17. Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare

Introduction

17.1. This chapter, written by Gordon Ingram Associates (GIA) assesses the effects of the Development in terms of:

- Daylight and sunlight amenity to existing residential properties Surrounding the Site;
- Daylight and sunlight amenity within the proposed residential units of the Development;
- Overshadowing to existing amenity areas surrounding the Site;
- Overshadowing to proposed amenity areas of the Development;
- Light pollution which could arise from the completed and operational Development, and
- Solar glare which could arise from the completed and operational Development.

17.2. The chapter contains a summary of relevant legislation, planning policy and guidance and methodologies applicable to the assessment. The relevant existing baseline conditions against which the effects are assessed are provided, together with an assessment of potential effects. Mitigation is set out as necessary and the resulting residual effects are also identified.

17.3. This chapter summarises the detailed technical assessments undertaken by GIA. Such detail is provided within the following Technical Appendices:

- Technical Appendix 17.1: Institution of Lighting Engineers (ILE) Guidelines;
- Technical Appendix 17.2: Drawings of the Baseline and Proposed (with Development) Situations and Window Maps of Surrounding Properties;
- Technical Appendix 17.3: Detailed Analysis Results of the Levels of Daylight and Sunlight Amenity within the Residential Properties Surrounding the Site; (for the existing Baseline and Proposed Development)
- Technical Appendix 17.4: Internal Daylight and Sunlight Results and Report
- Technical Appendix 17.5: Sun Hours on Ground Assessment
- Technical Appendix 17.6: Transient Overshadowing Results
- Technical Appendix 17.7: Light Pollution Results; and
- Technical Appendix 17.8: Solar Glare Results and Report.

Legislation, Planning Policy Context and Guidance

Legislation

Environmental Protection Act, 1990

17.4. By an amendment contained within the Clean Neighbourhoods and Environment Act, 2005 [1] Section 79 of the Environmental Protection Act, 1990 [2] states:

"Artificial light emitted from premises so as to be prejudicial to health and nuisance constitutes a 'Statutory Nuisance' and it shall be the duty of every local authority to cause its area to be

[1] Clean Neighbourhood and Environment Act

[2] Environmental Protection Act 1990

inspected from time to time to detect any statutory nuisances which ought to be dealt with under section 80 and, where a complaint of a statutory nuisance is made to it by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint".

National Planning Policy

Planning Policy Statement 1: Delivering Sustainable Development, January 2005

17.5. Planning Policy Statement (PPS)1: Delivering Sustainable Development [3] states that Local Planning Authorities and developers should take into account environmental issues, including light pollution.

National Planning Policy Framework, Draft 2011

17.6. "…planning policies and decisions should always seek to secure a good standard of amenity for existing and future occupants of land and buildings."

Regional Planning Policy

The Spatial Development Strategy for Greater London (The London Plan), July 2011

17.7. Policy 7.6 of The London Plan [4]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 micro-climate".*

17.8. Policy 7.7 notes that large buildings should not adversely affect their surroundings in terms of overshadowing and reflected glare.

Local Planning Policy

Camden Local Development Framework, Camden Core Strategy, (2010 - 2025 Adopted, November, 2010

17.9. Section CS5 of the London Borough of Camden (LBC) Core Strategy [5] recognises that the proximity of land uses, major roads and railways can mean that privacy and other issues can be problematic in protecting and providing a good level of amenity. Protecting amenity (including daylight and sunlight availability) is therefore a key element of managing growth within the Borough. As a result, LBC expect new redevelopment to protect and enhance the amenity of existing occupants who surround a redevelopment site. In addition, amenity value is expected to be maximised as far as practically possible for new occupants of a development.

17.10. Policy DP26 of the Core Strategy sets out:

"A development's effect on…overshadowing…access to daylight and sunlight and disturbance from artificial light can be influenced by its design and layout, the distance between properties, the vertical levels of onlookers or occupiers and the angle of views. These issues will also affect the amenity of the new occupiers. We will expect that these elements are considered at the design stage of a scheme to prevent potential negative effects of the development on occupiers and neighbours. To assess whether acceptable levels of daylight and sunlight are available to habitable spaces, the Council will take into account the standards recommended in the British Research Establishment's Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice (1991)."

