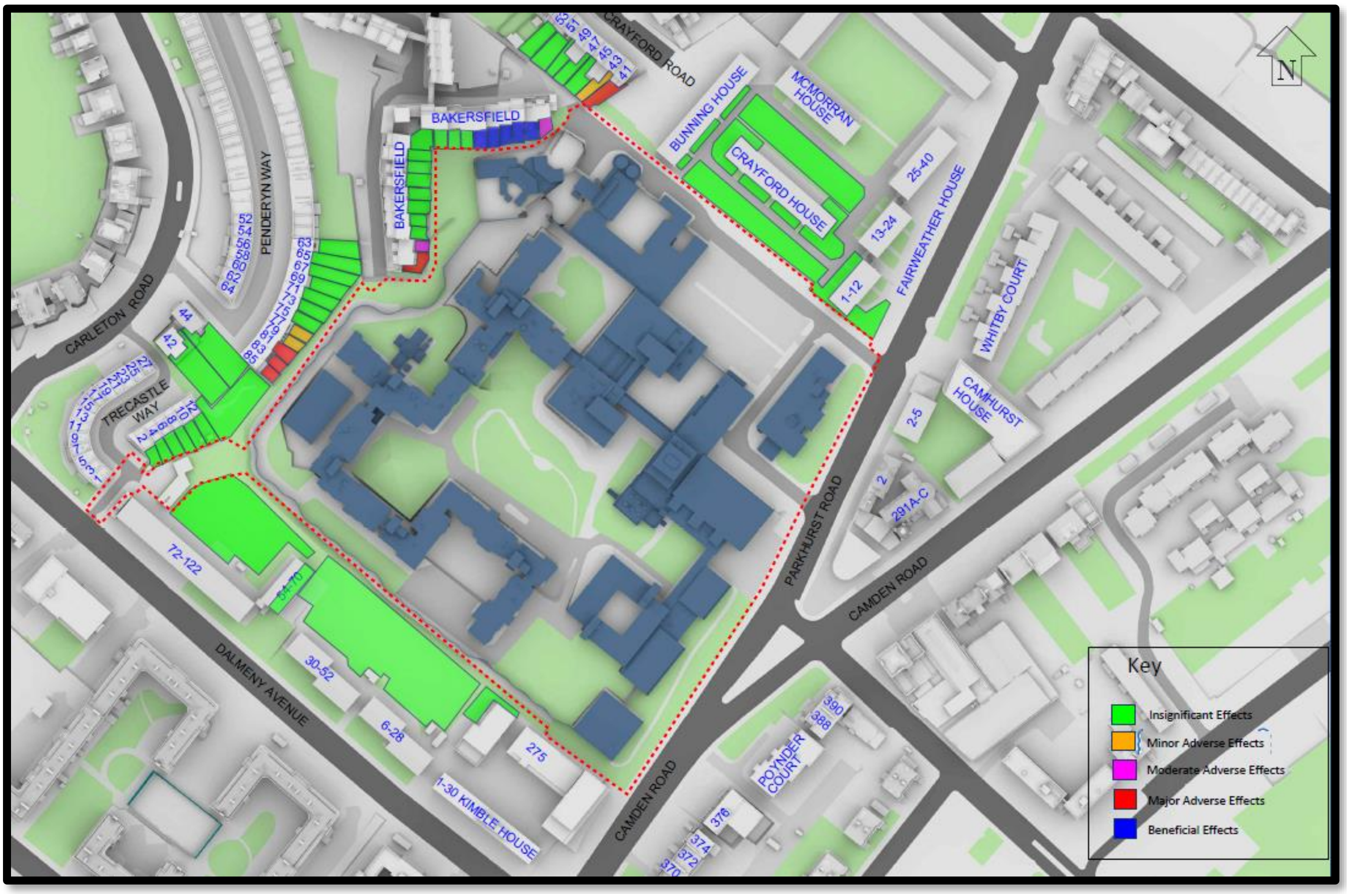
Ref on Figures 12.2 and 12.3	Receptor	Existing %	Proposed %	% Change	Date BRE Criteria Met if Below Guidance
1	6-28 Dalmeny Avenue	68.2%	TBC	TBC	n/a
2	30-52 Dalmeny Avenue	98.3%	98.3%	0.0%	n/a
3	54-70 Dalmeny Avenue	88.4%	88.1%	0.3%	n/a
4	72-122 Dalmeny Avenue	92.2%	90.8%	1.5%	n/a
5	2 Trecastle Way	47.6%	47.6%	0.0%	n/a

Ref on Figures 12.2 and 12.3	Receptor	Existing %	Proposed %	% Change	Date BRE Criteria Met if Below Guidance
6	4 Trecastle Way	54.7%	53.3%	2.6%	n/a
7	6 Trecastle Way	56.8%	55.0%	3.2%	n/a
8	8 Trecastle Way	76.9%	76.9%	0.0%	n/a
9	10 Trecastle Way	71.1%	71.1%	0.0%	n/a
10	12 Trecastle Way	59.5%	59.3%	0.3%	n/a
11	42 Carleton Road	84.2%	76.7%	8.9%	n/a
12	44 Carleton Road	82.6%	66.1%	20.0%	n/a
13	Trecastle Way Play Area	89.5%	88.6%	0.0%	n/a
14	85 Penderyn Way	55.3%	28.7%	48.1%	5th April
15	83 Penderyn Way	60.5%	32.5%	46.3%	4th April
16	81 Penderyn Way	64.7%	32.9%	49.1%	6th April
17	79 Penderyn Way	64.6%	45.7%	29.3%	28th March
18	77 Penderyn Way	64.0%	49.3%	23.0%	24th March
19	75 Penderyn Way	58.1%	48.5%	16.5%	n/a
20	73 Penderyn Way	75.3%	71.1%	5.6%	n/a
21	71 Penderyn Way	68.4%	60.0%	12.3%	n/a
22	69 Penderyn Way	80.1%	69.0%	13.9%	n/a
23	67 Penderyn Way	81.9%	68.8%	16.0%	n/a
24	65 Penderyn Way	78.2%	68.1%	12.9%	n/a
25	63 Penderyn Way	67.6%	60.9%	9.9%	n/a
26	45 Bakersfield Estate	52.5%	12.4%	76.4%	7th April
27	44 Bakersfield Estate	46.8%	31.7%	32.3%	25th March
23	43 Bakersfield Estate	44.4%	43.6%	1.8%	n/a
29	42 Bakersfield Estate	46.8%	42.4%	9.4%	n/a
30	41 Bakersfield Estate	54.4%	53.3%	2.0%	n/a
31	40 Bakersfield Estate	53.8%	51.8%	3.7%	n/a
32	39 Bakersfield Estate	59.0%	54.8%	7.1%	n/a
33	38 Bakersfield Estate	58.5%	55.6%	5.0%	n/a
34	37 Bakersfield Estate	62.4%	60.4%	3.2%	n/a
35	35 & 36 Bakersfield Estate	76.4%	74.1%	3.0%	n/a
36	34 Bakersfield Estate	77.3%	77.3%	0.0%	n/a
37	33 Bakersfield Estate	77.2%	77.2%	0.0%	n/a
38	32 Bakersfield Estate	73.8%	72.4%	1.9%	n/a
39	31 Bakersfield Estate	31.6%	62.8%	-98.7%	n/a
40	30 Bakersfield Estate	28.7%	58.3%	-103.1%	n/a
41	29 Bakersfield Estate	32.5%	51.7%	-59.1%	n/a

Ref on Figures 12.2 and 12.3	Receptor	Existing %	Proposed %	% Change	Date BRE Criteria Met if Below Guidance
42	28 Bakersfield Estate	35.2%	52.4%	-48.9%	n/a
43	27 Bakersfield Estate	34.3%	37.6%	-9.6%	n/a
44	26 Bakersfield Estate	45.7%	30.5%	33.3%	25th March
45	53 Crayford Road	54.7%	54.7%	0.0%	n/a
46	51 Crayford Road	70.5%	70.5%	0.0%	n/a
47	49 Crayford Road	44.6%	44.6%	0.0%	n/a
48	47 Crayford Road	27.2%	27.2%	0.0%	n/a
49	45 Crayford Road	46.8%	42.7%	8.8%	n/a
50	43 Crayford Road	56.7%	44.6%	21.3%	22nd March
51	41 Crayford Road	51.5%	17.4%	66.2%	30th March
52	Bunning House (1)	100.0%	100.0%	0.0%	n/a
53	Bunning House (2)	100.0%	100.0%	0.0%	n/a
54	Bunning House (3)	100.0%	100.0%	0.0%	n/a
55	Crayford House (1)	97.8%	97.9%	-0.1%	n/a
56	Crayford House (2)	97.7%	79.6%	18.5%	n/a
57	Crayford House (3)	100.0%	100.0%	0.0%	n/a
58	Crayford House (4)	100.0%	100.0%	0.0%	n/a
59	Crayford House (5)	90.5%	89.1%	1.5%	n/a
60	Crayford & Fairweather House	100.0%	88.7%	11.3%	n/a

12.4.220 The locations of each of the amenity areas assessed are shown in **Figure 12.3** along with their significance criteria which corresponds with the key.

Figure 12.3 Location of Properties within Overshadowing Assessment and Summary of Effects



12.4.221 **Table 12.26** and **Figure 12.3** demonstrates that on 21st March 46 of the 60 amenity spaces surrounding the Site would experience an **Insignificant** effect in relation to the area of the amenity space receiving 2 hours of sunlight. The overshadowing effect to these neighbouring amenity areas would be considered to be **insignificant**.

12.4.222 A further 4 spaces would experience effects considered to be **direct**, **long-term**, **local** likely effect of **major beneficial significance**.

12.4.223 The remaining 10 amenity areas would experience some overshadowing effects that are considered from **direct, long-term, local** and range from **minor to major adverse** in significance.

77-85 Penderyn Way

12.4.224 These 5 amenity spaces would be located to the north-west of Plot E. As reported in **Table 12.26**, 2 of the spaces (77 & 79 Penderyn Way) would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance**. Furthermore, these fall only slightly below the BRE Guidelines and would achieve 2 hours of sunlight to over 50 % of their areas within a week of the BRE Guidelines recommended assessment date as annotated on the result included within **Appendix 12.3.**

12.4.225 The gardens of 81, 83 and 85 Penderyn Way would experience a **direct**, **long-term**, **local** likely effect considered **major adverse in significance** when considering the change in Baseline and Development conditions. However, they would each receive 2 hours of sunlight to over 50 % of their areas within 14 to 16 days of the BRE Guidelines recommended assessment date. Whilst these spaces would experience a significant effect on March 21st, when considering the BRE Guidelines criteria would be met approximately 2 weeks later in the year, the likely effects are considered **direct**, **long-term**, **local** and of **moderate adverse significance**.

12.4.226 The remaining 7 amenity areas considered along this terrace of properties along Penderyn Way would experience **insignificant** effects.

12.4.227 The transient shadow drawings included within **Appendix 12.4** also clarify the precise timings of the effect of the Development during the March assessment period and how the shadow moves across the surrounding area. The drawings show that the additional shadow cast by the Development (coloured in blue on the drawings) on these amenity areas would occur between 08:00am (GMT) and moving away by 01:00pm (GMT). After this time, no overshadowing would be caused by the Development for the rest of the day, however the Penderyn Way properties start to overshadow themselves from 03:00pm (BST).

12.4.228 The transient shadow analysis on 21st June shows that the additional overshadowing effect of the Development would occur between 07:00am (BST) and 11:00am (BST). Beyond this time, the majority of the spaces would receive some direct sun until 05:00pm (BST) when the properties would overshadow themselves. 85 Penderyn Way would receive some direct sun until 07:00pm (BST).

12.4.229 The transient shadow analysis in December shows the substantial shadows that are cast in the Baseline condition by the existing buildings. These overshadow all of the gardens for all of the day and the Development would not cause any additional shadow.

12.4.230 Therefore, there would be a significantly improved position in the summer months, which in practice would be likely to be when the space would be most actively used, that demonstrates that ample sunlight would be available to the gardens during this period and no effect would be caused on December 21st.

Bakersfield Estate

12.4.231 Within the Bakersfield Estate, 19 gardens were assessed in total. 4 of these gardens would experience a **direct**, **long-term**, **local** likely effect of **major beneficial significance** effects, 12 will experience an **insignificant** effect, 2 would experience a **direct**, **long-term**, **local** likely effect of **moderate adverse significance** and 1 would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**.

