



CHARLTON
RIVERSIDE
P H A S E O N E

ENVIRONMENTAL STATEMENT ADDENDUM
VOLUME IA: MAIN TEXT

Rockwell

1A INTRODUCTION

Introduction

- 1.1 A full planning application ('the application') was submitted by Leopard Guernsey Anchor Propco Limited ('the Applicant') in December 2016 for the redevelopment ('the 2017 proposed development') of the Charlton Riverside Site in the Royal Borough of Greenwich (RBG) to provide a residential led, mixed use development, under application reference 16/4008/F.
- 1.2 The 2016 application was accompanied by an Environmental Statement (ES) prepared by Ramboll Environment and Health Limited (hereafter referred to as Ramboll) and a team of technical specialists, which comprised the following documents:
- Volume 1: Main ES;
 - Volume 2: Townscape, Visual and Heritage Impact Assessment (TVHIA);
 - Volume 3: Technical Appendices (including Historic Environment Assessment (HEA) and Flood Risk Assessment (FRA));
 - Non-Technical Summary (NTS).
- 1.3 Since the December 2016 application was submitted, the scheme was amended (**the '2017 proposed development'**) to respond to consultation feedback. As such, an amendment to the 2016 planning application was submitted in December 2017 and the ES was refreshed to accord with the revised scheme. The ES is hereafter referred to as the '2017 ES'.
- 1.4 The 2017 proposed development was refused by the Royal Borough of Greenwich (RBG) following the submission of the application at the committee hearing in July 2018. The **application was 'Called In'** by the Greater London Authority (GLA) in August 2018 on the basis the 2017 proposed development largely met with local plans and that it would significantly contribute to the new housing targets for the area. These targets are proposed to increase in the New Draft London Plan.
- 1.5 The 2017 proposed development has since been amended following the RBG and GLA comments. **Feedback was provided in respect of key aspects of the 2017 proposed development's design.** As a result of the consultation feedback, the 2017 proposed development has been amended with respect to block heights, the area schedule, car park access and ventilation intakes, energy centre location and the proposed east-west route along Anchor and Hope Lane. The 2017 proposed development as **amended is hereafter referred to as 'the amended proposed development'**.
- 1.6 Updated planning application drawings have been prepared and submitted to support the amended proposed development. This ES Addendum has also been prepared to support the planning application for the amended proposed development.

ES Addendum Approach

- 1.7 Updated environmental impact assessments have been undertaken to assess the potential impacts and likely effects of the amended proposed development as a whole, accounting for the proposed amendments to the 2017 proposed development. The outcomes of these assessments are presented in this addendum document ('the 2018 ES addendum'), which comprises the following volumes:
- ES Volume 1A: Environmental Statement Main Report Addendum;
 - ES Volume 2A: Townscape, Visual and Heritage Impact Assessment Addendum; and
 - ES Volume 3A: Technical Appendices Addendum.
- 1.8 In addition, a replacement Non-Technical Summary has been prepared.

- 1.9 This document comprises ES Volume 1A.
- 1.10 The 2018 ES addendum should be read alongside the 2017 ES.
- 1.11 In accordance with the transitional arrangements set out in Part 12 Regulation 76 (2a) of the 2017 EIA Regulations, the updated impact assessments have been undertaken and the 2018 ES addendum prepared in accordance with the 2011 EIA Regulations (as amended in 2015).

Development Context

- 1.12 The application site location, the application site context and the application site description as set out in the 2017 ES remain valid for the amended proposed development.

Planning Context

Planning Policy Context

- 1.13 Since submission of the 2017 ES, the revised National Planning Policy Framework (NPPF) (July 2018¹) has been published and has been taken into consideration for the amended proposed development. There are no amendments to the NPPF which affect the assessments within each of the technical chapters.
- 1.14 In addition, the Draft New London Plan, which follows on from the Consultation Draft Plan (2017), was published in August 2018². Although the Draft New London Plan document is not considered to be a material planning consideration for the amended proposed development, each of the technical assessments referenced the relevant content of the draft in the 2017 ES. These remain valid and as such, no updates are required in the technical assessments of the 2017 ES.
- 1.15 Additional relevant guidance updates are addressed in each individual technical chapter of the 2018 ES addendum.

Planning History

- 1.16 The planning history as set out in the 2017 ES remains valid for the amended proposed development, save for the addition of the 2017 proposed development's planning application (16/4008/F), which is updated by the amended proposed development.

Proposed Development Summary

- 1.17 The proposed development as described on the application form is as follows:

"Demolition of existing buildings and erection of eleven buildings ranging from 2 to 10 storeys in height for Class C3 residential use, with flexible uses comprising Class B1 (Business), Class A1 – A3 (Retail/Restaurant), Class D1 (Community) and Class D2 (Leisure) at ground floor and first floor level, alterations to existing vehicular access and creation of new pedestrian access from Hope and Anchor Lane and the riverside, creation of new areas of open space and landscaping together with the

¹ Secretary of State for Ministry of Housing, Communities and Local Government, 2018. National Planning Policy Framework.

² The Greater London Authority, 2018. Draft New London Plan showing Minor Suggested Changes. London.

provision of associated car parking, cycle spaces, refuse and recycling storage, plant and all other associated works.” [This description remains unchanged].

1.18 In summary, the proposed development would provide:

- 771 residential units;
- 3,280 m² (GIA) of flexible business/retail/restaurant/café/leisure use;
- 496 m² (GIA) of flexible community/leisure use;
- 338 m² (GIA) of community space for use as a creche;
- Up to 1,400 residential and commercial cycle spaces; and
- Two basements, providing up to 208 car parking spaces (148 within Plot A and 60 within Plot B).

1.19 The landscape proposals for the proposed development would deliver considerable public realm, biodiversity and amenity enhancement.

Applicant

1.20 The Applicant as set out in the 2017 ES remain valid for the amended proposed development.

Project Team

1.21 The project team as set out in the 2017 ES remains the same for the amended proposed development.

Environmental Statement

Environmental Statement Structure

1.22 The full Environmental Statement (ES) comprises:

- Replacement Non-Technical Summary;
- 2017 ES
 - Volume 1: Environmental Statement Main Report;
 - Volume 2: Townscape, Visual and Heritage Impact Assessment;
 - Volume 3: Technical Appendices;
- 2018 ES addendum
 - Volume 1A: Environmental Statement Main Report Addendum;
 - Volume 2A: Townscape, Visual and Heritage Impact Assessment Addendum; and
 - Volume 3A: Technical Appendices Addendum.

1.23 The 2018 ES addendum should be read in conjunction with the 2017 ES.

1.24 The 2018 ES addendum comprises the following documents:

- Volume 1A: ES Main Report Addendum, comprising the following chapters:
 - Table of Contents
 - Chapter 1A: Introduction
 - Chapter 2A: EIA Process and Methodology
 - Chapter 3A: Alternatives and Design Evolution
 - Chapter 4A: Proposed Development Description
 - Chapter 5A: Demolition and Construction
 - Chapter 6A: Socio-Economics

- Chapter 7A: Transport
- Chapter 8A: Air Quality
- Chapter 9A: Noise and Vibration
- Chapter 10A: Archaeology
- Chapter 11A: Daylight, Sunlight, Overshadowing and Solar Glare
- Chapter 12A: Wind Microclimate
- Chapter 13A: Cumulative Effects
- Chapter 14A: Residual Effects
- Glossary of Terms and Abbreviations
- Volume 2A: Townscape, Visual and Heritage Impact Assessment Addendum
- Volume 3A: Technical Appendices Addendum:
 - Technical Appendix 6.1A: Pupil Forecast and Net Capacity Data
 - Technical Appendix 7.1A: Transport Assessment Addendum (TAA)
 - Technical Appendix 8.1A: Traffic Data
 - Technical Appendix 9.4A: Site Suitability Update
 - Technical Appendix 11.1A: Drawings showing the baseline and proposed development scenarios
 - Technical Appendix 11.2A: Detailed daylight; Vertical Sky Component (VSC), No Sky-Line Contour (NSC), Average Daylight Factor (ADF) and sunlight; Annual Probable Sunlight Hours (APSH) results for existing surrounding properties
 - Technical Appendix 11.3A: Sunlight amenity assessment
 - Technical Appendix 11.4A: Transient overshadowing assessment
 - Technical Appendix 11.5A: Solar glare assessment

1.25 The outcomes of the 2017 EIA and 2018 EIA have been summarised within a fully updated NTS which will replace and supersede the NTS submitted as part of the 2017 ES. The Replacement NTS will outline the key findings of the EIA in non-technical language to assist the reader.

Content of the ES

1.26 The required content of the ES is set out in Schedule 4 of the EIA Regulations. Table 1.2 presents these requirements and indicates where in this ES the requirements have been met.

Table 1. 1: Information which is required in an ES (Schedule 4 of the EIA Regulations)		
Required Information		Section of ES
Part I		
1	Description of the development, including in particular – <ul style="list-style-type: none"> • a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases; • a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used; • an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the development. 	ES Chapter 4 and 4A: Proposed Development Description ES Chapter 5 and 5A: Demolition and Construction
2	An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account	ES Chapter 3 and 3A: Alternatives and Design

Table 1. 1: Information which is required in an ES (Schedule 4 of the EIA Regulations)	
Required Information	Section of ES
	the environmental effects.
3	A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.
4	A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from: <ul style="list-style-type: none"> the existence of the development the use of natural resources; the emission of pollutants, the creation of nuisances and the elimination of waste, and the description by the applicant or appellant of the forecasting methods used to assess the effects on the environment.
5	A description by the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
6	A non-technical summary of the information provided under paragraphs 1 to 5 of this Part.
7	An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant or appellant in compiling the required information.
Part II	
1	A description of the development comprising information on the site, design and size of development.
2	A description of the measures envisaged in order to avoid, reduce, and, if possible remedy significant adverse effects.
3	The data required to identify and assess the main effects which the development is likely to have on the environment.

Table 1. 1: Information which is required in an ES (Schedule 4 of the EIA Regulations)	
Required Information	Section of ES
	Evolution and ES Volume 2A
4	An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.
5	A non-technical summary of the information provided under paragraphs 1 to 4 of this Part.

Good Practice

1.27 Good practice in the preparation of an ES is defined in a number of sources, with more specific issues covered by ES review checklists. In terms of widely applicable and practical guidance, and consistent with the approach followed for the 2017 ES, the IEMA Quality Mark indicator check has been referenced in producing this ES. Ramboll Environment and Health UK Ltd is a Registrant of the IEMA Quality Mark.

2A EIA PROCESS AND METHODOLOGY

Introduction

- 2.1 This chapter of the 2018 ES addendum sets out the general approach to the process and to the methodology that is adopted when undertaking an EIA. It describes any updates or amendments (where relevant) to the legislative framework in which the EIA for the amended proposed development has been undertaken. The post-submission consultation process is summarised, and any amendments to the assessment methodology outlined within the 2017 ES, including an amended list of cumulative schemes. This chapter should be read alongside Volume 1 ES Chapter 2: EIA Process and Methodology of the 2017 ES.
- 2.2 Whilst the approach and methodology to the EIA are described in this chapter (and the 2017 ES chapter), further detail on how the methodology was tailored to each technical aspect of the EIA is presented in the relevant technical assessment chapters of the 2017 ES and the 2018 ES addendum.
- 2.3 The technical appendices that accompanied ES Chapter 2: EIA Process and Methodology of the 2017 ES remain valid for the amended proposed development.

Environmental Impact Assessment

- 2.4 The environmental impact assessment section set out in the 2017 ES remains valid for the amended proposed development.

EIA Process

- 2.5 The EIA screening and scoping processes set out in the 2017 ES remain valid for the amended proposed development. Additionally, the outcome of the EIA scoping process, inclusive of potentially significant and insignificant environmental issues, remains valid.
- 2.6 Due to the nature of the amended proposed development, the following technical chapters and volumes have been updated in the 2018 ES addendum and should be read alongside the corresponding technical chapter in the 2017 ES:
- Socio Economics (Chapter 6A);
 - Transport and Accessibility (Chapter 7A);
 - Air Quality (Chapter 8A);
 - Noise and Vibration (Chapter 9A);
 - Archaeology (Chapter 10A);
 - Daylight, Sunlight, Overshadowing and Solar Glare (Chapter 11A) – this is a full replacement chapter;
 - Wind Microclimate (Chapter 12A);
 - Cumulative Effects (Chapter 13A);
 - Townscape, Visual and Heritage Impact Assessment (ES Volume 2A).
- 2.7 Standalone reports submitted in respect of ground conditions, ecology, flood risk and historic environment that formed technical appendices to the 2017 ES have not been updated as their conclusions remain valid for the amended proposed development. However, Technical Appendix 9.4: Site Suitability in relation to the acoustic environment has been updated given the nature of the proposed changes and an addendum has been prepared for the Transport Assessment.

- 2.8 In addition, two reports; the Overheating Assessment and Energy Strategy, have also been updated and are submitted alongside this 2018 ES addendum.

Following the submission of the application, no further consultations/public engagements have been undertaken in respect of the amended proposed development, other than the post submission consultations with the Greater London Authority (GLA) associated with the Call-In. This addendum does also consider those amendments made following submission of the 2017 proposed development following the RBG comments.

Scope of EIA

- 2.9 The scope of EIA as set out in the 2018 ES remains valid for the amended proposed development.

EIA Approach

- 2.10 The consideration of alternatives, baseline characterisation and sensitive receptors set out in the 2018 ES remains valid for the amended proposed development.
- 2.11 The basis of the EIA and the supporting documents that have been considered, as set out in the 2018 ES, remain valid; however, updated as appropriate for the amended proposed development now under consideration.
- 2.12 The assessment methodology, as set out in the 2018 ES remains valid for the amended proposed development.
- 2.13 The assessment scenarios as set out in the 2018 ES remain valid for the amended proposed development. However, the demolition and construction programme as considered within the 2017 ES was to commence in Q1 2019 with completion in Q4 2022. The anticipated demolition and construction programme has been moved to allow a start date of Q1 2022 and completion date of Q4 2023.
- 2.14 The overall phasing, distribution of work and peak construction vehicle movements would remain the same. Additionally, from the historical baseline traffic data considered, the underlying trend over the past four to six years is that traffic levels are stable. Whilst looking further back, the traffic flow levels have decreased significantly from 2000. This was presented in the Transport Assessment 2016 contained within ES Volume 3: Technical Appendix 7.1.
- 2.15 As such, the change in demolition and construction period would not affect the construction phase assessments as presented in the 2017 ES within each of the Technical Chapters 6 – 12 and therefore these have not been considered further in this addendum.
- 2.16 The opening year has been revised from 2023 as presented in the 2017 ES, to 2024. Given the background traffic levels have remained stable for the past few years, no background growth factor was being applied for future baseline forecasts, as agreed with RBG and TfL for the assessment. Therefore the revised opening date of 2024 would, under this agreed methodology for future forecasts, result in the same assessment baseline traffic. Thus the operational traffic flows used within the 2017 ES remain robust and valid for the purposes of assessment within Chapter 7: Transport, Chapter 8: Air Quality and Chapter 9: Noise and Vibration.
- 2.17 The significance criteria as set out in the 2018 ES remain valid for the amended proposed development.

- 2.18 The methodology for intra and inter project cumulative effects as set out in the 2018 ES remains valid for the amended proposed development.
- 2.19 The list of cumulative schemes as set out in the 2018 ES remains valid for the amended proposed development, however there have been five additional applications submitted since the submission of the 2017 ES within the proximity of the site (Table 2.2). The potential effects associated with each of these cumulative schemes has been considered within each of the addendum technical chapters (ES chapters 6A-12A).

Table 2.2: Additional Cumulative Developments Since 2017 ES

Number	Name and Application Reference	Development Description
1	Flint Glass Wharf, 3 Herringham Road (ref: 18/0732/F)	Hybrid Application: i) Detailed Planning Permission for the demolition of existing buildings & structures on site and redevelopment of the eastern area (Phase 1) for the erection of 2 buildings between 7 & 9 storeys to provide 146 homes (8xStudio, 82x1-bed, 34x2-bed & 22x3-bed) & 482 sqm GEA of non-residential floor space Classes A1-A4 & Class B1 (Energy Centre 240 sqm) & new public open space & public realm, delivery & servicing space, 35 car parking spaces and 217 Cycle Spaces ii) Outline planning permission (landscaping, scale & appearance reserved) to provide up to 45,000 sqm floorspace GEA, comprising up to 354 residential units and up to 1,300 sqm of non-residential floor space within Classes A1-A4, Class B1, Class D1 & D2 use. Validated 27 July 2018
2	40 Victoria Way (ref: 17/1795/F)	Demolition of existing warehouse and redevelopment of the site to provide 341 residential units in blocks ranging from 3 to 10 storeys, creation of 303 sqm of community floorspace (Use Class D1/D2), 144 car parking spaces and associated cycle parking, refuse and landscaping. The proposal affects the setting of a listed building (Fossdene Primary School - Grade II). Approved 27 March 2018
3	Greenwich Millennium Village (Plots 302, 303, 304) (ref: 18/1318/R)	Submission of Reserved Matters (Appearance, Layout, Scale and Landscaping) pursuant to condition 2 of Outline Planning Permission dated: 24/12/2014 (Reference 14/1633/MA) for the construction of 170 residential dwellings and 613 sqm GEA Class A1-A4 retail/commercial units, associated infrastructure, landscape and car parking plus temporary vehicle turning area for refuse/servicing vehicles and temporary GMV345 Concierge and Management Suite, situated immediately south of the site. Approved 5 September 2018
4	Greenwich Millennium Village (Plots 204, 205) (Ref: 17/1631/R)	Submission of Reserved Matters (Appearance, Layout, Scale and Landscaping) pursuant to Condition 2 of Planning Permission dated 24/12/2014 (Reference: 14/1633/MA) for the construction of 112 residential units with associated landscaping, infrastructure and parking. Approved 21 November 2017
5	Greenwich Millennium Village (Plot 201) (Ref: 18/0825/R)	Submission of Reserved Matters (Appearance, Layout, Scale and Landscaping) pursuant to condition 2 of Planning Permission dated: 23/12/2014 (Reference 14/1633/MA) for the construction of 66 residential dwellings plus associated infrastructure, landscape and car parking on Plot 201. Submitted 16 March 2018

- 2.20 The assumptions and limitations as set out in the 2017 ES remain valid for the amended proposed development.

Technical Assessment Chapters

- 2.21 In respect of the technical assessment chapters, a new chapter for each technical assessment presented in the 2017 ES is submitted within this ES, which summarises key changes to the amended proposed development and should be read in conjunction with the 2017 ES technical chapters, with the exception of the Daylight, Sunlight, Overshadowing and Solar Glare Chapter (ES chapter 11A) which has been fully replaced.

3A ALTERNATIVES AND DESIGN EVOLUTION

Introduction

- 3.1 This chapter of the 2018 ES Addendum reports on the design evolution process undertaken by the Applicant following submission of the application. The chapter outlines the main reasons for the proposed amendments and describes how the proposals have evolved since the 2017 proposed development in response to the environmental and planning context. The predominant consideration has been comments provided by the GLA and the RBG on the 2017 proposed development.
- 3.2 This chapter should be read alongside Chapter 3: Alternatives and Design Evolution of 2017 ES Volume 1.

Development Objectives and Considerations

- 3.3 The development objectives and considerations set out in the 2017 ES remain valid for the amended proposed development.
- 3.4 The Draft London Plan has been reviewed, however, it is noted that limited weight should be afforded to this document due to its draft status.
- 3.5 The opportunities and environmental considerations set out in the 2017 ES remain valid for the amended proposed development.

Alternatives

- 3.6 The 'do nothing' scenario and alternative sites set out in the 2017 ES remain valid for the amended proposed development.

Post Submission Alternative Design

- 3.7 Since submission of the application for the 2017 proposed development in December 2017, a number of design amendments have been made in response to ongoing feedback from the GLA and RBG.
- 3.8 The amendments comprise the following:
- Reduction in storey height to Buildings G, H and J by 2 floors;
 - Increase in storey height to buildings:
 - C and D by 1 floor; and
 - E and F (from 6, 7 and 9 floors) to 8, 9 and 10 floors.
 - Increase in percentage of affordable housing from 21.5 % to 40 % habitable rooms to closer align with Local Plans;
 - A corresponding decrease in percentage of private housing from 78.5% to 60 % habitable rooms;
 - The east west link has been slightly realigned following the removal of the basement carpark entrance, with corresponding amendments to the seating area in front of the Community Centre space;
 - Design amendment to Building M's north corner (now curved) to accommodate the widening of the road at this location;

- Relocation of the flue from Building M to O;
- Relocation of the car park entrance to Building A and associated relocation of the car park vent to Building C (east façade) to introduce a more animated frontage along the east west link;
- Increase in long-stay residential bike storage to meet the Draft New London Plan requirements; and
- Increase in size of a number of the windows across all buildings to allow improved internal daylight and sunlight provision, resulting in the minor readjustment to the positioning of a number of balconies.

3.9 Landscaping amendments comprising:

- **Increased planting around Building M's north corner;**
- Implementation of roadside raingardens and the removal of one tree along the eastern road on Plot A, to accommodate two-way vehicular traffic into the new car park;
- New access to proposed duplex apartments;
- Additional terraces to three apartments within Building F; and
- Minor landscape amendments to planting area on ground floor and private amenity spaces.

Environmental and Design Considerations

- 3.10 The main environmental and design considerations that informed the proposed amendments can be summarised as follows:
- Buildings G, H and J were reduced in height to improve daylight and sunlight amenity for residential receptors around/along Atlas Gardens and Derrick Gardens to the north and west, and also to improve architectural design and visual appearance to match character of existing low-rise residential housing to the west.
 - Window sizes have been increased to improve internal daylight and sunlight amenity for units within the amended proposed development.
 - Alterations to the east to west link were made in order to improve pedestrian access across the amended proposed development and to align with the proposals set out in the Charlton Riverside Masterplan Supplementary Planning Document.
 - The new entrances to building C and J have been arranged suitability to provide wind mitigation at these locations.
 - The energy centre has been relocated to Building O
 - The relocation of the car park entrance to Building A, and vent to Building C at the opposite end of the car park, has been undertaken in order to introduce a more animated frontage along the east west link.

Consultation

3.11 The pre-application consultation set out in the 2017 ES remains valid for the amended proposed development.

Selected Option

3.12 The amended proposed development has sought to respond to comments from the GLA and RBG. The proposed amendments deliver an updated layout, height and massing option that improves daylight and sunlight amenity on surrounding receptors; improves the street environment and public access along the east west link; and increases the number of affordable units and one to two bed units.

Summary

3.13 The summary as presented in the 2017 ES remains valid.

4A PROPOSED DEVELOPMENT DESCRIPTION

Introduction

- 4.1 This chapter of the 2018 ES Addendum provides a description of the amended proposed development for the purposes of identifying and assessing the potential environmental impacts and likely environmental effects of the amended proposed development in the technical assessments of ES Volume 1A (Chapters 6-12). This chapter should be read alongside ES Chapter 4: Proposed Development Description of 2017 ES Volume 1.
- 4.2 A general description of the application site is provided in ES Volume 1 Chapter 1: Introduction of the 2017 ES, with more detailed descriptions provided in each technical assessment within ES Volume 1, 2 and 1A, and is therefore not repeated here.

Planning Application

- 4.3 The Applicant is submitting an addendum to the full planning application as submitted in December 2017 as a result of design changes. These amendments include:
- Reduction in storey height to buildings:
 - G by 2 floors;
 - H by 2 floors; and
 - J by 2 floors.
 - Increase in storey height to buildings:
 - C by 1 floor;
 - D by 1 floor; and
 - E and F by 1 to 2 floors to 8, 9 and 10 floors.
 - Alterations to the east west link to introduce a more animated frontage to Buildings A and C;
 - Relocation of the flue from Building M to O;
 - Relocation of the car park entrance and associated ventilation layout; and
 - Revisions to the landscaping strategy.
- 4.4 The updated full applications seeks permission for the following:
- "Demolition of existing buildings and erection of eleven buildings ranging from 2 to 10 storeys in height for Class C3 residential use, with flexible uses comprising Class B1 (Business), Class A1 – A3 (Retail/Restaurant), Class D1 (Community) and Class D2 (Leisure) at ground floor and first floor level, alterations to existing vehicular access and creation of new pedestrian access from Hope and Anchor Lane and the riverside, creation of new areas of open space and landscaping together with the provision of associated car parking, cycle spaces, refuse and recycling storage, plant and all other associated works."* [This description remains unchanged].
- 4.5 The amended proposed development would comprise the following:
- 771 residential units;
 - 3,280 m² (GIA) of flexible business/retail/restaurant/café/leisure use;
 - 496 m² (GIA) of flexible community/leisure use;
 - 338 m² (GIA) of community space for use as a creche;
 - Up to 1,400 residential and commercial cycle spaces; and

- Two basements, providing up to 208 car parking spaces (148 within Plot A and 60 within Plot B).

- 4.6 The landscape proposals for the amended proposed development would deliver considerable public realm, biodiversity and amenity enhancement.

Proposed Development

Site Arrangement

- 4.7 The general arrangement of buildings across the application site remains unchanged from that previously described in the 2017 ES.

Built Form, Height and Massing

- 4.8 Whilst the overall massing strategy set out in the 2017 ES remain valid, the strategy has been amended to reflect consultation feedback, with a number of buildings either reducing or increasing in height by up to two storeys as shown in Figure 4.1.
- 4.9 The eleven buildings range in height from two to ten storeys as per the 2017 ES.



Figure 4. 1: Amended Proposed Development Massing

- 4.10 The amended proposed development's block heights are shown in Table 4.1. The changes are a reflection of the addition of one floor to Buildings D, E and F, and the removal of two floors to Buildings G and J.

Building	No. of Storeys	Building Roof Height/Basement Depth (m AOD)	Building Roof Height/Basement Depth (m) Above/Below Ground Level	Top of the Building Maximum Height (m AOD)
Plot A - Building A	10	+35.525	+30.975	+39.525
Plot A - Building B	10	+36.050	+31.500	+40.050
Plot A - Building C	10	+36.250	+27.225 to +35.300	+39.300
Plot A - Building D	10	+35.150	+28.225 to +31.600	+36.400
Plot A - Building E	8	+29.150	+19.225 to +25.600	+30.400
Plot A - Building F	9-10	+35.200	+28.275 to +31.650	+36.450
Plot A - Building G	2-4	+16.525	+6.225 to +12.975	+17.775
Plot A - Building H	3-4	+16.150	+9.225 to +12.600	+17.775
Plot A - Basement Level	1	+1.150	-2.400	n/a
Plot B - Building J	5	+20.125	+16.575	+21.375
Plot B - Building K	10	+35.725	+32.175	+39.725
Plot B - Building L	10	+35.725	+32.175	+39.725
Plot B - Building M	8-10	+35.575	+25.650 to +32.025	+37.825
Plot B - Building N	10	+35.575	+32.025	+36.825
Plot B - Building O	10	+36.550	+33.000	+38.850
Plot B - Podium	1	+7.750	+4.200	+7.750
Plot B - Basement Level	1	-0.375	-3.925	n/a

- 4.11 The built form as set out in the 2017 ES remains largely unchanged.
- 4.12 Minor amendments have been made with respect to the relocation of one entrance to Building J from along the south elevation into the recommended zone. This is in response to the request for more activation for these elevations.