[3] Planning Policy Statement Delivering Sustainable Development, January 2005
[4] The London Plan, 2011
[5] Camden Council Core Strategy (2010- 2025)

Hawley Wharf Area Planning Framework Supplementary Planning Document, February 2009

17.11. "Camden's UDP already encourages the full use of sites and higher densities where development is designed to a high standard…It recognises that density varies across the borough and expects the highest densities in Central London…"

"Residential quality and amenity will depend on appropriate design and location of new housing…" Camden Local Development Framework, Camden Development Policies, Adopted, November 2010

17.12. " A developments' impact on visual privacy, overlooking, overshadowing, outlook, access to daylight and sunlight and disturbance from artificial light can be influenced by its design and layout, the distance between properties, the vertical levels of onlookers or occupiers and the angle of views. These issues will also affect the amenity of the new occupiers. We will expect that these elements are considered at the design stage of a scheme… To assess whether acceptable levels of daylight and sunlight are available to habitable spaces, the Council will take into account the standards recommended in the British Research Establishment's Site Layout Planning for Daylight and Sunlight- A Guide to Good Practise (1991)."

Guidance

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

17.13. The 1991 BRE Guidance has now been updated as of November 2011, and the new Guidance at 1.5 states "This guide supersedes the 1991 edition which is now withdrawn". Hence technical analysis has been undertaken based upon this most up-to-date document and the methodology therein. The 2011 BRE Handbook [6] provides advice on site layout planning to achieve good sunlighting and daylighting within buildings, and in the open spaces between them. It is intended to be used in conjunction with the interior daylight recommendations in the British Standard (BS) 8206 Part 2 2008 [7] and the Applications Manual Window Design of the Chartered Institute of Building Services Engineers (CIBSE)[8].

17.14. The 2011 BRE Handbook is intended for building designers, developers, consultants and LPAs. The advice it gives is not mandatory and should not be used as an instrument of planning policy. Of particular relevance, it states:

"This guide is a comprehensive revision of the 1991 edition of Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice. It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location."

Institute of Lighting Engineers (ILE) 'Guidance Notes for the Reduction of Obtrusive Light', 2005

17.15. The ILE Guidance Notes for the Reduction of Obtrusive Light [9] quantify the levels of sky glow, glare and light trespass considered as acceptable for varying environmental zones. Further detail is provided within Technical Appendix 17.1.

[6] Building Research Establishment (BRE) Handbook 'Site Layout Planning for Daylight and Sunlight 2011: A Guide to Good Practice, Second Edition

[7] British Standard 8206 Part 2 2008

[8] Applications Manual Window Design of the Chartered Institute of Building Services Engineers (CIBSE)

[9] Guidance Notes for the Reduction of Obtrusive Light

Assessment Methodology and Significance Criteria

Assessment Methodology

17.16. The methodology for the assessment of daylight, sunlight, overshadowing and solar glare is primarily set out in the 2011 BRE Handbook. The methodology for the assessment of light pollution is prescribed by the ILE. All relevant methodologies are summarised later in this chapter.

17.17. The technical analysis has been undertaken via the creation of a digital three dimensional model of the site and surroundings, based on measured survey data. Actual room layouts of the surrounding properties have been obtained where possible. Where room layout information is unavailable, reasonable assumptions have been made in regards to the likely use and internal configuration of rooms behind the fenestration observed. In such cases, it has also been assumed that a standard 4.2m deep room exists, unless the building form dictates otherwise. This is common practice when access for surveying is unavailable. This enables precise evaluation of the diffuse levels of daylight within each of the rooms via the NSL and ADF methodologies, which are discussed in more detail below.

17.18. 3D modelling of the completed and operational Development has been based upon:

- The detailed planning applications submitted for approval (in relation to the detailed component of the Development);
- The outline lighting strategy for the detailed component of the Development (refer to Chapter 5: The Proposed Development);
- The Parameter Plans submitted for approval for the outline component of the Development; and
- The Hawley Wharf School Design Principles submitted for approval (refer to Technical Appendix 5.1).

17.19. In respect of the outline component of the Development, the assessment assesses the maximum allowable footprint and height of School Block S1 and School Block S2 as shown on Parameter Plan P4410 and Parameter Plan P4411 respectively both with the School Block S2 in its easternmost position allowable within the parameters sought for approval and with School Block S2 in its westernmost position allowable within the parameters sought for approval (refer to Parameter Plan P4411).

17.20. The above two permutations of the parameters sought for approval are considered to represent a worst-case assessment in terms of daylight, sunlight and overshadowing. There are two worst-case permutations by virtue of the fact that consideration must be given to effects to existing receptors surrounding the Site and future receptors brought about by the Development itself. To exemplify this, the flexibility of the location of School Block S2 means that the implementation of its easternmost position would, for example, give rise to worst-case daylight and sunlight effects to surrounding receptors along Kentish Town Road. However, easternmost location of School Block S2 allowable within the parameters sought for approval would not give rise to worst-case effects to the proposed residential units within Blocks W and X of the Development. For this reason, a second worst-case permutation with School Block S2 within its westernmost location allowable within the parameters sought for approval is also tested to ensure that the worst-case daylight and sunlight effects can be established for the proposed residential units within Blocks W and X of the Development.