12.4.232 The gardens to experience effects of moderate adverse significance (26 and 44 Bakersfield) would be below the BRE Guideline recommendations in the Baseline conditions. Relatively small changes in the area receiving 2 hours of sun (approximately 4.4 sqm) would cause relative changes that are considered to result in effects of moderate adverse significance. These amenity spaces would, however, each receive 2 hours of sunlight to over 50 % of their areas within just four days of the BRE Guidelines recommended assessment date. When viewed in this context, the effects are considered to be of **minor adverse significance.**

12.4.233 The remaining garden (45 Bakersfield) would experience a change that is considered **direct**, **long-term**, **local** likely effect of **major adverse significance** when considering the March 21st assessment. By the 7th April (17 days later) the garden would receive 2 hours of sunlight to over 50 % of its area and therefore whilst there are some localised effects upon direct sunlight to this amenity space, the overall effect is considered to be of **moderate adverse significance** given the relatively limited period of time where changes in sunlight availability will be noticed.

12.4.234 It should be noted that although 3 gardens would fall short of the BRE criteria within the estate and experience adverse effects, 5 gardens would experience effects of beneficial significance with 4 of those being considered a **direct**, **long-term**, **local** likely effect of **major beneficial significance** so on balance more gardens would experience effects of beneficial significance than adverse significance. On balance therefore, the effects to the Bakersfield Estate would be considered a **direct**, **long-term**, **local** likely effects of **minor adverse significance**.

41 & 43 Crayford Road

12.4.235 These 2 amenity spaces are located to the north of Plot A1. 43 Crayford Road would experience a **direct**, **long-term**, **local** likely effect of **minor adverse significance** and 41 Crayford Road would experience a **direct**, **long-term**, **local** likely effect of **major adverse significance**. The remaining 5 amenity areas considered along this terrace of properties would experience **insignificant** effects.

12.4.236 The effect to 43 Crayford Road falls only marginally short the BRE Guidelines recommendations and would meet the BRE Guidelines recommendations just a day later than the recommended assessment date. The effects to this space would therefore, overall, be considered of **minor adverse significance**.

12.4.237 For 41 Crayford Road, the changes are considered to result in a **direct**, **long-term**, **local** likely effect of **major adverse significance** when considering the March 21st assessment. Whilst there would be a significant change in the area receiving 2 hours of direct sun, the space would experience less than a 0.8 times relative change in the area receiving 2 hours of direct sun by 30th March (just 9 days later). Overall, the effect to this space is therefore considered **direct**, **long-term**, **local** likely effect of **minor adverse significance.**

12.4.238 The transient shadow drawings included in **Appendix 12.4** also clarify the precise timings of the effect of the Development during the March assessment period and how the shadow moves across the surrounding area. The drawings show that the additional shadow cast by the Development (coloured in blue on the drawings) on these amenity areas would occur between 12:00pm (GMT) and moving away by 02:00pm (GMT) in relation to 43 Crayford Road and 03:00pm (GMT) in relation to 41 Crayford Road.

12.4.239 The transient shadow analysis on 21st June shows the Development would not cause any shadow on these gardens so would not materially interfere with the sunlight amenity available in the Baseline condition.

12.4.240 The transient shadow analysis in December shows the substantial shadows that are cast in the Baseline condition by the existing buildings. These overshadow all of the gardens for all of the day and the Development would not cause any additional shadow.

12.4.241 Of the 60 surrounding amenity spaces assessed, the effect of the Development on direct sunlight amenity (Sun on Ground) to the 50 surrounding amenity spaces listed within **Table 12.27** would be **Insignificant**.

Table 12.25 Surrounding Amenity Spaces Experiencing an Insignificant Overshadowing Effects

Surrounding Amenity Space	Surrounding Amenity Space
6-28 Dalmeny Avenue	38 Bakersfield Estate
30-52 Dalmeny Avenue	37 Bakersfield Estate
54-70 Dalmeny Avenue	35 & 36 Bakersfield Estate
72-122 Dalmeny Avenue	34 Bakersfield Estate
2 Trecastle Way	33 Bakersfield Estate
4 Trecastle Way	32 Bakersfield Estate
6 Trecastle Way	31 Bakersfield Estate
8 Trecastle Way	30 Bakersfield Estate
10 Trecastle Way	29 Bakersfield Estate
12 Trecastle Way	28 Bakersfield Estate
42 Carleton Road	27 Bakersfield Estate
44 Carleton Road	53 Crayford Road
Trecastle Way Play Area	51 Crayford Road
75 Penderyn Way	49 Crayford Road
73 Penderyn Way	47 Crayford Road
71 Penderyn Way	45 Crayford Road
69 Penderyn Way	Bunning House (1)
67 Penderyn Way	Bunning House (2)
65 Penderyn Way	Bunning House (3)
63 Penderyn Way	Crayford House (1)
43 Bakersfield Estate	Crayford House (2)
42 Bakersfield Estate	Crayford House (3)
41 Bakersfield Estate	Crayford House (4)
40 Bakersfield Estate	Crayford House (5)
39 Bakersfield Estate	Crayford & Fairweather House

12.4.242 In respect of the remaining 10 surrounding amenity spaces assessed, the effects would range from minor adverse to moderate adverse and will therefore be significant, as set out in **Table 12.28** below.

Table 12.26 Surrounding Amenity Spaces Experiencing Significant Overshadowing Effects

Surrounding Amenity Space	Surrounding Amenity Space
85 Penderyn Way (moderate adverse)	45 Bakersfield Estate (moderate adverse)
83 Penderyn Way (moderate adverse)	44 Bakersfield Estate (minor adverse)
81 Penderyn Way (moderate adverse)	26 Bakersfield Estate (minor adverse)

Surrounding Amenity Space	Surrounding Amenity Space
79 Penderyn Way (minor adverse)	43 Crayford Road (minor adverse)
77 Penderyn Way (minor adverse)	41 Crayford Road (minor adverse)

12.5 Additional Mitigation / Enhancement and Likely Residual Effects of the Development and their Significance

The Works

12.5.1 During the demolition and construction of the Development, no mitigation would be required in relation to daylight, sunlight and overshadowing. Accordingly, the likely effects presented in the previous section remain unchanged for the residual effects described below for the Completed and Operational Development.

The Completed and Operational Development

12.5.2 Throughout the design process, expert advice was given on alternative massing options, which were analysed so as to understand how the daylight and sunlight effects could be reduced and mitigated. In this respect, mitigation is embedded within the design, helping to deliver quality scheme design and management. The likely significant residual effects are summarised below in **Table 12.29**.

12.5.3 The embedded mitigation has been considered throughout the pre-application process via numerous and rigorous iterative analysis over a number of years. Throughout this process, the Development has taken many forms, however one of the key mitigation measures that has been incorporated is creating larger gaps between the blocks and breaking up long linear blocks into smaller buildings that allow daylight and sunlight to permeate through the scheme and to the neighbouring receptors. In addition to this, buildings have been carefully sculpted by introducing setbacks/terraces and chamfers to reduce them whilst still maintaining the high quality architectural integrity of the Development.

Summary

12.5.4 The likely significant residual effects are summarised below in **Table 12.29**.

Table 12.29 Summary of Residual Daylight, Sunlight and Overshadowing Effects

Description of Effect	Sensitivity of Receptor	Significance of Effect on Receptors
Daylight to surrounding sensitive receptors	Low (Islington Arts Centre) High (all other properties)	Insignificant – 41 Receptors: 54-70 Dalmeny Avenue 1-30 Kimble House 370 Camden Road 372 Camden Road 374 Camden Road Camhurst House Whitby Court 25-40 Fairweather House McMorran House 41 Crayford Road 45 Crayford Road 51 Crayford Road 53 Crayford Road 52 Penderyn Way 54 Penderyn Way 56 Penderyn Way 58 Penderyn Way 60 Penderyn Way 62 Penderyn Way 64 Penderyn Way 44 Carleton Road 42 Carleton Road 27 Trecastle Way 21 Trecastle Way 19 Trecastle Way 17 Trecastle Way 15 Trecastle Way 13 Trecastle Way 11 Trecastle Way 9 Trecastle Way 7 Trecastle Way 5 Trecastle Way 3 Trecastle Way 1 Trecastle Way 2 Trecastle Way 4 Trecastle Way 6 Trecastle Way 8 Trecastle Way 10 Trecastle Way 12 Trecastle Way 63 Penderyn Way
		Minor Adverse – 18 Receptors 72-122 Dalmeny Avenue 30-52 Dalmeny Avenue 6-28 Dalmeny Avenue 376 Camden Road Poynder Court 388 Camden Road 390 Camden Road 1-12 Fairweather House 13-24 Fairweather House Bunning House 43 Crayford Road 47 Crayford Road 49 Crayford Road 25 Trecastle Way 23 Trecastle Way 69 Penderyn Way 67 Penderyn Way 65 Penderyn Way
		Moderate Adverse – 12 Receptors 275 Camden Road 2 Parkhurst Road & 291 A-C Camden Road Crayford House Bakersfield Estate 85 Penderyn Way 83 Penderyn Way 81 Penderyn Way 79 Penderyn Way 77 Penderyn Way 75 Penderyn Way 73 Penderyn Way 71 Penderyn Way

Description of Effect	Sensitivity of Receptor	Significance of Effect on Receptors	
		Major Adverse – 1 Receptor 2-5 Prospect Place	
Sunlight to surrounding sensitive receptors	High	Insignificant – 53 Receptors 72-122 Dalmeny Avenue 54-70 Dalmeny Avenue 275 Camden Road 376 Camden Road 2 Parkhurst Road & 291 A & C Camden Road Camhurst House 1-12 Fairweather House 25-40 Fairweather House McMorran House Crayford House Bunning House 41 Crayford Road 45 Crayford Road 47 Crayford Road 49 Crayford Road 51 Crayford Road 53 Crayford Road Bakersfield Estate – Block 2 52 Penderyn Way 54 Penderyn Way 56 Penderyn Way 58 Penderyn Way 60 Penderyn Way 62 Penderyn Way 64 Penderyn Way 44 Carleton Road 42 Carleton Road	 27 Trecastle Way 25 Trecastle Way 23 Trecastle Way 21 Trecastle Way 19 Trecastle Way 17 Trecastle Way 15 Trecastle Way 13 Trecastle Way 11 Trecastle Way 2 Trecastle Way 4 Trecastle Way 6 Trecastle Way 8 Trecastle Way 10 Trecastle Way 12 Trecastle Way 83 Penderyn Way 81 Penderyn Way 79 Penderyn Way 75 Penderyn Way 73 Penderyn Way 71 Penderyn Way 77 Penderyn Way 69 Penderyn Way 67 Penderyn Way 65 Penderyn Way 63 Penderyn Way
		Minor Adverse – 4 Receptors 13-24 Fairweather House 43 Crayford Road	 Bakersfield Estate – Block 1 85 Penderyn Way

Description of Effect	Sensitivity of Receptor	Significance of Effect on Receptors	
Overshadowing to amenity areas	High	Insignificant – 46 Receptors	
		6-28 Dalmeny Avenue 30-52 Dalmeny Avenue 54-70 Dalmeny Avenue 72-122 Dalmeny Avenue 2 Trecastle Way 4 Trecastle Way 6 Trecastle Way 8 Trecastle Way 10 Trecastle Way 12 Trecastle Way 42 Carleton Road 44 Carleton Road Trecastle Way Play Area 75 Penderyn Way 73 Penderyn Way 71 Penderyn Way 69 Penderyn Way 67 Penderyn Way 65 Penderyn Way 63 Penderyn Way 43 Bakersfield Estate 42 Bakersfield Estate 41 Bakersfield Estate	40 Bakersfield Estate 39 Bakersfield Estate 38 Bakersfield Estate 37 Bakersfield Estate 35 & 36 Bakersfield Estate 34 Bakersfield Estate 33 Bakersfield Estate 32 Bakersfield Estate 27 Bakersfield Estate 53 Crayford Road 51 Crayford Road 49 Crayford Road 47 Crayford Road 45 Crayford Road Bunning House (1) Bunning House (2) Bunning House (3) Crayford House (1) Crayford House (2) Crayford House (3) Crayford House (4) Crayford House (5) Crayford & Fairweather House
		Minor Adverse – 6 Receptors	
		41 Crayford Road 43 Crayford Road 26 Bakersfield Estate	44 Bakersfield Estate 77 Penderyn Way 79 Penderyn Way
		Moderate Adverse – 4 Receptors	
		85 Penderyn Way 83 Penderyn Way	81 Penderyn Way 45 Bakersfield Estate
		Major Beneficial	
		31 Bakersfield Estate 30 Bakersfield Estate	29 Bakersfield Estate 28 Bakersfield Estate

12.6 Likely Residual Cumulative Effects and their Significance

12.6.1 As noted earlier, an additional analysis has been undertaken which consists of the assessment of the Development together with relevant Approved Projects, as described in **ES Volume 1, Chapter 2: Environmental Impact Assessment Methodology**, to determine the potential daylight, sunlight and overshadowing effects on surrounding residential receptors and amenity spaces.