Land Use

Land Use Types and Use Classes

- 4.13 The proposed amendments have resulted in minor changes to the area schedule, the non-residential uses are outlined in Table 4.2.
- 4.14 The proposed amendments have resulted in an additional 201 m² GEA of retail space. All other use classes have remained the same.

Land Use	GEA (m ²)	GIA (m ²)
Flexible work (Class B1)	3,250	3,097
Retail (Class A1-A3)	201	183
Creche use (Class D1/D2)	373	338
Community Use (Class D1/D2)	536	496

Residential Use

- 4.15 The total number of residential units remains unchanged from that previously described in the 2017 ES at 771.
- 4.16 The proposed amendments have resulted in an increase in social housing, from 21.5% to 37.9% of the unit tenure mix and a corresponding decrease in private housing (Table 4.3).
- 4.17 The amended residential unit mix is provided in Table 4.4. The reallocation of units from private to social housing has seen an increase in the number of one and two bed rental units from 12 and 15 to 47 and 46 respectively. The percentage of intermediate and private mixes remains relatively unchanged.

Tenure	Units
Private	479 (61.2%)
Social Housing	292 (37.9%)
TOTAL	771 (100%)

Unit Type	Total
Actual Rental Mix	
1 Bed	47 (28.5%)
2 Bed	46 (27.9%)
3 Bed/4 Bed	72 (43.6%)
Total	165 (100%)
Actual Intermediate Mix	
1 Bed	67 (52.8%)
2 Bed	58 (45.7%)
3 Bed	2 (1.6%)
Total	127 (100%)
Actual Private Mix	
1 Bed 1 person	115 (24%)
1 Bed 2 person	118 (24.6%)

Table 4.4: Amended Proposed Development Unit Mix

Unit Type	Total
2 Bed	197 (41.1%)
3 Bed	48 (10%)
4 Bed	1 (0.2%)
Total	479 (100%)

Land Use Distribution

- 4.18 The overarching principles of the land use distribution set out in the 2017 ES remain valid for the amended proposed development. However, the following amendments have been made:
- Relocation of a small proportion of residential units associated with the redistribution of storeys;
 - Relocation of the car park entrance to north eastern corner of application site;
 - Provision of pedestrian island along east west link; and
 - Relocation of the flue to Building O.
- 4.19 Amended representative layout plans for the amended proposed development are shown in Figures 4.2 to 4.6.



Figure 4.2: Amended Proposed Development (Basement Plot A)



Figure 4.3: Amended Proposed Development (Basement Plot B)



Figure 4.4: Amended Proposed Development (Ground Floor)



Figure 4.5: Amended Proposed Development (First Floor)



Figure 4.6: Amended Proposed Development (Third Floor)

Façade Detailing

- 4.20 The material palette and façade detailing set out in the 2017 ES remains valid for the amended proposed development.
- 4.21 There have however been two principal changes in order to improve internal daylight. Firstly, the position of balconies have been moved in order to reduce overshadowing of living rooms. Secondly, the window area has been increased where possible.

Landscaping and Public Realm

- 4.22 The landscape masterplan as described in the 2017 ES remains materially unchanged for the amended proposed development. **The amended proposed development's landscape masterplan is shown in Figure 4.7.** The following minor amendments have been made:
- The layout of Building M was slightly amended resulting in slight changes to the planting on the northern edge of Building M at ground floor and to two of the private amenity spaces at podium level;
 - The layout of Building A was amended to include a basement carpark entrance and new planters added to this location. A new planter replaces the private amenity terrace on the north western corner of the building.
 - The road on the eastern boundary has been widened to accommodate for two-way traffic into the basement carpark in Building A. As a result of this, two trees have been removed along this road along with areas of roadside planting and two trees have been relocated;
 - The east west route has been slightly realigned following the removal of the basement carpark entrance to Building F. Levels have been reviewed and revised along this road, the levels now show a more gradual incline over a longer distance;
 - The carpark entrance to Building F has been replaced with three additional duplex apartments. Access for two of these is directly off the foot way of the east west route and the finished floor levels are 'stepped' to work with the road levels;
 - Three private amenity spaces have been added to the additional duplex apartments. This has resulted in a slight adjustment to the pedestrian path adjacent;
 - Shared and landscaped roof terraces are now provided on Buildings A, B, C, F, K and L. Other buildings are provided with sedum roofs, with PV solar panels distributed across Buildings D, E, F, G, H, J, M, N and O;
 - Minor layout amendments to some private roof terraces on Buildings G and H;
 - Seating area in front of the Community Centre space has been set back farther from the road to accommodate road realignment and revised levels; and
 - Following updates to the residential apartment mix, cycle parking provision requirements have been updated and amended.
- 4.23 The public and private amenity space and playspace figures have been updated, resulting in a decrease in public space and a minor increase in private space and playspace (Table 4.5).

Table 4.5: Amended Proposed Development Amenity Areas	
Amenity Space	Area (m ²)
Public	14,956
Private	2,429
Playspace	2,786

- 4.24 The playspace figures have been updated and are now as follows:
- Under 5 year olds- decreased from 1,351 m² to 1,332 m²;
 - 5-11 year olds- increased from 873 m² to 907 m²; and
 - 12+ year olds- decreased from 573 m² to 547 m².



Figure 4.7: Amended Landscape Masterplan

Access Arrangements

4.25 The site access and connectivity set out in the 2017 ES remains valid for the amended proposed development, with the exception of the following:

- relocation of Plot A car park access to Building A;
- cycle parking provision has increased from 1,322 to 1,400; and
- widening of the east-west link to 24 m and associated inclusion of pedestrian islands along the east-west link of Anchor and Hope Lane.

Deliveries and Servicing

4.26 The deliveries and servicing arrangements set out in the 2017 ES remains valid for the amended proposed development.

Plant and Ventilation

4.27 The following changes have been made to the amended proposed development:

- The Main Plant flues have been relocated from Building M to Building O;
- The car park extract fans have been moved to the south side of the car park, near to where the car park entrance was formerly positioned. However, the ventilation strategy, combining natural ventilation with a mechanical extract, remains the same.

4.28 The proposed amendments have resulted in no change to the apartment ventilation strategy.

Utilities

4.29 The utilities set out in the 2017 ES (inclusive of gas and surface water) remains valid for the amended proposed development.

Cleaning and Maintenance

4.30 The cleaning and maintenance principles set out in the 2017 ES remains valid for the amended proposed development.

Operational Management Controls

4.31 The environmental operational management controls as set out in the 2017 ES remains valid for the amended proposed development.

Table 5.1: Amended Proposed Development's Predicted Construction Waste Arisings			
Use	Floor Area GIA (m ²)	EPI (m ³ /100m ²)	Waste Arisings EPI (m ³)
C3 Residential (Residential EPI)	62,492	18.1	11,311
Workspace (Commercial Offices EPI)	3,097	19.8	613
A1-A5 Retail / Services (Commercial Retail EPI)	183	20.9	38
D1-D2 Creche (Education EPI)	338	20.7	70
Community (Leisure EPI)	496	14.4	71
Total			12,103
Notes: Waste arisings rounded to nearest whole number.			

5.13 Overall the residential and office space waste arisings have reduced slightly from that originally presented. Overall the total waste arisings anticipated from the amended proposed development have reduced from 13,056 to 12,103. Accordingly, the amended proposed development would slightly reduce the total waste arising over that of the 2017 proposed development.

5.14 This however does not affect the total vehicle movements as a worst case scenario was considered within the 2017 ES.

Deconstruction of Proposed Development

5.15 The deconstruction process set out in the 2017 ES remains valid for the amended proposed development.

Summary

5.16 The information set out in ES Chapter 5: Demolition and Construction of 2017 ES Volume 1 remains valid for the amended proposed development.

6A SOCIO-ECONOMICS

Introduction

- 6.1 This chapter of the 2018 ES addendum assesses the potential socio-economic impacts and likely effects of the amended proposed development arising from the demolition and construction works and on completion of the amended proposed development. The assessment examines whether the amended proposed development would result in different conclusions to those of the socio-economic assessment set out in the 2017 ES. It states that the conclusions within the 2017 ES remain valid. The amended proposed development is therefore considered acceptable in socio-economic terms i.e. there are no significant adverse effects with mitigation in place.
- 6.2 This chapter should be read in conjunction with Chapter 6: Socio Economics of 2017 ES Volume 1.
- 6.3 This Chapter is accompanied by the following updated technical appendices:
- Technical Appendix 6.1A: Pupil and Net Capacity Forecast Data.

Legislation and Policy Context

- 6.4 In respect of national legislation relevant to the socio-economics assessment, changes since the 2017 ES have been limited to the release of the 2018 NPPF¹, which was published and became immediately effective on 24 July 2018. None of the changes in the 2018 NPPF affect the socio-economic assessment contained within the 2017 ES.
- 6.5 In respect of Regional policy, the draft London Plan has since undergone consultation, finishing in March 2018. It is anticipated that it will be subject to an Examination in Public (EiP) in January 2019. Although emerging policies demonstrate the direction of travel of the emerging framework for London, the policies have not been tested formally and can only be afforded limited weight at this stage and the current 2016 Plan² remains the adopted Development Plan.
- 6.6 In respect of Local policy, there have been no updates or new policies relevant to the socio-economic assessment since the 2017 ES.
- 6.7 In respect of other guidance, no other relevant updates have been published since the 2017 ES.
- 6.8 None of the updates summarised above affect the scope or assessment methodology for the socio-economic assessment of the amended proposed development.

Consultation Feedback

- 6.9 Following submission of the 2017 ES, comments raised by the Greater London Authority (GLA) were not specific to socio-economics and as a result, the issues addressed within this chapter follow from routine inspection/assessment of proposed design changes.

Assessment Methodology

- 6.10 The assessment methodology (inclusive of the study area, method of baseline characterisation, method of assessment, significance criteria and assumptions and limitations) set out in the 2017 ES remains valid for the amended proposed development.
- 6.11 Although, for the purposes of informing the assessment appropriately, the education facilities and healthcare facilities baseline has been updated using the most up-to-date capacity data available³.

Baseline Conditions

- 6.12 There has been no material change to the existing uses; demographic profile; economic profile; housing; crime; open space and playspace, and, sensitive receptor information presented in the 2017 ES. Accordingly, the baseline position in respect of these areas is considered to remain valid for consideration in the 2018 ES addendum.
- 6.13 As noted in the previous section, the capacity assessments for both education facilities and healthcare facilities have been updated with more recent data in order to inform the corresponding assessments. The updated baseline positions for these topics are presented in the following sections.

Education Facilities

- 6.14 The school data analysis excludes privately funded schools, special educational needs (SEN) schools, pupil referral unit (PRU) schools, and, schools that are outside of the RBG, due to common restrictions on admissions policies.

Primary

- 6.15 As stated within the 2017 ES, there are still eight primary schools in the borough area that are within one mile of the application site⁴. The nearest of which is Fossdene Primary School, which is located approximately 0.56 miles south-west of the application site.
- 6.16 Table 6.1 shows the level of surplus capacity available at primary schools within one mile of the application site. The most recent publicly available data for the academic year 2016 to 2017 indicates that for those primary schools within a one-mile radius of the application site there is net capacity of 363 primary school places. This has slightly increased since the 2017 ES which reported a net capacity of 204, as two of the schools (Woodhill Primary School and Our Lady of Grace Catholic Primary School) have increased their capacities.

¹ Ministry of Housing, Communities and Local Government, 2018. The National Planning Policy Framework, Department for Communities and Local Government, July 2018.

² Greater London Authority, 2016. The London Plan Spatial Development Strategy for Greater London, Consolidated with Alterations since 2011. London, GLA

³ Department for Education, 2018. School Capacity 2016/2017. DfE. [Online] [Accessed 10/10/2018].

⁴ GOV.UK, 2018. Find and compare schools in England. GOV. [Online] [Accessed 09/10/2018].

Primary School Name	Distance (miles)	School Places	Number on Roll (NOR)	Net Capacity
Fossdene Primary School	0.56	420	404	16
Thorntree Primary School	0.57	210	205	5
Woodhill Primary School	0.78	661	529	132
Our Lady of Grace Catholic Primary School	0.80	420	247	173
Halstow Primary School	0.86	420	388	32
Sherington Primary School	0.86	420	418	2
Millennium Primary School	0.89	420	420	0
Cardwell Primary School	0.92	420	417	3
Total		3,391	3,028	363

6.17 However, forecast data shows that there will be a deficit of primary school places within the relevant primary planning areas from 2018/2019 onwards. Therefore, based on this data, by 2022 (first year of occupation) there would be a deficit of up to 1,716 primary school places across the relevant borough primary planning areas (for full details regarding the forecast capacity data refer to ES Volume 3: Technical Appendix 6.1).

Secondary

6.18 Since the 2017 ES, there are now an additional two schools located within two miles of the application site, increasing the total to eight secondary schools. Although, the nearest remains as the Royal Greenwich Trust School, which is located approximately 0.56 miles east of the application site.

6.19 Table 6.2 shows the level of surplus capacity available at secondary schools within the borough and within two miles of the application site. The following should be noted:

- Leigh Academy Blackheath, one of the additional secondary schools, opened in September 2018 and therefore currently has no publicly available data and the other additional secondary school, Saint Mary Magdalene Church of England, is an all-through school⁵ and therefore data for the 'number on roll' has not been separated between primary and secondary. Therefore, to ensure a conservative assessment, it has been assumed that there is currently no capacity at these schools; and
- Since 2017, Corelli College has changed its name to The Halley Academy.

6.20 The data shows that, during the academic year 2016 to 2017, the secondary schools within two miles of the application site had a net capacity of 1,185 secondary school places, which has slightly decreased since the 2017 ES.

⁵ A school which provides both primary and secondary education

⁶ National Health Service, 2018. NHS Choices. NHS. [Online] [Accessed 09/10/2018].

⁷ National Health Service, 2009. London Healthy Urban Development Unit Model and Planning Contributions Tool. London: NHS.

Secondary School Name	Distance (miles)	School Places	Number on Roll (NOR)	Net Capacity
Royal Greenwich Trust School	0.56	600	315	285
Leigh Academy Blackheath	1.07	N/A	N/A	N/A
Saint Mary Magdalene Church of England All Through School	1.27	360	360	0
The John Roan School	1.33	1,400	1,234	166
The Halley Academy (formerly Corelli College)	1.64	1,479	1,147	331
Ark Greenwich Free School	1.66	700	395	207
Thomas Tallis School	1.90	1,950	1,788	118
St Ursula's Convent School	1.97	690	614	78
Total		7,179	5,994	1,185

6.21 However, forecast data shows that there will be a deficit of secondary school places within the relevant secondary planning area from 2020/2021 onwards. Therefore, based on this data, by 2022 (first year of occupation) there would be a deficit of up to 1,754 secondary school places within the relevant borough secondary planning area (for full details regarding the forecast capacity data refer to ES Volume 3: Technical Appendix 6.1A). It should be noted that the forecast data already accounted for the future capacity of the Saint Mary Magdalene Church of England school, however not the future capacity of Leigh Academy Blackheath school which has been accounted for manually.

Healthcare Facilities

6.22 Using the NHS Choices website⁶ (the national database for finding primary healthcare providers), there are still five General Practitioners (GP) surgeries identified within one mile of the application, all of which are currently accepting new patients. It should be noted that three of the listed surgeries have other branches located over one mile from the application site, and only the overall figures are available. This means that the Dr B Patel, Dr P Vutukuri (previously Dr Gera & Partner) figures include the Glyndon Medical Centre, the Britannia Village Surgery figures include the Albert Road Surgery and the Charlton Road Surgery (listed as Dr Ratnarajan & Partner) figures include the Woodlands Surgery.

6.23 The identified GP surgeries have an average list size of 2,971 patients per GP (refer to Table 6.3), which has increased since the 2017 ES. This is above the benchmark of 1,800 patients per GP, commonly used in healthcare planning and recommended by the HUDU⁷. It should be noted that the GP capacity data has been sourced from both the NHS Choice website⁶ and the NHS Digital website⁸.

⁸ NHS Digital, 2018. General and Personal Medical Services, England: Final 31 March and Provisional 30 June 2018, experimental statistics published 23 Aug 2018. NHS Digital. [Online] [Accessed 09/10/2018].

GP Surgery Name	Distance (miles)	No. of GPs	Current Ratio (Patients/GPs)	Capacity
The Fairfield Centre	0.6	4.56	2,500	-3,194
Greenwich Peninsula Practice	0.9	3.47	2,700	-3,121
Dr B Patel Dr P Vutukuri (including Glyndon Medical Centre)	0.9 (and 2.1)	3.36	2,029	-768
Britannia Village Surgery (and Albert Road Surgery)	0.9 (and 1.2)	1.89	5,711	-7,405
Charlton Road Surgery (and Woodlands Surgery)	1 (and 1.3)	3.23	1,916	-374
Total				-14,862

Potential Effects

Completed Development

- 6.24 The potential impacts and likely effects related to the completed development have been updated to reflect the amended proposed development and subsequent changes to the amended proposed development forecast population, education, healthcare, employment and open space and playspace.
- 6.25 There would be no changes to the potential impacts and likely effects of the following:
- Demand for Housing – The total number of residential units remains the same.
 - Crime – The amended proposed development **would still aim to achieve 'Secured by Design'**.

Amended Proposed Development Total Population and Child Yield

Total Population

- 6.26 The amended proposed development would deliver 771 residential units at a range of unit sizes and tenure mix as shown in Table 6.4, with an estimated population of 1,815 people upon full completion. This is based on **RBG's Average Household Size (AHS) of 2.354 assuming an initial operational year of 2022⁹**. This remains the same as the 2017 ES, as the total unit numbers have not varied.

Tenure	1 Bed	2 Bed	3 Bed	4 Bed	Total
Private	233	197	48	1	479
Intermediate	67	58	2	0	127
Social Rented	47	46	70	2	165
Total	347	301	120	3	771

Child Yield

- 6.27 The total child yield, based on the GLA Data Management and Analysis Group (DMAG) figures (Wandsworth Model)¹⁰, for the amended proposed development is 226 children aged 0 – 15 years old.

This is a total increase in 29 children from the 2017 ES due to the variance in the breakdown of tenures. Table 6.5 provides a breakdown by age bracket of the child yield across the various tenures.

Age	Private	Intermediate	Social Rented	Child Yield Total*
0-4	22.71	4.62	83.06	110
5-10	9.07	1.34	64.82	75
11-15	2.70	0.43	39.16	42
Total*	34	6	187	228

*roudest to nearest number

Education

- 6.28 Table 6.5 indicates that the amended **proposed development's forecast child yield would result in an increased demand for school places**. The amended proposed development would create a demand for 118 school places (increase in 6 from 2017 ES) comprising 75 primary aged places (increase of 4 from 2017 ES) and 42 secondary aged places (remains the same from 2017 ES). The remaining 110 children would be under 5 years old (increase in 21 from 2017 ES).
- 6.29 As previously stated within the 2017 ES, the net increase in demand for school places is likely to be less than the total number of children living in the amended proposed development as some children may be moving to the amended proposed development from within the borough and therefore, may already have a local school place, particularly children in the social rented tenure units. Further, some children may attend private school. Therefore, the assessment of the amended **proposed development's total child yield** represents a conservative position.

Primary

- 6.30 The existing baseline analysis of the primary schools that include the application site within their catchments indicates that there is still currently a surplus in places. However, it has been identified that there will be a deficit in places as a result of primary pupil projections within the borough up to the operational year of the amended proposed development. Therefore, considering the amended proposed development in the context of the future baseline it is considered to remain a Minor Adverse effect at the neighbourhood level (which is not considered significant) based on the number of primary aged children it would bring forward, resulting in a need for an additional 2.5 primary classes (where a maximum class size is 30 pupils). This is an increase in 0.1 primary classes from the 2017 ES. Therefore, the conclusions set out in the 2017 ES remain valid for the amended proposed development.

Secondary

- 6.31 The existing baseline analysis of the secondary schools that include the application site within their catchments indicates that there is currently a surplus in places within the borough. However, as a result of secondary pupil projections the future baseline for the borough shows there will again, be a deficit in secondary school places. Therefore, with regard to the amended proposed development in the context of the future baseline it is considered to remain a Minor Adverse effect at the neighbourhood level (which is not considered significant) based on the number of secondary aged children it would bring forward resulting in a need for an additional 1.4 primary classes (where a maximum class size is 30 pupils). This remains the same as the 2017 ES. Therefore, the conclusions set out in the 2017 ES remain valid for the amended proposed development.

⁹ London Datastore, 2017. 2016-based Household Projections: Long-Term Trend (Households). London: GLA. [Online] [Accessed 11/10/2018].

¹⁰ Greater London Authority, 2005. Data Management and Analysis Group Briefing Note 2005/25: Child Yield. London: GLA.

Healthcare

- 6.32 The amended **proposed development's additional forecast population of 1,815 would result in the need** for the equivalent of around 1 full time GP, which is the same as the 2017 ES. As set out in the baseline section, there remains a severe deficit of available capacity within the GP surgeries located within close proximity to the application site.
- 6.33 As there is no available capacity, the amended **proposed development's forecast population would add** further pressure to the current situation. Therefore, it is considered this would result in a Moderate Adverse effect at a neighbourhood level with respect to GP provision, which is considered significant. This remains the same as the 2017 ES. Therefore, the conclusions set out in the 2017 ES remain valid for the amended proposed development.

Employment

- 6.34 The application site is currently operational as a predominantly industrial site, and as previously stated within the 2017 ES, this space creates approximately 90 Full-time Equivalent (FTE) jobs.
- 6.35 The amended proposed development is residential-led mixed-use, bringing forward a small element of commercial floorspace comprising office and retail space, which would create direct employment. Based on the standard employment densities¹¹, this space would create an estimated 210-213 FTE jobs as set out in Table 6.6. This is a slight increase from the 2017 ES, which reported 175-197 FTE jobs, as a result of the change in the split of use classes increasing the floorspace density. It should be noted that the amended proposed development also includes space for community facilities which have been excluded in terms of employment to ensure a conservative assessment.
- 6.36 Given the potential for these types of employment uses to provide part-time and flexible work opportunities, the actual employment that could be created on-site has the potential to be higher.

Employment Use	Area*	Number of FTE Jobs
B1 Office (Corporate)	2,632 m ² NIA	202
A1/A3 Retail/Restaurant & Cafes	156 m ² NIA	8-10
D1/D2 Community uses	834 m ² GIA	N/A
Total		210-213

Note: *NIA/GIA have been used in line with assessment methodology in the Employment Density Guide published by the HCA, and conversions have been used where necessary.

Generation of Net Direct and Indirect Employment

- 6.37 To ascertain the net direct and indirect employment benefits to the target area of the local authority, an additionality assessment has been undertaken.
- 6.38 As shown in Table 6.7, the amended proposed development is considered to result in 55-56 net operational employment opportunities to the target area of the local authority. This is a slight increase from the 2017 ES which reported 46-52 jobs. This is considered to remain a permanent Minor Beneficial effect, which is not considered significant. Therefore, the conclusions set out in the 2017 ES remain valid for the amended proposed development.

¹¹ Homes and Communities Agency, 2015. Employment Density Guide, 3rd Edition. London: HCA.

Additionality Steps	Additionality Application
Gross direct operational employment	210-213
Estimated leakage	105-107
Gross direct operational employment to a target area	105-107
Less displacement	53
Net direct operational employment to target area	53
Plus multiplier effects	3
Net operational employment to target area	55-56

- 6.39 In terms of the employment figures between the current uses and the amended proposed development, it is considered to remain a Negligible effect at a borough level.

Open Space and Playspace

Open Space

- 6.40 As previously stated within the 2017 ES, there is currently no open space on-site and the application site has been identified as an area which falls below the provision standard.
- 6.41 The amended **proposed development's forecast population of 1,815 would result in a demand for 4.9 ha** of open space based on the RBG Parks and Open Spaces Strategy¹² ratio of 2.69 ha per 1,000 of the population. However, due to site constraints 1.49 ha (14,956 m²) of publicly accessible amenity space would be brought forward on-site comprising the following:
- 2,025 m² of public roof space across Plots A and B;
 - 8,939 m² of public realm within Plot A;
 - 2,765 m² of public realm within Plot B;
 - 1,227 m² of communal podium space across Plots A and B.
- 6.42 This is a slight increase from the 2017 ES, although the open space provision of the amended proposed development still falls short of the standards. However, it still remains valid that, in the context of the application site, enhancements to the visual amenity of the application site compared to the existing state and the amended proposed development's **increased publicly accessible amenity space is** considered to have a Negligible effect at borough level, and a Minor Beneficial effect at neighbourhood level, which is not considered significant. Therefore the conclusions set out in the 2017 ES remain valid for the amended proposed development.

Playspace

- 6.43 Table 6.8 sets out the calculated child yield and corresponding playspace demand by age bracket as a result of the amended proposed development.
- 6.44 In total, approximately 248 children aged 0 – 18 years would be introduced to the application site with a corresponding demand for approximately 2,480 m² of playable space which is an increase in 300 m² from the 2017 ES.

¹² Royal Borough of Greenwich, 2017. Royal Greenwich Parks and Open Spaces Strategy. London: RBG.

Age Group	Number of Children*	Playspace Requirement (m ²)*
Under 5 years	110	1,100
5 -11 years	84	840
12 - 18 years	53	530
Total*	248	2,480
*rounded to nearest number		

- 6.45 According to the GLA's child yield methodology there would be 110 children under five years living in the amended proposed development. Therefore, the amended proposed development would create a demand for 1,100 m² of under five years playspace based on the GLA's playspace requirement of 10 m² per child.
- 6.46 In addition, the amended proposed development would bring forward 84 children aged 5-11 years old and 53 children aged 12-18 years old creating a demand for 840 m² and 530 m² of associated playspace, respectively.
- 6.47 The application site would bring forward the following areas of playspace per age group:
- Under five year olds: 1,332 m²;
 - 5-11 year olds: 907 m²; and
 - Over 12 year olds: 547 m².
- 6.48 Whilst the total playspace provided is slightly lower than that proposed in the scheme assessed by the 2017 ES, the amended proposed development would still exceed the policy requirements for playspace by 306 m² overall, and is therefore considered to remain a Minor to Moderate Beneficial effect at a neighbourhood level, which is considered significant. Therefore, the conclusions set out in the 2017 ES remain valid for the amended proposed development.

Mitigation and Residual Effects

- 6.49 The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development.

Summary of Mitigation and Residual Effects

- 6.50 The mitigation and residual effects set out in the 2017 ES remain valid for the amended proposed development however these have been replicated below for completeness.