17.21. The minimum footprint and height of School Block S1 and S2 as shown on Parameter Plans P4410 and Parameter Plan P4411 have not been assessed. Whilst the minimum footprint and height of

School Block S1 and School Block S2 may demonstrate marginal improvements in the results of daylight, sunlight, and overshadowing assessments, based upon professional judgement, the extent of the differences between the maximum and minimum scale parameters is not to be considered substantial enough to alter the overall conclusions of this chapter.

17.22. All models have been correctly orientated north by the use of Ordnance Survey (OS) information so as to enable the path of the sun to be tracked throughout the year, where relevant.

17.23. Completed Development effects to daylight, sunlight, overshadowing, light pollution and solar glare in relation to receptors surrounding the Site have been based upon a comparison of the existing baseline conditions with those which are predicted with the Development in place.

17.24. Completed Development effects to elements of the Development itself have been based upon the BRE Handbook guidelines only. This is due to the fact that there is no 'baseline comparison' for future receptors within the Development to be compared to.

Daylight

17.25. The BRE Handbook provides three different methods for assessing daylight to residential accommodation:

- The Vertical Sky Component (VSC) method;
- The No Sky Line (NSL) method; and
- The Average Daylight Factor (ADF) method.

17.26. Each method is described as follows. It should be noted that this assessment deals only with effects to residential properties (both existing residential properties which surround the Site and future proposed residential units of the Development itself). This is due to the fact that the BRE Handbook clearly notes that residential receptors / properties are most sensitive to daylight availability.

The Vertical Sky Component Method

17.27. 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.

17.28. VSC may be calculated by using a sky light indicator or 'Waldram Diagram'. For calculation purposes, trees may be ignored unless they form dense continuous belts. Technical Appendix 17.1.

No Sky Line Method

17.29. The NSL 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.

17.30. The NSL 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.

17.31. If a significant area of the working plane lies beyond the NSL (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.

17.32. The effect of daylighting distribution in an existing building can be found by plotting the NSL in each of the main rooms. For houses, this will include living rooms, dining rooms and kitchens. Bedrooms should also be analysed, although they are less important. The BRE Handbook state that if the area of a room that does receive direct sky light is reduced to less than 0.8 times its former value, then this would be noticeable to its occupants.

The Average Daylight Factor Method

17.33. The ADF method is derived from BS 8026 and is a more complex and representative calculation to determine the natural internal luminance (daylight). The ADF is defined in the BRE Handbook 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".

17.34. The ADF method of assessment considers:

- 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); and
- The angle of visible sky reaching the window / windows in question.

17.35. In addition to the above, the ADF method makes allowance for the average reflectance of the internal surfaces of the room and of external obstruction.

17.36. It should be noted that when reviewing daylight results for each receptor assessed, they have been read sequentially with VSC first, NSL next and ADF last. If all the windows at the receptor tested meet the VSC criteria, it can be concluded that there would be adequate daylight to the receptor in question. If the windows at a receptor assessed do not meet the VSC criteria, the NSL analysis for the room served by that window should be considered. If the NSL criteria for the receptor in question are met, then there would be adequate daylight to that room. Finally, if neither the VSC nor NSL criteria are met, the ADF results should be considered.

Sunlight

17.37. The 2011 BRE Guidelines provide two methods for assessing sunlight, depending on whether the assessment is upon an existing neighbouring property or a proposed property / building. However, the methods are similar and relate to methods of assessing the Annual Probable Sunlight Hours (APSH) at a reference point. Similar to the assessment of VSC daylight, this assessment considers only sunlight effects to existing residential properties surrounding the Site and sunlight effects to the proposed residential units of the Development. Section 3.1.2 of the 2011 BRE states that *"In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day, but especially in the afternoon."*

17.38. Sunlight is deemed less important in bedrooms and in kitchens, where people prefer sunlight in the morning, rather than in afternoon.

17.39. With regard to sunlighting, the same skylight indicator is used for the VSC test at the same reference point to calculate Annual Probable Sunlight Hours (APSH), which are expressed as a percentage.

17.40. The 2011 BRE Handbook notes:

"…a south facing window will, in general, receive most sunlight, while a north facing one will receive it only on a handful of occasions. East and west facing windows will receive sunlight only at certain times of day".

Sunlight Assessment- New Proposed Developments

17.41. For a new proposed building, the 2011 BRE Handbook states that the centre of each proposed main living room window can be assessed for sunlight.