12.6.2 This scenario is illustrated on drawings within **ES Volume 3, Appendix 12.5** and the results of the effects with the Development in place are included in **ES Volume 3, Appendix 12.6.** Owing to the location of the Approved Projects, it was only considered necessary to consider the daylight and sunlight effects within a cumulative scenario as they are located too far away to have any bearing on the overshadowing effects.

12.6.3 The Approved Projects considered relevant for inclusion within this assessment only includes 2 Parkhurst Road & 2A Parkhurst Road (the Islington Arts Factory site) to the east of the Site. For this Approved Project, the massing and layouts have been based upon the approved planning drawings. All other Approved Projects are considered too distant from the Site to result in cumulative effects.

12.6.4 When comparing the Cumulative and Existing Baseline daylight and sunlight results, it is evident that the Cumulative Schemes will not have a material bearing on the daylight and sunlight levels of the vast majority of sensitive receptors and the conclusions of the Existing Baseline assessments will remain the same as set out in Section 12.4 and therefore have not been considered further.

12.7 Likely Residual Effects on Future Receptors and their Significance

12.7.1 The 2 and 2A Parkhurst Road Approved Project would include residential accommodation if implemented. Therefore, the effect of the Development on this future receptor has also been considered. The results for this analysis can be found within **Appendix 12.8** and purely focus on the effect of the Development on the 2 and 2A Parkhurst Road proposals. The effect to this property has been described below.

2 and 2A Parkhurst Road Proposals

12.7.2 There are 60 windows serving 34 habitable rooms in this property that overlook the Site.

12.7.3 The BRE Guidelines recommend that VSC and NSL are the primary assessments in considering the effects to a neighbouring receptor. However, there are instances where the use of ADF is appropriate and Appendix F, paragraph F8 (ii) stating it may be applicable when:

> *"Where the existing building is proposed but not built. A typical situation might be where the neighbouring building has received planning permission but not yet been constructed."*

12.7.4 VSC and NSL are used to quantify the change in the daylight and sunlight amenity between the baseline and Development conditions. As it is during the present day, there is no receptor there to notice any effects nor are there any occupants to notice the change. Therefore, in accordance with the BRE advice set out above, it is considered that ADF is the more appropriate form of daylight assessment so that the level of daylight that the future receptors would be left with, with the Development built is quantified.

12.7.5 The APSH assessment has been used to quantify the level of sunlight the future occupants will receive with the Development in place.

Daylight

12.7.6 The 34 rooms assessed can be broken down into 8 living/kitchen/dining rooms (LKDs), 25 bedrooms and 1 study. In accordance with the ADF methodology set out in the BRE Guidelines, BS 8206-2:2008[8] and advice received from Paul Littlefair, author of the BRE Guidelines, a 1% ADF target has been applied to the bedrooms and a 1.5% ADF target has been applied to the LKDs. The BRE Guidelines and British Standards do not provide a recommended ADF target for study rooms so professional opinion must be applied, however for the purposes of this analysis a 1.5% target is considered appropriate for this room, which is the same target for a living room.

12.7.7 In total, 30 of the 34 rooms assessed would meet the minimum ADF recommendations. This includes 7 of the 8 LKDs that would achieve at least 1.7% ADF. In fact, 5 would achieve between 2.4 % and 5 % ADF so would also meet the minimum ADF recommendations for a kitchen. The remaining LKD achieves 0.9 % ADF, however is served by a heavily recessed window which limits the access to daylight within the room. This is evident by the window only receiving 7% VSC in the existing condition despite overlooking an underdeveloped Site.

12.7.8 In relation to the bedrooms, 23 of the 25 assessed would achieve at least 1 % ADF. Whilst the remaining bedrooms fall short of achieving this target, they are located at 4th floor and would retain at least 20 % VSC which as set out in the Research Paper (included in **Appendix 12.9**) is a level of daylight commonly seen in the local context. The study achieves 1.2% ADF so would fall short of achieving the 1.5 % ADF recommendation for a living room, however, would exceed the minimum recommendation for a bedroom.

12.7.9 Overall, the number of rooms that would not meet the minimum ADF recommendations is limited to just 4. Therefore, the effect of the Development on the future occupiers of this Approved Project is considered **direct**, **long-term**, **local** likely effect of **minor adverse significance**.

Sunlight

12.7.10 6 rooms served by southerly orientated windows within this property have been considered for sunlight.

[8] British Standards Institution. BS 8206-2:2008 Lighting for buildings - Code of practice for daylighting. 2008. [now withdrawn]

12.7.11 5 of the rooms would satisfy the typical BRE Guideline recommendations for winter and total APSH so experience an **insignificant** effect. The remaining room would meet the BRE Guidelines for winter APSH but would experience an effect considered **direct**, **long-term**, **local** likely effect of **major adverse significance** for total APSH.

12.7.12 The room would still retain 20 % total APSH so would be within 5 % of achieving the BRE Guidelines.

12.7.13 Overall, the effect to the sunlight received by this property is considered to be a **direct**, **long-term**, **local** likely effect of **minor adverse significance.**

12.8 Conclusions

12.8.1 The conclusions of this ES Chapter should be read in parallel with the Standalone Daylight, Sunlight and Overshadowing report which is submitted as a standalone document and sits outside of this ES, supporting the planning application and Research Paper (**Appendix 12.9**) that assist the reader in contextualising the effects caused by the Development.

12.8.2 Construction of the Development would have a gradually increasing effect on the levels of daylight, sunlight, and overshadowing to existing residential properties and amenity spaces surrounding the Site as the massing of the Development steadily increases. Those effects that are perceptible as the Development nears completion would be similar to those of the completed Development.

12.8.3 Following completion of the Development, the results of the assessment show that the majority of existing residential properties surrounding the Site are predicted to receive adequate levels of daylight with 41 of the 73 properties assessed experience insignificant effects. The remaining properties would experience effects beyond the BRE Guidelines, however, this is not unusual given the urban context of the Site and its surroundings and it is considered that the general overall daylight availability for the affected residential properties remains adequate by reference to Point 2's Research Paper (refer to **Appendix 12.9**).

12.8.4 Where the levels of daylight are lower than those recommended by the BRE Guidelines and those seen in the local area, this is generally attributable to existing architectural features (access decks, overhangs and roof eaves) which limit the access to daylight and when considering the additional analysis with these features removed the affected properties would generally be left with commensurate levels of daylight.

12.8.5 Generally, adequate sunlight levels, in line with BRE Guidelines, would be achieved for the vast majority (91%) of southerly orientated rooms assessed within the sensitive receptors. In the instances where BRE Guideline levels of sunlight were not predicted to be achieved, the overwhelming majority are bedrooms for which the BRE acknowledge sunlight is less important and the levels of retained sunlight will generally remain reasonable for an urban location.

12.8.6 Again, there are instances where the retained levels of sunlight are lower due to the existing architectural features that limit access to sunlight, however when the effects of these features are not considered within the analysis, the retained sunlight levels would be in line with what would be expected in a more urban area.

12.8.7 In terms of the potential for the Development to result in overshadowing of existing amenity spaces in the vicinity of the Site, 50 out of the 60 amenity spaces assessed remain compliant with the criteria set out in the BRE Guidelines. 4 gardens within the Bakersfield Estate would experience effects that are considered major beneficial in significance. Whilst the gardens that do not meet the BRE Guidelines fall short of the guidance on March 21st, they would achieve 2 hours of sun on ground by no later than 7th April which is just 17 days after the BRE target test date. When a degree of flexibility is applied to the sun on ground assessments, taking into consideration the urban context, the majority of gardens that do not meet the BRE Guidelines would only experience a relatively short-term effect upon their direct sunlight availability.

12.8.8 The cumulative effects on the existing neighbours are not considered material. For the proposed residential accommodation within the Approved Project at 2 and 2A Parkhurst Road (the Islington Arts Factory site) if implemented, the vast majority of rooms assessed would continue to meet the minimum ADF recommendations with the Development in place so the future occupiers will on the whole, receive acceptable levels of daylight. For sunlight, just one room falls slightly below the BRE Guidelines so again any sunlight effects to the future occupants as a direct result of the Development would be limited.

13. Greenhouse Gases

13.1 Introduction

13.1.1 This Chapter, prepared by Air Quality Consultants ('AQC'), presents an assessment of the likely significant effects of the Development on greenhouse gas (GHG) emissions through consideration of the direct and indirect GHG releases associated with the Development.

13.1.2 This Chapter provides a description of the methods used in the GHG assessment. This includes an assessment of the direct and indirect release of GHGs during Site preparation, demolition and construction works (the 'Works'). The GHG assessment also estimates the GHG emissions associated with the completed and operational Development taking a lifecycle approach and presents the numerous mitigation measures and specific design measures provided by the Development to minimise its GHG footprint.

13.1.3 Where appropriate, mitigation measures are identified to avoid, reduce or offset any significant adverse effects. Taking account of the mitigation measures, the nature and significance of the likely residual effects are described. The cumulative greenhouse gas effects of the Development and other relevant Cumulative Schemes are also considered.

13.1.4 This Chapter is supported by further detailed information contained within the following Appendices:

- **ES Volume 3, Appendix 13.1: Planning Policy Context.**
- **ES Volume 3, Appendix 13.2: Extract from London Atmospheric Emissions Inventory.**
- **ES Volume 3, Appendix 13.3: Extract from the Sustainable Design & Construction Statement.**
- **ES Volume 3, Appendix 13.4: London Travel Demand Survey 2020.**
- **ES Volume 3, Appendix 13.5: Glossary.**

13.2 Assessment Methodology and Significance Criteria

Assessment Methodology

13.2.2 The EIA Directive 2014[1] sets out the rationale for incorporating climate change into the EIA process. It states:

[1] Directive 2014/52/EU of the European Parliament and of the Council on the assessment of effects of certain public and private projects on the environment.

"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 greenhouse gas emissions) and their vulnerability to climate change."

13.2.3 The requirements of the EIA Directive 2014, implemented in the UK by the EIA Regulations 2017 (as amended), require that the assessment provides:

"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 greenhouse gas emissions) and the vulnerability of the project to climate change".

13.2.4 The assessment presented in this Chapter only covers the impacts of the project on climate through the quantification of GHGs resulting from the Development. The impact of future climate change on the resilience of the Development has been addressed in **ES Volume 1: Chapter 5: The Development**. A Whole Life-Cycle Carbon (WLC)[2] assessment has been completed by Hoare Lea (the Applicant's building service engineers and sustainability consultant) and is submitted as a stand-alone document supporting the planning application, in line with the requirements of Part F of Policy SI 2 of the London Plan[3]. Data from the WLC assessment have been utilised in the preparation of this GHG assessment.

13.2.5 The assessment of GHG does not include identification of sensitive receptors (i.e. residential properties), as GHG emissions do not directly affect specific locations, but lead to indirect effects by contributing to climate change. Impacts on specific areas are not included within this assessment, since the impacts of GHG emissions would affect the global atmosphere, and therefore need to be considered in a total context, rather than on localised areas.

13.2.6 The GHG assessment has taken a whole life approach to develop a GHG footprint for the Development. The footprint sources considered include GHG emissions:

- Embedded in the materials used in the construction of the Development.
- From construction site activities (e.g. construction plant, site offices, welfare facilities etc.).
- From traffic movements during the Works.
- From energy consumed by the operation of the Development.
- From water used by the operation of the Development.

2 Whole Life-Cycle Carbon (WLC) emissions are the carbon emissions resulting from the materials, construction and the use of a building over its entire life, including its demolition and disposal.

3 GLA. The London Plan, Available: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf. 2021.

- From the operational Repair, Maintenance and Refurbishment of the Development.
- From transport associated with the operation of the Development.
- From demolition/deconstruction and disposal of the building at the end of its life.

13.2.7 In addition to the sources of emissions listed above, there are some minor GHG emissions sources that have been scoped out of the assessment (e.g. waste disposal during the Works and operation). Combined, these emissions would make up a very small component of the overall GHG footprint. Additionally, they are challenging to estimate at this stage of the project as they can depend on how the contractors of the Works and users of the Development operate. Measures to reduce GHGs from waste disposal have been considered where possible later in this Chapter.

13.2.8 **Table** 13.1 sets out the GHG assessment scenarios examined by the assessment, key sources of data and methodologies used.

13.2.9 The metric for assessing the climate change impacts of GHG emissions in this assessment is Global Warming Potential (GWP). This is expressed in units of CO_2 equivalent (CO_2e) over 100 years. This allows for the emissions of the seven key GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF3) and sulphur hexafluoride (SF_6) to be expressed in terms of their equivalent Global Warming Potential as a mass of CO_2e.