Receptor	Description of Residual Effect	Nature of Residual Effect*					
		Significance**	+	D	P	R	St Mt Lt
Demolition and Construction							
Existing: Borough working age residents	Generation of construction employment	Minor	+	D	T	IR	Lt

Completed Development							
Existing & Future Neighbourhood and Borough residents	Provision of new housing	Moderate (neighbourhood level) Minor (borough level)	+	D	P	IR	Lt
Existing: Primary Education Facilities & Borough residents	Increased demand for primary education facilities	Negligible	N/A	N/A	N/A	N/A	N/A
Existing: Secondary Education Facilities & Borough residents	Increased demand for secondary education facilities	Negligible	N/A	N/A	N/A	N/A	N/A
Existing: Primary Healthcare Facilities & Borough residents	Increased demand for healthcare facilities	Negligible	N/A	N/A	N/A	N/A	N/A
Existing: Borough working age residents	Generation of operational employment	Negligible	N/A	N/A	N/A	N/A	N/A
Existing & Future Neighbourhood and Borough residents	Provision of open space	Minor (neighbourhood level) Negligible (borough level)	+	D	P	IR	Lt
Existing & Future Neighbourhood residents	Provision of playspace	Minor to Moderate	+	D	P	IR	Lt
Existing & Neighbourhood and Borough residents	Improvements in site safety	Moderate	+	D	P	IR	Lt
Notes: * - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt -Medium term/ Lt -Long term. **Negligible/Minor/Moderate/Major							

- 6.51 Within the assessment, no adverse significant environmental effects have been identified. There are three beneficial significant environmental effects which are the provision of new housing on a neighbourhood level, provision of playspace at a neighbourhood level and improvements to site safety on a neighbourhood level.

Cumulative Effects

- 6.52 Since the 2017 ES there are additional cumulative schemes as follows:
- 18/0732/F - Flint Glass Wharf, 3 Herringham Road;
 - 17/1795/F - 40 Victoria Way;
 - 18/1318/R - Greenwich Millennium Village - Plots 302/303/304;
 - 17/1631/R - Greenwich Millennium Village - Plots 204/205; and
 - 18/0825/R - Greenwich Millennium Village - Plot 201.
- 6.53 It should be noted that the Greenwich Millennium Village planning references (18/1318/R, 17/1631/R and 18/0825/R) are reserved matters applications, and therefore this application has already been taken into consideration under the planning reference 12/0022/O within the 2017 ES.
- 6.54 An overview of the details of the other cumulative schemes (18/0732/F and 17/1795/F) is provided in Table 6.10.

Description	Flint Glass Wharf, 3 Herringham Road (18/0732/F)	40 Victoria Way (17/1795/F)
Construction period	2018-2022	Unknown
Unit Number	500	341
Population	835	780
Primary aged children	31	42
Secondary aged children	17	24
Operational employment	50-82	Loss of 9 existing jobs to be offset by proposed nursery
Open space/playspace	Unknown/1,370m ²	Unknown/Unknown

Demolition and Construction

6.55 Based on the information that is publicly available, it is possible that the construction phases of the cumulative schemes would overlap with that of the amended proposed development. Whilst there may be some competition for locally sourced construction employment with the potential for construction workers to be employed from outside the target area; the likely overlap in construction phases of the cumulative schemes gives potential for apprentices to move between schemes and complete their apprenticeships within the borough. This is particularly beneficial as many apprenticeships require a three-year duration, which can be difficult to achieve on shorter duration build projects. Therefore, having overlapping projects within the borough is considered to remain a Minor Beneficial cumulative effect, in this regard, which is not considered significant.

Completed Development

6.56 From Table 6.10, it can be seen that the two cumulative schemes would bring forward an additional 841 residential units in a mix of size and tenures that would deliver beneficial effects for the RBG. Therefore, it is considered that this housing provision would remain a Moderate to Major Beneficial cumulative effect at a borough level, which is considered significant.

6.57 The two cumulative schemes would increase demand on the school and healthcare facilities in addition to that already exerted by the amended proposed development. Through the potential mitigation measures, such as financial contributions, the cumulative effect for education and healthcare is considered to remain Negligible.

6.58 The two cumulative schemes would bring forward an additional 50-82 operational employment opportunities. It is considered these employment opportunities would deliver beneficial effects for the RBG. Therefore, it is considered this would remain a Minor Beneficial cumulative effect, which is not considered significant.

6.59 It is considered that the schemes bringing forward a residential population would create an additional draw to existing and proposed open space and playspace. Even though the residual effects for these two cumulative schemes have been assessed as not significant, as the amended proposed development is bringing forward a significant amount of open space and playspace, the cumulative effect would be Minor to Moderate Beneficial, which is considered significant.

6.60 It is considered that crime would be dealt with appropriately within each cumulative scheme in response to the RBG requirements. Therefore, it is considered that this would remain a Moderate Beneficial cumulative effect, which is considered significant.

6.61 Therefore, considering the additional cumulative schemes which have come forward since the 2017 ES, the conclusions set out in the 2017 ES remain valid for the amended proposed development.

Summary

6.62 The amended proposed development would not give rise to any new or amended significant socio-economic effects in addition to those previously reported within the 2017 ES. Accordingly, when considering the amended proposed development as a whole, and the mitigation measures embedded within the amended proposed development, the conclusions of the 2017 ES remain valid.

7A TRANSPORT AND ACCESSIBILITY

Introduction

- 7.1** This chapter of the 2018 ES addendum assesses the potential impacts and likely effects of the amended proposed development on transport at the application site and within the study area. The assessment examines whether the amended proposed development would result in different conclusions to those of the transport assessment set out in the 2017 ES. It states that the conclusions within the 2017 ES remain valid. The amended proposed development is therefore considered acceptable in transport terms i.e. there are no significant adverse effects with mitigation in place.
- 7.2** This chapter should be read in conjunction with Chapter 7: Transport of 2017 ES Volume 1.

Legislation and Policy Context

- 7.3** In respect of national legislation relevant to the transport and accessibility assessment, changes since the 2017 ES have been limited to the release of the 2018 NPPF¹, which was published and became immediately effective on 24 July 2018. None of the changes in the 2018 NPPF affect the transport and accessibility assessment contained within the 2017 ES.
- 7.4** In respect of Regional policy, the draft New London Plan has since undergone consultation, finishing in March 2018. It is anticipated that it will be subject to an Examination in Public (EiP) in January 2019. Although emerging policies demonstrate the direction of travel of the emerging framework for London, the policies have not been tested formally and can only be afforded limited weight at this stage and the current 2016 Plan² remains the adopted London Plan. Notwithstanding this, the cycle parking provision at the amended proposed development would be provided in accordance with the draft New London Plan standards.
- 7.5** In respect of Local policy, there have been no updates or new policies relevant to the transport and accessibility assessment since the 2017 ES.
- 7.6** In respect of other guidance, no other relevant updates have been published since the 2017 ES.
- 7.7** None of the updates summarised above affect the scope or assessment methodology for the transport assessment of the amended proposed development.

Consultation Feedback

- 7.8** Following submission of the 2017 ES, comments raised by the Greater London Authority (GLA) were not specific to transport and accessibility and as a result, the issues addressed within this chapter follow from routine inspection/assessment of proposed design changes. The only design related aspect that was commented on by the GLA related to ensuring that the amended proposed development would not prejudice the later provision of the East West Link Road as part of the wider Charlton Master Plan delivery. Following on from this comment, the GLA requested that the access to the basement car park on Plot A be located on the western side of Plot A rather than the southern side. Neither of these aspects has any bearing on the transport effects of the amended proposed development, particularly as account had already been taken of the East West Link Road corridor in the scheme assessed as part of the 2017 ES.

¹ Ministry of Housing, Communities and Local Government, 2018. The National Planning Policy Framework, Department for Communities and Local Government, July 2018.

² Greater London Authority, 2016. The London Plan Spatial Development Strategy for Greater London, Consolidated with Alterations since 2011. London. GLA

Assessment Methodology

- 7.9** The assessment methodology (inclusive of the study area, method of baseline characterisation, method of assessment, significance criteria and assumptions and limitations) set out in the 2017 ES remain valid for the amended proposed development.

Baseline Conditions

- 7.10** The baseline conditions set out in the 2017 ES remain valid for the amended proposed development.
- 7.11** It is noted that since the production of the 2017 ES, Department for Transport (DfT) has added additional traffic flow data on their website for Woolwich Road (A206) in the vicinity of the junction with Anchor and Hope Lane. The additional data for 2017 and is included in the Table below.

Year	All vehicles	All HGVs
2000	25,556	2,628
2001	21,428	1,784
2002	21,433	1,749
2003	21,456	1,764
2004	25,506	1,618
2005	25,321	1,623
2006	25,701	1,629
2007	25,580	1,755
2008	19,927	1,705
2009	19,655	1,664
2010	19,224	1,680
2011	19,219	1,735
2012	16,119	1,430
2013	16,256	1,421
2014	16,322	1,342
2015	16,330	1,322
2016	16,458	1,296
2017	16,242	1,335

- 7.12** The additional data further confirms that vehicle and HGV flows on Woolwich Road have remained generally stable over the last six years. This confirms that the normally expected underlying traffic growth has not been experienced in this location. Thus, the baseline traffic flows used within the 2017 ES remain valid and robust; no additional data is required to be collected and the baseline data remains unchanged.

Potential Effects

- 7.13** The opening year has been revised from 2023 as presented in the 2017 ES, to 2024. Given the background traffic levels have remained stable for the past few years, no background growth factor was being applied for future baseline forecasts, as agreed with RBG and TfL for the assessment. Therefore the revised opening date of 2024 would, under this agreed methodology for future forecasts, result in the same assessment baseline traffic. Thus the operational traffic flows used within the 2017 ES remain robust and valid for the purposes of assessment within the transport and accessibility assessment.
- 7.14** The proposed number of residential units remains unchanged, and therefore the trip generation assessment and the subsequent assessment of potential effects continue to be valid.
- 7.15** With regard to commercial space, this has become more defined than assessed in the December 2017 ES where it was described as 'flexible'. Thus, in order to undertake a robust assessment, the highest likely trip generating land use (B1 office) was assumed for all of the area proposed. As a result of the revisions and refinements to the scheme the area proposed as B1 office use has reduced and generally replaced with a small flexible retail (A1-A5) area which is intended to be ancillary to the amended proposed development, providing amenity for the future occupants, and therefore attracting primarily internal trips. Therefore, a worse case assessment, in terms of peak hour trip generation, was undertaken within the December 2017 Transport Assessment (TA) (presented within 2017 ES Volume 3: Technical Appendix 7.1) and 2017 ES Chapter. Therefore, the original trip generation in the 2017 ES remains a suitable and robust assessment of the commercial space generated trips for the proposed amended scheme.
- 7.16** Similarly, the expected servicing trips associated with the commercial space would not alter the peak hour or daily volumes of servicing trips. Therefore, this also remains valid for the amended proposed development. Therefore, the potential effects assessed as part of the 2017 ES remain a valid and robust assessment for the amended proposed development.
- 7.17** The ancillary residential space in the original application has been replaced by D1-D2 community use. However, these uses are considered to be comparable and would therefore not affect any trip generation figures as staff would be expected to be arranged in shift work, arriving and leaving outside of the peak hours. Therefore, this use has been excluded from the trip generation assessment. This is consistent with the treatment of this space within Plot A throughout the assessment of the development impacts.
- 7.18** In summary, the generated development trips set out in Table 7.14 of the 2017 ES remain a robust assessment an update to the 2017 ES traffic and accessibility assessment is not required and therefore the conclusions set out in the 2017 ES remain valid for the amended proposed development.

Mitigation and Residual Effects

- 7.19** The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development.

Summary of Mitigation and Residual Effects

- 7.20** The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development however these have been replicated below in Table 7.2 for completeness.

Table 7.2: Summary of Residual Effects from 2017 ES							
Receptor	Description of Residual Effect	Nature of Residual Effect*					
		Significance**	+ -	D I	P T	R IR	St Mt Lt
Demolition and Construction							
Highway network	Effects of traffic flows from construction vehicle movements upon the local highway network.	Minor to Moderate (beneficial) to Minor (adverse for HGV traffic)	+/-	D	T	R	St
	Effects of traffic flows from construction vehicle movements upon the Site Access.	Minor	-	D	T	R	St
Pedestrians	Effects of construction activities on pedestrian movement and capacity, severance, delay, fear and intimidation, amenity.	Negligible	N/A	D	T	R	St
Cyclists	Effects of construction on cyclists.	Negligible	N/A	D	T	R	St
Public transport	Effects of increased number of public transport trips as a result of construction workers' travel.	Negligible	N/A	D	T	R	St
Completed Development							
Pedestrians	Effects of the proposed development on pedestrian movement and capacity, severance, pedestrian delay, pedestrian amenity and pedestrian fear and intimidation.	Negligible to Moderate	+	D	P	IR	Lt
Cyclists	Effects of the proposed development cycle trips.	Negligible	N/A	D	P	IR	Lt
Bus	Effects of the proposed development bus trips.	Negligible to Minor	+	D	P	IR	Lt
Rail	Effects of the proposed development rail trips.	Negligible	N/A	D	P	IR	Lt
Highway network	Effects of the proposed development Traffic Flows.	Negligible to Minor	-	D	P	IR	Lt
Notes: * - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt -Medium term/ Lt -Long term. **Negligible/Minor/Moderate/Major							

Likely Significant Environmental Effects

7.21 As set out in the 2017 ES Transport chapter, there would be no significant adverse residual environmental effects. There would be likely beneficial effects of traffic flows from construction vehicle movements upon the local highway network and pedestrian effects within the application site resulting from the operational amended proposed development and on the immediate pedestrian network.

Cumulative Effects

7.22 Since the 2017 ES submission, five additional applications have been identified to be taken into consideration as outlined in Chapter 2A: EIA Process and Methodology. It is noted that three of these are reserved matters applications associated with schemes already taken into account and therefore need not be considered further. The two new additional cumulative schemes are as follows:

- Victoria Way (17/1795/F40); and
- Flint Glass Wharf, 3 Herringham Road (Komoto) (18/0732/F).

7.23 For both schemes, a review of their planning application documents has been undertaken and account taken of their transport impacts in this assessment.

Demolition and Construction

7.24 It is anticipated that each site coming forward would be required to develop their own CEMP and therefore agree vehicular numbers and vehicular routes with the RGB and TfL. It is therefore considered that on this basis and subject to the implementation of best practice construction traffic management measures, the residual cumulative effects on all modes of transport would be negligible and that the cumulative increase would still leave capacity on the local roads, particularly when account is taken of existing cumulative development site use which would reduce the net effects.

Completed Development

7.25 Both schemes are expected to have an impact on Woolwich Road (A206). As a result, the updated cumulative baseline flows for the Woolwich Road (A206) are shown in Table 7.3 and Table 7.4 for the AM and PM peak hour respectively. Reference to the flows provided in Table 7.20 of the 2017 ES is also provided.

Link	Baseline flows		Cumulative Baseline + Proposed Dev		Percentage Difference	
	2017 ES	2018 ES	2017 ES	2018 ES	2017 ES	2018 ES
A206 East of Anchor & Hope Lane	2,137	2,137	2,297	2,351	7.50%	10.00%
A206 West of Anchor & Hope Lane	1,201	1,201	1,284	1,338	6.90%	11.40%

Link	Baseline flows		Cumulative Baseline + Proposed Dev		Percentage Difference	
	2017 ES	2018 ES	2017 ES	2018 ES	2017 ES	2018 ES
A206 East of Anchor & Hope Lane	2,587	2,587	2,761	2,797	6.70%	8.10%
A206 West of Anchor & Hope Lane	1,234	1,234	1,291	1,327	4.60%	7.50%

7.26 The cumulative assessment demonstrates that the A206 would continue to experience an increase in traffic of less than 30% during both the AM and PM peak hour, following the additional cumulative developments. Therefore, the cumulative effect on this road continues to be assessed as being negligible and not significant. There are no changes to any of the other road links assessed as part of the amended proposed development.

Summary

7.27 In summary, the assessment and conclusions reached within the 2017 ES in respect of transport effects of the amended proposed development remain valid. There are no significant adverse residual effects as a result of the amended proposed development. There would be likely beneficial effects of traffic flows from construction vehicle movements upon the local highway network and pedestrian effects within the application site resulting from the operational amended proposed development and on the immediate pedestrian network. In addition, the operational residual effects of the proposed development on pedestrians would result in a negligible to moderate, beneficial, permanent impact through the schemes contribution towards pedestrian public realm and permeability. Therefore, the conclusions reached on the cumulative impacts remain unchanged, even whilst taking account of the additional cumulative schemes.

8A AIR QUALITY

Introduction

- 8.1** This Chapter of the 2018 ES addendum assesses the potential impacts and likely effects of the amended proposed development on air quality at the application site. The assessment examines whether the amended proposed development would result in different conclusions to those of the air quality assessment set out in the 2017 ES. It states that the conclusions within the 2017 ES remain valid. The amended proposed development is therefore considered acceptable in air quality terms i.e. there are no significant adverse effects with mitigation in place.
- 8.2** This chapter should be read in conjunction with Chapter 8: Air Quality of 2017 ES Volume 1 and Technical Appendices 8.1 to 8.6 of ES Volume 3, with the exception of Technical Appendix 8.5A which has been updated and is contained within Volume 3A of this addendum.

Legislation and Policy Context

- 8.3** In respect of national legislation relevant to the Air Quality Assessment, changes since the 2017 ES have been limited to the release of the 2018 NPPF¹, which was published and became immediately effective on 24 July 2018. None of the changes in the 2018 NPPF affect the air quality assessment contained within the 2017 ES.
- 8.4** In respect of Regional policy, the draft London Plan has since undergone consultation, finishing in March 2018. It is anticipated that it will be subject to an Examination in Public (EiP) in January 2019. Although emerging policies demonstrate the direction of travel of the emerging framework for London, the policies have not been tested formally and can only be afforded limited weight at this stage and the current 2016 Plan² remains the adopted Development Plan.
- 8.5** In respect of Local policy, there have been no updates or new policies relevant to the Air Quality Assessment since the 2017 ES.
- 8.6** In respect of other guidance, no other relevant updates have been published since the 2017 ES.
- 8.7** None of the updates summarised above affect the scope or assessment methodology for the air quality assessment of the amended proposed development.

Consultation Feedback

- 8.8** Following submission of the 2017 ES, comments raised by the Greater London Authority (GLA) were not specific to Air Quality and as a result, the issues addressed within this chapter follow from routine inspection/assessment of proposed design changes.

Assessment Methodology

- 8.9** The assessment methodology (inclusive of the study area, method of baseline characterisation, method of assessment, significance criteria and assumptions and limitations) set out in the 2017 ES remains valid for the amended proposed development.

¹ Ministry of Housing, Communities and Local Government, 2018. The National Planning Policy Framework, Department for Communities and Local Government, July 2018.

Operational Development

Traffic Assessment

- 8.10** The opening year has been revised from 2023 as presented in the 2017 ES, to 2024. Given the background traffic levels have remained stable for the past few years, no background growth factor was being applied for future baseline forecasts, as agreed with RBG and TfL for the assessment. Therefore the revised opening date of 2024 would, under this agreed methodology for future forecasts, result in the same assessment baseline traffic. Thus the operational traffic flows used within the 2017 ES remain robust and valid for the purposes of assessment within the transport and accessibility assessment.
- 8.11** However, the traffic data for the assessment has been updated to take into account additional cumulative developments and is summarised in Technical Appendix 8.5A contained within Volume 3A of this ES Addendum.
- 8.12** The versions of the emission factors and background maps used within the roads assessment have remained unchanged.

Stack Emission Parameters

- 8.13** Due to the changes in massing, the CHP and Boiler Stack location and height has changed from the previous 2017 ES from Building M to Building O and from 33 m to 38 m. Therefore, the AERMOD stack dispersion model was re-run with these changes.
- 8.14** The model of CHP remains unchanged however the Boilers model has changed to a new model which has a higher thermal output.
- 8.15** Table 8.1 details the parameters that have changed within the AERMOD stack dispersion model.

Table 8.1: Combustion source emission parameters 2017 ES		
Parameter	CHP (1 Unit)	Boilers (3 Units)
Model	V-0250MA-070-NG-50-500_L6	Hovel UltraGas 850
Location	Within Building O	
OS grid coordinates	541079.7 178720.3	
Stack height above ground (m)	38.3	

Underground Car Park Emissions

- 8.16** The location of the entrance and extract vent servicing the underground car park within Plot A has changed location. Therefore, the AERMOD stack dispersion model was re-run with these changes.

Meteorological Data

- 8.17** Due to the above changes the AERMOD stack dispersion model was re-run for all five years as was previously undertaken to determine the worst-case year.

² Greater London Authority, 2016. The London Plan Spatial Development Strategy for Greater London, Consolidated with Alterations since 2011. London. GLA

8.18 2013 is considered to be the worst-case year which produced the highest pollutant concentrations across the whole modelled area as well as the sensitive receptors which are likely to be affected the most for the annual mean as shown below in Table 8.2.

Table 8.2: Determination of worst case meteorological year

Year	Maximum grid ($\mu\text{g}/\text{m}^3$)	Maximum sensitive receptor ($\mu\text{g}/\text{m}^3$)	Maximum grid ($\mu\text{g}/\text{m}^3$)	Maximum sensitive receptor ($\mu\text{g}/\text{m}^3$)
	Annual mean		Hourly mean NOx (NO ₂)	
2012	5.95	5.29	139.04	140.57
2013	6.56	5.44	150.71	146.39
2014	5.13	4.54	123.45	122.51
2015	4.19	3.25	122.22	120.81
2016	5.93	4.61	122.02	118.73
Maximum concentration as a percentage of NAOQ for worst year	16.41%	13.61%	75.35%	73.20%

Air Quality Neutral Assessment

8.19 Due to the changes in land use floor areas (sqm) and energy demand, the Air Quality Neutral Assessment has been re-assessed.

Assumptions and Limitations

8.20 The following assumptions are relevant to this chapter:

- The locations of the CHP, boiler stacks and car park ventilation extract as modelled in this assessment are shown in Figure 8.1.
- London City Airport meteorological data was utilised for the stack modelling assessment and, following a worst-case analysis, it was determined for the stack test the 2013 meteorological data would be utilised.



Figure 8-1: Energy Centre Stacks and Main Car Park Ventilation Modelling Locations

Baseline Conditions

Current Baseline

Existing Air Quality

Local Air Quality Monitoring

8.21 The baseline conditions set out in the 2017 ES remain valid for the amended proposed development, however, the 2017 monitoring has now been published and therefore this is now presented in Table 8.3 below.

Monitor	Site Type	Distance to kerb (m)	Years						
			2011	2012	2013	2014*	2015	2016	2017
Annual Mean (40µg/m ³)									
Woolwich Flyover (GR8) - CM	R	3.0	67	71	64	75	66	64	65
Millennium Village (GN2) (previously GR12) - CM	BG	N/A	33	37	38	36	28	30	Closed
Woolwich Road GW29(6) - DT	R	1.5	65.0	66.6	65.2	61.8	62.3	58.14	56.2
Woolwich Flyover GW50(25, 26, 27) col-located with GR8 -DT	R	3.5	75.5	75.9	67.5	73.9	70.7	67.11	69.5
Millennium Village GW61(50, 51, 52) triplicate collocated with GN2 - DT	BG	N/A	40.7	40.0	39.1	35.2	30.5	32.12	28.1
Number of Hours exceeding 200µg/m ³ (18 exceedances allowed)									
Woolwich Flyover (GR8) - CM	R	3.0	6	27	8	26	6	24	7
Millennium Village (GN2) - CM	BG	N/A	0	2	2	0 (151.5)	0	0	Closed
Notes: CM: Continuous Monitor, DT: Diffusion Tube R: Roadside, BG: Background Bold: concentrations in exceedance of NAQO (40µg/m ³) <u>Bold underlined</u> : concentrations above 60µg/m ³ indicating potential exceedances of the short term NO ₂ NAQO. N/A: Not Available *Where period of valid data is less than 90%, the 99.8th percentile of hourly means is included in brackets.									

Local Air Quality Monitoring – Particulate Matter (PM₁₀)

8.22 2017 monitoring has now been published and therefore this is now presented in Table 8.4 below.

Objective	Site Type	Distance to kerb (m)	Years						
			2011	2012	2013	2014*	2015	2016	2017
Annual Mean (40µg/m ³)									
Woolwich Flyover (GR8) - CM	R	3.0	35	33	32	29	29	30	25

Millennium Village (GN2) - CM	BG	N/A	25	23	26	26 (25.5)	17	20	Closed
Number of Days Exceeding Daily Mean (50µg/m ³ - 35 exceedances allowed)									
Woolwich Flyover (GR8) - CM	R	3.0	42	33	26	17 (45.8)	18	22	9
Millennium Village (GN2) - CM	BG	N/A	25	20	20 (46)	16 (48.4)	1	6	Closed
Notes: CM: Continuous Monitor Bold: concentrations in exceedance of NAQO NA: Not Available *Means "annualised" as in Box 3.2 of TG (09), if monitoring was not carried out for the full year.									

Sensitive Receptors

New Sensitive Receptors

8.23 The change in massing has meant that some receptor locations within the amended proposed development have been altered.

8.24 Table 8.5 identifies the proposed sensitive receptors which would be created as part of the amended proposed development to determine if mitigation would be required as a result of the local pollutant concentration levels. Location plans for the introduced receptors is provided in Figures 8.2 – 8.9.