17.42. Section 3.1.12 (page 16) of the 2011 BRE Handbook states;

17.43. *"If a room has multiple windows on the same or adjacent walls, the highest value of APSH should be taken."* This is an approach which seeks to simplify the calculation of sunlight for multi-glazed rooms.

Sunlight Assessment- Existing Buildings

17.44. For existing properties, the 2011 BRE Handbook suggests in section 3.2.3 *"that all main living rooms of dwellings…should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun."*

17.45. Section 3.2.4 continues, *"If the main living room to a dwelling has a main window facing within 90° of due north, but a secondary window facing within 90° of due south, sunlight to the secondary window should be checked."*

17.46. The 2011 BRE Handbook suggest that when assessing sunlight for existing neighbouring buildings, the point at the centre of the window on the outside window face can be used.

17.47. Section 3.2.5 states *"If this window point can receive at least one quarter of APSH, including at least 5% of APSH in the winter months between 21 September and 21 March, then the room should still receive enough sunlight."* The 2011 BRE Handbook (page 17) goes on to summarise that if these guidelines are not met, and if a window receives less than 0.8 times its former value of total APSH or winter APSH, and if that window has a reduction in total APSH of more than 4%, *"then the sunlighting of the existing dwelling may be adversely affected."*

Overshadowing Permanent Overshadowing (Sun Hours on Ground Assessment)

17.48. The methodology for the assessment of permanent overshadowing, or sun hours on ground is set out in the 2011 BRE Guidance and is summarised below.

17.49. The 2011 BRE Guidance acknowledges that sunlight in the space between buildings has an important effect on the overall appearance and ambience of a development. The worst situation is to have significant areas on which the sun only shines for a limited part of the year.

17.50. This assessment is run on 21st March (Spring Equinox). Using specialist software the path of the sun is tracked, at one-minute intervals, around the 3D computer model of the Site and its surrounding buildings in order to establish where sunlight will fall on the ground and where it is prevented from doing so as a result of surrounding obstructions. The assessment establishes the area of a private garden or a public open space which receives at least 2 hours of sunlight on the ground on 21 March. The part of an amenity area which receives 2 or more hours of sunlight on the 21 March is highlighted green in the Sun Hours on Ground Assessment (Technical Appendix 17.5). The part of an amenity area which would receive less than 2 hours of sunlight on 21 March, which indicates the potential for an area or amenity space to be gloomy during the winter months, and is highlighted blue in the Sun Hours on Ground Assessment (Technical Appendix 17.5).

Transient Overshadowing

17.51. The BRE Handbook 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 undertaken 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:

- 21 March (Spring Equinox);
- 21 June (Summer Solstice); and
- 21 December (Winter Solstice).

17.52. For each of these dates, transient overshadowing has been calculated at hourly intervals throughout the day from 08:00 to 19.00. Some images have not been included within Technical Appendix 17, as at some of these times during the winter months the site is in total darkness. September 21st (Autumn Equinox) provides the same overshadowing images as March 21st (Spring Equinox) as the sun follows the same path at these corresponding times of year.

17.53. The indicators are calculated for different latitudes, London being 51.5° north. Clearly, southern orientation is critically important, as are the heights of the Proposed Development and existing buildings.

Light Pollution

Table 1 – Obtrusive Light Limitations for Exterior Lighting Installations

Environmental Zone	Sky Glow ULR [Max %] (1)	Light Trespass (into Windows) Ev [Lux] (2)		Source Intensity I [kcd] (3)		Building Luminance Pre-curfew (4)
		Pre- curfew	Post- curfew	Pre- curfew	Post- curfew	Average, L [cd/m2]
E1	0	2	1*	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5.0	10	2	10	1.0	10
E4	15.0	25	5	25	2.5	25

17.54. Light pollution can be defined as any light emitting from artificial sources into spaces where this light would be unwanted, such as the spillage of light into the night sky, or the spillage of light into the windows of neighbouring residential properties where this would cause nuisance to occupants.

17.55. Potential light spill/pollution impacts of a proposed development are typically assessed in relation to four specific criteria: Sky Glow; Light Trespass; Glare / Source Intensity; and Building Luminance.

- **Sky Glow** is the brightening of the night sky over our towns, cities and countryside. It can be quantified by measuring the Upward Light Ratio (ULR), which is the maximum permitted percentage (%) of luminaire flux for the total installation that goes directly into the sky;
- **Light Trespass** is the spilling of light beyond the boundary of a proposed development. It is assessed as vertical illuminance in lux (Ev) measured flat at the centre of the sensitive receptor;
- **Glare/Source Intensity** is the uncomfortable brightness of a light source when viewed against a dark background. It is applied to each source visible from a sensitive receptor and is measured as source intensity (I) (kcd); and

- **Building Luminance** which can cause an increase in the brightness of a general area and is measured in cd/m2 (L) as an average over the building facade caused only by external lighting.