13.2.10 The assessment (using the methodologies referenced in **Table** 13.1) determines the baseline GHG emissions and the GHG emissions from the Development in the first year of occupation (2027[4]) and assumes an estimated operational lifetime of 60 years, which is detailed within the WLC Guidance Pre-consultation Draft and is a typical assumption in accordance with British Standard EN 15978:2011[5].

13.2.11 The quantification of annual emissions for the assessment is carried out to allow comparison of the Development's GHG emissions to London-wide and borough level annual GHG emissions for context. The 'net emissions' are the change in the GHG emissions between the baseline and the Development, taking account of GHG reduction measures. Offsetting of emissions is also considered in the calculation of residual net GHG emissions.

13.2.12 The assessment estimates the Development's GHG emissions in the first year of occupation as this provides a worst-case assessment due to decarbonisation of the energy supply in the future and increase in sustainable transport in preference to private car use.

4 2027 is the earliest year that all plots would be completed.
5 British Standard BSEN 15978:2011. Sustainability of construction works. Assessment of environmental performance of buildings. Calculation method.

Table 13.1: GHG Assessment Scenarios

Development Phase	Life Cycle Module a	Baseline	Development	Methods and Data Sources	Reference
The Works: Embedded Carbon.	A1-A3	The baseline is assumed to be zero.	The completed Development as defined in **ES Volume 1, Chapter 5: The Development**.	Total GHG emissions associated with the construction materials and activities of the Works have been taken from calculations carried out for the WLC assessment.	Whole Life-Cycle Carbon Assessment[6].
The Works: Site Activities.	A5	The baseline is assumed to be zero.	Site activities as described in ES Volume 1: Chapter 6: The Works.	Estimated GHG emissions from site construction plant, welfare offices, lighting, heating etc. during the Works taken from calculations carried out for the WLC assessment.	Whole Life Cycle Carbon Assessment.
The Works: Transport.	A4	The baseline is assumed to be zero.	Traffic generated by the construction of the Development during the Works.	Estimated GHG emissions from site construction traffic.	Whole Life Cycle Carbon Assessment.
Operation: Repair, Maintenance and Refurbishment.	B1 – B5	The baseline is assumed to be zero.	Construction material quantities, taken from **ES Volume 1: Chapter 6: The Works**.	Total GHG emissions associated with repair, maintenance and refurbishment have been taken from calculations carried out for the WLC assessment.	Whole Life Cycle Carbon Assessment.
Operation: Transport.	n/a	The baseline is assumed to be zero.	2027 transport GHG emissions.	Application of calculated 2027 BEIS GHG factors to km travelled by mode, calculated using movements per mode provided by the	Transport Consultant (Velocity).

6 Hoare Lea. GLA Whole Lifecycle Carbon Assessment. 2021.

Development Phase	Life Cycle Module [a]	Baseline	Development	Methods and Data Sources	Reference
				Transport Consultant, and assumed distance travelled.	
Operation: Energy.	B6	The baseline is assumed to be zero.	Energy usage by the Development, including proposals to meet the Mayor's Climate Change Strategy: be lean, be clean and be green, incorporating extensive energy efficiency measures along with low and zero carbon (LZC) applications.	Development CO_2 from energy use taking into account savings from the Sustainable Design and Construction Statement.	Sustainable Design and Construction Statement.
Operation: Water Use.	B7	The baseline is assumed to be zero.	Operational water use by the Development.	Estimated GHG emissions from operational water use.	Whole Life Cycle Carbon Assessment.
End of Life: Demolition, Deconstruction and Disposal.	C1 – C4	The baseline is assumed to be zero.	Decommissioning of the completed Development as defined in **ES Volume 1: Chapter 5: The Development**.	GHG emissions associated with demolition and deconstruction and transport and disposal/reuse of the building materials. These emissions have been taken from calculations carried out for the WLC assessment.	Whole Life Cycle Carbon Assessment.

Notes; [a] Lifecycle modules in accordance with BSEN 15978:2011 and RICS Whole Life Carbon Assessment for the Built Environment (2017). The lifecycle modules are a standardised structure for the reporting of carbon emissions arising over the entire life of a built asset from cradle to grave. Being divided into different stages of the development's life (i.e. material choosing, construction, use, maintenance, repair, operation and deconstruction) allows for each development to be looked at individually as well as in conjunction with one another. The modules are presented for consistency with the Draft Circular Economy Statement.

Assessment Approach - The Works

13.2.13 GHGs associated with the Works relate to those embedded in the materials from which the Development is constructed, and with traffic movements generated during the Works.

Embedded Carbon

13.2.14 In line with Policy SI 2 of the London Plan, a WLC assessment was undertaken by Hoare Lea which included quantification of the GHG emissions associated with the construction materials and activities during the Works. Specifically, this involved calculation of the CO_2e emissions associated with the production of a range of construction materials, including earthworks, superstructure frame, internal walls and finishes, and the activities which used these materials.

13.2.15 For the purposes of this GHG assessment and for consistency, the value for total CO_2e emissions associated with construction and activities presented in the WLC assessment has been used as the value of the embedded carbon in the Development.

13.2.16 Whilst the exact volumes of materials to be recycled and reused from the existing building occupying the Site is unknown, to minimise GHG emissions the current ambition is to reuse a minimum of 20% of construction material; reuse or recycle 75% of materials off-Site; and divert 95% of non-hazardous waste from landfill (as detailed in the Circular Economy Statement which is submitted as a stand-alone document in support of the planning application). For conservatism, however, it has been assumed that none of the materials from the existing building to be demolished are recycled or reused on-Site.

Site Activities

13.2.17 Emissions from the Works site activities include the fuel and electricity consumption of on-site plant, machinery and vehicles as well as emissions associated with the energy consumption of welfare facilities, Site security and lighting, etc.

13.2.18 CO_2e emissions from construction Site activities have been obtained from the WLC assessment.

The Works Traffic

13.2.19 GHG emissions associated with the Works generated traffic have been obtained from the WLC assessment.

Assessment Approach – The Completed and Operational Development

13.2.20 GHGs associated with the operation of the Development relate to emissions from repair, maintenance and refurbishment of the buildings during their operational lifetime as well as emissions from transport and energy use.

Repair, Maintenance and Refurbishment

13.2.21 GHG emissions associated with the ongoing repair, maintenance and refurbishment of the Development during operation have been obtained from the WLC assessment.

Transport

13.2.22 GHG emission factors for transport in 2027 (the first year of occupation of the Development) were determined by applying engine and fuel efficiency factors (sourced from the WebTAG databook[7]) to the 2021 BEIS factors, for different types of fuel/energy source, and vehicle size/type. A summary of the 2027 GHG emission factors for selected modes of transport used in this GHG assessment are provided in **Table 13.2**.

13.2.23 The calculation of transportation GHG emissions is carried out by multiplying the transport GHG factors detailed in **Table 13.2** by kilometres travelled by mode, calculated using trip generation per mode data provided by Velocity (the Applicant's Transport Consultant), and assumptions relating to the average distance travelled by mode (**ES Volume 3, Appendix 13.4**).

Table 13.2: 2027 Operational Transport GHG Factors by Mode (Selected Modes)

Mode	Type	Unit	Calculated 2027 factor (kg CO_2e)
Car Travel.	Average Car.	km	0.14532
Motorcycle.	Average motorcycle.	km	0.10228
Taxis.	Black Cab.	km	0.28383
Bus.	Local London Bus.	passenger.km	0.07718
Rail.	Light rail and tram.	passenger.km	0.02376
London Underground.	London Underground.	passenger.km	0.01862

Energy Consumption

13.2.24 In terms of the baseline setting for energy use, the Institute of Environmental Management and Assessment (IEMA) guidance[8] acknowledges that baseline energy use for existing buildings can be very difficult to calculate. The IEMA guidance recommends that baseline energy use is considered to be zero, or an alternative baseline is considered, whereby the GHG emissions from an alternative development of building design are considered. In this case, the baseline energy consumption has been assumed to be zero as information regarding the energy consumption of the existing land use was not available. This will provide a conservative assessment.

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7 Department for Transport (2020) TAG data book July 2020 v1.13.1, Available: https://www.gov.uk/government/publications/tag-data-book

8 IEMA (2017), 'Assessing Greenhouse Gas Emissions and Evaluating their Significance'.

13.2.25 GHG emissions associated with the energy use of the Development have been taken from the Sustainability Design & Construction Statement (submitted as stand-alone document supporting the planning application), taking account of energy efficiency measures, and low and zero carbon technologies to be incorporated within the Development. These are based on the energy demand of the Development and published GHG emission factors for gas and electricity use (SAP 10).

13.2.26 It should be noted that for energy consumption during operation, the GHG emissions are presented as CO_2 rather than CO_2e. The use of CO_2 emissions factors (rather than CO_2e) will underestimate the GHG emissions from energy by approximately 1%[9], however these are used for consistency with the Sustainable Design and Construction Statement, which was prepared in line with Policy requirements. Any underestimation is minor and will not alter the conclusions of the assessment.

13.2.27 The assessment considers regulated energy consumption, which is the energy consumption from heating and cooling, lighting, and on-site infrastructure such as lifts, and unregulated energy consumption, which is the electricity consumption from the behaviour of the building's users, such as personal electrical appliances (phones, laptops, televisions etc.), and kitchen appliances.

13.2.28 Further details on the GHG factors and GHG emissions from energy consumption are provided in the Sustainable Design and Construction Statement; an extract of the Sustainable Design and Construction Statement detailing the information used in this assessment is provided in **ES Volume 3, Appendix 13.3**.

Water Use

13.2.29 GHG emissions associated with the operational water use of the Development have been obtained from the WLC assessment.

Net Zero Policy Implications

13.2.30 The UK has recently legislated a 2050 net zero target following recommendations and analysis completed by the Committee on Climate Change (CCC)[10]. The CCC's Net Zero report[11] has established a "Further Ambition" scenario which considers feasible and cost-effective policy and technology interventions to ensure the UK can meet its new net zero target.

13.2.31 For power generation under this scenario, the CCC consider that 100% of power generation by 2050 will be low carbon and for ground transport it forecasts that all ground transportation (apart from small number of HGVs) will

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9 For UK electricity, CO^2e/kWh is estimated by BEIS to be 0.9% higher than CO^2/kWh.

10 Net zero has been defined by the CCC to allow for GHG removals to offset any residual GHG emissions in 2050 so that the overall balance of emissions is zero.

11 Committee on Climate Change (2019) Net Zero. The UK's contribution to stopping global warming, Available: https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/.

be electrically powered. The CCC therefore forecast that power and ground transportation sectors are largely decarbonised by 2050 with any residual emissions removed through technical and/or natural means.

13.2.32 The implications of the UK adopting the net zero target are that it is reasonable to assume that Government policies will be brought forward to ensure the net zero target is achieved. The Government's announcement bringing forward the ban on sale of new internal combustion engine vehicles to 2030 is an example of policy that is being developed.

13.2.33 For this assessment, therefore, all operational and transportation emissions with the Development are likely to be zero at the latest by 2050.

End of Life

13.2.34 Emissions associated with the end of life of the Development include emissions associated with the deconstruction or demolition of the buildings, and transport and disposal of building materials. The impacts of deconstruction include emissions from processing recyclable construction waste flows for recycling until the end-of-waste stage or the impacts of pre-processing and landfilling for waste streams that cannot be recycled based on type of material. Additionally, deconstruction impacts include emissions caused by waste energy recovery.

13.2.35 End of life CO_2e emissions have been obtained from the WLC assessment.

Assumptions

13.2.36 It is necessary to make a number of assumptions when undertaking a GHG assessment; assumptions made have generally sought to reflect a realistic worst-case scenario. Key assumptions made in carrying out this assessment include:

- Embedded carbon is based on embedded carbon for currently available materials.
- WLC emissions are based on the size of the development and assume decarbonisation of the grid.
- Multimodal trips generated by the proposed development do not account for changes in travel behaviour.
- Energy use is based off of information available at the time of assessment, factors such as energy and thermal efficiency may improve in future years.
- The model of energy plant used may be different from that assessed, at the time of construction.

Significance Criteria

Magnitude of Impact

13.2.37 There are no impact descriptors for GHG emissions; the approach taken is therefore to consider the calculated GHG emissions from the Development in the context of GHG emissions for the GLA area, as well as those attributable to the LBI, as published within the London Atmospheric Emissions Inventory[12] (LAEI).

Defining Likely Significant Effects

13.2.38 For GHG emissions there are no recognised criteria for determining the scale of the likely effects.

13.2.39 In terms of defining significance, guidance from IEMA[13] has been adopted, which has identified three underlying principles to inform the assessment of significance, as follows:

- The GHG emissions from all projects will contribute to climate change; the largest interrelated cumulative environmental effect.
- The consequences of a changing climate have the potential to lead to significant environmental effects on all topics in the EIA Directive[14] – e.g. population, fauna, soil, etc.
- GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, such that any GHG emissions or reductions from a project might be considered to be significant.