Receptor No.	Description	Coordinates		Height	Floor	Type	Long / Short Term
		X	Y				
10	Ground_Resi_A	541144	178996	1.5	0	Residential	LT
11	Ground_Resi_B	541161	178975	1.5	0	Residential	LT
12	Ground_Creche	541166	178927	1.5	0	Creche	LT
13	Ground_Community_C	541181	178881	1.5	0	Residential Lounge	LT
14	Ground_Outdoor_1	541152	178954	1.5	0	Outdoor Space	ST
15	Ground_Outdoor_2	541162	178895	1.5	0	Outdoor Space	ST
16	Ground_Resi_D	541125	178975	1.5	0	Residential	LT
17	Ground_Resi_E	541132	178945	1.5	0	Residential	LT
18	Ground_Resi_F	541153	178871	1.5	0	Residential	LT
19	Ground_Outdoor_3	541113	178954	1.5	0	Outdoor Space	ST
20	Ground_Outdoor_4	541121	178913	1.5	0	Outdoor Space	ST
21	Ground_Outdoor_5	541131	178864	1.5	0	Outdoor Space	ST
22	Ground_Resi_G	541089	178973	1.5	0	Residential	LT

23	Ground_Resi_H_1	541096	178940	1.5	0	Residential	LT
24	Ground_Resi_H_2	541112	178857	1.5	0	Residential	LT
25	Ground_Outdoor_6	541048	178796	1.5	0	Outdoor Space	ST
26	Ground_Outdoor_7	541056	178752	1.5	0	Outdoor Space	ST
27	Ground_Outdoor_8	541095	178723	1.5	0	Outdoor Space	ST
28	First_Resi_A	541139	179009	4.5	1	Residential	LT
29	First_Resi_B	541161	178975	4.8	1	Residential	LT
30	First Crèche	541166	178927	4.5	1	Residential	LT
31	First_Community_C	541181	178881	4.5	1	Residential Lounge	LT
32	First_Resi_D	541123	178981	5.5	1	Residential	LT
33	First_Resi_E	541131	178946	5.5	1	Residential	LT
34	First_Resi_F	541153	178871	5.5	1	Residential	LT
35	First_Resi_G	541089	178973	4.5	1	Residential	LT
36	First_Resi_H_1	541096	178940	4.5	1	Residential	LT
37	First_Resi_H_2	541112	178857	4.5	1	Residential	LT
38	First_Resi_L	541108	178718	5.7	1	Residential	LT
39	First_Resi_M	541049	178805	5.7	1	Residential	LT
40	First_Resi_N	541062	178746	5.7	1	Residential	LT
41	Second_Resi_A	541139	179006	7.5	2	Residential	LT
42	Second_Resi_B_1	541163	178963	7.8	2	Residential	LT
43	Second_Resi_B_2	541163	178930	7.8	2	Residential	LT
44	Second_Resi_C	541178	178886	7.5	2	Residential	LT
45	Second_Resi_D	541121	178980	8.5	2	Residential	LT
46	Second_Resi_F	541140	178899	8.5	2	Residential	LT
47	Second_Resi_G	541089	178968	7.7	2	Residential	LT
48	Second_Resi_H	541111	178856	7.5	2	Residential	LT
49	Second_Resi_J	541080	178817	8.7	2	Residential	LT
50	second_Resi_K	541088	178784	8.7	2	Residential	LT
51	Second_Resi_M	541051	178799	8.7	2	Residential	LT
52	Second_Resi_N	541062	178746	8.7	2	Residential	LT
53	Second_Resi_O_1	541063	178729	9.9	2	Residential	LT
54	Second_Resi_O_2	541068	178707	9.9	2	Residential	LT
55	Third_Terrace_G	541089	178968	11.1	3	Outdoor Space	LT
56	Third_Terrace_H	541111	178856	10.7	3	Outdoor Space	LT
57	Fourth_Terrace_C	541178	178886	14.7	4	Outdoor Space	ST

58	Fourth_Resi_G	541089	178968	14.3	4	Residential	LT
59	Fourth_Resi_H	541111	178856	14.1	4	Residential	LT
60	Fourth_Resi_J	541080	178817	14.7	4	Residential	LT
61	Sixth_Terrace_E	541131	178946	20.7	6	Outdoor Space	LT
62	Ninth_Resi_A	541150	178998	29	9	Residential	LT
63	Ninth_Resi_B	541176	178930	29.5	9	Residential	LT
64	Ninth_Terrace _D	541121	178980	29.7	9	Outdoor Space	LT
65	Ninth_Resi_E	541131	178946	29.8	9	Residential	LT
66	Ninth_Resi_F	541153	178871	29.8	9	Residential	LT
67	Ninth_Resi_L	541108	178718	30.2	9	Residential	LT
68	Ninth_Resi_K	541088	178784	30.2	9	Residential	LT
69	Ninth_Resi_M	541051	178799	30.2	9	Residential	LT
70	Ninth_Resi_N	541062	178746	30.2	9	Residential	LT
71	Ninth_Resi_N	541060	178765	30.2	9	Residential	LT
72	Ninth_Resi_O	541085	178736	31.1	9	Residential	LT
73	Ninth_Resi_O	541069	178713	31.1	9	Residential	LT
74	Roof_A	541150	178998	33.5	Roof	Outdoor Space	ST
75	Roof_B	541176	178930	34.4	Roof	Outdoor Space	ST
76	Roof_C	541185	178908	32.9	Roof	Outdoor Space	ST
77	Roof_D	541121	178980	31.6	Roof	Outdoor Space	ST
78	Roof_G	541089	178968	12.6	Roof	Outdoor Space	ST
79	Roof_H	541111	178856	14.1	Roof	Outdoor Space	ST
80	Roof_K	541088	178784	33.7	Roof	Outdoor Space	ST
81	Roof_L	541108	178718	33.7	Roof	Outdoor Space	ST
82	Roof_M	541051	178799	33.5	Roof	Outdoor Space	ST
83	Roof_N	541060	178765	33.5	Roof	Outdoor Space	ST



Figure 8-2: Modelled Ground Floor Receptors



Figure 8-3: Modelled First Floor Receptors



Figure 8-4: Modelled Second Floor Receptors



Figure 8-5: Modelled Third Floor Receptors



Figure 8-6: Modelled Fourth Floor Receptors



Figure 8-7: Modelled Sixth Floor Receptors



Figure 8-8: Modelled Ninth Floor Receptors



Figure 8-9: Modelled Roof Receptors

Potential Effects

8.25 The potential impacts and likely effects related to the completed development have been updated to reflect the amended proposed development and subsequent changes due to the change in massing, CHP, boiler and car park extract locations, boiler plant changes, land use floor areas, energy demand and additional committed development traffic.

Completed Development

Traffic and Energy Assessment – NO₂

8.26 Table 8.6 identifies that for the completed development opening year, existing sensitive receptors are predicted, at worst, to experience a negligible effect as a result of the amended proposed development. Five of the modelled receptors have been predicted to exceed the annual mean objective for NO₂ in 2016 and are predicted to remain above the objective in 2023³. The modelling was undertaken utilising the 2016 emission factors and background pollutant concentrations to represent a worst-case scenario. The

³ As outlined in paragraph 8.10 above, the opening year has been revised from 2023 as presented in the 2017 ES, to 2024. Given the background traffic levels have remained stable for the past few years, no background growth factor would need to be applied and therefore the operational traffic flows used within the 2017 ES remain robust and valid for the purposes of assessment within the air quality assessment.

amended proposed development would not cause any exceedances of the NAQO which were not already experienced due to heavily trafficked local roads.

Table 8.6: Predicted Annual Mean NO₂ Concentrations at Existing Sensitive Receptors (µg/m³)

Receptor No.	2016 Baseline (µg/m ³)	2023 Baseline + Cumulative (µg/m ³)	2023 Baseline + Cumulative + Development (µg/m ³)	% Change in concentration relative to NAQO	Significance
1	30.9	30.1	30.1	0.0	No Change
2	29.1	28.6	28.6	0.1	Negligible
3	32.3	31.1	31.2	0.1	Negligible
4	34.4	32.9	33.1	0.3	Negligible
5	49.1	47.6	47.7	0.2	Negligible
6	49.1	47.3	47.4	0.2	Negligible
7	50.2	48.3	48.4	0.2	Negligible
8	56.9	54.5	54.5	0.2	Negligible
9	55.4	52.8	52.8	0.1	Negligible

Bold: concentrations in exceedance of NAQO

8.27 Table 8.7 presents the NO₂ concentrations for the proposed development to assess site suitability focusing on each of the newly created receptors discussed earlier in the chapter. No exceedances of the annual mean objective are predicted and as all receptors are predicted to be below 60µg/m³ it is likely that the hourly mean would also not be exceeded⁴.

Table 8.7: Predicted Annual Mean NO₂ Concentrations at Proposed Sensitive Receptors (µg/m³)

Receptor No.	2023 Baseline + Cumulative + Development (µg/m ³)	Type	Long / Short Term	Annual NAQO Applicable
10	28.0	Residential	LT	Yes
11	28.1	Residential	LT	Yes
12	28.6	Creche	LT	Yes
13	34.4	Residential Lounge	LT	Yes
14	28.3	Outdoor Space	ST	No
15	29.4	Outdoor Space	ST	No
16	28.2	Residential	LT	Yes
17	28.4	Residential	LT	Yes
18	30.6	Residential	LT	Yes
19	28.4	Outdoor Space	ST	No

Table 8.7: Predicted Annual Mean NO₂ Concentrations at Proposed Sensitive Receptors (µg/m³)

20	28.9	Outdoor Space	ST	No
21	30.7	Outdoor Space	ST	No
22	28.4	Residential	LT	Yes
23	28.7	Residential	LT	Yes
24	30.7	Residential	LT	Yes
25	34.5	Outdoor Space	ST	No
26	37.0	Outdoor Space	ST	No
27	34.9	Outdoor Space	ST	No
28	27.8	Residential	LT	Yes
29	28.0	Residential	LT	Yes
30	28.5	Residential	LT	Yes
31	30.0	Residential Lounge	LT	Yes
32	28.0	Residential	LT	Yes
33	28.3	Residential	LT	Yes
34	29.5	Residential	LT	Yes
35	28.2	Residential	LT	Yes
36	28.5	Residential	LT	Yes
37	30.0	Residential	LT	Yes
38	32.2	Residential	LT	Yes
39	31.8	Residential	LT	Yes
40	33.8	Residential	LT	Yes
41	27.7	Residential	LT	Yes
42	27.9	Residential	LT	Yes
43	28.2	Residential	LT	Yes
44	28.7	Residential	LT	Yes
45	27.8	Residential	LT	Yes
46	28.5	Residential	LT	Yes

⁴ Analysis of the relationship between annual mean nitrogen dioxide concentration and exceedances of the one-hour mean. A. Cook 2008

47	28.0	Residential	LT	Yes
48	29.3	Residential	LT	Yes
49	29.8	Residential	LT	Yes
50	30.4	Residential	LT	Yes
51	30.5	Residential	LT	Yes
52	31.5	Residential	LT	Yes
53	31.0	Residential	LT	Yes
54	31.1	Residential	LT	Yes
55	27.7	Outdoor Space	ST	No
56	28.7	Outdoor Space	ST	No
57	27.9	Outdoor Space	ST	No
58	27.5	Residential	LT	Yes
59	28.2	Residential	LT	Yes
60	28.4	Residential	LT	Yes
61	27.2	Outdoor Space	ST	No
62	26.8	Residential	LT	Yes
63	26.9	Residential	LT	Yes
64	26.8	Outdoor Space	ST	No
65	26.9	Residential	LT	Yes
66	27.0	Residential	LT	Yes
67	27.1	Residential	LT	Yes
68	27.1	Residential	LT	Yes
69	26.9	Residential	LT	Yes
70	27.0	Residential	LT	Yes
71	27.0	Residential	LT	Yes
72	27.5	Residential	LT	No
73	27.2	Residential	LT	No
74	26.7	Outdoor Space	ST	No
75	26.8	Outdoor Space	ST	No

76	26.9	Outdoor Space	ST	No
77	26.7	Outdoor Space	ST	No
78	27.6	Outdoor Space	ST	No
79	28.2	Outdoor Space	ST	No
80	27.1	Outdoor Space	ST	No
81	27.4	Outdoor Space	ST	No
82	26.8	Outdoor Space	ST	No
83	27.0	Outdoor Space	ST	No

8.28 Contour plots are provided in Figures 8.10 and 8.11 and presents the results from both stack sources (energy centre and car park ventilation) at 1.5 m above ground level across the whole of the application site area.

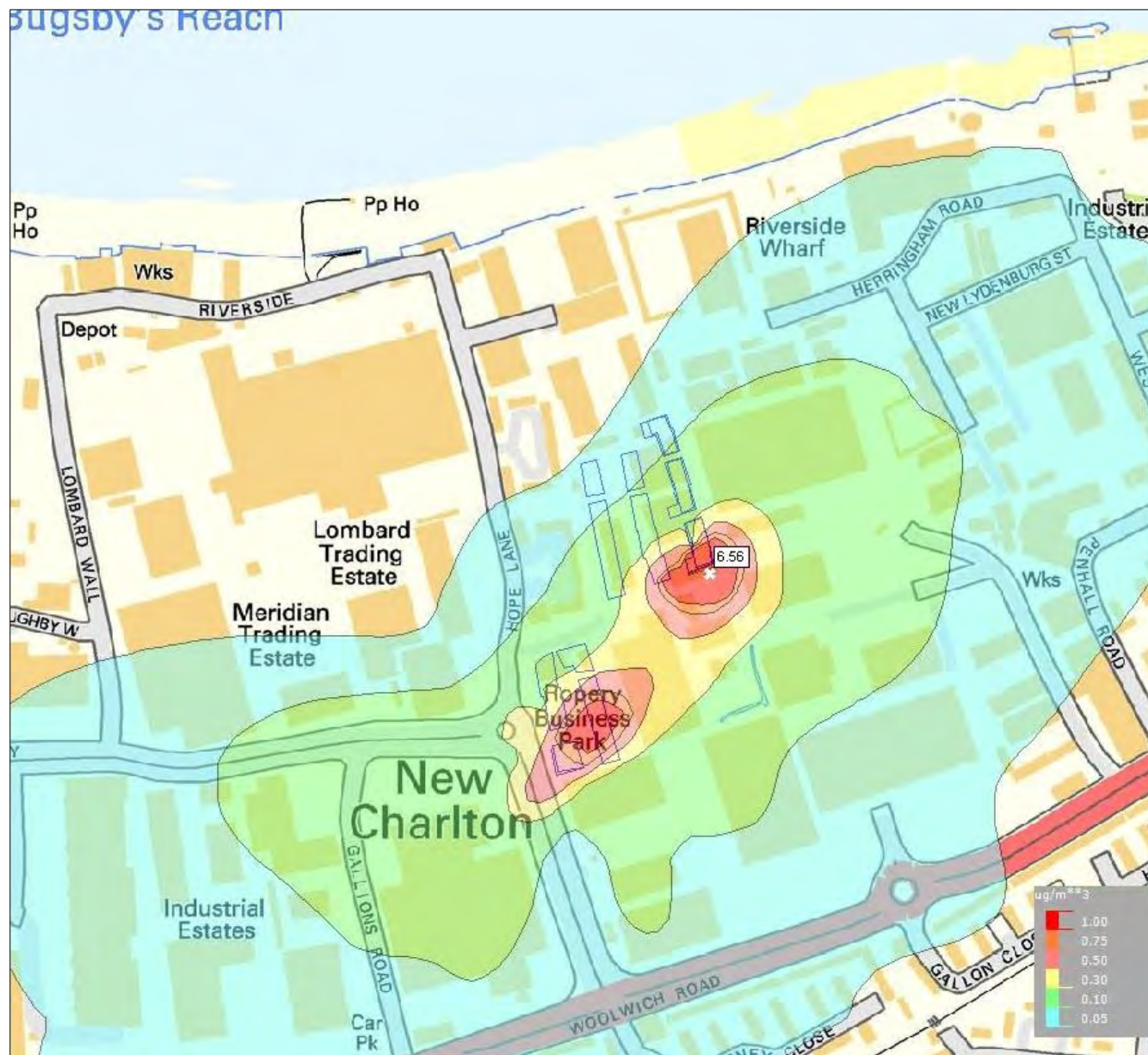


Figure 8-10: Annual Mean Contour Plot – Ground Level NO₂ Stack Sources Contribution



Figure 8-11: Hourly Mean Contour Plot – Ground Level NO₂ Stack Sources Contribution

Traffic Assessment – PM₁₀

8.29 Table 8.8 identifies that none of the existing sensitive receptors would exceed the annual PM₁₀ annual objective. The modelling was undertaken utilising the 2016 emission factors and background pollutant concentrations to represent a worst-case scenario. The amended proposed development would not cause any exceedances of the NAQO in 2023.

Table 8.8: Predicted Annual Mean PM₁₀ Concentrations at Existing Sensitive Receptors (µg/m³)

Receptor No.	2016 Baseline (µg/m ³)	2023 Baseline + Cumulative (µg/m ³)	2023 Baseline + Cumulative + Development (µg/m ³)	% Change in concentration relative to NAQO	Significance
1	17.7	17.7	17.7	0.0	No Change

Table 8.8: Predicted Annual Mean PM₁₀ Concentrations at Existing Sensitive Receptors (µg/m³)

2	17.5	17.5	17.5	0.0	No Change
3	17.8	17.8	17.8	0.0	No Change
4	18.1	18.1	18.1	0.0	No Change
5	20.7	20.7	20.7	0.0	No Change
6	20.4	20.5	20.5	0.0	No Change
7	20.5	20.6	20.6	0.0	No Change
8	21.4	21.5	21.5	0.0	No Change
9	20.8	21.0	21.0	0.0	No Change

Bold: concentrations in exceedance of NAQO

8.30 Table 8.9 presents the PM₁₀ concentrations for the amended proposed development to assess site suitability. All newly created receptors associated with the amended proposed development are predicted to be well within the annual mean.

8.31 The predicted PM₁₀ (annual mean) concentrations for all receptors are also significantly below 40 µg/m³ in 2023. This indicates that the daily mean objective is unlikely to be exceeded at the modelled outdoor receptors where the daily mean would apply.

Table 8.7: Predicted Annual Mean PM₁₀ Concentrations at Proposed Sensitive Receptors (µg/m³)

Receptor No.	2023 Baseline + Cumulative + Development (µg/m ³)	Type	Long / Short Term	Annual NAQO Applicable
10	17.4	Residential	LT	Yes
11	17.4	Residential	LT	Yes
12	17.5	Creche	LT	Yes
13	17.6	Residential Lounge	LT	Yes
14	17.5	Outdoor Space	ST	No
15	17.6	Outdoor Space	ST	No
16	17.4	Residential	LT	Yes
17	17.5	Residential	LT	Yes
18	17.7	Residential	LT	Yes
19	17.5	Outdoor Space	ST	No
20	17.5	Outdoor Space	ST	No
21	17.8	Outdoor Space	ST	No
22	17.5	Residential	LT	Yes
23	17.5	Residential	LT	Yes
24	17.8	Residential	LT	Yes

Table 8.7: Predicted Annual Mean PM₁₀ Concentrations at Proposed Sensitive Receptors (µg/m³)

25	18.3	Outdoor Space	ST	No
26	18.7	Outdoor Space	ST	No
27	18.3	Outdoor Space	ST	No
28	17.4	Residential	LT	Yes
29	17.4	Residential	LT	Yes
30	17.5	Residential	LT	Yes
31	17.5	Residential Lounge	LT	Yes
32	17.4	Residential	LT	Yes
33	17.5	Residential	LT	Yes
34	17.6	Residential	LT	Yes
35	17.4	Residential	LT	Yes
36	17.5	Residential	LT	Yes
37	17.7	Residential	LT	Yes
38	18.0	Residential	LT	Yes
39	17.9	Residential	LT	Yes
40	18.2	Residential	LT	Yes
41	17.4	Residential	LT	Yes
42	17.4	Residential	LT	Yes
43	17.4	Residential	LT	Yes
44	17.5	Residential	LT	Yes
45	17.4	Residential	LT	Yes
46	17.5	Residential	LT	Yes
47	17.4	Residential	LT	Yes
48	17.6	Residential	LT	Yes
49	17.6	Residential	LT	Yes
50	17.7	Residential	LT	Yes
51	17.7	Residential	LT	Yes
52	17.9	Residential	LT	Yes
53	17.8	Residential	LT	Yes

Receptor ID	Concentration (µg/m ³)	Receptor Type	Location	Acceptable
54	17.8	Residential	LT	Yes
55	17.4	Outdoor Space	ST	No
56	17.5	Outdoor Space	ST	No
57	17.4	Outdoor Space	ST	No
58	17.4	Residential	LT	Yes
59	17.4	Residential	LT	Yes
60	17.5	Residential	LT	Yes
61	17.3	Outdoor Space	ST	No
62	17.3	Residential	LT	Yes
63	17.3	Residential	LT	Yes
64	17.3	Outdoor Space	ST	No
65	17.3	Residential	LT	Yes
66	17.3	Residential	LT	Yes
67	17.3	Residential	LT	Yes
68	17.3	Residential	LT	Yes
69	17.3	Residential	LT	Yes
70	17.3	Residential	LT	Yes
71	17.3	Residential	LT	Yes
72	17.3	Residential	LT	Yes
73	17.3	Residential	LT	Yes
74	17.2	Outdoor Space	ST	No
75	17.3	Outdoor Space	ST	No
76	17.3	Outdoor Space	ST	No
77	17.3	Outdoor Space	ST	No
78	17.4	Outdoor Space	ST	No
79	17.4	Outdoor Space	ST	No
80	17.2	Outdoor Space	ST	No
81	17.2	Outdoor Space	ST	No

Receptor ID	Concentration (µg/m ³)	Receptor Type	Location	Acceptable
82	17.2	Outdoor Space	ST	No
83	17.2	Outdoor Space	ST	No
84	17.2	Outdoor Space	ST	No

Site Suitability

- 8.32** The predicted NO₂ and PM₁₀ pollutant concentrations at the amended proposed development are not predicted to exceed any of the annual, daily or hourly objectives. All new residential receptor locations **fall within the London Council's APEC Category A** (>5% below the national objective) for both NO₂ and PM₁₀ annual means which recommends **"no air quality grounds for refusal; however, mitigation of any emissions should be considered"**.
- 8.33** Considering the above results along with the particulate matter monitoring and the odour diary undertaken by Ramboll presented in the 2017 ES, in terms of sensitive receptors, the amended proposed development has been determined to remain appropriate for the proposed intended uses.

Mitigation and Residual Effects

- 8.34** The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development.

Summary of Mitigation and Residual Effects

- 8.35** The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development however these have been replicated below for completeness.

Receptor	Description of Residual Effect	Nature of Residual Effect*					
		Significance* *	+ -	D I	P T	R IR	St Mt Lt
Demolition and Construction							
Existing Receptors	Dust Soiling and PM ₁₀ Health Effects	Negligible	n/a	I	T	R	ST
Existing Receptors	NO ₂ & PM ₁₀ effects due to vehicle emissions	No Change to Negligible	n/a	I	T	R	ST
New Receptors	Dust Soiling and PM ₁₀ Health Effects	Negligible	n/a	I	T	R	ST
Completed Development							
Existing Receptors	NO ₂ & PM ₁₀ effects due to emissions	No Change to Negligible	n/a	I	P	R	LT
New Receptors	NO ₂ , PM ₁₀ effects due to vehicle emissions and site suitability	Negligible	n/a	I	P	R	LT
Notes:							

Table 8.8: Summary of Residual Effects for 2017 ES

* - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt -Medium term/ Lt -Long term.
**Negligible/Minor/Moderate/Major

Cumulative Effects

Demolition and Construction

- 8.36 The only potential additional cumulative effects relating to air quality would be due to impacts relating to construction HGV emissions and / or demolition / construction dust due to the permitted development 40 Victoria Way (Ref. 17/1795/F) and proposed development Flint Glass Wharf (Ref. 18/0732/F). However, these are unlikely to be significant and would be a temporary negligible cumulative effect. The Greenwich Millennium Village development proposals, approximately 1.1 km north west of the application site, are located too far away to cause any significant cumulative effects; however, the reserved matters applications would have been accounted for within the initial cumulative assessment of the outline application.
- 8.37 In the absence of detailed demolition and construction method statements for the cumulative schemes, it can be assumed with a reasonable level of confidence, that similar provisions as set out for the proposed development in ES Chapter 5: Demolition and Construction Environmental Management, including stringent management measures and controls (as specified in a CEMP or equivalent Method Statement) would be adopted during demolition and construction works for each of the cumulative schemes.

Completed Development

- 8.38 Additional cumulative schemes have been included within the updated traffic data and therefore have been taken into account in the Potential Effects Assessment section above. The proposed Flint Glass Wharf, 3 Herringham Road development (Ref. 18/0732/F) includes an Energy Centre. The Environmental Statement of the proposed development at 3 Herringham Road concluded that emissions from the energy plant are expected to be minimal once the Development is complete and operational and have a negligible impact. Notwithstanding this, due to its location and the prevailing westerly winds, any emissions from the proposed energy plant are unlikely to cause any significant cumulative effect.

Air Quality Neutral

- 8.39 The Air Quality Neutral assessment has been re-assessed with updated data relating to the updated trip rates and energy demand detailed below. The amended proposed development remains Air Quality Neutral as shown in Tables 8.9 – 8.12 below.

Transport Emissions

Table 8.9: Air Quality Neutral Assessment - Transport Emissions Benchmark (TEB)

Land Use Class	Description	GIA (sqm / number dwellings)	Emission Benchmark (kg/annum)	
			NOx	PM ₁₀
Class A1-A5	Retail	183	40	7
Class B1	Office	3,097	35	6
Class C3, C4	Residential	771 dwellings	430	77

Total TEB	506	91
-----------	-----	----

Table 8.10: Air Quality Neutral Assessment - Transport Emissions

Land Use Class	Daily Trips	Trips per annum	Distance travelled per annum (km)	Predicted Development Emission (kg/annum)	
				NOx	PM ₁₀
Class A1-A5	3	1,066	6,288	2	0
Class B1	1	280	2,156	1	0
Class C3, C4	239	87,291	322,976	120	21
Total predicted development transport emission (kg/annum)				123	22
Total TEB (kg/annum)				506	91
Difference between predicted development transport emission and TEB				-383	-69

Table 8.11: Air Quality Neutral Assessment - Transport Emissions – Underived Benchmark

Benchmark - Inner			
Land Use	Trips/m ² /Annum	GIA (m ²)	Total Benchmark Trips / Annum
D1	65.1	834	54,293
Predicted Development Compared to Benchmark			
Land Use	Daily Trips	Trips per Annum	Comparison
D1	1	360	-53,934

Building Emissions

Table 8.12: Air Quality Neutral Assessment - Building Emissions

Class	Description	GIA (m ²)	NOx Benchmark (g/m ²)	Estimated Development NOx Emission (kg/annum)
Class A1	Retail	183	22.6	4
Class A2 and B1	Financial/Professional and Business	3,097	30.8	95
Class C3	Residential	62,492	26.2	1,637
D1 (b)	Creche, Day Centres etc.	338	75.0	25
Total building emissions benchmark (BEB)				1,762
Annual emission from CHP assuming 24 hours operation per year				369
Annual emission from boilers assuming 3 boilers operate 24/7 per year				728
Total predicted development building emission (kg/annum)				1097
Difference between predicted development building emission and BEB				-665

Summary

- 8.40** This addendum has updated the air quality modelling results for the completed development impacts to take into account the changes in design to the amended proposed development, namely the change in massing, CHP, boiler and car park extract locations, boiler plant changes, land use floor areas, energy demand and additional cumulative development traffic.
- 8.41** Overall the results of the assessment remain unchanged from that presented in the 2017 ES.

9A NOISE AND VIBRATION

Introduction

- 9.1** This Chapter of the 2018 ES addendum assesses the potential impacts and likely effects of the amended proposed development on noise and vibration at the application site. The assessment examines whether the amended proposed development would result in different conclusions to those of the noise and vibration assessment set out in the 2017 ES. It states that the conclusions within the 2017 ES remain valid. The amended proposed development is therefore considered acceptable in noise and vibration terms i.e. there are no significant adverse effects with mitigation in place.
- 9.2** This chapter should be read in conjunction with Chapter 9: Noise and Vibration of 2017 ES Volume 1 and Technical Appendices 9.1 to 9.7 of 2017 ES Volume 3, with the exception of Technical Appendix 9.4 which has been updated and is contained within Volume 3A of this addendum.

Legislation and Policy Context

- 9.3** In respect of national legislation relevant to the noise and vibration assessment, changes since the 2017 ES have been limited to the release of the 2018 NPPF¹, which was published and became immediately effective on 24 July 2018. None of the changes in the 2018 NPPF affect the noise and vibration assessment contained within the 2017 ES.
- 9.4** In respect of Regional policy, the draft London Plan has since undergone consultation, finishing in March 2018. It is anticipated that it will be subject to an Examination in Public (EiP) in January 2019. Although emerging policies demonstrate the direction of travel of the emerging framework for London, the policies have not been tested formally and can only be afforded limited weight at this stage and the current 2016 Plan² remains the adopted Development Plan.
- 9.5** In respect of Local policy, there have been no updates or new policies relevant to the noise and vibration assessment since the 2017 ES.
- 9.6** In respect of other guidance, no other relevant updates have been published since the 2017 ES.
- 9.7** None of the updates summarised above affect the scope or assessment methodology for the noise and vibration assessment of the amended proposed development.