Determining the Baseline Conditions

17.56. To establish the baseline lighting conditions, a survey of the existing light levels around the Site at night was undertaken, using a calibrated photocell light meter. The results of the baseline night time survey are outlined in detail in the Light Pollution section of this chapter.

17.57. The assessment methodology for the 4 light spill assessments is considered in turn.

Sky Glow Assessment Approach

17.58. As it is not anticipated that the Proposed Development would incorporate any upward looking luminaire, aside from accent lighting along the viaduct arches and under trees, a Sky Glow assessment is therefore irrelevant and has not been undertaken in this instance.

Light Trespass Assessment Approach

17.59. In this assessment approach the sensitive receptors are specified as the windows of residential properties in close proximity to the Site. In the proposed scenario virtual sensors are placed on the windows of residential buildings surrounding the new Development. The sensors then calculate the incident illuminance to this point.

17.60. In the absence of a detailed internal lighting scheme, a typical office lighting scheme layout which will provide illuminance levels on the working plane of 500lux, have been assessed. These values are suggested by Lighting of Work Places – Part 1: Indoor Work Places, British Standard (BS) 12464-2:2002.

17.61. Exterior luminaries have been selected in accordance with the strategy outlined in the Light Pollution section of this Chapter, and depicted in pages 9 and 10 of the Light Pollution report (Appendix 17.7).

Source Intensity/ Glare Assessment Approach

17.62. In this assessment approach, a virtual camera is positioned at the assessed point, typically a residential window facing the Site. A false colour luminance picture is then produced showing the brightness levels of the light sources that are visible within the Proposed Development. A Source Intensity assessment has been undertaken in this instance, for a train travelling along the viaducts in the direction of the Proposed Development.

Building Luminance

17.63. In this assessment approach, a false colour luminance picture is produced showing the luminance (cd/m^2) of the facades of the Proposed Development. This data is then averaged to assess compliance.

17.64. As the Proposed Development does not incorporate a detailed external lighting installation that would incorporate façade lighting of the Scheme, a Building Luminance assessment has not been undertaken in this instance. Sky Glow and Building Luminance are therefore not considered further in this assessment.

Solar Glare

17.65. The BRE Handbook makes the following statement regarding the potential for reflected solar glare:

"Glare or solar dazzle can occur when sunlight is reflected from a glazed façade. This can affect road users outside and the occupants of adjoining buildings. The problem can occur either when there are large areas of reflective tinted glass on the façade, or when there are areas of glass which slope back at up to 35^{o} from the vertical, so that high altitude sunlight can be reflected along the ground. Solar dazzle is a long-term problem only for some heavily glazed (or mirror clad) non-domestic buildings. A glazed façade also needs to face within 90^{o} of due south for significant amounts of sunlight to be reflected."

17.66. Solar glare is particularly important at pedestrian and vehicular junctions, where glare can cause temporary blinding of drivers and / or pedestrians.

17.67. The BRE Handbook suggest that façades containing glazing that is sloped back at more than 35^{o}, or façades that contain large areas of glazing may have the potential to produce glare. As such, elements of the Development that contain large areas of either vertical or sloped glazing have been assessed from potentially sensitive locations within the vicinity of the Site.

17.68. The assessment of solar glare has involved the creation of a 3D computer model of the Development and the existing surrounding buildings using specialist software which allows a detailed recreation of the sun's path around the Site.

17.69. To recreate the effect of sunlight upon glass or specular materials, a highly reflective material was simulated for the façades of the proposed buildings. All commercial areas, including the proposed school, have been assumed to be fully glazed and reflective, in order to present a worst-case scenario.

17.70. The potential for reflective sunlight was then assessed from key locations around the Site as the sun travels through the sky on the three key dates during the year as assessed within the overshadowing assessment (i.e. 21 March, 21 June and 21 December).

17.71. The assessment has involved the production of images where potential solar glare effects were identified. The assessments were carried out from 4 junctions around the Site, and are outlined in detail in the Solar Glare section of this chapter.

Significance Criteria

Daylight and Sunlight to Existing Sensitive Receptors

17.72. The results of each assessment are compared against the criteria set out in the 2011 BRE Handbook. Where results show compliance with the 2011 BRE Handbook criteria, the effect is considered to be **negligible**. However, as previously noted in this Chapter, the 2011 BRE Handbook criteria do not specifically relate to city centre locations. As such, a degree of flexibility should be applied to this urban area. At 1.6 the BRE Guidance states that "Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design."