13.2.40 Therefore, in the absence of any effect criteria or a defined threshold, IEMA recommends that all GHG emissions are significant. This does not, however, mean that the contribution of GHGs from the Development alone would equate to a likely significant effect; for the majority of development projects, the individual contribution to total GHG emissions (from local through to global scale) would be very small. However, the IEMA guidance recognises that the contribution of GHG emissions to climate change is a cumulative global issue, and as such it is important for developments of all scales to acknowledge the significance of any increases in GHG emissions, and that the EIA should ensure the project addresses their occurrence by taking appropriate mitigating action.

13.2.41 In terms of mitigation, IEMA recommends that mitigation should, in the first instance, seek to avoid GHG emissions. Where GHG emissions cannot be avoided, a development should aim to reduce the residual significance of a project's emissions at all stages. Where additional GHG emissions remain but cannot be further reduced at source,

[12] LAEI (2013) London Atmospheric Emissions Inventory (LAEI) 2013, Available: https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory-2013.

[13] EMA. Assessing Greenhouse Gas Emissions and Evaluating their Significance. 2017.

[14] Directive 2014/52/EU of the European Parliament and of the Council on the assessment of effects of certain public and private projects on the environment.

approaches should be considered that compensate the project's remaining emissions, for example through offsetting.

13.2.42 The approach to defining likely significant effects has been carried out in three steps:

- The first step is to compare the Development's GHG emissions in the opening year to the baseline GHG emissions to determine whether there is a net increase or decrease in GHG emissions as a result of the Development.
- The second step is to compare the calculated change in emissions to local and regional GHG emissions for context.
- The third step applies expert judgment on the significance of those emissions taking into account the changes in emissions, their contribution to local and regional GHG emissions, their consistency with relevant policy, and an evaluation of the mitigation measures proposed to avoid, reduce and compensate GHG emissions. It is noted that even with mitigation, any increase in GHGs will be a permanent global significant adverse effect.

13.2.43 Significant effects are concluded for the Development GHG footprint overall, therefore the Works and operation of the Development are considered together.

13.3 Relevant Baseline Conditions

The Works

13.3.1 The Site is currently occupied by the former Holloway Prison, which would be demolished as part of the Works. As detailed in **paragraph 13.2.16** whilst there is an ambition to reuse 20% of material on site, given the uncertainty at this stage of the project on the exact amount, as a worst-case it has been assumed that none of the demolition materials would be recycled and thus the baseline embedded carbon is assumed as zero.

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13.3.2 The former Holloway Prison that currently occupies the Site has not been operational since 2016 and therefore the baseline GHG emissions for transportation and energy are assumed to be zero, to provide a worst-case assessment.

13.3.3 A summary of the estimated baseline GHG emissions is provided in **Table 13.3**.

Table 13.3: Summary of Baseline GHG Emissions

Development Phase	Baseline CO_2e Emissions (tonnes/annum)	Comment/Rationale
The Works.	0	Assumes that no materials in existing buildings are recycled or reused.

Development Phase		Baseline CO_2e Emissions (tonnes/annum)	Comment/Rationale
Operation.	Transport.	0	The Site is no longer in active use, so the baseline transport emissions are assumed to be zero.
	Energy.	0	The Site is no longer in active use, so the baseline energy emissions are assumed to be zero.
Total		0	Construction + Operation

13.3.4 The total assumed baseline GHG emissions are 0 tonnes/annum CO_2e.

13.4 Likely Effects of the Development and their Significance

The Works

Embedded Carbon

13.4.2 As described in earlier, the value for total CO_2e emissions associated with construction materials and activities was calculated as part of the WLC assessment (submitted as a stand-alone document in support of the planning application).

13.4.3 The total embedded CO_2e emissions (lifecycle modules A1-A3) is 23,443 tonnes CO_2e. Based on a construction period of five years (as outlined in **ES Volume 1, Chapter 6: The Works**), this equates to 4,689 tonnes CO_2e/annum.

Site Activities

13.4.4 Emissions from Site activities during the Works (lifecycle module A5) are 3,862 tonnes CO_2e as set out in the WLC assessment. Based on a construction period of five years, this equates to 772 tonnes CO_2e/annum (although all of these emissions will occur in the Works prior to building occupation).

Transport

13.4.5 Emissions from traffic generated during the Works (lifecycle module A4) are 1,130 tonnes CO_2e, as set out in the WLC assessment. Based on a construction period of five years, this equates to 226 tonnes CO_2e/annum.

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Operation- Repair and Maintenance

13.4.6 GHG emissions relating to the repair, maintenance and refurbishment of the Development over its lifetime (lifecycle modules B1 – B5) are estimated to total 14,498 tonnes CO_2e, or 242 tonnes CO_2e/annum based on a development lifetime of 60 years, as set out in the WLC assessment.

Operation- Transport

13.4.7 The transport-related GHG emissions for the Development in the first year of occupation are presented in **Table 13.4**. The transport data used in the assessment have been provided by Velocity Transport Planning. The assessment of transport-related GHG emissions are calculated by multiplying the GHG emission factors published by BEIS, adjusted to the year 2027 for each mode of travel (see **Table 13.2**), by the distance travelled, as reproduced in **Table 13.4** below.

Table 13.4: Assessment of GHG Emissions from Operational Transport (2027)

Mode	Annual Two-way Trips	Distance Travelled per Annum (km)	CO_2e Tonnes (per annum) [a]
National Rail	89,294	1,071,528	25
Underground/DLR	658,545	7,902,540	147
Bus/Tram	368,339	2,283,702	176
Car Driver	13,936	132,392	19
Car Passenger	12,909	104,563	0
Cycle	50,770	319,851	0
Walk	663,576	1,393,510	0
Total	-	13,208,086	368

Notes; [a] CO_2e emissions are calculated by multiplying distance travelled by CO_2e factors by mode from **Table 13.3**.

13.4.8 The total transport GHG emissions are calculated as 368 tonnes of CO_2e per annum in the first year of occupation. Emissions will reduce year-on-year through the lifetime of the Development as the transport sector decarbonises, and are anticipated to be net zero by (or before) 2050.

Operation- Energy Consumption

13.4.9 The CO_2 emissions from energy consumption of the Development are described in the Sustainable Design and Construction Statement which accompanies the planning application. It should be noted that, for energy, it is CO_2

emissions and not CO_2e emissions that have been reported, but this is to ensure consistency with the energy strategy and GLA policy requirements.

13.4.10 The Energy Strategy compares the Development to a notional "baseline" of compliance with Part L Building Regulations. This is not used as the baseline in this GHG assessment, but it is important in demonstrating that the Development meets the CO_2 emission policy requirements of the London Plan.

13.4.11 **Table 13.5** summarises the improvement in performance for the Development for regulated and unregulated CO_2 emissions, taking into account measures to address Policy SI2 of the London Plan to 'be lean, be clean, be green', including offsets to meet the GLA target for zero carbon development and target to achieve minimum on-site carbon reductions of 35% compared to Part L of the Building Regulations, including a 15% reduction achieved by energy demand reduction alone (Be Lean) for non-domestic development and 10% reduction achieved by energy demand reduction alone for domestic development.

Table 13.5: Assessment of CO_2 Emissions from Energy Consumption

Overall Carbon Dioxide Emissions (Tonnes CO_2 per Annum)	
Regulated Emissions	
No Energy Strategy assuming Part L Compliance	1,159
After Energy Demand Reduction (Be Lean)	1,046
% Improvement after Be Lean (i.e. energy efficiency measures only)	9.8%
After Renewable Energy (Be Green)	555
% Improvement after Be Lean, Be Clean, Be Green	42.3%
Net Emissions	555
Unregulated Emissions	
With Energy Strategy	166
Regulated and Unregulated Emissions	
Net Emissions	721

Notes; [a] As described in the Energy Strategy within the Sustainable Design & Construction Statement. See **ES Volume 3, Appendix 13.3.**

[b] Net emissions do not take into account offsets to meet GLA target zero carbon, which are discussed in the Mitigation section of this report.

13.4.12 **Table 13.5** shows that the Development would achieve a 42.3% improvement in site-wide regulated carbon emissions over Part L 2013 compliance. As presented in **ES Volume 3, Appendix 13.3,** the increase in energy demand, meets the 15% improvement by energy demand reduction for non-domestic uses and 10% improvement for domestic use.

Operation

13.4.13 The WLC assessment estimates the emissions from the operational water use of the Development (lifecycle module B7) to be 1,494 tonnes CO_2e. Based on a Development lifetime of 60 years, this equates to 25 tonnes CO_2e/annum (although all of these emissions will occur at the end of the building's life).

End of Life

13.4.14 The WLC assessment estimates the emissions from the deconstruction and disposal of the building at the end of its practical life (lifecycle modules C1-C4) are 3,773 tonnes CO_2e. Based on a Development lifetime of 60 years, this equates to 63 tonnes CO_2e /annum (although all of these emissions would occur at the end of the building's life).

Total GHG Emission Footprint of the Development (during the Works and once Complete and Operational)

13.4.15 **Table 13.6** and **Figure 13.1** summarise the GHG emissions for the Development in the first year of occupation for each footprint element during the Works and once the Development is complete and operational, and end of life. The GHG emissions from embedded materials used in construction are annualised assuming a 60-year lifetime[15] and emissions from construction transportation are annualised assuming a 5-year construction period. Annualising the embedded and construction transportation GHG emissions allows them to be compared on a like-for-like basis to the operational GHG emissions which are reported on a per annum basis.

13.4.16 As shown in **Table 13.6** the Development would result in a net increase in GHG emissions in the first year of occupation of 7,106 tonnes. This is the first step of the assessment of significance as described in **paragraph 13.2.42**.

Table 13.6: GHG Footprint for Development [a]

Development Phase	Footprint Element	Tonnes of CO_2e/annum		
		Baseline	First Year of Occupation	Net Emissions
The Works	Embedded	0	4,689 [b]	4,689

[15] Which is considered standard for a development of this type.

Development Phase	Footprint Element	Tonnes of CO_2e/annum		
		Baseline	First Year of Occupation	Net Emissions
	Site Activities	0	772 [c]	772
	Transport	0	226 [d]	226
Operation	Repair, Maintenance and Refurbishment	0	242 [e]	242
	Energy	0	721	721
	Transport	0	368	368
	Water Use	0	25 [f]	25
End of Life	Demolition, Deconstruction and Disposal	0	63 [g]	63
Total		0	7,106	7,106

Notes; [a] All figures are rounded.

[b] Total embedded emissions from construction (23,443 tonnes – see Paragraph 13.4.3) divided by five-year construction period.

[c] Total emissions from Site activities (1,131 tonnes – see Paragraph 13.4.4 divided by five-year construction period.