Consultation Feedback

- 9.8** Following submission of the 2017 ES, comments raised by the Greater London Authority (GLA) were not specific to noise and vibration and as a result, the issues addressed within this chapter follow from consideration and assessment of proposed design changes.

Assessment Methodology

- 9.9** The assessment methodology (inclusive of the study area, method of baseline characterisation, method of assessment, significance criteria and assumptions and limitations) set out in the 2017 ES remains valid for the amended proposed development.

Baseline Conditions

- 9.10** The baseline conditions set out in the 2017 ES remains valid for the amended proposed development. No new noise generating activities on or around the application site which would necessitate additional noise monitoring have been identified.

Potential Effects

- 9.11** The opening year has been revised from 2023 as presented in the 2017 ES, to 2024. Given the background traffic levels have remained stable for the past few years, no background growth factor was being applied for future baseline forecasts, as agreed with RBG and TfL for the assessment. Therefore the revised opening date of 2024 would, under this agreed methodology for future forecasts, result in the same assessment baseline traffic. Thus the operational traffic flows used within the 2017 ES remain robust and valid for the purposes of assessment within the transport and accessibility assessment.
- 9.12** Given there is no change to traffic data and the energy centre specification, an update to the 2017 ES noise assessment is not required and therefore the conclusions set out in the 2017 ES remain valid for the amended proposed development.
- 9.13** However, the site suitability assessment has been updated to incorporate changes in storey heights of the amended proposed development, presented in Technical Appendix 9.4 within ES Volume 3A of this addendum.

Mitigation and Residual Effects

- 9.14** The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development.

Summary of Mitigation and Residual Effects

- 9.15** The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development however these have been replicated below for completeness.

¹ Ministry of Housing, Communities and Local Government, 2018. The National Planning Policy Framework, Department for Communities and Local Government, July 2018.

² Greater London Authority, 2016. The London Plan Spatial Development Strategy for Greater London, Consolidated with Alterations since 2011. London. GLA

Table 9A.1: Summary of Residual Effects for 2017 ES							
Receptor	Description of Residual Effect	Nature of Residual Effect*					
		Significance**	+	D	P	R	St Mt Lt
		-	I	T	IR		
Demolition and Construction							
Existing Sensitive Receptors							
R1, R2, R3	Construction Noise –Negligible to minor effects would occur at receptors R1, R2 and R3	Negligible to minor	-	D	T	R	Mt
R1, R2, R3	Construction Vibration - It is shown that minor effects would occur at receptors R1, R2 and R3.	Negligible to Minor	-	D	T	R	Mt
R1, R2, R3	Construction Traffic	Minor at Receptor R1, R2 Negligible at Receptor R3	-	I	T	R	Mt
New Sensitive Receptors							
Buildings J, K+L, M+N, O	Construction Noise	Negligible to Minor	-	D	T	R	Mt
Buildings J, K+L, M+N, O	Construction Vibration	Negligible	n/a	D	T	R	Mt
Buildings J, K+L, M+N, O	Construction Traffic	Moderate at Building J Negligible at all other receptors	-	I	T	R	Mt
Completed Development							
All Receptors	Operational Noise	Negligible to Minor	-	D	P	R	Lt
All Receptors	Changes in Traffic Noise	Negligible to Minor	-	I	P	IR	Lt
All Receptors	Building Services Plant Noise Levels	Negligible	-	D	P	IR	Lt
Notes: * - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt –Medium term/ Lt –Long term. **Negligible/Minor/Moderate/Major							

proposed development in ES Chapter 5: Demolition and Construction Environmental Management, including stringent management measures and controls (as specified in a CEMP or equivalent Method Statement) would be adopted during demolition and construction works for each of the cumulative schemes. As such, no cumulative effects are anticipated from the construction of these.

Summary

- 9.19** The 2018 ES addendum assesses the potential impacts and likely effects of the amended proposed development in respect of noise and vibration at the application site. The changes to the Noise and Vibration ES chapter since the 2017 ES are limited and pertain to a reassessment of site suitability (to account for amendments to storey heights within the amended proposed development).
- 9.20** The updated assessment shows that with the mitigation measures outlined in the 2017 ES, or similar, the amended proposed development would be suitable for residential, community and office use. As such, the outcome of the 2017 ES remains valid for the amended proposed development, when read in conjunction with the updated Site Suitability Technical Appendix 9.4 contained within ES Volume 3A.
- 9.21** The updated cumulative schemes assessment for the completed development shows that no significant effects are predicted and therefore the outcome of the 2017 ES is still valid.
- 9.22** Therefore the 2018 ES Addendum results in the same conclusions to those of the noise and vibration assessment set out in the 2017 ES.

Cumulative Effects

- 9.16** Cumulative schemes have been noted in addition to those that were assessed in the 2017 ES. The updated traffic flows indicate that these schemes would contribute an additional 1000-1200 vehicles on the A206. It is considered that this increase would not increase the noise levels resulting from traffic previously predicted.
- 9.17** The updated traffic flows show no increase in any other road link.
- 9.18** In the absence of detailed demolition and construction method statements for the cumulative schemes, it can be assumed with a reasonable level of confidence, that similar provisions as set out for the

10A ARCHAEOLOGY (BURIED HERITAGE)

Introduction

- 7.1 This Chapter of the 2018 ES addendum assesses the potential impacts and associated likely effects on archaeological assets (buried heritage) at the application site. The assessment examines whether the amended proposed development would result in different conclusions to those of the archaeology assessment set out in the 2017 ES. It states that the conclusions within the 2017 ES remain valid. The amended proposed development is therefore considered acceptable in archaeology terms i.e. there are no significant adverse effects with mitigation in place.
- 7.2 This chapter should be read in conjunction with Chapter 10: Archaeology of 2017 ES Volume 1 and Technical Appendix 10.1 of 2017 ES Volume 3.

Legislation and Policy Context

- 7.3 In respect of national legislation relevant to the archaeological assessment, changes since the 2017 ES have been limited to the release of the 2018 NPPF, which was published and became immediately effective on 24 July 2018. None of the changes in the 2018 NPPF affect the archaeological assessment contained within the 2017 ES.
- 7.4 In respect of Regional policy, the draft London Plan has since undergone consultation, finishing in March 2018. It is anticipated that it will be subject to an Examination in Public (EiP) in January 2019. Although emerging policies demonstrate the direction of travel of the emerging framework for London, the policies have not been tested formally and can only be afforded limited weight at this stage and the current 2016 Plan remains the adopted Development Plan.
- 7.5 In respect of Local policy, there have been no updates or new policies relevant to the archaeology assessment since the 2017 ES.
- 7.6 In respect of other guidance, no other relevant updates have been published since the 2017 ES.
- 7.7 None of the updates summarised above affect the scope or assessment methodology for the archaeology assessment of the amended proposed development.

Consultation Feedback

- 7.8 Following submission of the 2017 ES, comments raised by the Greater London Authority (GLA) were not specific to archaeology and as a result, the issues addressed within this chapter follow from routine inspection/assessment of proposed design changes.

Assessment Methodology

- 7.9 The assessment methodology (inclusive of the study area, method of baseline characterisation, method of assessment, significance criteria and assumptions and limitations) set out in the 2017 ES remains valid for the amended proposed development.

Baseline Conditions

- 7.10 The baseline conditions set out in the 2017 ES remains valid for the amended proposed development.

Potential Effects

- 7.11 As the proposed basement depths and extents, piling depths and construction techniques have not changed for the amended proposed development, an update to the 2017 ES archaeology assessment is not required and therefore the conclusions set out in the 2017 ES remain valid for the amended proposed development.

Mitigation and Residual Effects

- 7.12 The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development.

Summary of Mitigation and Residual Effects

- 7.13 The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development however these have been replicated below for completeness.

Table 10.9: Summary of Residual Effects							
Receptor	Description of Residual Effect	Nature of Residual Effect*					
		Significance**	+	D	P	R	St Mt Lt
Demolition and Construction							
Paleoenvironmental remains within alluvial deposits (High potential)	Asset locally removed by new piled foundations. Negligible (following the implementation of an agreed programme of geoarchaeological borehole survey and sub-surface deposit modelling to greater understand the nature of the underlying geology and topography, and any potential prehistoric landscapes).	Negligible	-	D	P	IR	Lt
Post-medieval industrial remains (High potential)	Asset severely truncated by site strip, entirely removed within footprint of proposed basements, and locally removed by new piled foundations. Minor (The significance of post-medieval remains on the application site is not sufficient to warrant recording).	Minor	-	D	P	IR	Lt
Post-medieval wetland management such as timber	Asset severely truncated by site strip, entirely removed within footprint of proposed basements, and locally removed by new piled foundations.	Minor	-	D	P	IR	Lt

Table 10.9: Summary of Residual Effects							
revetments and reclamation dumps (Moderate potential; high for dumps)	Minor (The significance of post-medieval remains on the application site is not sufficient to warrant recording).						
Evidence of prehistoric wetland exploitation (moderate potential)	Asset locally removed by new piled foundations Minor (following the implementation of an agreed programme of geoarchaeological borehole survey and sub- surface deposit modelling to greater understand the nature of the underlying geology and topography, and any potential prehistoric landscapes).	Minor	-	D	P	IR	Lt
Notes: * - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt -Medium term/ Lt -Long term. **Negligible/Minor/Moderate/Major							

Cumulative Effects

- 7.14 As per the 2017 ES, an assessment of cumulative effects has been scoped out based on professional judgement. Cumulative effects are 'elevated' effects which occur where the combined effect of the proposed development with other proposed schemes in the vicinity, on a discrete and significant shared asset/resource, is more severe than that reported at the proposed development site. The reason for the scoping out is that, for intangible and deeply buried heritage assets, it is not feasible to quantify accurately the nature of the resource across the assessment study area and therefore not possible to identify any cumulative impact or potential elevated effect.
- 7.15 Therefore, an update to the 2017 ES cumulative assessment with respect to archaeology is not required and therefore the conclusions set out in the 2017 ES remain valid for the amended proposed development.

Summary

- 7.16 As the below ground works to the amended proposed development have not changed, the results of the assessment remain unchanged from that presented in the 2017 ES.

11A DAYLIGHT, SUNLIGHT, OVERSHADOWING & SOLAR GLARE

Introduction

- 11.1 This chapter is a full update of the chapter included within the 2017 ES to account for the amended proposed development.
- 11.2 This chapter of the ES assesses the potential impacts and likely effects of the proposed development on daylight, sunlight, overshadowing and solar glare. The assessment considers four main issues:
- Daylight and Sunlight to surrounds – the likely effect of the proposed development on daylight and sunlight availability at adjacent existing residential properties;
 - Sunlight Amenity and transient overshadowing analysis – the likely effect of the proposed development on amenity areas and public open space surrounding the application site;
 - Sunlight Amenity and transient overshadowing analysis – the likely effect of the proposed development on amenity areas and public open space within the proposed development;
 - Solar glare – the likely effect of the reflected solar glare from the proposed development to drivers of vehicles.
- 11.3 As agreed during the EIA Scoping Process, internal daylight and sunlight of the residential units within the proposed development is not considered an EIA issue; as such, this will be presented in a standalone report to accompany the planning application.
- 11.4 This chapter describes the methods used to assess the potential impacts and likely effects of the proposed development; the representative baseline scenario at the application site with its surroundings; the potential daylight, sunlight and overshadowing effects following the introduction of the proposed development; any relevant mitigation measures required; and the significance of the residual effects.
- 11.5 The assessment has been undertaken in accordance with the relevant policy documents, as detailed in Legislation and Policy Context, the Building Research Establishment (BRE) Guidance, 2011¹ and British Standard (BS) 8206 Part 2: Code of Practice for Daylighting, 2008².
- 11.6 This chapter is accompanied by the following technical appendices:
- Technical Appendix 11.1A: Drawings showing the baseline and proposed development scenarios;
 - Technical Appendix 11.2A: Detailed daylight; Vertical Sky Component (VSC), No Sky-Line Contour (NSC), Average Daylight Factor (ADF) and sunlight; Annual Probable Sunlight Hours (APSH) results for existing surrounding properties;
 - Technical Appendix 11.3A: Sunlight amenity assessment;
 - Technical Appendix 11.4A: Transient overshadowing assessment; and
 - Technical Appendix 11.5A: Solar glare assessment.
- 11.7 The states that the conclusions within the 2017 ES remain valid. The amended proposed development is therefore considered acceptable in daylight, sunlight and overshadowing terms i.e. there are no significant adverse effects with mitigation in place.

¹ Building Research Establishment (BRE) (2011): 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice

² British Standard (BS) 8206 Part 2 (2008): Lighting for Buildings

³ Department for Communities and Local Government (2018): National Planning Policy Framework.

⁴ National Planning Practice Guidance (2014): Design.

Legislation and Policy Context

National Policy

National Planning Policy Framework, 2018

- 11.8 In regard to daylight and sunlight, paragraph 123(c) the National Planning Policy Framework³ (NPPF) states:

"Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities and ensure that developments make optimal use of the potential of each site. In these circumstances:

c) local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards)."

Planning Practice Guidance, 2014

- 11.9 With respect to daylight and sunlight, paragraph 026 of the Planning Practice Guidance: Design⁴ (PPG) states:

"Account should be taken of local climatic conditions, including daylight and sunlight..."

Tall Buildings, Historic England Advice Note 4, 2015

- 11.10 Paragraph 4.10 of the Historic England Advice Note⁵ recommends that the following criteria should be addressed in relation to new developments:

"...Consideration of the impact on the local environment is also important, including microclimate, overshadowing, night-time appearance, light pollution, vehicle movements, the environment and amenity of those in the vicinity of the building..."

Regional Policy

The London Plan Spatial Development Strategy for London Consolidated with Alterations since 2011, 2016

- 11.11 Within the London Plan⁶, Policy 7.6: 'Architecture' states:

"Buildings and structures should...not cause unacceptable harm to the amenity of surrounding land and buildings, particularly residential buildings, in relation to privacy, overshadowing, wind and microclimate. This is particularly important for tall buildings".

⁵ Historic England (December 2015): 'Tall Buildings, Historic England Advice Note 4'

⁶ Greater London Authority (2016): The London Plan – Spatial Development Strategy for Greater London, Consolidated with Alterations Since 2011

11.12 Policy 7.7: 'Location and design of tall and large buildings' states:

"Tall buildings should not...affect adversely their surroundings in terms of microclimate, wind turbulence, overshadowing, noise, reflected glare, aviation, navigation and telecommunication interference".

The London Plan Spatial Development Strategy for Greater London – Draft for public consultation, December 2017

11.13 Within the London Plan⁷, Policy D4 'Housing quality and standards' states:

"F The design of development should provide sufficient daylight and sunlight to new housing that is appropriate for its context, whilst avoiding overheating, minimising overshadowing and maximising the usability of outside amenity space."

11.14 Policy D8 'Tall buildings' states:

"C 3 a) Wind, daylight, sunlight penetration and temperature conditions around the building(s) and neighbourhood must be carefully considered not compromise comfort and the enjoyment of open spaces, including water spaces, around the building"

The Housing – Supplementary Planning Guidance, London Plan, March 2016

11.15 The Housing – Supplementary Planning Guidance⁸, States:

"1.3.45 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, as well as within new developments themselves. 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.

1.3.46 The degree of harm on adjacent properties and the daylight targets within a proposed scheme 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."

Local Policy

Royal Greenwich Local Plan: Core Strategy, 2014

11.16 Within Chapter 4.1 Housing⁹ it states:

"Wherever possible, the Royal Borough will look to secure dual aspect units. The Royal Borough will only consider single aspect units when it can be demonstrated that good levels of ventilation, daylight and privacy will be provided to each habitable room and the kitchen."

11.17 Policy 'DH(b) Protection of Amenity for Adjacent Occupiers' states:

"When determining applications for new developments, extensions or renovations of buildings, the Royal Borough will only permit an application where it can be demonstrated that the proposed development does not cause an unacceptable loss of amenity to adjacent occupiers by reducing the amount of daylight, sunlight or privacy they enjoy or result in an unneighbourly sense of enclosure."

"When the amount of daylight and sunlight that enters a property is impacted on by development, whether it be new build, raised decking or an extension to an existing property, it can adversely affect the adjacent occupier's enjoyment of their own home."

"Policy H5 Housing Design

New residential development, redevelopment, refurbishment or conversions will be expected to achieve a high quality of housing design and an integrated environment. The Royal Borough will take into account the key relationships between the character of the area, site location and housing densities and expect the following:

...In flats, a good-sized balcony, a terrace or enclosed communal gardens should be provided..."

Royal Greenwich Site Allocation Local Plan Issues and Opinions Paper, 2016

11.18 There is no current, specific national planning policy relating to developments and their potential effects on daylight, sunlight, overshadowing and solar glare¹⁰.

Charlton Riverside SPD, June 2017

11.19 The Charlton Riverside SPD¹¹, states **"Residential development should be delivered in line with the provision of the Core Strategy in respect of noise, light, air quality and vibration issues"**.

Other Guidance

Site Layout Planning for Daylight and Sunlight, 2011

11.20 The BRE 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice' document provides advice on site layout planning to achieve good sun lighting and daylighting within buildings, and in the open spaces between them (hereafter referred to as the 'BRE guidelines'). It is intended to be used in conjunction with the interior daylight recommendations in the BS 8206 Part 2 and the Applications Manual Window Design of the Chartered Institute of Building Services Engineers (CIBSE).

11.21 The BRE guidelines are intended for building designers, developers, consultants and planning officials. The guidance is not mandatory and should not be used as an instrument of planning policy. It states:

"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 many factors in the application site layout design. In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high rise buildings, a higher degree of obstruction may be unavoidable if new Developments are to match the heights and proportions of existing buildings."

CIE Equations for Disability Glare, 2002

11.22 The International Commission on Illumination (CIE) 146:2002 Equations for Disability Glare, part of the CIE Collection on Glare¹², states:

⁷ Greater London Authority (2017): The London Plan – Spatial Development Strategy for Greater London, Draft for consultation. December 2017

⁸ The Mayor of London (2016) Housing – Supplementary Planning Guidance

⁹ The Royal Borough of Greenwich (2014): Royal Greenwich Local Plan: Core Strategy with Detailed Policies

¹⁰ The Royal Borough of Greenwich (2016): Royal Greenwich Local Plan: Site Allocations

¹¹ The Royal Borough of Greenwich (2017): Charlton Riverside SPD

¹² CIE, (2002): 146:2002 Equations for Disability Glare

- 11.23 *"Disability glare is glare that impairs vision (CIE, 1987). It is caused by scatterings of light inside the eye {...}. The veiling luminance of scattered light will have a significant effect on visibility when intense light sources are present in the peripheral visual field and the contrast of objects to be seen is low".*
- 11.24 *"Disability glare is most often of importance at night when contrast sensitivities is low and there may well be one or more bright light sources near to the line of sight, such as car headlights, streetlights or floodlights. But even in daylight conditions disability glare may be of practical significance: think of traffic lights when the sun is close to them, or the difficulty viewing paintings hanging next to a window".*

Consultation Feedback

- 11.25 As discussed in Chapter 2: EIA Process and Methodology, consideration has been given in this assessment to the formal EIA Scoping Opinion comments provided by the RBG and consultees in respect to the proposed development. The key considerations are summarised in Table 11.1.

Table 11.1: Consultation Feedback		
Consultee	Comment	Where in the Chapter this Issue is addressed
Port of London Authority (PLA)	Light spillage is considered a non-significant issue however any application should demonstrate that an assessment has been undertaken of any lighting at the safeguarded wharves and at the barge works and its impact on the application site. Mitigation measures should be identified if required.	Angerstein and Murphy's wharves are 200m+ from the site and as such there would be no adverse interactions in terms of light pollution (200m +). Riverside Wharf is closer (circa 50m) but at this distance the it is not considered that Wharf activities would have an adverse impact on the proposed development assuming the lighting for the Wharf follows the recommendations of the ILP guidance as required under planning policy.
London Borough of Greenwich - Reasons for refusal. Within the stage II report from the GLA (13 th August 2018)	<i>"5. Due to the height of the proposed buildings and their proximity to existing residential properties the proposed development would result in an unacceptable reduction in daylight and overshadowing of external amenity spaces to properties in Atlas Gardens and Anchor and Hope Lane as well as a loss of privacy to properties in Derrick Gardens, Atlas Gardens and Anchor and Hope Lane through overlooking. In addition the proposal fails to provide adequate levels of internal daylight and sunlight to the proposed residential units within the development. As such the proposal would adversely affect the amenity of neighbouring occupiers and would provide a poor quality living environment for future occupants of the development contrary to policy 7.6 of the London Plan (2016) and policies DH(b) and H5 of the Royal Greenwich Local Plan: Core Strategy with Detailed Policies July 2014."</i>	The concerns relating to daylight and sunlight have been directly assessed through design. With regard to daylight and sunlight to neighbours these are addressed in the embedded mitigation section of this report. Internal daylight and sunlight has been addressed within the standalone internal daylight and sunlight report.

Embedded Mitigation

- 11.26 The original planning application was submitted in December 2016 and following on from this, the proposal has been subject to iterative design changes.
- 11.27 As the scheme has evolved through the planning process it has been possible to apply daylight design to ensure daylight and sunlight amenity within and surrounding the proposed development was maximised where possible. EB7 Ltd worked alongside the architects and the design team to ensure adverse impacts are minimised. This has been achieved by stepping down the massing of the buildings in proximity to the residential neighbours at Atlas Gardens, Derrick Gardens and Anchor & Hope Lane.
- 11.28 As a result, the impacts provided in this report indicates significant improvements from the impacts recorded in to the initial ES dated December 2016.

Assessment Methodology

Baseline Characterisation

- 11.29 The neighbouring residential properties and adjacent amenity areas that might require daylight, sunlight and overshadowing assessments were evaluated as sensitive receptors by undertaking a site visit and determining use through council tax records.
- 11.30 The baseline scenario used within the assessments is the existing site, as shown within drawings in ES Volume 3: Technical Appendix 11.1. The application site currently has a number of low rise light industrial buildings and warehouses. Generally, these do not exceed two storeys.
- 11.31 Residential properties are considered to be sensitive receptors as the occupants have a higher expectation of daylight and sunlight for habitation. As described in the BRE guidelines, commercial buildings are deemed less sensitive. This is because they are generally designed to rely on electric lighting to provide a consistent and reliable source of light in which to work, rather than daylight or sunlight which vary greatly. As such commercial buildings are not considered relevant for assessment.

Method of Assessment

Determining Baseline Scenario and Sensitive Receptors

- 11.32 The technical analysis has been undertaken through the creation of a digital three dimensional model of the application site and surroundings, based on measured survey data. This will be referred to in this chapter as the test environment. Where survey data was not available, building dimensions have been determined using Ordnance Survey (OS) data and site photographs.

Daylight and Sunlight

- 11.33 The assessment of daylight and sunlight considers windows within the surrounding residential receptors which face the proposed development and are in close enough proximity to be potentially affected (as listed below and presented within ES Volume 3: Technical Appendix 11.1). The following residential properties surrounding the application site have been assessed (as marked in Figure 11.1 below), due to their proximity to the application site and potential for being impacted by the proposed development.
- 1 – 30 Atlas Gardens;
 - 21 – 40 Derrick Gardens; and
 - 1 – 8 Anchor & Hope Lane.



Figure 11.1: Position of the Existing Residential Receptors

Figure 11.2: Illustration of the Existing Amenity Areas

Overshadowing

- 11.34 The sunlight amenity assessment considers the impact of the proposed development on existing neighbouring amenity areas as well as those amenity areas within the proposed development. In this case, the surrounding amenity areas considered include 38 areas to the north and west of the application site (shown in ES Volume 3: Technical Appendix 11.3). These are the gardens of Atlas and Derrick Gardens and communal amenity spaces at the front of these properties.
- 11.35 Within the proposed development, 38 separate existing amenity areas were considered relevant for overshadowing assessment (shown in Figure 11.2 below).

Solar Glare

- 11.36 A review of local transport routes has identified five viewpoints around the proposed development where road traffic could potentially be adversely affected. These are locations where drivers may need to make a decision (e.g. a junction or signal). Viewpoint locations are limited to the vicinity of the application site, as at great distances the annual frequency of solar reflections is small due to the sun moving in the sky, and point-in-time reflections are usually brief, as drivers quickly lose sight of them. The viewpoints are identified as listed and illustrated in Figure 11.3:
- Viewpoint V1 - Travelling east along Bugsby's Walk approaching the roundabout at the end of the road.
 - Viewpoint V2 - Stopping at the roundabout at the end of Bugsby's Walk and looking at incoming traffic from the right.
 - Viewpoint V3 - Travelling east along Bugsby's Walk, stopping at the traffic lights.
 - Viewpoint V4 - Travelling north along Charlton Church Lane and stopping at the traffic lights with Woolwich Road.
 - Viewpoint V5 - Travelling north along Anchor and Hope Lane and approaching the roundabout.

- 11.37 The glare angle refers to the angle between a reflection and the driver's line of sight. According to CIE, glare angles beyond 30° are normally considered of little significance unless the glare source is of unusual intensity (i.e. tilted rooflights reflecting high sun or very reflective glass). The hours stated on the drawings within the analysis refer to solar times and no anomalies are considered.
- 11.38 To provide additional information, further analysis has been undertaken for the proposed development scenario, with the large deciduous trees at the end of Bugsby's Walk in leaf and in the existing scenario.



Figure 11.3: Illustration of the Viewpoints Positioning

Determining Construction Effects

- 11.39 The significance of an effect in relation to daylight, sunlight, overshadowing and solar glare for the identified sensitive receptors will vary throughout the construction phase, depending on the level of obstruction caused. Initially, the demolition of the existing buildings on site will result in a temporary improvement to existing receptors in terms of daylight, sunlight and overshadowing. However, as the existing buildings on the site are low rise and generally non reflective warehouse buildings there will be no significant instances of reflected solar glare.
- 11.40 From then, the effect to daylight, sunlight, overshadowing and solar glare will increase, but be less than that of the completed development, given that the extent of permanent massing will increase throughout the construction phase, until the buildings are complete. Therefore a quantitative assessment of the construction phase is not required, and reference should be made to the completed development effects, as this would address a worst case scenario.

Determining Completed Development Effects

Daylight Assessment Surrounds

- 11.41 The BRE guidelines provide three relevant methods for assessing daylight for existing residential accommodation:
- Vertical Sky Component (VSC);
 - No Sky Line Contour (NSC); and
 - Average Daylight Factor (ADF).
- 11.42 Each method is summarised in the following sections.

When reviewing the daylight results for each receptor identified, the VSC results should be considered in the first instance, looking at the daylight potential at the window face. This is the most basic daylight assessment and should be considered in conjunction with the NSC to consider the daylight entering the rooms.

The Vertical Sky Component Method

- 11.43 VSC is a quantified measurement of the amount of skylight falling on a vertical wall or window. This is the ratio of the direct sky luminance falling on a vertical wall at the reference point for the simultaneous horizontal illuminance under an unobstructed sky. The 'standard overcast sky' is used and the ratio is usually expressed as a percentage. The maximum value is almost 40% for a completely unobstructed vertical wall. The vertical sky component on a window can be related to the average daylight factor in a room, which is one basis for the BS 8206 Part 2 recommendations on interior daylighting.