Page 73, 2011 BRE Handbook states *"Adverse impacts occur when there is a significant decrease in the amount of skylight and sunlight reaching an existing building where it is required, or in the amount of sunlight reaching an open space… The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied."* In view of the above, the interpretation of the daylight and sunlight results should be considered in terms of the quantum of light lost and retained, not purely upon the percentage of change. The percentage value may well be misleading, particularly where the baseline values are small. In these situations, a small change in the quantum of light could represent a high percentage change in the overall figure, implying that there would be a significant change in daylight and sunlight whereas in reality the difference would be negligible.

17.73. The numerical criteria provided within the BRE Handbook are presented in Table 17.1:

Table 17.1: Daylight and Sunlight Criteria for Existing Surrounding Properties and Proposed Residential Accommodation

Issue	BRE Criteria
VSC.	A window may be adversely affected if its VSC measured is less than 27% and is less than 0.8 times its former value.
NSL	A room may be adversely affected if the daylight distribution (NSL) is reduced beyond 0.8 times its existing area.
ADF	A room may be adversely affected if the ADF is less than 1% for a bedroom, 1.5% for a living room or 2% for a kitchen.
APSH	A window may be adversely affected if a point at the centre of the window received for the whole year, less than 25% of the APSH including at least 5% of the APSH during the winter months (21 September - 21 March) and less than 0.8 times its former sunlight hours during either period, and (for existing neighbouring buildings), if there is a reduction in total APSH which is greater than 4%

17.74. Appendix 1 of the 2011 BRE Handbook provides a guideline for environmental impact assessments, when evaluating the skylight and sunlight impact of a new development.

17.75. Paragraph 16, Appendix 1 of the 2011 BRE Handbook states;

> "*Where the loss of skylight or sunlight does not meet the guidelines… the impact is assessed as minor, moderate or major adverse."* Throughout this chapter however, it should be noted that all potential major adverse impacts are referred to as substantial.

17.76. The 2011 BRE Guidelines recommends that for a garden or amenity area to appear adequately sunlit throughout the year, at least 50% of an amenity area should receive at least 2 hours of sunlight on 21 March. The 2011 BRE Guidelines goes on to suggest that if, as a result of a new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive some sun on the 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

17.77. Where the results show compliance with the 2011 BRE Guidance criteria, the impact is considered negligible since the BRE Guidance indicate that the occupants are unlikely to experience any noticeable change to their sunlight amenity levels.

17.78. Appendix 1 (page 73) of the 2011 BRE Guidelines states that *"adverse impacts occur when there is a significant decrease… in the amount of sunlight reaching an open space…The assessment of impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied."*

17.79. The 2011 BRE Guidelines outlines factors tending towards minor and major adverse impacts for sun hours on ground;

- Minor adverse- the open space breaches sun-on-ground guidance but is considered to have a low requirement or expectation for sunlight
- Major (substantial) adverse- large area of open space are affected

Transient Overshadowing

17.80. The 2011 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 would be cast over surrounding areas, an indication is given as to the significance of the effect of the Development. The assessment of transient overshadowing effects is therefore based upon

professional judgement, taking into consideration the effect of the existing site and comparing it with the transient overshadowing effect of the Proposed Development.

Light Pollution

17.81. Table 17.2 is taken from the aforementioned ILE Guidance Notes and quantifies acceptable levels of light spillage and source intensity for differing geographical areas, ranging from naturally dark areas to city centres.

Table 17.2: Light Pollution Significance Criteria

Environmental Zone	Upward Light Ratio (%)	Light into Windows E_v (lux)[1]		Source Intensity (kcd)[2]	
		Before Curfew	After Curfew	Before Curfew	After Curfew
E1 - Intrinsically dark areas (i.e. National Parks, Areas of Outstanding Natural Beauty).	0	2	1[3]	0	0
E2 - Low district brightness (i.e. rural or small village locations).	2.5	5	1	20	0.5
E3 - Medium district brightness (i.e. small town centres or urban locations.	5	10	2	30	1.0
E4 – High district brightness (i.e. town / city centres with high levels of night time activity).	15	25	5	30	2.5

Notes: 1 - Ev = Vertical Illuminance in Lux normal to glazing,

2 - Light intensity in kilo-candelas.

3 - Acceptable from public road lighting installations only.

17.82. By reference to the ILE Guidance Notes, a city centre is classified as Environmental Zone E4. This zone allows up to 25 lux of light measured vertically upon the face of residential windows surrounding a proposed development. This value has been adopted in relation to assessing the potential light pollution associated with the Development.