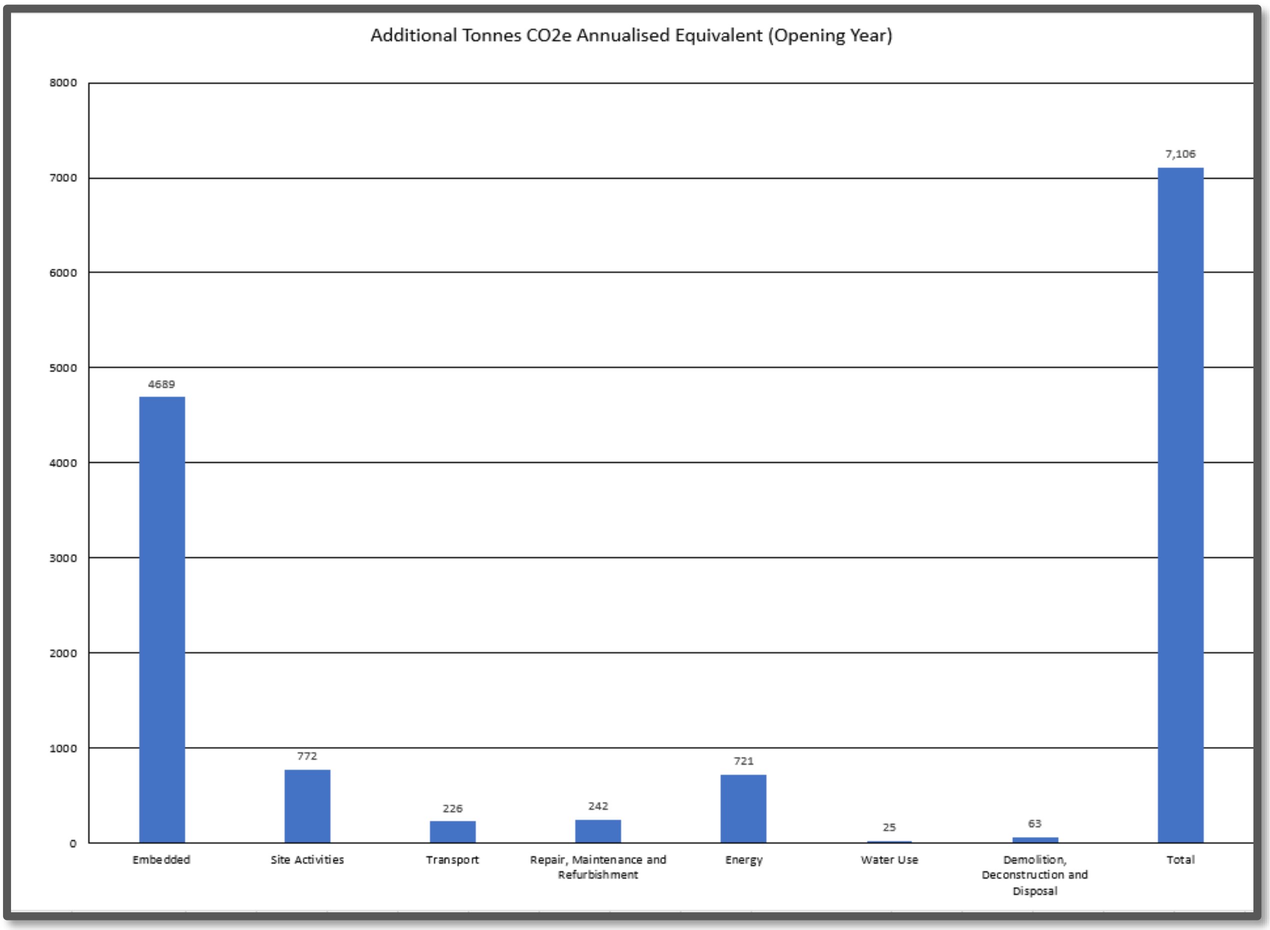
[d] Total transport emissions from construction (23,443 tonnes – see Paragraph 13.4.5) divided by five-year construction period.

[e] Total emissions from repair, maintenance and refurbishment (18,360 tonnes – Paragraph 13.4.6) divided by 60-year lifetime.

[f] Total emissions from operational water use (26,641 tonnes – see Paragraph 13.4.13) divided by 60-year lifetime.

[g] Total emissions from demolition, destruction and disposal (1,494 tonnes – see Paragraph 13.4.14) divided by 60-year lifetime.

Figure 13.1: Change in GHG Emissions for the Development in the First Year of Occupation



GHG Comparisons

13.4.17 The second step in determining the likely significant effects is to compare the net change in GHG emissions in the first year of occupation to London-wide and local GHG emissions (see **paragraph 13.2.42**). This has been undertaken for the Works and the complete and operational Development.

The Works

Greater London Authority Emissions

13.4.18 **Table 13.7** compares the residual CO_2e data for the Development with CO_2 emissions data taken from the 2013 LAEI for the GLA area for the year 2025 (the closest year of available data to the first year of occupation of the Development). It should be noted that the 2013 LAEI data do not contain data in relation to embedded carbon and end of life demolition, deconstruction and disposal. As such, the comparison of GHG emissions associated with the Works to those contained within the 2013 LAEI excludes these elements. An extract of the 2013 LAEI is shown in **ES Volume 3, Appendix 13.2**.

13.4.19 Comparison of the GHG emissions from the Works with those within the GLA area inventory shows that the Development would account for 0.01% of total emissions in the GLA area, and no more than 0.25% when looking at any individual aspect of the footprint.

Table 13.7: Comparison of Proposed Development Construction Phase Footprint to GLA Emissions [a]

Development Phase	Footprint Element	First Year of Occupation CO_2e Emissions (Tonnes) from Development	2025 CO_2e Emissions (Tonnes) from within GLA [a]	Notes	Development as % of GLA
The Works	Site Activities.	772	309,318	NRMM.	0.25%
	Transport.	226	8,799,911	Based on Road Transport.	0.003%
	Total	998	9,109,229	All LA Sources.	0.01%

Notes; [a] The LAEI data presented are for 2025, which is the closest year of available data to the first year of occupation of the Development.

[b] Total includes sources not listed in this table.

The Works - London Borough of Islington Emissions

13.4.20 The total LBI CO_2e emissions equates to 349,829 tonnes per annum (see **ES Volume 3, Appendix 13.2**). Compared to this value, the estimated 2025 CO_2e footprint for the works phase of the Development (998 tonnes[16]) represents 0.29% of local emissions.

Complete and Operational Development

Greater London Authority Emissions

13.4.21 **Table 13.8** presents residual CO_2e data associated with the operational phase of the Development, with a comparison to CO_2 emissions data taken from the 2013 LAEI for the GLA for the year 2025 (the closest year of available data to the first year of occupation of the Development). It should be noted that the 2013 LAEI data do not contain data in relation to emissions associated with operational repair, maintenance and refurbishment or water use. As such, the comparison of GHG emissions associated with the operational phase of the Development to those contained within the 2013 LAEI excludes this element. An extract of the 2013 LAEI is shown in **ES Volume 3, Appendix 13.2**.

13.4.22 Comparison of the GHG emissions associated with the operational phase of the Development to those within the GLA inventory shows that the Development equates to 0.007% of total emissions in the GLA, and no more than 0.007% when looking at any individual aspect of the operational phase footprint.

16 Total excludes GHG emissions embedded in construction materials and end of life demolition, deconstruction and disposal emissions as these are not reported in the 2013 LAEI.

Table 13.8: Comparison of Development Operational Phase Footprint to GLA Emissions

Development Phase	Footprint Element	First Year of Occupation CO_2e Emissions (Tonnes) from Development	2025 CO_2e Emissions (Tonnes) from within GLA [a]	Notes	Development as % of GLA
Operation	Energy.	721	10,062,101	Combined data for domestic and commercial gas and other fuel.	0.007%
	Transport.	368	5,918,390	Combined data for road and rail transport.	0.006%
Total		1,089	15,980,491	All GLA Sources.	0.007%

Notes; [a] The LAEI data presented are for 2025.

[b] Total excludes GHG emissions associated with operational repair, maintenance and refurbishment as these are not reported in the 2013 LAEI.

Complete and Operational Development London Borough of Islington Emissions

13.4.23 The total LBI CO_2e emissions equates to 349,829 tonnes per annum (see **ES Volume 3, Appendix 8.2**). Compared to this value, the estimated 2025 CO_2e footprint for the operational phase of the Development (1,089 tonnes[17]) represents 0.3% of local emissions.

Total GHG Emissions Footprint

Greater London Authority Emissions

13.4.24 **Table 13.7** compares the residual CO_2e data for the Development with CO_2 emissions data taken from the 2013 LAEI for the GLA area for the year 2025 (the closest year of available data to the first year of occupation of the Development). It should be noted that the 2013 LAEI data do not contain data in relation to embedded carbon and end of life demolition, deconstruction and disposal. As such, the comparison of GHG emissions associated with the total development to those contained within the 2013 LAEI excludes these elements. An extract of the 2013 LAEI is shown in **ES Volume 3, Appendix 13.2**.

[17] Total excludes GHG emissions associated with operational repair, maintenance and refurbishment, as these are not reported in the 2013 LAEI.

13.4.25 Comparison of the GHG emissions from the total development with those within the GLA area inventory shows that the Development would account for 0.008% of total emissions in the GLA area, and no more than 0.25% when looking at any individual aspect of the footprint.

Table 13.9: Comparison of Development Construction Phase Footprint to GLA Emissions [a]

Development Phase	Footprint Element	First Year of Occupation CO_2e Emissions (Tonnes) from Development	2025 CO_2e Emissions (Tonnes) from within GLA [a]	Notes	Development as % of GLA
The Works	Site Activities.	772	309,318	NRMM.	0.25%
	Transport.	226	8,799,911	Based on Road Transport.	0.003%
Operation	Energy.	721	10,062,101	Combined data for domestic and commercial gas and other fuel.	0.007%
	Transport.	368	5,918,390	Combined data for road and rail transport.	0.006%
Total		2,087	25,089,720	All LA Sources.	0.008%

Notes; [a] The LAEI data presented are for 2025, which is the closest year of available data to the first year of occupation of the Development.

[b] Total includes sources not listed in this table.

The Works - London Borough of Islington Emissions

13.4.26 The total LBI CO_2e emissions equates to 349,829 tonnes per annum (see **ES Volume 3, Appendix 13.2**). Compared to this value, the estimated 2025 CO_2e footprint for the total Development (2,087 tonnes[18]) represents 0.6% of local emissions.

GHG Comparisons Summary

13.4.27 IEMA guidance[22] makes clear that any increase in GHG emissions might be considered significant; however, as presented in **Table 13.9**, the residual emissions are a small component (maximum of 0.008%) in the context of the regional GHG emissions and a small component (maximum of 0.6%) in the context of local emissions for the year 2025, from either the Works or the complete and operational Development. The principles of the IEMA guidance

[18] Total excludes GHG emissions embedded in construction materials and end of life demolition, deconstruction and disposal emissions as these are not reported in the 2013 LAEI.

are that, where GHGs cannot be avoided, mitigation should be provided to minimise GHG emissions. The mitigation is discussed in the following section.

13.5 Inherent Tertiary Mitigation

13.5.2 The final stage of assessment of significance is to consider the GHG emissions in the context of the proposed mitigation and relevant policy targets.

13.5.3 As above, the Development would result in additional GHG emissions compared to the baseline and there would be GHG emissions in the opening year of 2027, in tonnes per annum. Consequently, the following mitigation measures would be implemented as part of the Development to avoid, reduce and compensate the GHG emissions during construction and throughout the lifetime of the Development, however, given it is not possible to quantify the success of the mitigation measures and GHG emissions would still be generated by the Development. As a worst-case it is assumed a net increase in GHG emissions against the baseline GHG emissions (as 7,106 tonnes per annum) will remain.

The Works

13.5.4 Reducing GHG emissions during the Works includes:

- Minimising the use of materials.
- The procurement of sustainable materials.
- The embedded carbon footprint of the material from the extraction of the raw materials.
- The production of the final construction products.
- Reducing the transport of products between the factory and Development (consolidation of deliveries).

Construction Waste

13.5.5 The Applicant would implement a Construction Environmental Management Plan (CEMP), secured via planning condition. The CEMP would be implemented throughout the Works, and details control measures and activities to be undertaken to minimise environmental effects, including matters regarding waste management, and energy and water usage. An outline CEMP has been submitted as a stand-alone supporting document to the planning application.

13.5.6 In terms of waste management, a Site Waste Management Plan (SWMP)[19] has been prepared and submitted as a stand-alone document in support of the planning application, which includes measures to be implemented to

[19] London Square. Holloway Prison, Islington, Site Waste Management Plan. 2021.

minimise waste generation, including segregating waste to enable higher reuse and recycling rates, with demolition waste to be diverted from landfill.

13.5.7 In terms of machinery and plant use, and Site energy usage, energy consumption monitoring and reduction plans would be in place and all relevant contractors would be required to investigate opportunities to minimise and reduce the use of energy so as to avoid excessive energy consumption and resulting GHG emissions. This may include measures such as the use of low emission or electric plant and machinery, on site engine idling policy and energy efficient site lighting. During Site establishment, small power operations and tower crane and hoist use would utilise grid-generated electrical energy.

The Works Traffic

13.5.8 Walking, cycling and other sustainable forms of transport would be promoted, and pedestrian site access would be segregated from the road by physical barriers to ensure safety upon arrival and departure, with separate pedestrian gates and footways provided. Cycle parking facilities would be provided. In terms of construction transport, a Construction Logistics Plan (CLP)[20] has been prepared and is submitted as part of the Transport Assessment in support of the planning application. It sets out the measures to reduce the environmental impact from the Works and to optimise the efficient delivery and collection of goods and materials to the Site.

Completed and Operational Development

Transport

13.5.9 A Framework Travel Plan[21] (FTP) has been developed for the Development which sets out the measures to minimise car use and facilitate the sustainable movement of staff, visitors and goods to and from the Development. The FTP is submitted as a stand-alone document in support of the planning application. A Travel Plan Coordinator would be appointed to take responsibility for the development and management of the Travel Plan.

13.5.10 The following measures are proposed to influence sustainable travel behaviour from the Development Site:

- Car free development with exception of 30 blue badge parking spaces and 6 loading bays. All parking spaces would be provided with active electric charging.
- Provision of 1,855 long stay and 62 short stay cycle spaces for residential use, and 42 long stay and 50 short stay for non residential use in line with the London Plan requirements, with shower facilities provided in the Extra Care and commercial spaces.