No Sky Line Contour Method

- 11.44 The NSC method is a measure of the distribution of daylight at the 'working plane' within a room. In houses, the 'working plane' means a horizontal 'desktop' plane 0.85 metres (m) in height. The NSC divides those areas of the working plane in a room which receive direct sky light through the windows from those areas of the working plane which cannot. If a significant area of the working plane lies beyond the NSC (i.e. it receives no direct sky light), then the distribution of daylight in the room will be poor and supplementary electric lighting may be required.
- 11.45 The effect of daylight distribution in an existing building can be found by plotting the NSC in each of the main rooms. For residential dwellings, main rooms comprise living rooms, dining rooms and kitchens. Bedrooms can also be analysed, although they are considered less important by reference to the BRE guidelines.

Average Daylight Factor

- 11.46 The Average Daylight Factor assessment has not been used to determine significance of effect but has been included as supporting information.
- 11.47 The BRE guidelines define ADF as:
- "...a ratio of total daylight flux incident on a reference area to the total area of the reference area, expressed as a percentage of outdoor luminance on a horizontal plane, due to an unobstructed sky of assumed or known luminance distribution".**
- 11.48 The ADF method of assessment takes into account the diffuse visible transmittance of the glazing to the room in question (i.e. how much light gets through the window glass); the net glazed area of the window in question; the total area of the room surfaces (ceiling, walls, floor and windows); proportion of window located above the working plane and the angle of visible sky reaching the window/windows in question. It also makes allowance for the average reflectance of the internal surfaces of the room and of external obstruction. Reasonable estimations of internal reflectance are used if not known.
- 11.49 It is only the visible sky angle element which is dependent upon external obstruction. It can be directly related both to the obstruction angle and to the VSC on the external window wall.

Sunlight Assessment

The Annual Probable Sunlight Hour Method

- 11.50 With regard to sunlight, the same skylight indicator is used for the VSC test at the same reference point to calculate APSH, which is expressed as a percentage.
- 11.51 The BRE guidelines also notes:
- "Access to sunlight should be checked for the main window of each room which faces within 90 degrees (°) of due south".**
- 11.52 Therefore, any windows facing 90° of due north need not be analysed as they have no expectation of sunlight.

Overshadowing Assessment

Sunlight Amenity Assessment

- 11.53 The sunlight amenity assessment was introduced by the BRE in 2011 and provides for an assessment of the proportion of an amenity area which receives at least two hours of direct sunlight. This is achieved by plotting a contour of the area which receives at least two hours of direct sunlight on the 21st March (Spring Equinox). An amenity space with at least two hours of sunlight across the majority of its area can be said to see acceptable levels of direct sun. The amenity area surrounding the proposed development with the potential to see increased levels of shadow (those to the north) has been defined and assessed. In addition, amenity spaces created as part of the proposed development have also been assessed to confirm they receive sufficient direct sunlight.

Transient Overshadowing

- 11.54 The BRE guidelines suggest that where large buildings are proposed which may affect a number of gardens or open spaces, it is useful and illustrative to plot a shadow plan to show the location of shadows at different times of the day and year. This can be done by using the sun on the ground indicator in reverse. For the purpose of this assessment the overshadowing has been mapped for the following three key dates in the year being the dates where the sun's arc is at its midpoint, highest and lowest point in the sky:
- 21st March (Spring Equinox);
 - 21st June (Summer Solstice); and
 - 21st December (Winter Solstice).
- 11.55 For each of these dates, the overshadowing was calculated at hourly intervals throughout the day from 8.00am to 7.00pm. These images are presented within ES Volume 3: Technical Appendix 11.4. September 21st (Autumn Equinox) provides similar overshadowing images as March 21st (Spring Equinox) as the sun follows a similar path at these corresponding times of year.
- 11.56 The indicators are calculated for different latitudes, London being 51.5° north. Clearly, southern orientation is critically important, as are the heights of the existing and proposed development and surrounding buildings.

Solar Glare

- 11.57 The assessment of the frequency of instances of reflective solar glare has been undertaken by assuming all specular materials on the proposed development are fully reflective to present a worst case.
- 11.58 For each viewpoint two sets of angular images were generated:

- 1) Images displaying the time of the year: The sunpath is divided in months, taking the 21st of each month as the limit for each section.
- 2) Images displaying the time of the day: In this case the sunpath is divided by hours of the day. The hours represent mean solar time and not local time, and therefore they do not take daylight saving hours into account.

Application of Assessment Methodology

- 11.59 Each of the methods described above have been implemented in this assessment, using specialist computer software applied to three-dimensional AutoCAD models of the baseline scenario and surrounds and the proposed development.
- 11.60 The London Housing Design Guide¹³ stipulates that a kitchen is not considered habitable unless it provides space large enough to accommodate a dining table. Where kitchens are smaller than 13m² they have been omitted from our assessment as not being considered habitable.
- 11.61 The software uses Waldram Diagrams to establish the vertical sky component and 3D geometric calculations for NSC and uses the room layouts and window dimensions in conjunction with the VSC assessments for the average daylight factor to be calculated.
- 11.62 The three-dimensional AutoCAD model, which is orientated to north, also enables the path of the sun to be tracked throughout the year to establish the shadow cast by the existing and proposed buildings and thus to calculate the shadow cast on open spaces in each assessment scenario.
- 11.63 The effect on the baseline scenario of the existing surrounding properties has been compared with the proposed development scenario.
- 11.64 Solar reflections are visible from the observer's perspective and their frequencies throughout the year (time and date) are identified. It is also possible to quantify the angle between each reflection and the observer's line of sight (glare angle), which is a critical factor to estimate the likelihood of a glare episode.

Significance Criteria

- 11.65 An effect which is defined as moderate or major by the criteria listed below would be considered as significant. Effects defined in this chapter would be considered permanent and direct.
- 11.66 The BRE Guidelines¹⁴ state the following for use in EIA:

"The guidance in this book may be used as the basis for environmental impact assessment, where the skylight and sunlight impact of a new Development on its surroundings are taken into account.

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 would be 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 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 or sunlight in the affected building or open space.

¹³ Mayor of London (2010): The London Housing Design Guide: Interim Edition

¹⁴ Building Research Establishment (BRE) (2011): 'Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice

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 minor adverse impact would include:

- Only a small number of windows or limited area or open space are affected;
- The loss is only marginally outside the guidelines;
- The 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 guidelines 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."

Daylight

VSC Criteria

- 11.67 The BRE Guidelines recommends that a window serving a habitable room should be able to benefit from a minimum VSC value of 27%.
- 11.68 In order to be regarded as meeting the VSC criteria once the proposed development has been constructed, a window should either:
- Retain at least 27% VSC in absolute terms; or
 - Retain at least 80% of its existing VSC value after the proposed development is constructed.
- 11.69 In special circumstances the developer or Local Planning Authority (LPA) may wish to use different target values. For example, in a historic city centre 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.
- 11.70 Where the results show compliance with the BRE guidelines criteria, the occupants are unlikely to experience any noticeable change to their daylight amenity levels. For the purposes of this assessment, such an effect would be considered to be negligible.
- 11.71 Where there will be a noticeable change, the results have been summarised dependent on how far beyond the suggested targets the reductions are from baseline levels. For VSC, the ranges of reduction have been set at 20-29.9% (minor), 30-39.9% (moderate) and >40% (major).

NSC Criteria

- 11.72 In order to be regarded as meeting the NSC criteria an existing 'habitable room' should retain at least 80% of its existing NSC value after the proposed development is constructed.
- 11.73 Where the results show compliance with the NSC criteria, the effect is of negligible significance since the occupants are unlikely to experience any noticeable change to their daylight amenity levels. For the purposes of this assessment, such an effect would be considered negligible.
- 11.74 If, following construction of a new development, the NSC changes so that the area of the existing room which receives direct sky light is reduced to less than 0.8 times its former value, then this will be noticeable to the occupants and more of the room will appear poorly lit.

- 11.75 Where there will be a noticeable change, the results have been summarised dependent on how far beyond the suggested targets the reductions from baseline levels will occur. For NSC the ranges of reduction have been split into 20-29.9% (minor), 30-39.9% (moderate) and >40% (major).
- 11.76 VSC and NSC assessments are separate methodologies used for assessing daylight amenity which quantify light levels in different ways. Where there are discrepancies between these two assessments, professional judgement is applied to understand the overall impacts to daylight.

ADF Criteria

- 11.77 The ADF results and commentary have been provided as supporting information and have not been used to determine significance.
- 11.78 The recommended ADF value is dependent upon the use of the room in question. The BRE guidelines suggest a bedroom should have an ADF of 1%, a living room 1.5% and a kitchen 2%. Where room use is unknown an ADF target value of 1.5% (that of a living room) has been assumed. If a given room meets its relevant criteria, then it will be regarded as having adequate daylight.

Sunlight

- 11.79 The BRE Guidelines for the APSH method state that if a window:
- 11.80 "...can receive more than one quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months between 21 September and 21 March, then the room should still receive enough sunlight".
- 11.81 Accordingly, in order to be regarded as meeting APSH criteria once the proposed development has been constructed, a window should either:
- Retain at least 25% total APSH and 5% APSH in the winter months in absolute terms;
 - Retain at least 80% of its existing total and winter APSH values after the proposed development is constructed; or
 - The loss of total absolute annual APSH should be no more than 4% lower than the existing level.
- 11.82 Where the results show compliance with the BRE Guidelines APSH criteria, the effect is of negligible significance since occupants are unlikely to experience any noticeable change to their sunlight amenity levels.
- 11.83 Where the assessment demonstrates that sunlight levels will not meet either of the requirements set out above, the results have been assessed on the basis of how far beyond the suggested targets the reductions from baseline levels will occur. For total APSH the ranges of reduction have been split into 20-29.9% (minor), 30-39.9% (moderate) and >40% (major).
- 11.84 Where secondary or smaller windows are assessed within a room, professional judgement can be used to reduce the level of significance from those stated above.

Overshadowing

- 11.85 It is suggested in the BRE guidelines that for an area to appear adequately sunlit throughout the year, at least half (50%) of any assessment area should see direct sunlight for at least two hours on the 21st March. If, as a result of new development, an existing assessment area will not meet BRE guidelines and the area which can receive two hours of direct sunlight on the 21st March is reduced to less than 0.8 times its former area, then the loss of sunlight is likely to be noticeable.
- 11.86 Where the results show compliance with the BRE guidelines criteria, the occupants are unlikely to experience any noticeable change to their sunlight amenity levels. For the purposes of this assessment, such an effect would be considered negligible. Should the relevant criteria not be achieved, a judgment has to be made as to the significance of the effect based on the level of loss, retained sunlight levels and the relevant baseline scenario.

- 11.87 In order to determine minor, moderate or major effects professional judgement is applied following the principals set out in the BRE guidelines introduced at the beginning of the significance criteria section of this report.
- 11.88 For a new amenity area that is part of a new development, significance criteria cannot strictly be applied as there is no baseline to compare the impacts against. However, for this assessment we have applied professional judgement that 50% of the area should see at least 2 hours of direct sunlight on the 21st March for there to be a negligible effect. Where an amenity area does not meet this target, the criteria applied is again considered by professional judgement by considering the importance of the area and its proportional significance.
- 11.89 The BRE guidelines give no criteria for the significance of transitory overshadowing other than to suggest that by establishing the different times of day and year when shadow will be cast over surrounding areas an indication can be given as to the significance of the proposed development's effect. For this reason the results of the transient overshadowing assessment will be discussed in this chapter but the significance of the effect for overshadowing will be defined based on the results of the quantitative sunlight amenity assessment as described above.

Solar Glare

- 11.90 As there is no set guidance for applying significance to solar glare effects, the following significance criteria is based on professional opinion:
- Negligible: Glare angles greater than 30°, as reflections beyond this angle are normally not intense enough to cause glare (CIE), or between 10° and 30° for brief periods of time.
 - Minor adverse: Glare angles between 10° and 30° for long periods of time or between 2.5° and 10° for a short period of time.
 - Moderate adverse: Glare angles between 5° and 10° for a long period of time.
 - Major adverse: Solar reflections with glare angles smaller than 5°, which is the minimum angle that can be mitigated by the use of a visor.
- 11.91 Glare angle refers to the angle **between a reflection and the driver's line of sight**. According to CIE, glare angles beyond 30° are normally of little significance unless the glare source is of unusual intensity (i.e. very reflective glass or tilted rooflights that could reflect intense sunlight from high solar altitudes).
- 11.92 A long period of time is considered as more than two hours per day during more than two months per year.
- 11.93 These are general criteria, which should be adapted to the specific situation in order to consider the complexity of solar glare. The probability of a glare episode occurring can be reduced e.g. a limited intensity of traffic or alternative traffic signals. The severity of glare could also be reduced if the reflections were broken up by the façade, the intensity of the solar reflection is likely to be too weak **or if the driver was able to use a car's visor for mitigation. Other parameters may apply in unusual situations.**

Assumptions and Limitations

Daylight and Sunlight Assessment

- 11.94 Where detailed floor plan information for each existing sensitive residential receptor with the potential to be affected by the proposed development was not available, reasonable assumptions as to the internal configuration of the rooms behind the fenestration were made. A standard 4.27 m (14 ft) deep room was assumed unless the building form dictated otherwise. The use of the rooms behind the fenestration was also assumed from external observation. This is common accepted practice when access is unavailable.

- 11.95 We have been able to obtain the floor layouts for a number of properties within 1-30 Atlas Gardens and 21-40 Derrick gardens. Given the uniform design of these dwellings, **with the exception of No's 11-12 and 25-26 Atlas Gardens**, we have assumed that the layouts obtained are applicable to all of properties where the layouts are unknown.

Solar Glare Assessment

- 11.96 Specular materials on the façade of the proposed development were assumed to be fully reflective.

Baseline Scenario

Current Baseline

Daylight and Sunlight

- 11.97 Tables 11.2 to 11.5 summarise the baseline daylight and sunlight results for the baseline scenario (2016).

Table 11.2: Baseline VSC Summary

Surrounding Properties	Total number of windows	Total number of windows that achieve VSC levels above those suggested in the BRE guidance	Total number of windows that achieve VSC levels below those suggested in the BRE guidance
1-2 Atlas Gardens	2	2	0
3-4 Atlas Gardens	2	1	1
5-6 Atlas Gardens	2	1	1
7-8 Atlas Gardens	2	1	1
9-10 Atlas Gardens	2	1	1
11-12 Atlas Gardens	16	9	7
13-14 Atlas Gardens	2	1	1
15-16 Atlas Gardens	2	1	1
17-18 Atlas Gardens	2	1	1
19-20 Atlas Gardens	5	4	1
21-22 Atlas Gardens	2	1	1
23-24 Atlas Gardens	2	1	1
25-26 Atlas Gardens	16	10	6
27-28 Atlas Gardens	5	5	0
29-30 Atlas Gardens	2	1	1
21-22 Derrick Gardens	3	3	0
23-24 Derrick Gardens	2	2	0
25-26 Derrick Gardens	2	2	0
27-28 Derrick Gardens	2	2	0
29-30 Derrick Gardens	2	2	0
31-32 Derrick Gardens	2	2	0

Table 11.2: Baseline VSC Summary

Surrounding Properties	Total number of windows	Total number of windows that achieve VSC levels above those suggested in the BRE guidance	Total number of windows that achieve VSC levels below those suggested in the BRE guidance
33-34 Derrick Gardens	2	2	0
35-36 Derrick Gardens	2	2	0
37-38 Derrick Gardens	2	2	0
39-40 Derrick Gardens	7	5	2
1-8 Anchor & Hope Lane	15	10	5

Table 11.3: Baseline NSC Summary

Surrounding Properties	Total number of rooms	Total number of rooms above 50% well lit	Total number of rooms below 50% well lit
1-2 Atlas Gardens	2	2	0
3-4 Atlas Gardens	2	2	0
5-6 Atlas Gardens	2	2	0
7-8 Atlas Gardens	2	2	0
9-10 Atlas Gardens	2	2	0
11-12 Atlas Gardens	6	6	0
13-14 Atlas Gardens	2	2	0
15-16 Atlas Gardens	2	2	0
17-18 Atlas Gardens	2	2	0
19-20 Atlas Gardens	5	5	0
21-22 Atlas Gardens	2	2	0
23-24 Atlas Gardens	2	2	0
25-26 Atlas Gardens	6	6	0
27-28 Atlas Gardens	5	5	0
29-30 Atlas Gardens	2	2	0
21-22 Derrick Gardens	3	3	0
23-24 Derrick Gardens	2	2	0
25-26 Derrick Gardens	2	2	0
27-28 Derrick Gardens	2	2	0
29-30 Derrick Gardens	2	2	0
31-32 Derrick Gardens	2	2	0
33-34 Derrick Gardens	2	2	0
35-36 Derrick Gardens	2	2	0
37-38 Derrick Gardens	2	2	0

Table 11.3: Baseline NSC Summary

Surrounding Properties	Total number of rooms	Total number of rooms above 50% well lit	Total number of rooms below 50% well lit
39-40 Derrick Gardens	5	5	0
1 – 8 Anchor & Hope Lane	11	11	0

Table 11.4: Baseline ADF Summary

Surrounding Properties	Total number of rooms	Total number of rooms above the BRE suggested targets	Total number of rooms below BRE suggested targets
1-2 Atlas Gardens	2	2	0
3-4 Atlas Gardens	2	2	0
5-6 Atlas Gardens	2	2	0
7-8 Atlas Gardens	2	2	0
9-10 Atlas Gardens	2	2	0
11-12 Atlas Gardens	6	6	0
13-14 Atlas Gardens	2	2	0
15-16 Atlas Gardens	2	2	0
17-18 Atlas Gardens	2	2	0
19-20 Atlas Gardens	5	2	3
21-22 Atlas Gardens	2	2	0
23-24 Atlas Gardens	2	2	0
25-26 Atlas Gardens	6	6	0
27-28 Atlas Gardens	5	4	1
29-30 Atlas Gardens	2	2	0
21-22 Derrick Gardens	3	3	0
23-24 Derrick Gardens	2	2	0
25-26 Derrick Gardens	2	2	0
27-28 Derrick Gardens	2	2	0
29-30 Derrick Gardens	2	2	0
31-32 Derrick Gardens	2	2	0
33-34 Derrick Gardens	2	2	0
35-36 Derrick Gardens	2	2	0
37-38 Derrick Gardens	2	2	0
39-40 Derrick Gardens	5	4	1
1 – 8 Anchor & Hope Lane	11	3	8

Table 11.5: Baseline APSH Summary

Surrounding Properties	Total number of windows facing the application site and within 90° of due south	Total number of windows above BRE suggested targets for total and winter APSH	Total number of windows below BRE suggested targets for total and winter APSH
1-2 Atlas Gardens	0	0	0
3-4 Atlas Gardens	0	0	0
5-6 Atlas Gardens	0	0	0
7-8 Atlas Gardens	0	0	0
9-10 Atlas Gardens	0	0	0
11-12 Atlas Gardens	6	5	1
13-14 Atlas Gardens	0	0	0
15-16 Atlas Gardens	0	0	0
17-18 Atlas Gardens	0	0	0
19-20 Atlas Gardens	0	0	0
21-22 Atlas Gardens	0	0	0
23-24 Atlas Gardens	0	0	0
25-26 Atlas Gardens	8	3	5
27-28 Atlas Gardens	5	5	0
29-30 Atlas Gardens	2	2	0
21-22 Derrick Gardens	0	0	0
23-24 Derrick Gardens	0	0	0
25-26 Derrick Gardens	0	0	0
27-28 Derrick Gardens	0	0	0
29-30 Derrick Gardens	2	2	0
31-32 Derrick Gardens	2	2	0
33-34 Derrick Gardens	2	2	0
35-36 Derrick Gardens	0	0	0
37-38 Derrick Gardens	0	0	0
39-40 Derrick Gardens	0	0	0
1 – 8 Anchor & Hope Lane	15	15	0

11.98 In the baseline scenario there are a number of windows surrounding the application that fall below the BRE suggested VSC level of 27%. These instances are generally driven by the windows being blinkered by the rear extensions and external stairs on the rear facade of these buildings. Beyond these self-limiting features there is little external obstruction caused by existing buildings on site. In terms of NSC, all rooms are fully compliant in the baseline scenario.

11.99 Only properties with site-facing windows within 90° of due south are relevant for sunlight assessment. For this reason the number of windows assessed in relation to sunlight levels is reduced from those

assessed for daylight. Of the 39 windows assessed for sunlight, 33 meet the suggested BRE criteria. The remaining six windows are located within 11-12 and 25-26 Atlas Gardens.

Overshadowing

11.100 In the baseline scenario 21 of the 38 surrounding amenity areas assessed receive direct sunlight to at least 50% of their area for 2 or more hours on the 21st of March in their existing condition. The amenity areas that fall below the target are generally limited by the garden fences, external staircases and the buildings they serve.

Solar Glare

11.101 The low rise non reflective warehouse buildings currently on site cause no noticeable solar glare in the baseline scenario.

Sensitive Receptors

Existing Sensitive Receptors

11.102 The existing sensitive receptors detailed within paragraphs 11.27 to 11.32 and Figures 11.1 and 11.2 have the potential to be affected by the proposed development and have therefore been included within our assessments.

New Receptors

11.103 The new receptors assessed are the amenity spaces formed within the proposed development. These have been assessed for sunlight amenity as part of the overshadowing analysis.

Potential Effects

Demolition and Construction

11.104 The level of effect in relation to daylight, sunlight and overshadowing to the surrounding properties would vary throughout the demolition and construction phase, depending on the level of obstruction caused. There would be a slight temporary improvement in levels of daylight and sunlight after the buildings and structures on the application site are demolished. The effect of the construction of the proposed development would be less than that of the completed development, given that the extent of permanent massing will increase throughout the construction phase, until the buildings are complete. As such the effect on daylight and sunlight to surrounding properties will be negligible - major adverse and overshadowing to surrounding amenity areas will be negligible - minor adverse, the moderate and major adverse effects would be considered significant.

11.105 During the construction phase, a number of tall cranes would be present on-site; however their size and temporary presence would lead to generally imperceptible effects to local reductions in daylight and sunlight. The likely effect is considered to be negligible.

11.106 Potential solar glare effects would not occur until the proposed development's cladding is fixed. The effect on solar glare would be negligible until conditions are representative of the proposed developments completed significant effects, as discussed below.

Completed Development

Daylight and Sunlight

11.107 Full details of the VSC, NSC, ADF and APSH analysis are provided within ES Volume 3: Technical Appendix 11.2. Drawings of the proposed development in context and window maps are provided

within ES Volume 3: Technical Appendix 11.1. A summary of these results is provided below in Tables 11.6 to 11.9.

Table 11.6: Completed Development – VSC in Relation to the BRE Guidelines						
Surrounding Properties	Total number of windows	Total number of windows that achieve VSC levels in excess of 27% or a reduction of less than 20% from the baseline level	Total number of windows that see VSC reductions suggested to be noticeable in the BRE guidance			
			20% - 29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
1-2 Atlas Gardens	2	2	0	0	0	0
3-4 Atlas Gardens	2	2	0	0	0	0
5-6 Atlas Gardens	2	2	0	0	0	0
7-8 Atlas Gardens	2	2	0	0	0	0
9-10 Atlas Gardens	2	2	0	0	0	0
11-12 Atlas Gardens	16	10	6	0	0	6
13-14 Atlas Gardens	2	0	2	0	0	2
15-16 Atlas Gardens	2	0	2	0	0	2
17-18 Atlas Gardens	2	0	2	0	0	2
19-20 Atlas Gardens	5	3	2	0	0	2
21-22 Atlas Gardens	2	0	2	0	0	2
23-24 Atlas Gardens	2	0	2	0	0	2
25-26 Atlas Gardens	16	16	0	0	0	0
27-28 Atlas Gardens	5	4	1	0	0	1
29-30 Atlas Gardens	2	0	2	0	0	2
21-22 Derrick Gardens	3	3	0	0	0	0
23-24 Derrick Gardens	2	2	0	0	0	0
25-26 Derrick Gardens	2	2	0	0	0	0
27-28 Derrick Gardens	2	2	0	0	0	0
29-30 Derrick Gardens	2	2	0	0	0	0
31-32 Derrick Gardens	2	2	0	0	0	0
33-34 Derrick Gardens	2	2	0	0	0	0
35-36 Derrick Gardens	2	2	0	0	0	0

Table 11.6: Completed Development – VSC in Relation to the BRE Guidelines						
Surrounding Properties	Total number of windows	Total number of windows that achieve VSC levels in excess of 27% or a reduction of less than 20% from the baseline level	Total number of windows that see VSC reductions suggested to be noticeable in the BRE guidance			
			20% - 29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
37-38 Derrick Gardens	2	2	0	0	0	0
39-40 Derrick Gardens	7	7	0	0	0	0
1 – 8 Anchor & Hope Lane	15	3	11	1	0	12

Table 11.7: Completed Development – NSC in Relation to the BRE Guidelines						
Surrounding Properties	Total number of rooms	Total number of rooms that achieve less than a 20% reduction from the baseline level in NSC	Total number of rooms that see NSC reductions suggested to be noticeable in the BRE guidance			
			20% - 29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
1-2 Atlas Gardens	2	2	0	0	0	0
3-4 Atlas Gardens	2	2	0	0	0	0
5-6 Atlas Gardens	2	2	0	0	0	0
7-8 Atlas Gardens	2	2	0	0	0	0
9-10 Atlas Gardens	2	2	0	0	0	0
11-12 Atlas Gardens	6	6	0	0	0	0
13-14 Atlas Gardens	2	1	1	0	0	1
15-16 Atlas Gardens	2	1	1	0	0	1
17-18 Atlas Gardens	2	1	1	0	0	1
19-20 Atlas Gardens	5	4	1	0	0	1
21-22 Atlas Gardens	2	1	1	0	0	1
23-24 Atlas Gardens	2	2	0	0	0	0
25-26 Atlas Gardens	6	6	0	0	0	0
27-28 Atlas Gardens	5	5	0	0	0	0
29-30 Atlas Gardens	2	2	0	0	0	0
21-22 Derrick Gardens	3	3	0	0	0	0
23-24 Derrick Gardens	2	2	0	0	0	0
25-26 Derrick Gardens	2	2	0	0	0	0

Table 11.7: Completed Development – NSC in Relation to the BRE Guidelines

Surrounding Properties	Total number of rooms	Total number of rooms that achieve less than a 20% reduction from the baseline level in NSC	Total number of rooms that see NSC reductions suggested to be noticeable in the BRE guidance			
			20% - 29.9% reduction	30% - 39.9% reduction	>40% reduction	Total
27-28 Derrick Gardens	2	2	0	0	0	0
29-30 Derrick Gardens	2	2	0	0	0	0
31-32 Derrick Gardens	2	2	0	0	0	0
33-34 Derrick Gardens	2	2	0	0	0	0
35-36 Derrick Gardens	2	2	0	0	0	0
37-38 Derrick Gardens	2	2	0	0	0	0
39-40 Derrick Gardens	5	5	0	0	0	0
1 – 8 Anchor & Hope Lane	11	9	2	0	0	2

Table 11.8: Completed Development - ADF in Relation to the BRE Guidelines

Surrounding Properties	Total number of rooms	Total number of rooms above the BRE suggested targets	Total number of rooms below BRE suggested targets
1-2 Atlas Gardens	2	2	0
3-4 Atlas Gardens	2	2	0
5-6 Atlas Gardens	2	2	0
7-8 Atlas Gardens	2	2	0
9-10 Atlas Gardens	2	2	0
11-12 Atlas Gardens	6	6	0
13-14 Atlas Gardens	2	1	1
15-16 Atlas Gardens	2	1	1
17-18 Atlas Gardens	2	1	1
19-20 Atlas Gardens	5	1	4
21-22 Atlas Gardens	2	1	1
23-24 Atlas Gardens	2	1	1
25-26 Atlas Gardens	6	6	0
27-28 Atlas Gardens	5	4	1

Table 11.8: Completed Development - ADF in Relation to the BRE Guidelines

Surrounding Properties	Total number of rooms	Total number of rooms above the BRE suggested targets	Total number of rooms below BRE suggested targets
29-30 Atlas Gardens	2	2	0
21-22 Derrick Gardens	3	2	1
23-24 Derrick Gardens	2	2	0
25-26 Derrick Gardens	2	2	0
27-28 Derrick Gardens	2	2	0
29-30 Derrick Gardens	2	2	0
31-32 Derrick Gardens	2	2	0
33-34 Derrick Gardens	2	2	0
35-36 Derrick Gardens	2	2	0
37-38 Derrick Gardens	2	2	0
39-40 Derrick Gardens	5	4	1
1 – 8 Anchor & Hope Lane	11	2	9

Table 11.9: Completed Development – APSH in Relation to the BRE Guidelines

Existing Property	Total number of windows facing the application site and within 90° of due south	Total number of windows above BRE suggested targets for total and winter APSH	Total number of windows below BRE suggested targets for total and winter APSH
1-2 Atlas Gardens	0	0	0
3-4 Atlas Gardens	0	0	0
5-6 Atlas Gardens	0	0	0
7-8 Atlas Gardens	0	0	0
9-10 Atlas Gardens	0	0	0
11-12 Atlas Gardens	6	4	2
13-14 Atlas Gardens	0	0	0
15-16 Atlas Gardens	0	0	0
17-18 Atlas Gardens	0	0	0
19-20 Atlas Gardens	0	0	0
21-22 Atlas Gardens	0	0	0
23-24 Atlas Gardens	0	0	0
25-26 Atlas Gardens	8	8	0
27-28 Atlas Gardens	5	5	0
29-30 Atlas Gardens	2	2	0

Table 11.9: Completed Development – APSH in Relation to the BRE Guidelines			
Existing Property	Total number of windows facing the application site and within 90° of due south	Total number of windows above BRE suggested targets for total and winter APSH	Total number of windows below BRE suggested targets for total and winter APSH
21-22 Derrick Gardens	0	0	0
23-24 Derrick Gardens	0	0	0
25-26 Derrick Gardens	0	0	0
27-28 Derrick Gardens	0	0	0
29-30 Derrick Gardens	2	2	0
31-32 Derrick Gardens	2	2	0
33-34 Derrick Gardens	2	2	0
35-36 Derrick Gardens	0	0	0
37-38 Derrick Gardens	0	0	0
39-40 Derrick Gardens	0	0	0
1 – 8 Anchor & Hope Lane	15	15	0

11.108 The VSC, NSC and APSH results indicate that there would be no noticeable change in the levels of daylight and sunlight to the following properties:

- 1-2 Atlas Gardens;
- 3-4 Atlas Gardens;
- 5-6 Atlas Gardens;
- 7-8 Atlas Gardens;
- 9-10 Atlas Gardens;
- 25-26 Atlas Gardens;
- 27-28 Atlas Gardens;
- 21-22 Derrick Gardens;
- 23-24 Derrick Gardens;
- 25-26 Derrick Gardens;
- 27-28 Derrick Gardens;
- 29-30 Derrick Gardens;
- 31-32 Derrick Gardens;
- 33-34 Derrick Gardens;
- 35-36 Derrick Gardens;
- 37-38 Derrick Gardens; and
- 39-40 Derrick Gardens.