17.83. The ILE Guidance Notes also include an 'after curfew' value of 5 lux for city centre areas. The curfew reference indicates a notional night time dark period and it is usually applied to a residential area where there is a high expectation of darkness during the hours of sleep, typically 23:00 to 06:00.

17.84. The criteria also specify a maximum upward light ratio of 15% and a maximum source intensity of 30kcd.

17.85. The ILE Guidance Notes do not provide criteria for assessing the significance of light pollution effects. Accordingly, for the purposes of this assessment, the significance of the effect has been informed by professional, expert judgement.

Solar Glare

17.86. There are no quantitative criteria within the 2011 BRE Handbook or elsewhere regarding acceptable levels of solar glare. Professional judgement has therefore been applied as to the likely effects of solar glare associated with the Development. However, generally, glare reflected at steeper angles is less likely to cause nuisance of distraction as one has to look upwards to see it.

Baseline Conditions

Technical Appendix 17.2 provides a map of the surrounding properties and indicates residential, commercial and mixed use properties surrounding the Site.

As noted earlier in this chapter, the BRE Handbook suggests that the most sensitive receptors for daylight and sunlight effects are residential properties. Accordingly, this assessment has focused on residential properties surrounding the Site which would have the potential to be affected by the Development. The following surrounding properties are residential or partially residential (mixed use) and have therefore been considered within the assessment:

- 10 Chalk Farm Road;
- 11 Chalk Farm Road;
- 12 Chalk Farm Road;
- 13 Chalk Farm Road;
- 1-25 Leybourne Street;
- 20A Castlehaven Road;
- 22 Castlehaven Road;
- 22A Castlehaven Road;
- 22B Castlehaven Road;
- 22C Castlehaven Road;
- 21 Hawley Road;
- 19 Hawley Road;
- Welford Court;
- Bradfield Court;
- Quinn's Public House (upper levels);
- 63 Kentish Town Road;
- 61 Kentish Town Road;
- 59 Kentish Town Road;
- 57 Kentish Town Road;
- 55 Kentish Town Road;
- 53 Kentish Town Road;
- 51 Kentish Town Road;
- 53- 55 Camden Gardens;
- 47- 52 Camden Gardens;
- 248 Camden High Street (1st and 2nd floors); and
- 246 Camden High Street (1st and 2nd floors).

Daylight and Sunlight

17.87. Within the residential receptors which surround the Site there are 326 windows serving 272 rooms within 26 properties.

17.88. For the baseline assessment, the daylight and sunlight conditions for each residential property have been assessed in the Current Existing Baseline scenarios.

Table 17.3 – Summary of Baseline VSC, NSL & APSH Values

Property	Total No. of Windows that achieve VSC values ≥27% in Current Existing Baseline Conditions		Total no. of rooms that receive NSL ≥ 80% of room area in Current Existing Baseline Conditions.		Total No. of Windows that achieve 25% total APSH and 5% APSH between 21 September and 21 March in Current Existing Baseline Conditions	
	PASS	TOTAL	PASS	TOTAL	PASS	TOTAL
CHALK FARM ROAD, 10	9	12	8	8	4	6
CHALK FARM ROAD, 11	6	8	6	7	0	1
CHALK FARM ROAD, 12	6	8	6	7	0	0
CHALK FARM ROAD, 13	3	7	6	7	0	1
LEYBOURNE STREET, 1-25	26	32	26	29	11	12
CASTLEHAVEN ROAD, 20A	3	4	3	3	2	3
CASTLEHAVEN ROAD, 22	4	4	3	3	3	3
CASTLEHAVEN ROAD, 22A	4	4	4	4	4	4
CASTLEHAVEN ROAD, 22B	3	4	3	3	3	3
CASTLEHAVEN ROAD, 22C	4	4	3	3	3	3
HAWLEY ROAD, 21	6	7	6	6	7	7
HAWLEY ROAD, 19	6	7	6	6	5	5
WELFORD COURT	64	70	64	64	69	69
BRADFIELD COURT	38	42	40	40	27	27
QUINN'S PUBLIC HOUSE	8	8	4	4	8	8
KENTISH TOWN ROAD, 63	5	5	5	5	0	0
KENTISH TOWN ROAD, 61	6	9	4	7	0	3
KENTISH TOWN ROAD, 59	5	9	5	7	0	0
KENTISH TOWN ROAD, 57	6	7	4	5	0	1
KENTISH TOWN ROAD, 55	12	14	9	12	0	0
KENTISH TOWN ROAD, 53	6	8	6	6	0	0
KENTISH TOWN ROAD, 51	7	19	10	13	2	11
CAMDEN GARDENS, 53-55	5	13	5	8	1	2
CAMDEN GARDENS, 47-52	6	10	4	6	3	3
CAMDEN HIGH STREET,248	4	4	4	4	0	0
CAMDEN HIGH STREET,246	7	7	5	5	0	0
Total	**259 of 326 (90%)**		**249 of 272 (91%)**		**152 of 172 (88%)**	