[20] Velocity Transport Planning. Holloway Prison Transport Assessment. 2021.
[21] Velocity Transport Planning. Holloway Prison Framework Travel Plan. 2021.

- Create pedestrian and cycle permeability through links to neighbouring roads (i.e. Trecastle Connection which links the Site to Trecastle Way).
- Improved pedestrian signal crossing on Camden Road.
- Promotion of walking, cycling and other sustainable transport through cycle to work schemes, public transport season tickets and marketing campaigns.

13.5.11 In addition to the above, overall, the Development Site itself is in a well-connected location for public transport (Public Transport Accessibility Level of 6A) providing a wide range of transport services including Caledonian Road Railway Station and Camden Road Bus Stop.

Energy Consumption

13.5.12 Key mitigation measures adopted by the Development to minimise GHG emissions from energy use over the building's operational phase include the following:

- Air Source Heat Pumps (ASHPs) for heating, cooling and domestic hot water within the Development.
- Inclusion of passive design features within the Development including solar control blinds to manage heat.
- Openable windows to maximise natural ventilation.
- Low energy lighting throughout with occupant detection, where possible.

13.5.13 The Development achieves an overall total on-site regulated carbon reduction of 57% relative to Part L of the Building Regulations, which is better than the London Plan policy requirement of a 35% reduction.

13.5.14 In addition, to comply with Policy SI 2 of the London Plan, a carbon offset payment (secured via planning obligations) will be provided to offset residual regulated domestic CO_2 emissions to zero. As detailed in the Sustainable Design and Construction Statement, the carbon offset fund contribution has been calculated at £1,581,500.

Mitigation Summary

13.5.15 **Table 13.10** sets out an assessment of the Development's approach to mitigation against the mitigation principles described in the IEMA guidance (as discussed earlier), to avoid and reduce GHGs where practicable and compensate for any residual emissions.

Table 13.10: Proposed Development Approach to Mitigation in Accordance with IEMA Mitigation Principles

Development Phase	Avoid and Reduce GHGs	Compensate GHGs
Construction.	As detailed in the SWMP the reuse of material on site where possible. the current ambition is to reuse a minimum of 20% of construction material); reuse or recycle 75% of materials off-site and divert 95% of non-hazardous waste from landfill.	N/A
Operation: Transport.	Good practice measures to minimise energy use from construction activities, including the implementation of a CEMP.	N/A
Operation: Energy.	Implementation of a CLP containing measures to reduce the environmental impact from the construction stage and to optimise the efficient delivery and collection of goods and materials to site.	Regulated emissions will be reduced to zero via offset payment, in line with GLA guidelines.
End of Life.	Promotion of sustainable forms of transport for construction staff, such as walking and cycling, and no car parking provision.	N/A

Policy Intervention

13.5.16 The Development meets the requirements of the London Plan, with a reduction of more than 35% in regulated emissions when compared to the Part L of the Building Regulations Part L baseline (**ES Volume 3, Appendix 8.1 Paragraphs 8.1.19 and 8.1.20)**.

13.5.17 As detailed in 13.2.20, the UK adopted a net zero target to be achieved no later than 2050, with UK government legally mandated to take steps across the economy to meet this target. This will include measures to decarbonise UK power supply as well as ground transportation, the effects of which it is reasonable to assume will be to reduce the longer term operational GHG emissions associated with the Development to zero by 2050.

Significance of the GHG Emission Footprint of the Development (during the Works and once Complete and Operational)

13.5.18 Whilst in the context of regional GHG emissions (as 0.008% of total emissions in the Greater London and 0.6% of borough-wide emissions) the emissions are small, the IEMA guidance makes clear that any increase in GHG emissions should be considered significant. To be consistent with the significance of effects as detailed throughout the ES, an indirect, long-term, global significant adverse effect is predicted. However, the above comparison against the Greater London and London Borough of Islington GHG emissions should be considered when determining the overall effect.

13.6 Additional Mitigation/ Enhancement and Likely Residual Effects of the Development and their Significance

13.6.2 No additional mitigation measures are required.

13.7 Likely Residual Cumulative Effects and their Significance

Approved Projects

13.7.2 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 GHGs contribute to climate change. The definition of 'cumulative effects' in the context of greenhouse gases 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 Development.

13.7.3 The EIA has identified three Approved Projects for consideration in the assessment. It is difficult to quantify the GHG emissions from each of the identified cumulative schemes, and as discussed above, cumulative contributions to climate change from GHGs will extend well beyond these three schemes. It is expected that mitigation would 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 Approved Projects.

13.7.4 The residual cumulative GHG emissions from the Approved Projects and Development would 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, and in accordance with IEMA guidance, the residual effect above remains, as **indirect, long-term, global** effects of **adverse significance.**

Approved Projects plus Developments that have a Planning Status in the Development Plan Process

13.7.5 As above, it is difficult to qualify the GHG emissions from each of the identified developments that have a planning status in the development plan process and the cumulative contributions to climate change from GHGs would extend well beyond these schemes. The emissions are small in the context of global GHG emissions but nonetheless the residual effect above remains, as **indirect, long-term, global** effects of **adverse significance.**

13.8 Conclusions

13.8.2 The GHG emissions associated with the Works and the completed and operational Development were estimated and the significance of resultant effects were assessed.

13.8.3 The assessment took a whole life approach to develop a GHG footprint for the Development, including emissions associated with construction materials, construction Site activities and construction transport during the Works and ongoing repair, maintenance and refurbishment activities, transport, energy consumption, water use during its operation. The end of life GHG emissions from demolition, deconstruction and disposal of the Development were also considered.

13.8.4 The GHG assessment has identified that the Development would lead to GHG emissions throughout its lifetime, which are described as significant in accordance with IEMA best practice guidance on the assessment of GHGs for EIA. Although the individual contribution of the Development to total GHG emissions (from local through to global scale) is small, the IEMA guidance recognises that the contribution of GHG emissions to climate change is a cumulative global issue, and as such it is important for developments of all scales to acknowledge the significance of any increases in GHG emissions. Therefore, mitigation was provided during the design of the Development to avoid and reduce the GHG emissions, including the Development meeting the requirements of the London Plan.

13.8.5 The cumulative effects assessment has identified that the conclusions would not change or be worse than that of the assessment of the Development in isolation.

13.8.6 The Development has been designed to avoid and reduce the GHG emissions, which follows the key principles of GHG mitigation in the IEMA guidance and is consistent with the requirements of relevant policy.

14. Effect Interactions

14.1 Introduction

14.1.1 This Chapter presents an assessment of the likely significant effect interactions of the Development; that is, the likely combination of significant environmental effects generated by the Development in isolation upon a particular receptor or group of receptors. Effect interactions were considered for the Works and the completed and operational Development.

14.1.2 This Chapter, prepared by Avison Young, was informed by all assessments undertaken as part of the Environmental Impact Assessment (EIA) and subsequently reported in the Environmental Statement (ES). As such, this Chapter draws from information contained in **ES Volume 1, Chapters 7** to **13** inclusive and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**.

14.1.3 It should be noted that effect interactions are commonly referred to as a type of 'cumulative effect'. However, as outlined in **ES Volume 1, ES Chapter 2: EIA Methodology**, the likely cumulative effects of the Development with other Cumulative Schemes per environmental topic area scoped into the ES (different to 'effect interactions') are considered separately within **ES Volume 1, Chapter 7** to **13** inclusive and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**.

14.2 Assessment Methodology and Significance Criteria

Assessment Methodology

14.2.1 There are no established methodologies for assessing, qualifying or quantifying the interaction of effects from a particular project upon a receptor or group of receptors. However, the following method was employed, based upon professional judgement, experience and a review of other similar assessments undertaken to inform recently published ESs for urban regeneration projects:

- A review of **ES Volume 1, Chapters 7** to **13** and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment** to establish:
  - The range of likely significant residual effects arising from the Works and the completed and operational Development in isolation.
  - The receptor or group of receptors affected by the identified likely significant residual effects of the Works and the completed and operational Development in isolation.
- Tabulation of the above, thereby allowing for the identification of receptors, or groups of receptors, that would experience multiple likely significant residual environmental effects.

14.2.2 Only likely significant residual effects were considered in this assessment. This is owing to the following:

- Insignificant effects would have no potential to interact with any other likely residual effects.
- The reasonable assumption that all Primary and Tertiary Mitigation and additional (Secondary) Mitigation referred to in **ES Volume 1, Chapters 7** to **13** inclusive and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment** would be implemented.

Significance Criteria

14.2.3 The significance of each individual likely significant environmental effect was defined according to the methodologies outlined in **ES Volume 1, Chapters 7** to **13** inclusive and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**. However, once again, there are no accepted methodologies which allow for the establishment of the relative significance of effect interactions. This is partially due to the fact that the assessment of effect interactions do not compare 'like effects' with 'like effects'.

14.2.4 In view of the above, this assessment can only identity the range of likely significant residual environmental effects (and their significance as defined in **ES Volume 1, Chapters 7** to **13** inclusive and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**) upon a particular receptor or group of receptors. In order to undertake a worst-case scenario assessment, it was assumed that the combination of two or more significant residual effects from two or more environmental topics (i.e. **ES Volume 1, Chapters 7** to **13** inclusive and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**) upon a particular receptor or group of receptors would constitute a **significant** effect interaction.

14.3 Likely Residual Effect Interactions of the Development and their Significance

The Works

14.3.1 **Table 14.1** summarises all likely significant residual effects associated with the Works, as identified in **ES Volume 1, Chapters 7** to **13** inclusive and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**. **Table 14.1** also identifies the receptor or groups of receptors affected by the significant residual effects.

Table 14.1: Likely Significant Residual Effects of the Works

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
Socio-economics (SE)		
SE1 - Direct employment generated from the Works and GVA added by direct employment	**Direct, short to medium-term, beneficial** effect of **moderate significance** at the **district level.**	The district and regional economy.

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
generated from the Works**:**	and **Direct, short to medium-term, beneficial** effect of **minor significance** at the **regional level.**	
Air Quality (AQ)		
No significant residual effects associated with the Works.		
Noise and Vibration (NV)		
NV1 – Noise generated from physical processes during the Works.	**Direct, temporary, short to medium term, local** effects of **moderate adverse significance.**	Residential and non-residential receptors surrounding the Site, specifically: • 1 – 12 Fairweather House, 1 – 18 Bunning House, 45 / 171 Bakersfield, 2 and 4 Dalmeny Avenue, 53 – 85 Penderyn Way, 1 – 18 Crayford House, 54 – 70 Dalmeny Way, 2 / 2a Parkhurst Road, 2 – 12 Trecastle Way and 376 – 380 Camden Road.
	Direct, temporary, short to medium term, local effects of **minor adverse significance.**	Residential and non-residential receptors surrounding the Site, specifically: • 13 - 24 and 25 - 40 Fairweather House, 1 - 18 McMorran House, 41 - 53 Crayford Road, 36 / 154 / 155 / 225 / 226 Bakersfield, 6 - 52 and 72 – 122 Dalmeny Avenue, 1-23 Poynder Court, 388 – 390 and 392 Camden Road, 2 / 2A Parkhurst Road and 2 – 5 Prospect Place.
NV2 – Vibration generated from physical processes during the Works.	**Direct, temporary, short to medium term, local** effects of **moderate adverse significance.**	Residential and non-residential receptors surrounding the Site, specifically: • 1 – 12 Fairweather House, 1 – 18 Bunning House, 45 / 171 Bakersfield, 2, 4 and 54 – 70 Dalmeny Avenue.
	Direct, temporary, short to medium term, local effects of **moderate adverse significance.**	Residential and non-residential receptors surrounding the Site, specifically: • 1 – 18 Crayford House, 41 – 53 Crayford Road, 53 – 85 Penderyn Way, 1 - 8

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
		Dolphin Court, 2 – 12 Trecastle Way, 376 – 380 Camden Road and 2 – 5 Prospect Place.
Ecology (ECO)		
ECO1 - Loss of / disturbance to on-Site habitats.	**Direct, local, permanent** effect of **minor adverse significance.**	On-Site habitats.
ECO2 - Potential displacement / harm to bird species.	**Indirect, local, permanent** effect of **minor adverse significance.**	Bird Species on-Site.
ECO3 - Potential displacement / harm to bats.	**Direct, local, permanent** effect of **major adverse significance.**	Bat species on and off Site.
Wind Microclimate (WM)		
No significant residual effects associated with the Works.		
Daylight, Sunlight and Overshadowing (DSO)		
No significant residual effects associated with the Works.		
Greenhouse Gases (GHG)		
GHG1 –Greenhouse gas emissions associated with the Works.	**Indirect, long-term, global** effect of **adverse significance.**	Global atmosphere.
Townscape, Visual and Above Ground Built Heritage (TVAGBH)		
TVAGBH1 – effects on heritage significance or appreciation of the heritage significance of built heritage assets.	**No effects** and **Direct, temporary, short to medium term, local** effects**, minor** in scale and **adverse** in nature**.**	Built heritage assets.
TVAGBH2 – Effects on townscape character.	**Direct, temporary, short to medium-term, local** effects**, insignificant to moderate** in scale and **adverse** in nature**.**	Townscape character areas.
TVAGBH3 – Effects on visual receptors from close local views.	**Direct, temporary, short to medium term, local** effects**, moderate** in scale	Occupants of residential and non-residential properties surrounding the Site.