11.109 With no noticeable alterations in the VSC, NSC or APSH to these properties, by reference to the BRE Guidance, the effect of the proposed development on their daylight and sunlight is considered negligible and no further commentary on effects is provided. The remaining properties have the potential to see noticeable effects and as such have been described below.

11.110 The properties on Atlas Gardens and Derrick Gardens are of a similar typology and as such are likely to have similar internal layouts. Site research has shown that these terrace buildings are split into two flats with one at ground and one at first. Generally primary bedrooms and living spaces are located at the front of the property with small secondary bedrooms, small kitchens and bathrooms at the rear (facing the application site).

11.111 Beyond the self-limiting rear extensions and external stairs there is little external obstruction at present affecting the residential receptors, meaning any reasonable development on the application site is likely to cause a significant loss in natural light. The proposed development buildings have been designed to respect their neighbours light with buildings G and H in Plot A and Building J in plot B stepping down to their residential neighbours. Significance of impact for EIA is primarily based on reduction of light and does not consider retained daylight levels. The Housing – Supplementary Planning Guidance states that a degree of flexibility needs to be applied when using BRE guideline. As such, retained daylight levels have been described in certain cases where the windows experience noticeable reductions.

11.112 The properties below, which see noticeable change to daylight and/or sunlight, have been grouped by building.

11-12 Atlas Gardens

Daylight

11.113 In the baseline condition, 9 of the 16 windows assessed would achieve VSC levels in excess of those suggested in the BRE guidelines. The 7 windows that do not achieve the target level of 27% VSC are orientated facing the existing neighbouring buildings flank wall which restricts their sky view. Further to this, all 6 rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.114 The VSC assessment indicates that of the 16 windows assessed, 10 would experience no noticeable alteration in daylight with the proposed development in place. The remaining 6 windows would experience minor adverse effects with the proposed development in place.

11.115 In all but one case, the windows that see a noticeable reduction in VSC are within rooms served by other windows that see no noticeable effect. The primary window in the remaining room has retained a VSC of 25.9% which is only marginally below the BRE suggested 27%.

11.116 The NSC assessment indicates that all rooms comply with the suggested BRE targets.

11.117 With reference to the ADF assessment and considering reasonable assumed room layouts, all rooms retain ADF levels in excess of the BRE suggested levels.

11.118 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.119 Of the 6 windows assessed there are 2 windows that show reductions to APSH levels that are in excess of the targets set within the BRE guide. These 2 windows are the smaller side panes within a bay window within 2 separate rooms. In each case the primary window serving the room is not orientated within 90° of due south. In addition, 1 of these windows exceeds the total APSH targets but falls below the winter APSH target. Overall, with only secondary windows relevant for assessment and with professional judgement applied, the effect to sunlight within this property is considered to be minor adverse, which is not considered significant.

13-14 Atlas Gardens

Daylight

11.120 This 2 storey residential property currently faces the low rise buildings on the application site. In its existing outlook, 1 of the 2 windows achieve VSC levels in excess of those suggested by the BRE. The other window achieves a VSC of 26.8%, marginally below the 27% absolute target. Further to this, both of the rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.121 The VSC assessment indicates that both windows assessed would experience minor adverse effects with the proposed development in place. Based on the typical floor layout for this property, these windows serve single aspect secondary bedrooms, as such having the lowest requirement for daylight. The retained VSC levels are 19.8% on ground and 24.6% at the first floor level.

11.122 The NSC assessment indicates that 1 of the 2 bedrooms would experience no noticeable alteration in daylight. The remaining room would experience minor adverse impacts with the proposed development in place. The results for this room show a reduction of 22.5%, which is just beyond the suggested target of 20%.

11.123 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.124 None of the windows within this property that face the application site are relevant for assessment due to their orientation.

15-16 Atlas Gardens

Daylight

11.125 This 2 storey residential property currently faces low rise buildings on the application site and in its existing outlook, 1 of the 2 windows assessed achieve daylight levels in excess of the BRE suggested levels for VSC. The other window achieves a VSC of 26%, marginally below the 27% absolute target. Further to this, both of the rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.126 The VSC assessment indicates that with the proposed development in place the 2 windows assessed would experience noticeable effects which would be considered minor. Based on the typical floor layout for this property, these windows serve single aspect secondary bedrooms, as such having the lowest requirement for daylight. The retained VSC levels are 19.4% on ground and 24.6% at the first floor level.

11.127 The NSC assessment indicates that 1 of the 2 bedrooms would experience no noticeable alteration in daylight. The remaining room would experience minor adverse impacts with the proposed development in place. The results for this room show a reduction of 21.1%, which is only marginally beyond the suggested target of 20%.

11.128 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.129 None of the windows within this property that face the application site are relevant for assessment due to their orientation.

17-18 Atlas Gardens

Daylight

11.130 This 2 storey residential property currently faces low rise buildings on the application site. In its existing outlook, 1 of the 2 windows assessed achieve daylight in excess of the BRE suggested levels for VSC. The other window achieves a VSC of 25.9%, marginally below the 27% absolute target. Further to this, both of the rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.131 The VSC assessment indicates that with the proposed development in place the windows would experience minor adverse effects. Based on the typical floor layout for this property, these windows serve single aspect secondary bedrooms, as such having the lowest requirement for daylight. The retained VSC levels are 19.5% at ground floor and 24.1% at the first floor level.

11.132 The NSC assessment indicates that 1 of the 2 bedrooms would experience no noticeable alteration in daylight. The remaining room would experience minor adverse impact with the proposed development in place. The results for this room show a reduction of 23.2%, which is just beyond the suggested target of 20%.

11.133 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.134 None of the windows within this property that face the application site are relevant for assessment due to their orientation.

19-20 Atlas Gardens

Daylight

11.135 This 3 storey residential property currently faces low rise buildings on the application site. All but one window achieve the BRE suggested levels for VSC in the baseline scenario. Further to this, all of the rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.136 The VSC assessment indicates that of the 5 windows assessed, 3 would experience no noticeable alteration in daylight with the proposed development in place. The remaining two windows, would experience minor adverse effects with the proposed development in place.

11.137 Based on the typical floor layout for this property, these windows serve single aspect secondary bedrooms, as such having the lowest requirement for daylight. The retained VSC levels are 19.8% on ground and 22.5% at the first floor level. %.

11.138 The NSC assessment indicates that 4 of the 5 rooms would experience no noticeable alteration in daylight. The remaining room would experience minor adverse impacts with the proposed development in place. The results for this room show a reduction of 23.7%, which is just beyond the suggested target of 20%.

11.139 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.140 None of the windows within this property that face the application site are relevant for assessment due to their orientation.

21-22 Atlas Gardens

Daylight

11.141 This 2 storey residential property currently faces low rise buildings on the application site. In its existing outlook, 1 of the 2 windows achieves VSC in excess of the BRE suggested levels. The other window achieves a VSC of 26.2%, marginally below the 27% absolute target. Further to this, both of the rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.142 The VSC assessment indicates that the 2 windows serving this property would experience minor adverse effects. Based on the typical floor layout for this property, these windows serve single aspect secondary bedrooms, as such having the lowest requirement for daylight. The retained VSC levels are 19.7% on ground and 21.9% at the first floor level.

11.143 The NSC assessment indicates that 1 of the 2 bedrooms would experience no noticeable alteration in daylight. The remaining room would experience minor adverse impacts with the proposed development in place. The results for this room show a reduction of 20.7%, which is marginally beyond the suggested target of 20%.

11.144 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.145 None of the windows within this property that face the application site are relevant for assessment due to their orientation.

23-24 Atlas Gardens

Daylight

11.146 This 2 storey residential property currently faces low rise buildings on the application site. In its existing outlook, 1 of the 2 windows achieve VSC levels in excess of those suggested by the BRE. The other window achieves a VSC of 26.2%, marginally below the 27% absolute target. Further to this, both of the rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.147 The VSC assessment indicates that both windows would experience minor adverse effects. Based on the typical floor layout for this property, these windows serve single aspect secondary bedrooms, as such having the lowest requirement for daylight. The retained VSC levels are 19.7% on ground and 24.8% at the first floor level.

11.148 The NSC assessment indicates that all rooms comply with the suggested BRE targets with the proposed development in place.

11.149 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.150 None of the windows within this property that face the application site are relevant for assessment due to their orientation.

27-28 Atlas Gardens

Daylight

11.151 This 2 storey residential property currently faces low rise buildings on the application site and in its existing outlook all 5 windows assessed achieve daylight levels in excess of the BRE suggested levels for VSC. Further to this, all rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.152 The VSC assessment indicates that with the proposed development in place, 4 of the 5 windows assessed would experience no noticeable effects. The remaining window would experience minor adverse effects. Based on the typical floor layout for this property, this window serves a single aspect secondary bedroom, as such having the lowest requirement for daylight. The retained VSC levels for this window is 22.1%.

11.153 The NSC assessment indicates that all rooms comply with the suggested BRE targets with the proposed development in place.

11.154 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

29-30 Atlas Gardens

Daylight

11.155 This 2 storey residential property currently faces low rise buildings on the application site and in its existing outlook 1 of the 2 windows assessed achieve VSC levels in excess of those suggested by the BRE. The other window achieves a VSC of 26.5%, marginally below the 27% absolute target. Further to this, both of the rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.156 The VSC assessment indicates that with the proposed development in place the 2 windows would experience minor adverse effects. Based on the typical floor layout for this property, these windows serve single aspect secondary bedrooms, as such having the lowest requirement for daylight. The retained VSC levels are 19.3% on ground and 23.9% at the first floor level.

11.157 The NSC assessment indicates that all rooms comply with the suggested BRE targets with the proposed development in place.

11.158 The effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.159 The windows within the property would retain APSH levels in line with the BRE targets with the proposed development in place. The overall effect to the sunlight within this property is considered to be negligible, which is not considered significant.

1-8 Anchor & Hope Lane

Daylight

11.160 This 2 storey residential property currently faces low rise buildings and in its existing outlook 10 of the 15 windows achieve VSC levels in excess of those suggested by the BRE. Further to this, all of the rooms assessed achieve NSC levels in excess of those suggested by the BRE.

11.161 The VSC assessment indicates that of the 15 windows assessed, 3 would experience no noticeable alteration in daylight with the proposed development in place. Of the remaining 12 windows, 11 would experience minor adverse effects with the proposed development in place and 1 would experience moderate adverse effects. The room that sees a window with a moderate adverse effect is served by an alternate window. The other window within this room sees a minor adverse effect.

11.162 The NSC assessment indicates all but two rooms assessed experience no noticeable light loss. The remaining rooms see a very marginal minor adverse effect with the proposed development in place. The reductions are 21.1% and 21.9%, which is marginally above the suggested BRE targets of 20%.

11.163 Overall, the effect to daylight with the proposed development in place is considered to be minor adverse, which is not considered significant.

Sunlight

11.164 The windows within the property would retain APSH levels in line with the BRE targets with the proposed development in place. The overall effect to the sunlight within this property is considered to be negligible, which is not considered significant.

Overshadowing

Sunlight amenity

11.165 All 38 of the external amenity areas surrounding the proposed development would achieve direct sunlight to at least 50% of their area for 2 or more hours on the 21st March, or see a reduction of no more than 20% from baseline levels with the proposed development in place. The impact of the proposed development on surrounding amenity areas is considered to be negligible.

11.166 As part of the proposed development there will be newly created external amenity spaces relevant for assessment. This has shown that 8 of the 9 amenity areas will experience direct sunlight across more than 50% of their area for 2 hours or more on the 21st of March. The scheme has been designed to allow suitable light penetration to amenity areas where possible. As such, there is only one amenity area that does not achieve the target (labelled B8 within ES Volume 11: Technical Appendix 11.3A) which would have 18.4% of its area experiencing direct sunlight for 2 hours or more. A graded sunlight amenity study showing hours of sun on the ground on the 21st March indicates that whilst this area

would not see 2 hours of sunlight across the 50% of its area, the majority of the area would see at least 1 hour on this date.

- 11.167 With 8 of the 9 areas showing full compliance in terms of sunlight amenity and the one remaining area seeing a reasonable level of sunlight across the majority of its area, the impact to overshadowing within the proposed development in place would be considered minor adverse, which is not considered significant.

Transient Shadow

- 11.168 The transient shadow images for three key points throughout the year are located within ES Volume 3: Technical Appendix 11.4.

21st March

- 11.169 As would be expected, the proposed development would cause some additional shadowing, however sunlight is able to pass to the neighbouring amenity areas to the west of block A before 10 am. The cutbacks to the elements of the scheme at the north of Plot B reduce overshadowing to the gardens directly to the north of this location. Any additional overshadowing to these gardens at this time of year would be brief and isolated.
- 11.170 Additional assessments are available for 21st June when the shadows cast will be at their shortest and 21st December, when the shadows cast will be at their longest.

Solar Glare

Viewpoint 1 - Travelling east along Bugsby's Walk approaching the roundabout at the end of the road.

- 11.171 It should be noted that for this viewpoint there are no signals and, as such, no single point of attention. View V1A represents a driver looking ahead and V1B looking at potential incoming traffic from the right.
- 11.172 Reflections from Buildings M, N and O will be discussed with reference to V1A, as reflections from this building **are closer to the driver's line of sight in that view (figs. 3 to 14). Similarly, reflections from Block O will be discussed with reference to view V1B (figs. 15 to 26).**
- 11.173 The analysis shows that primary solar reflections from buildings M, N and O can be seen in view V1A **within 30 degrees of a driver's line of sight between 2pm and 6pm throughout the year (figs. 3 to 6).** Some of these reflections may happen within 10 degrees of the line of sight. These reflections happen for less than an hour per day (fig. 3) and are broken up by the non-reflective elements of the facade, producing partial solar reflections that would be brief in time and weak in intensity. They are also partially mitigated by the branches of the existing large plane trees (fig. 4), and half of the reflections would also be blocked by foliage (fig. 8), as they occur during the mid-seasons (green colour in fig. 4). It should also be noted that most of these reflections replace direct sunlight in the existing scenario (figs. 11 and 12), and therefore the proposed building would not increase the likelihood of a direct glare episode. Finally, the vast majority of reflections can be easily mitigated by the use of a car visor. Overall, we consider that reflections from buildings M,N and O will result in minor adverse effects of glare on drivers which is not considered significant.
- 11.174 Primary solar reflections from building O **can be seen in view V1B within 30 degrees of a driver's line of sight between 3pm and 5pm (figs. 15 to 18).** Some of these reflections may happen within 10 degrees of the line of sight, but they are partially mitigated by the branches of the existing large plane trees, and some of these reflections will also be blocked by foliage during the summer months (figs. 19 to 22). It should also be noted that most of these reflections replace direct sunlight in the existing scenario (figs. 23 to 26). Finally, most reflections can be easily mitigated by the use of a car visor. As the driver would have a clear view ahead at times when glare would occur when looking for oncoming traffic, they would have the ability to stop before reaching the roundabout at which point they would

have reached viewpoint 2 described below. Overall, we consider that reflections from the lower part of building O to result in minor adverse effects, which is not considered significant.

Viewpoint 2 – Stopping at the roundabout at the end of Bugsby's Walk and looking at incoming traffic from the right.

- 11.175 Reflections visible from this viewpoint are similar to viewpoint V1B, but the effect is less significant, as none of them occur within 10 degrees of a **driver's line of sight (figs. 27 and 28).**
- 11.176 We consider that solar reflections visible from viewpoint V2 would result in minor adverse effects of glare to drivers. Solar reflections are visible over large parts of building O, but only for glare angles greater than 10 degrees. The reflections closer to the line of sight would be masked by the existing trees even in winter, and the vast majority of reflections can be masked with the use of a car visor.

Viewpoint V3 – Travelling east along Bugsby's Walk, stopping at the traffic lights.

- 11.177 Three view targets were considered from this view point. View V3A represents a driver looking ahead and views V3B and V3C represent drivers looking at the left and the right traffic light respectively.
- 11.178 Solar reflections from buildings N and M in view V3A **can be seen within 10 degrees of a driver's line of sight between 4pm and 6pm from late February to late March and from late September to late October (figs. 39 to 42).** A few reflections from the lower floors can also be seen at the centre of vision. The reflections on the lower part of the façade would be brief. They would be partially mitigated by the branches of the existing large plane trees, and they would also be blocked by foliage during the summer months (figs. 43 to 46). Reflections from the upper floors can be easily mitigated by the use of a car visor.
- 11.179 Solar reflections from building O in view V3A span from 8 to **15 degrees of a driver's line of sight between 3pm and 5pm from late February to late March and from mid-September to late October (figs. 39 to 42).** The reflections on the lower part of the façade would be partially mitigated by the existing trees, and those closer to the line of sight would be blocked by foliage during the summer months (figs. 43 to 46). Reflections from the upper part of the façade can be easily mitigated by the use of a car visor.
- 11.180 With regards to traffic lights from viewpoint V3, the signal on the left (view V3B) would be less affected by solar reflections. Solar reflections from buildings N and M in view V3B can be seen within 10 degrees **of a driver's line of sight between 4pm and 6pm from late February to late March and from late September to late October (figs. 51 to 54).** Only reflections from the upper floors will be of significance, as the rest would be short and they would be mitigated by the existing trees (figs. 55 to 58). The frequency of reflections from Block O is the same as per view V3A, but for view V3B they span from 15 to 20 **degrees from the driver's line of sight.**
- 11.181 Overall we consider that solar reflections visible from viewpoint V3 can result in moderate adverse effects of glare on drivers, especially due to reflections from the upper floors on top of building B-West. It should be noted that most reflections from this viewpoint replace direct sunlight in the existing scenario (figs. 47 to 50).

Viewpoint V4 - Travelling north along Charlton Church Lane and stopping at the traffic lights with Woolwich Road.

- 11.182 There are no significant instances of glare from this viewpoint. We consider that solar reflections visible from viewpoint V4 will result in negligible instances of glare on drivers.

Viewpoint V5 – Travelling north along Anchor and Hope Lane and approaching the roundabout.

- 11.183 There are no significant instances of glare from this viewpoint. We consider that solar reflections visible from viewpoint V5 will result in negligible instances of glare on drivers.

Mitigation and Residual Effects

11.184 Table 11.10 and Table 11.11 provide a tabulated summary of the outcomes of the Daylight, Sunlight, Overshadowing and Solar Glare Impact Assessment of the proposed development.

11.185 Mitigation has been applied through the design of the building to minimise the effects. Although there are some residual significant effects these have been reduced significantly through the design evolution.

Receptor	Description of Potential Effect	Proposed Mitigation & Enhancement Measures
Demolition and Construction		
Daylight and Sunlight	Negligible – major adverse effects (as set out in the competed developments section)	None
Overshadowing	Negligible - minor adverse effects (as set out in the competed developments section)	None
Solar Glare	Negligible	None
Completed Development		
Daylight to surrounding receptors	Mainly negligible, with some long-term, local, minor – major adverse effects	None
Sunlight to surrounding receptors	Mainly negligible, with one property experiencing long-term, local, minor adverse effects	None
Overshadowing (surrounds)	Negligible	None
Overshadowing (Internal)	Minor adverse effects	None
Solar Glare	Negligible with some long-term, local, minor – moderate adverse effects.	Low reflectivity glass has been specified for the upper floors on the west façade of buildings M and N.

Receptor	Description of Residual Effect	Nature of Residual Effect*					
		Significance**	+	D	P	R	St Mt Lt
Demolition and Construction							
1-2 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
3-4 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
5-6 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
7-8 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
9-10 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT

11-12 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
13-14 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
15-16 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
17-18 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
19-20 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
21-22 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
23-24 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
25-26 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
27-28 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
29-30 Atlas Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
21-22 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
23-24 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
25-26 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
27-28 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
29-30 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
32-32 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
33-34 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
35-36 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
37-38 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
39-40 Derrick Gardens	Daylight and Sunlight	Negligible	-	D	T	IR	LT
1 – 8 Anchor & Hope Lane	Daylight and Sunlight	Negligible	-	D	T	IR	LT
External Amenity Areas A01-A38	Overshadowing	Negligible	-	D	T	IR	LT
V1 – V5	Solar Glare	Negligible	-	D	T	IR	LT
Completed Development							
1-2 Atlas Gardens	Daylight	Negligible	-	D	P	IR	LT
3-4 Atlas Gardens	Daylight	Negligible	-	D	P	IR	LT
5-6 Atlas Gardens	Daylight	Negligible	-	D	P	IR	LT
7-8 Atlas Gardens	Daylight	Negligible	-	D	P	IR	LT
9-10 Atlas Gardens	Daylight	Negligible	-	D	P	IR	LT
11-12 Atlas Gardens	Daylight	Minor adverse	-	D	P	IR	LT
13-14 Atlas Gardens	Daylight	Minor Adverse	-	D	P	IR	LT
15-16 Atlas Gardens	Daylight	Minor Adverse	-	D	P	IR	LT
17-18 Atlas Gardens	Daylight	Minor adverse	-	D	P	IR	LT
19-20 Atlas Gardens	Daylight	Minor adverse	-	D	P	IR	LT
21-22 Atlas Gardens	Daylight	Minor adverse	-	D	P	IR	LT
23-24 Atlas Gardens	Daylight	Minor adverse	-	D	P	IR	LT

Location	Effect	Significance	Duration	Reversibility	Timing	Frequency	Duration
25-26 Atlas Gardens	Daylight	Negligible	-	D	P	IR	LT
27-28 Atlas Gardens	Daylight	Minor adverse	-	D	P	IR	LT
29-30 Atlas Gardens	Daylight	Minor adverse	-	D	P	IR	LT
21-22 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
23-24 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
25-26 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
27-28 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
29-30 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
31-32 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
33-34 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
35-36 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
37-38 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
39-40 Derrick Gardens	Daylight	Negligible	-	D	P	IR	LT
1 – 8 Anchor & Hope Lane	Daylight	Minor adverse	-	D	P	IR	LT
1-2 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
3-4 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
5-6 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
7-8 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
9-10 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
11-12 Atlas Gardens	Sunlight	Minor adverse	-	D	P	IR	LT
13-14 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
15-16 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
17-18 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
19-20 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
21-22 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
23-24 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
25-26 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
27-28 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
29-30 Atlas Gardens	Sunlight	Negligible	-	D	P	IR	LT
21-22 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
23-24 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
25-26 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
27-28 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
29-30 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
31-32 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT

Location	Effect	Significance	Duration	Reversibility	Timing	Frequency	Duration
33-34 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
35-36 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
37-38 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
39-40 Derrick Gardens	Sunlight	Negligible	-	D	P	IR	LT
1 – 8 Anchor & Hope Lane	Sunlight	Negligible	-	D	P	IR	LT
Internal Amenity Areas	Overshadowing	Minor adverse	-	D	P	IR	LT
External Amenity Areas A01-A38	Overshadowing	Negligible	-	D	P	IR	LT
Viewpoint V1	Solar Glare	Minor adverse	-	D	P	IR	LT
Viewpoint V2	Solar Glare	Minor adverse	-	D	P	IR	LT
Viewpoint V3	Solar Glare	Minor adverse	-	D	P	IR	LT
Viewpoint V4	Solar Glare	Negligible	-	D	P	IR	LT
Viewpoint V5	Solar Glare	Negligible	-	D	P	IR	LT
Notes: * - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt -Medium term/ Lt -Long term. **Negligible/Minor/Moderate/Major							

Likely Significant Environmental Effects

- 11.186 Construction of the proposed development would have a gradually increasing effect on the levels of daylight, sunlight, overshadowing and solar glare to residential properties and amenity spaces surrounding the application site as the construction progresses. The effects that are perceptible as the superstructure progresses would be similar, albeit lesser, to those of the completed proposed development.
- 11.187 Due to application of daylight design through the evolution of these buildings it has been possible to mitigate any significant effects on daylight, sunlight, overshadowing and solar glare with the completed development in place.
- 11.188 The proposal has been designed to step back to respect neighbouring residential properties and their amenity areas such that the impacts to the all of the residential receptors would be negligible to minor adverse. The assessment of solar glare has shown that there would be solar reflections from the top floors of the west façade of Block B-West which could create minor - moderate adverse solar glare effects. Through mitigation involving the use of low reflectivity glass on the top floors, these effects have been reduced to minor adverse, which is not considered significant.