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
	and **adverse** in nature**.**	Visual receptors (on highway, walking, passing by).
TVAGBH4 – Effects on visual receptors at medium distance views.	**Direct, temporary, short to medium term, local** effects**, minor** in scale and **adverse** in nature**.**	Visual receptors (on highway, walking, passing by).

14.3.2 **Table 14.2** reorganises the results of **Table 14.1** so that the full range of likely residual environmental effects arising from the Works upon specific receptors or groups of receptors can be easily identified. As noted earlier in this Chapter, the combination of two or more significant residual effects from two or more environmental topics upon a particular receptor or group of receptors was judged as a **significant** effect interaction.

Table 14.2: Likely Significant Effect Interactions of the Works

Receptor / Group of Receptors Affected	Likely Significant Residual Effects of the Works	Would Significant Effect Interactions be Experienced?
The district and regional economy.	SE1.	No.
Occupants of residential and non-residential receptors surrounding the Site.	NV1, NV2 and TVAGBH3.	Yes, to the following properties: • 1 – 12 Fairweather House, 1 – 18 Bunning House, 45/171 Bakersfield, 2, 4 and 54 – 70 Dalmeny Avenue, 1 – 18 Crayford House, 41 – 53 Crayford Road, 53 – 85 Penderyn Way, 2 – 12 Trecastle Way, 376 – 80 Camden Road and 2 -5 Prospect Place.
On-Site habitats.	ECO1.	No.
Bird species.	ECO2.	No.
Bat species.	ECO3.	No.
Global atmosphere.	GHG1.	No.
Built heritage assets.	TVAGBH1.	No.
Townscape character areas.	TVAGBH2.	No.
Visual receptors (on highway, walking, passing by).	TVAGBH3 and TVAGBH4.	No.

14.3.3 **Table 14.2** demonstrates that significant residual effect interactions attributable to the Works would be anticipated to some residential properties for some periods during the demolition and construction activities relating to noise, vibration and changes to views of the Site. However, the noise and vibration effects would be temporary and exist for a limited period of time and visual effects would change throughout the five year period depending on the Works being undertaken. Accordingly, the periods of these residual effects interacting at the same time would be limited. As such, no additional mitigation over and above that already stated was considered necessary.

The Completed and Operational Development

14.3.4 **Table 14.3** summarises all likely significant residual effects associated with the completed and operational Development, as identified in **ES Volume 1, Chapters 7** to **13** inclusive and **ES Volume 2, Townscape, Visual and Above Ground Built Heritage Assessment**. **Table 14.3** also identifies the receptor or groups of receptors affected by the significant residual effect.

Table 14.3: Likely Significant Residual Effects of the Completed and Operational Development

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
Socio-economics (SE)		
SE2 - Net additional employment opportunities.	**Direct, long-term** and of **minor beneficial significance** at the **district level.**	The district economy.
SE3 - Gross Value Added to the economy.	**Direct, long-term** and of **minor beneficial significance** at the **district level.**	The district economy.
SE4 - Local expenditure from residents of the completed and operational Development.	**Direct, long-term** and of **major beneficial significance** at the **district level** and **Direct, long-term** and of **moderate beneficial significance** at the **regional level.**	The district and regional economy.
SE5 - Additional Council Tax receipts.	**Direct, long-term** and of **minor beneficial significance** at the **district level.**	The district economy.
SE6 – Delivery of housing.	**Direct, long-term** and of **major beneficial significance** at the **district level.**	The district population.

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
SE7 – Provision of play space.	**Direct, long-term** and of **minor beneficial significance** at the **district level.**	The district population.
Air Quality (AQ)		
No significant residual effects would be anticipated for the completed and operational Development.		
Noise and Vibration (N&V)		
No significant residual effects would be anticipated for the completed and operational Development.		
Ecology (ECO)		
ECO4 - Long-term change in habitat type.	**Direct, local, long-term** effect of **minor beneficial significance.**	On-Site habitats created as part of the Development.
ECO5 - Long-term change in provision for protected species.	**Direct, local, long-term** effect of **minor beneficial significance.**	Protected species on and off Site.
Wind Microclimate (WM)		
WM1 – Thoroughfares on-Site.	**Direct, long-term, local** effects of **moderate beneficial significance** to **Direct, long-term, local** effects of **minor beneficial significance**.	Future pedestrian users of the Site using on-Site thoroughfares.
WM2 – Ground level play areas and other mixed-use amenity spaces.	**Insignificant** to **direct, long-term and local** effects of **minor beneficial significance.**	Future pedestrian users of the Site using on-Site ground level play areas and mixed-use amenity spaces.
WM3 – Elevated level amenity spaces.	**Direct, long-term and local** effects of **minor beneficial significance**.	Future residents of the Development using the elevated level amenity spaces.
WM4 – Entrances.	**Insignificant** to **direct, long-term, local effects** of **minor beneficial significance**.	Future pedestrian users of the Site using on-Site entrances.
Daylight, Sunlight and Overshadowing (DSO)		
DSO1 - Long-term changes to the duration and quantum of daylight to	**Insignificant**	The following receptors surrounding the Site would experience minor

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
existing residential properties surrounding the Site as a result of the completed Development.	and **Direct**, **long-term**, **local** likely effects of **minor adverse significance** and **Direct**, **long-term**, **local** likely effects of **moderate adverse significance** and **Direct**, **long-term**, **local** likely effects of **major adverse significance.**	adverse effects: • 72-122 Dalmeny Avenue, 30-52 Dalmeny Avenue, 6-28 Dalmeny Avenue, 376 Camden Road, Poynder Court, 388 Camden Road, 390 Camden Road, 1-12 Fairweather House, 13-24 Fairweather House, Bunning House, 43 Crayford Road, 47 Crayford Road, 49 Crayford Road, 25 Trecastle Way, 23 Trecastle Way, 69 Penderyn Way, 67 Penderyn Way and 65 Penderyn Way. The following receptors surrounding the Site would experience moderate adverse effects: • 275 Camden Road, 2 Parkhurst Road & 291 A-C Camden Road, Crayford House, Bakersfield Estate, 85 Penderyn Way, 83 Penderyn Way, 81 Pendern Way, 79 Penderyn Way, 77 Penderyn Way, 75 Penderyn Way, 73 Penderyn Way and 71 Penderyn Way. The following receptor surrounding the Site would experience major adverse effects: • 2-5 Prospect Place.
DSO2 - Long-term changes to the duration and quantum of sunlight to existing residential properties surrounding the Site as a result of the completed Development.	**Insignificant** to **direct**, **long-term**, **local** likely effects of **minor adverse significance.**	The following receptors surrounding the Site would experience minor adverse effects: • 13-24 Fairweather House, 43 Crayford Road, Bakersfield Estate – Block 1, 85 Penderyn Way.
DSO3 - Long-term changes to the duration and quantum of sunlight to existing amenity areas surrounding the Site as a result of the completed Development.	**Insignificant** and **Direct, long-term, local** effects of **minor adverse significance** and **Direct**, **long-term**, **local** effects of	The following receptors surrounding the Site would experience minor adverse effects: • 41 Crayford Road, 43 Crayford Road, 26 Bakersfield Estate, 44 Bakersfield Estate, 77 Penderyn Way and 79 Penderyn Way.

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
	moderate adverse significance. and **Direct**, **long-term**, **local** effects of **major beneficial significance.**	The following receptors surrounding the Site would experience moderate adverse effects: • 85 Penderyn Way, 83 Penderyn Way, 81 Penderyn Way and 45 Bakersfield Estate. The following receptors surrounding the Site would experience major beneficial effects: • 31 Bakersfield Estate, 30 Bakersfield Estate, 29 Bakersfield Estate and 28 Bakersfield Estate.
Greenhouse Gases (GHG)		
GHG2 – Greenhouses gas emissions associated with the completed and operational Development.	**Indirect, long-term, global** effects of **adverse significance.**	Global atmosphere.
Townscape, Visual and Above Ground Built Heritage (TVAGBH)		
TVAGBH5 - Effects on built heritage assets including heritage significance or appreciation of the heritage significance of built heritage assets.	**Insignificant** and **Indirect, long term** effects which are **minor in scale** and **neutral in nature** and **Indirect, long term** effects which are **minor in scale** and **adverse in nature.**	Heritage assets and Conservation Areas in proximity to the Site. Heritage asset to be adversely affected is former Camden Road New Church.
TVAGBH6 – Effects on townscape character and quality.	**Insignificant** and **Indirect, long term** effects which are **moderate in scale** and **beneficial in nature** and **Indirect, long term** effects which are **moderate in scale** and **neutral in nature**.	Townscape Character Areas.

Topic and Type of Significant Residual Effect	Likely Significance of Residual Effect	Receptor / Group of Receptors Affected
TVAGBH7 – Effects on visual receptors as a result of changes in short, medium and long distance views towards the Site.	**Insignificant** and **Indirect, long term** effects which are **minor to major** in scale and **neutral** in nature and **Indirect, long term** effects which are **moderate to major** in scale and **beneficial** in nature and **Indirect, long term** effects which are **moderate** in scale and **adverse** in nature.	Occupants of residential and non-residential properties surrounding the Site. Visual receptors (on highway, walking, passing by).

14.3.5 **Table 14.4** reorganises the results of **Table 14.3** so that the full range of likely residual environmental effects airing from the completed and operational Development upon specific receptors or groups of receptors can be easily identified. As noted earlier in this Chapter, the combination of two or more significant residual effects from two or more environmental topics upon a particular receptor or group of receptors was judged as a **significant** effect interaction.

Table 14.4: Likely Significant Effect Interactions of the Completed and Operational Development

Receptor / Group of Receptors Affected	Likely Significant Residual Effects of the Completed and Operational Development	Would Significant Effect Interactions be Experienced?
District economy.	SE2, SE3, SE4 and SE5.	Yes, however they would be beneficial.
Regional economy	SE4.	No.
District population.	SE6 and SE7.	Yes, however they would be beneficial.
On-Site habitats created as part of the Development.	ECO4.	No.
Protected species on and off Site.	ECO5.	No.
On-Site pedestrians, users of the Site and residents of the Development.	WM1, WM2, WM3, WM4.	Yes, however they would be beneficial.

Receptor / Group of Receptors Affected	Likely Significant Residual Effects of the Completed and Operational Development	Would Significant Effect Interactions be Experienced?
Occupants of residential and non-residential properties surrounding the Site.	DSO1, DSO2, DSO3 and TVAGBH7.	Yes. to the following properties: 13 – 24 Fairweather House, Bakersfield Estate, 43 Crayford Road, 77– 85 Penderyn Way.
Global atmosphere.	GHG2.	No.
Heritage assets and Conservation Areas in proximity to the Site.	TVAGBH5.	No.
Townscape Character Areas.	TVAGBH6.	No.
Visual receptors (on highway, walking, passing by).	TVAGBH7.	No.

14.3.6 **Table 14.4** demonstrates that significant adverse residual effect interactions attributable to the completed and operational Development would be limited to the following:

- Occupants of properties around the Site would experience significant effect interactions between changes to daylight, sunlight and / or overshadowing and changes to the visual setting of the Site. Some effects would be beneficial, whilst others would be adverse and therefore some receptors would not necessarily experience a worsened adverse effect. No additional mitigation was considered necessary.

14.3.7 No further significant adverse residual effect interactions would be anticipated for the completed and operational Development.

14.4 Conclusions

14.4.1 Significant adverse residual effect interaction during the Works would be limited, comprising the following:

- Occupants of properties around the Site potentially experiencing noise and vibration from the physical processes associated with the Works and changes to the visual setting of the Site.

14.4.2 Significant adverse residual effect interaction once the Development is completed and operational would also be limited, comprising:

- Occupants of properties around the Site experiencing changes to daylight, sunlight and / or overshadowing and changes to the visual setting of the Site.

14.4.3 Considering the above, no additional mitigation would be required to address significant effect interactions during either the Works or once the Development was completed and operational.

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