Cumulative Effects

- 11.189 The cumulative schemes set out in Chapter 2: EIA Process and Methodology have been considered but are too far from the proposed development to be affected or cause additional cumulative effect to existing surrounding receptors. As a result no cumulative assessment has been undertaken.

12A WIND MICROCLIMATE

Introduction

- 12.1** This Chapter of the 2018 ES addendum assesses the potential impacts and likely effects of the amended proposed development on wind microclimate at the application site. The assessment examines whether the amended proposed development would result in different conclusions to those of the wind microclimate assessment set out in the 2017 ES. It states that the conclusions within the 2017 ES remain valid. The amended proposed development is therefore considered acceptable in wind microclimate terms i.e. there are no significant adverse effects with mitigation in place.
- 12.2** This chapter should be read in conjunction with Chapter 12: Wind Microclimate of 2017 ES Volume 1.

Legislation and Policy Context

- 12.3** In respect of national legislation relevant to the wind microclimate Assessment, changes since the 2017 ES have been limited to the release of the 2018 NPPF¹, which was published and became immediately effective on 24 July 2018. None of the changes in the 2018 NPPF affect the wind microclimate assessment contained within the 2017 ES.
- 12.4** In respect of Regional policy, the draft London Plan has since undergone consultation, finishing in March 2018. It is anticipated that it will be subject to an Examination in Public (EiP) in January 2019. Although emerging policies demonstrate the direction of travel of the emerging framework for London, the policies have not been tested formally and can only be afforded limited weight at this stage and the current 2016 Plan² remains the adopted Development Plan.
- 12.5** In respect of Local policy, there have been no updates or new policies relevant to the wind microclimate assessment since the 2017 ES.
- 12.6** In respect of other guidance, no other relevant updates have been published since the 2017 ES.
- 12.7** None of the updates summarised above affect the scope or assessment methodology for the wind microclimate assessment of the amended proposed development.

Consultation Feedback

- 12.8** Following submission of the 2017 ES, comments raised by the Greater London Authority (GLA) were not specific to Wind Microclimate and as a result, the issues addressed within this chapter follow from routine inspection/assessment of proposed design changes.

Assessment Methodology

- 12.9** The assessment methodology of the baseline characterisation, significance criteria and assumptions and limitations set out in the 2017 ES remains valid. The amended proposed developed has been assessed qualitatively using professional judgement and experience and is based on the wind tunnel assessment conducted in the 2017 ES.

- 12.10** As the changes were relatively minor, large changes in the expected wind effects and resulting wind conditions were not expected. Therefore, a qualitative assessment was considered to be suitable for this assessment.

Baseline Conditions

- 12.11** The baseline conditions set out in the 2017 ES remains valid for the amended proposed development.
- 12.12** This is because there have been no changes to the existing site and surrounding area within the 360 m test radius, and therefore there are no new wind effects which would result in a change in wind conditions.

Potential Effects

- 12.13** The potential impacts and likely effects related to the tested 2017 proposed development have been reviewed against the amended proposed development and subsequent changes to the landscape plan. The likely effect of the design changes on the tested scheme have been assessed qualitatively, due to the scale of the measures and the generally calm wind conditions shown in the original results.
- 12.14** The most notable change is to the south-western corner of Building M, where the windiest conditions occurred in the tested scheme. Strong winds exceeding the safety threshold occurred at this location where mitigation measures were required in the form of a 2.4 m deep and 1.5 m tall shrub/planter, which had been developed through wind tunnel testing.
- 12.15** The introduction of a curved façade (in the absence of mitigation) is expected to redirect the corner accelerations (shear) of the strong winds at the south-west corner of Building M, and therefore may move the windy location further along the façade. However, the shrub/planter has been kept at the corner (of the same dimensions in height, depth and length) and would still be expected to mitigate the strong winds at this location.
- 12.16** The change in height of Buildings C and D (one floor added), E and F (one to two floors added) and Buildings G, H and J (two floors removed) is unlikely to result in a change in wind conditions, as the changes are relatively small relative to the overall height of the buildings.
- 12.17** At worst, the increase in height at buildings C, D, E and F may slightly increase channelling winds between these buildings. However, the wind conditions at ground level are generally calm for the intended use, and therefore even if a slight increase in channelling did result in a marginal increase in wind speeds, this would still result in suitable wind conditions for the intended use. As the terraces at Blocks C - F are below the sitting threshold by a suitable margin during the summer season, it is not expected that the increase in height of one to two storeys would have a significant effect subject to the landscaping strategy being implemented.
- 12.18** The scheme changes also include several additional entrances, or relocation of entrances. All new entrances are located in areas where wind conditions are suitable for standing use or calmer and are therefore suitable for the intended use.
- 12.19** The rooftop area of Building O has changed from amenity use to maintenance use.
- 12.20** The slight changes of balcony locations as a result of widening windows would not change the wind conditions reported (where all balconies were suitable for the intended use).

¹ Ministry of Housing, Communities and Local Government, 2018. The National Planning Policy Framework, Department for Communities and Local Government, July 2018.

² Greater London Authority, 2016. The London Plan Spatial Development Strategy for Greater London. Consolidated with Alterations since 2011. London. GLA

- 12.21 The recessed balconies at building O are expected to have calmer wind conditions in comparison to the exposed balconies tested.
- 12.22 The removal of a terrace at Building A (which has been replaced with a planter) means there will be no pedestrian access to the area, and therefore wind conditions at this location have no effect.
- 12.23 The three additional amenity terraces which have been added to three apartments at Building F are located in areas which are suitable for amenity use, representing a negligible effect.
- 12.24 The relocated seating area to the south-east of Building F had wind conditions suitable for sitting use during the summer season and represents a negligible effect.
- 12.25 Adjustments to the private amenity terraces at Building M are not expected to change the wind conditions which remain negligible.

Mitigation and Residual Effects

- 12.26 The mitigation and residual effects set out in the 2017 ES remains valid for the amended proposed development.

Summary of Mitigation and Residual Effects

- 12.27 The mitigation and residual effects set out in the 2017 ES would therefore remain valid for the amended proposed development, however these have been replicated below for completeness.

Table 12A.1: Summary of Residual Effects for 2017 ES							
Receptor	Description of Residual Effect	Nature of Residual Effect*					
		Significance**	+	D	P	R	St Mt Lt
Demolition and Construction							
None measured	Negligible	Negligible					
Completed Development							
Pedestrians on off-site thoroughfares	Sitting use to leisure walking	Negligible to moderate	+	D	P	R	Lt
Off-site ground floor amenity	Sitting in summer	Negligible	n/a	D	P	R	Lt
Pedestrians on thoroughfares	Sitting use to leisure walking	Negligible to moderate	+	D	P	R	Lt
Pedestrians at entrances	Sitting use to standing/entrance use	Negligible to Minor	+	D	P	R	Lt
Ground floor amenity	Sitting use to standing/entrance (at active amenity spaces)	Negligible	n/a	D	P	R	Lt
Podium terraces	Sitting use to standing/entrance use in summer	Negligible	n/a	D	P	R	Lt
Rooftop terraces	Sitting use and standing entrance use (probe location 166) in summer	Negligible	n/a	D	P	R	Lt

Table 12A.1: Summary of Residual Effects for 2017 ES							
Balconies	Sitting in summer	Negligible	n/a	D	P	R	Lt
Notes: * - = Adverse/ + = Beneficial; D = Direct/ I = Indirect; P = Permanent/ T = Temporary; R=Reversible/ IR= Irreversible; St- Short term/ Mt –Medium term/ Lt –Long term. **Negligible/Minor/Moderate/Major							

Cumulative Effects

- 12.28 The cumulative schemes within the test area (360 m) have not changed from those previously assessed. Flint Glass Wharf is the closest to the amended proposed development and sits just outside of the modelled area. The scheme is to the north-east (the secondary wind direction for London), however the distance to the amended proposed development and the mid-rise height of the cumulative scheme means it is unlikely to change the wind effects at the application site.
- 12.29 Therefore, as there are no new developments in the nearby surrounding area no different wind effects will occur to change the expected wind conditions.

Summary

- 12.30 The amended proposed development has undergone design changes of relevance to wind microclimate studies since the submission of 2017 ES in relation to a change in storey heights at a number of the buildings.
- 12.31 The potential increase in wind speeds at building M are expected to be mitigated through the landscape design.
- 12.32 The slight changes in storey heights by up to two storeys would either not have an effect on the wind microclimate or would be already mitigated through the proposed landscaping.
- 12.33 The changes in locations of seating areas (Plot A) and terraces (Plots A and B) is not expected to have an effect on the wind microclimate. The new locations of these amenity spaces (which includes the recessed balconies at Plot B) are suitable for the intended use and represent a negligible effect.
- 12.34 Additional terraces at Building F are in locations suitable for the intended use and represent a negligible effect.
- 12.35 The removal of a terrace at Plot A (Building A) will result in no effect at this location.
- 12.36 Adjusted entrance locations are in location which are suitable for entrance use, and therefore have a negligible effect.
- 12.37 The additional cumulative schemes are outside of the test radius and are not expected to change the wind conditions at the application site.
- 12.38 The overall conclusions for the 2017 ES remain valid and there are no significant (adverse) residual effects.

13A CUMULATIVE EFFECTS

Introduction

- 13.1 This chapter summarises the cumulative effects identified for the amended proposed development in the technical assessment (Chapters 6-12) of 2017 ES Volume 1, 2017 ES Volume 2 and (Chapters 6A-12A) of 2018 ES Addendum Volume 1A.
- 13.2 The methodology regarding inter-project and intra-project cumulative effects as set out in the 2017 ES remains valid for the amended proposed development.

Approach to the Assessment of Intra-Project Effects

- 13.3 The assessment approach for intra-project cumulative effects as set out in the 2017 ES remains valid for the amended proposed development.

Summary of Intra-Project Effects

- 13.4 The intra-project effects set out in the 2017 ES remain valid for the amended proposed development with the exception of daylight and sunlight which has improved to have only Minor Adverse and Negligible residual effects. All intra-project effects have been replicated below for completeness.

Sensitive Receptor/ Receptor Group	Demolition and Construction Residual Effects	Potential for Effect Interaction and so Combined Cumulative Effects?
Local existing residents and new on-site Users	Transport (Effects on highway network/pedestrians/cyclists/public transport) Minor – Moderate Beneficial, Minor Adverse and Negligible Noise and Vibration (Construction noise/Construction vibration/Construction Traffic) Moderate Adverse and Negligible for local existing residents. For new on-site users Construction Traffic is Moderate Adverse solely at Building J, whilst Construction Noise is Negligible to Minor for all buildings on Plot B.	Yes In relation to Transport and Noise and Vibration
Local economy	Socio-Economics (Generation of construction employment) Minor Beneficial	No (No aspects/effects to interact with)
Highway network	Transport (Traffic flows from construction vehicle movements upon the local highway network and the site access) Minor – Moderate Beneficial and Minor Adverse	No (No aspects/effects to interact with)
Local commercial uses	Noise and Vibration (Construction noise/Construction vibration/Construction Traffic) Minor Adverse and Negligible	No (No aspects/effects to interact with)

Archaeological remains	Archaeology (Asset locally removed by new piled foundations/ Asset severely truncated by site strip, entirely removed within footprint of proposed basements, and locally removed by new piled foundations) Minor Adverse and Negligible	No (No aspects/effects to interact with)
Townscape views	Townscape and Visual Impact (Changes to local views) Moderate Adverse	No (No aspects/effects to interact with)
Townscape Character Areas (TCAs)	Townscape and Visual Impact (Changes to local views) Negligible to Moderate Adverse	No (No aspects/effects to interact with)
Heritage Assets	Townscape and Visual Impact (Changes to local views) Minor to Moderate Adverse Built Heritage (demolition of non-designated heritage assets on site) Minor to Moderate Adverse Built Heritage (direct effect on Conservation Area) Minor to Moderate Adverse	No (these effects are interrelated and would not combine)

Sensitive Receptor/ Receptor Group	Completed Development Residual Effects	Potential for Effect Interaction and so Combined Cumulative Effects?
Local existing residents	Socio-Economics (Improvements in site safety) Moderate Beneficial Transport (Effects on highway network/pedestrians/ cyclists/public transport) Minor – Moderate Beneficial, Minor Adverse, and Negligible Noise (Operational noise/Changes in traffic noise) Minor Adverse and Negligible Daylight and Sunlight (Reduction in daylight and sunlight) Minor Adverse and Negligible	Yes In relation to Transport and Noise
Open space facilities and amenity space	Socio-Economics (Provision of open space and playspace) Minor to Moderate Beneficial Overshadowing (Increase in overshadowing) Minor Adverse and Negligible	No (No aspects/effects to interact with)
Highway network	Transport (Effects of the proposed development traffic flows) Minor Adverse and Negligible Solar Glare (Increase in reflected solar glare) Minor Adverse and Negligible	Yes In relation to Transport and Solar Glare

Table 13.2: Intra-Project Cumulative Assessment – Completed Development		
Pedestrians	Transport (Effects of the proposed development on pedestrian movement and capacity, severance, pedestrian delay, pedestrian amenity and pedestrian fear and intimidation) Moderate Beneficial and Negligible	No (No aspects/effects to interact with)
Local commercial uses	Noise (Operational noise/Changes in traffic noise) Minor Adverse and Negligible	No (No aspects/effects to interact with)
Townscape views	Townscape and Visual Impact (Changes to local views) Minor to Moderate Beneficial, Negligible, No Effect and Minor Neutral	No (No aspects/effects to interact with)
Townscape Character Areas (TCAs)	Townscape and Visual Impact (Changes to local views) Minor to Moderate Beneficial and Negligible	No (No aspects/effects to interact with)
Heritage Assets	Townscape and Visual Impact (Changes to local views) Minor to Moderate Beneficial, Neutral and Negligible Built Heritage (demolition of non-designated heritage assets on site) Minor to Moderate Adverse Built Heritage (Direct effect on Conservation Area) Moderate, Neutral	No (these effects are interrelated and would not combine)
Future residents of the proposed development	Socio-Economics (Provision of new housing) Minor to Moderate Beneficial Noise (Changes in traffic noise at the site access) Minor Adverse and Negligible Wind Microclimate (Wind conditions on-site) Minor – Moderate Beneficial and Negligible	No These effects are not expected to directly interact with each other to affect the future residents
Future employees and general site users of the proposed development	Socio-Economics (Generation of operational employment/Improvements in site safety) Negligible and Moderate Beneficial	No (No aspects/effects to interact with)

Conclusion of Intra-Project Effects

13.5 The conclusions as set out in the 2017 ES remain valid for the amended proposed development.

14A RESIDUAL EFFECTS AND MITIGATION

Introduction

14.1 This chapter summarises the residual effects and the likely significant environmental effects attributed to the amended proposed development identified in the technical chapters of the 2017 ES and 2018 ES Addendum (Chapters 6-12 of 2017 ES Volume 1 and 2017 ES Volume 2 and Chapters 6A-12A of 2018 ES Addendum Volume 1A and 2018 ES Addendum Volume 2A).

Mitigation and Enhancement

14.2 As set out in Chapter 2A: EIA Process and Methodology of this ES, one of the main aims of EIA is to develop measures to avoid, offset or reduce the potentially significant adverse effects of a project and to enhance any beneficial effects.

14.3 Within each of the technical assessments (Chapters 6-12 of 2017 ES Volume 1), a number of additional mitigation measures have been identified as necessary to avoid or minimise potential effects that could be significant and adverse. In addition, opportunities for compensation by environmental enhancement have been explored where practicable.

14.4 Reference should therefore be made to individual technical assessment chapters of ES Volume 1 for more detail, with the exception of daylight, sunlight and overshadowing which should be referred to in the fully updated chapter in the 2018 ES Addendum (Chapter 11: Daylight, Sunlight, Overshadowing and Solar Glare). The proposed mitigation and enhancement are in addition to the embedded design input which has already been considered within the technical assessments.

14.5 No additional mitigation is required over and above embedded mitigation measures outlined in ES Chapters 6-12 of 2017 ES Volume 1.

Summary of Residual Effects

14.6 This section summarises the predicted residual effects of the amended proposed development following the adoption and inclusion of the additional mitigation and enhancement measures that are set out in Chapter 14 of 2017 ES Volume 1.

14.7 Reference should be made to individual technical chapters (Chapters 6-12 of 2017 ES Volume 1 and 2017 ES Volume 2 and Chapters 6A to 12A of 2018 ES Addendum Volume 1A and 2018 ES Addendum Volume 2A) of the 2017 ES and 2018 ES Addendum for a detailed description of residual and likely significant environmental effects.

Residual Effects during Demolition and Construction

14.8 The residual effects as set out in the 2017 ES for demolition and construction remain valid for the amended proposed development, however they have been replicated in Table 14.1 for completeness.

Table 14.1: Residual Effects during the Demolition and Construction Phase of the Amended Proposed Development

Topic Area	Residual Effect	Significance of Effect	Adverse/Beneficial/Neutral	Duration of Effect
Socio-Economics	Generation of construction employment	Minor	Beneficial	Long-term
Transport	Effects of traffic flows from construction vehicle movements upon the local highway network	Minor to Moderate (beneficial) to Minor (adverse for HGV traffic)	Beneficial / Adverse	Short-term
	Effects of traffic flows from construction vehicle movements upon the Site Access.	Minor Adverse	Adverse	Short Term
	Effects of construction activities on pedestrian movement and capacity, severance, delay, fear and intimidation, amenity	Negligible	N/A	Short-term
	Effects of construction on cyclists	Negligible	N/A	Short-term
	Effects of increased number of public transport trips as a result of construction workers' travel	Negligible	N/A	Short-term
Air Quality	Dust Soiling and PM ₁₀ Health Effects	Negligible	N/A	Short-term
	NO ₂ and PM ₁₀ effects due to vehicle emissions	No Change to Negligible	N/A	Short-term
	Dust Soiling and PM ₁₀ Health Effects	Negligible	N/A	Short-term
Noise and Vibration	Construction Noise - Existing Sensitive Receptors	Negligible to Minor	Adverse	Medium-term
	Construction Vibration - Existing Sensitive Receptors	Negligible to Minor	Adverse	Medium-term
	Construction Traffic - Existing Sensitive Receptors	Negligible to Minor	Adverse	Medium-term
	Construction Noise - New Sensitive Receptors	Negligible to Minor	Adverse	Medium-term
	Construction Vibration - New Sensitive Receptors	Negligible	N/A	Medium-term
	Construction Traffic - New Sensitive Receptors	Moderate (at Building J) to Negligible (all	Adverse	Medium-term

Table 14.1: Residual Effects during the Demolition and Construction Phase of the Amended Proposed Development

		other receptors)		
Archaeology (Buried Heritage)	Asset locally removed by new piled foundations in relation to palaeoenvironmental remains within alluvial deposits	Negligible	Adverse	Long-term
	Asset severely truncated by site strip, entirely removed within footprint of proposed basements, and locally removed by new piled foundations in relation to post-medieval industrial remains	Minor	Adverse	Long-term
	Asset severely truncated by site strip, entirely removed within footprint of proposed basements, and locally removed by new piled foundations in relation to post-medieval wetland management such as timber revetments and reclamation dumps	Minor	Adverse	Long-term
	Asset locally removed by new piled foundations in relation to evidence of prehistoric wetland exploitation	Minor	Adverse	Long-term
Daylight, Sunlight, Overshadowing and Solar Glare	Daylight and Sunlight	Negligible	Adverse	Long-term
	Overshadowing	Negligible	Adverse	Long-term
	Solar Glare	Negligible	Adverse	Long-term
Wind Microclimate	N/A			
Townscape and Visual	Impact on Views	Moderate	Adverse	Short-term
	Impact on Townscape Character Areas	Moderate to Negligible	Adverse	Short-term
Built Heritage	Impact on non-designated heritage assets on site	Minor to Moderate	Adverse	Short-term
	Heritage assets beyond the application site	No more than Minor	Adverse or Neutral	Short-term
	Indirect effect on Atlas and Derrick Gardens, Stone Foundries	Minor to Moderate	Adverse	Short-term
	Direct effect on Conservation Area	Minor to Moderate	Adverse	Short-term

Residual Effects during Completed Development

14.9 The residual effects as set out in the 2017 ES for the completed development remain valid for the amended proposed development, however they have been replicated in Table 14.2 for completeness. There have however been some slight improvements in the daylight, sunlight and overshadowing residual effects which have been included in Table 14.2.

Table 14.2: Residual Effects during the Completed Development Phased of the Amended Proposed Development

Topic Area	Residual Effect	Significance of Effect	Adverse/Beneficial/Neutral	Duration of Effect
Socio-Economics	Provision of new housing	Moderate (neighbourhood level) Minor (borough level)	Beneficial	Long-term
	Increased demand for primary education facilities	Negligible	N/A	N/A
	Increased demand for secondary education facilities	Negligible	N/A	N/A
	Increased demand for healthcare facilities	Negligible	N/A	N/A
	Generation of operational employment	Negligible	N/A	N/A
	Provision of open space	Minor (neighbourhood level) Negligible (borough level)	Beneficial	Long-term
	Provision of playspace	Minor to Moderate	Beneficial	Long-term
	Improvements in site safety	Moderate	Beneficial	Long-term
Transport	Effects of the proposed development on pedestrian movement and capacity, severance, pedestrian delay, pedestrian amenity and pedestrian fear and intimidation	Negligible to Moderate	Beneficial	Long-term
	Effects of the proposed development cycle trips	Negligible	N/A	Long-term
	Effects of the proposed development bus trips	Negligible to Minor	Beneficial	Long-term
	Effects of the proposed development rail trips	Negligible	N/A	Long-term
	Effects of the proposed development traffic Flows	Negligible to Minor	Adverse	Long-term
Air Quality	NO ₂ and PM ₁₀ effects due to emissions	No Change to Negligible	N/A	Long-term

Table 14. 2: Residual Effects during the Completed Development Phased of the Amended Proposed Development				
	NO ₂ and PM ₁₀ effects due to vehicle emissions and site suitability	Negligible	N/A	Long-term
Noise and Vibration	Operational Noise	Negligible to Minor	Adverse	Long-term
	Changes in Traffic Noise	Negligible to Minor	Adverse	Long-term
	Building Services Plant Noise Levels	Negligible	Adverse	Long-term
Archaeology (Buried Heritage)	N/A			
Daylight, Sunlight, Overshadowing and Solar Glare	Daylight to surrounding receptors	Negligible to Minor	Adverse	Long-term
	Sunlight to surrounding receptors	Negligible to Minor	Adverse	Long-term
	Overshadowing (external amenity areas)	Negligible	Adverse	Long-term
	Overshadowing (internal amenity areas)	Minor	Adverse	Long-term
	Solar Glare	Negligible to Minor	Adverse	Long-term
Wind Microclimate	Sitting use to leisure walking (on off-site thoroughfares)	Negligible to Moderate	Beneficial	Long-term
	Sitting in summer (off-site ground floor amenity)	Negligible	N/A	Long-term
	Sitting use to leisure walking (thoroughfares)	Negligible to Moderate	Beneficial	Long-term
	Sitting use to standing/entrance use	Negligible to Minor	Beneficial	Long-term
	Sitting use to standing/entrance (at active amenity spaces)	Negligible	N/A	Long-term
	Sitting use to standing/entrance use in summer (podium terraces)	Negligible	N/A	Long-term
	Sitting use and standing entrance use (probe location 166) in summer	Negligible	N/A	Long-term
	Sitting in summer (balconies)	Negligible	N/A	Long-term
Townscape and Visual	Impact on View – Views 1, 5, 7-9, 18-19	Minor to Moderate	Beneficial	Long-term
	Impact on View – View 2, 6	Moderate	Beneficial	Long-term

	Impact on View – View 3	Minor to Moderate (summer) Moderate (Winter)	Beneficial	Long-term
	Impact on View – View 4, 20 and 21	Minor	Neutral	Long-term
	Impact on View – Views 10-12.	Negligible to Moderate, and No effect	Beneficial, Neutral and No Effect	Long-term
	Impact on View – Views 13, 14, 16	No Effect	Neutral to No Effect	Long-term
	Impact on View – View 15, 17	Minor	Beneficial	Long-term
	Impact on Townscape Character Areas – Charlton Riverside and Residential Charlton	Minor to Moderate	Beneficial	Long-term
	Impact on Townscape Character Areas – Charlton Village	Negligible	Neutral	Long-term
	Built Heritage	Impact on non-designated heritage assets on-site	Minor to Moderate	Adverse
Impact on Charlton Riverside Conservation Area		Moderate	Neutral	Long-term
Impact on Listed Buildings		Negligible	Neutral	Long-term
Impact on Conservation Areas		Negligible	Neutral	Long-term
	Impact on Locally Listed Buildings	Negligible to Moderate	Neutral	Long-term

Conclusion

14.10 The summary of significant adverse and beneficial effects as set out in the 2017 ES remains valid for the amended proposed development, with the exception of the daylight, sunlight and overshadowing assessments which have seen some improvements. All significant adverse effects from daylight, sunlight and overshadowing have been reduced; previously having some moderate to major effects, the significant effects now do not exceed minor adverse, which is not considered significant.

14.11 Overall, the EIA process has demonstrated that likely significant environmental adverse effects are limited to views during construction which are also to be expected, however these would be only of a temporary nature and to non-designated heritage assets on site which are likely to range from minor to moderate adverse. These assets have largely been demolished however there is the potential for some remain to still be in situ. There are no other significant adverse effects predicted by socio-economics, transport, air quality, noise and vibration, archaeology (buried heritage), daylight, sunlight and overshadowing, wind or townscape.

14.12 There are a number of significant environmental beneficial effects associated with the amended proposed development in relation to socio-economics. These comprise provision of new housing, the provision of

playspace, and the improvements in site safety. In addition, there would be significant beneficial effects in relation to improved pedestrian movement and capacity, improved wind conditions and improved views of the application site. Furthermore, during construction there would be significant beneficial effects in relation to traffic flows from construction vehicle movements upon the local highway network, due to a reduction in the number of trips in comparison to the current site use.

- 14.13** The amended proposed development would bring forward high quality residential units with ancillary residential facilities and associated public and private open space. The commercial space would generate local employment and community facilities would benefit the local residents. In addition, the amended proposed development would improve the existing highway network and public realm which would benefit the wider local area.