17.89. The Site is relatively undeveloped in its existing condition, with the exception of the south western corner of Chalk Farm Road and Castlehaven Road, and the area immediately north of the Kentish Town Lock Consent. Therefore, the majority of the properties outlined in the baseline enjoy a relatively uninterrupted access to light. In spite of this, there remain a number of windows and rooms within some residential properties that do not meet BRE recommendations within the existing scenario, this being a function of building design.

17.90. The properties along 51- 59 Kentish Town Road, in particular, currently have several rooms or windows which are unable to satisfy BRE Guidance despite facing an undeveloped site. This is primarily due to the positioning of windows that sit beneath architectural features which inhibit light penetration. 59 Kentish Town Road, more specifically, has an external staircase and walkway on the first floor. As a result, the ground floor rooms experience poor levels of vertical sky component and average daylight factor in its current condition. This is analysed in greater detail later in the chapter (Daylight to Surrounding Properties).

Potential Effects

Demolition and Construction

17.91. The level of effect in relation to the daylight, sunlight and shadow position for the surrounding properties will vary throughout the construction phase, depending on the level of obstruction caused. The effect would almost certainly be less than that of the completed Development, given that the extent of permanent massing would increase throughout the construction phase, until the buildings are complete.

17.92. Therefore, assessment of the effects of the completed Development provides a worse- case assessment. It is this assessment that has been technically analysed. No technical analysis has been undertaken of the effect upon the surrounding properties and amenity areas during the demolition and construction process. However, general effects during the demolition and construction stages of the Development can be made. The demolition and construction stages have been grouped into two phases.

Demolition Effects

17.93. The potential effects of the demolition of the existing building and structures on Site would lead to a temporary improvement in daylight, sunlight, overshadowing, and light pollution, to nearby surrounding properties and amenity areas. These effects would likely be a **short-term, local** effect of **minor to moderate beneficial** significance, to the sensitive receptors within close proximity to the Site. It is likely that sensitive receptors at a greater distance from the Site would experience a **negligible** effect.

17.94. Portable lighting apparatus may be used during the demolition phase. The effect of light pollution as a result of this lighting apparatus would be highly **short term, local** and of a **negligible** effect to sensitive receptors within very close proximity to the Site. Sensitive receptors at a greater distance from the Site would experience a **negligible** effect. There would be a **negligible** effect of solar glare during the demolition process.

Construction Effects

17.95. Construction of the Development would have a gradual effect upon the levels of daylight, sunlight, and overshadowing as the massing of the Development steadily increases. The effects will increase in magnitude as the superstructure is built and then clad. Those effects that are perceptible, as the superstructure and cladding progresses, would be similar to those of the completed Development presented in the next section of this chapter.

Completed Development

Daylight to Surrounding Sensitive Receptors (Accounting for the Maximum Allowable Footprint and Height Parameter of School Block S1 and School Block S2 with School Block S2 in its Westernmost Allowable Position).

Table 17.4– Completed Development Daylight Effects to Surrounding Sensitive Receptors (Accounting for the Maximum Allowable Footprint and Height Parameter of School Block S1 and School Block S2 with School Block S2 in its Westernmost Allowable Position)

Property	No of Rooms	No of rooms within which all windows retain at least 27% VSC or at least 80% of their baseline value	No of rooms which, despite being served by one or more windows which do not retain at least 27% VSC or at least 80% of their baseline value, retain at least 80% of their baseline NSL value	No of rooms which, despite being served by one or more windows which do not retain at least 27% VSC or at least 80% of their baseline value or retain at least 80% of their baseline NSL value, retain at least 1.5% ADF	No. of rooms unable satisfy any of the th daylight criteria
CHALK FARM ROAD, 10	8	8	0	0	0
CHALK FARM ROAD, 11	7	7	0	0	0
CHALK FARM ROAD, 12	7	7	0	0	0
CHALK FARM ROAD, 13	7	7	0	0	0
LEYBOURNE STREET, 1-25	29	29	0	0	0
CASTLEHAVEN ROAD, 20A	3	2	1	0	0
CASTLEHAVEN ROAD, 22	3	0	3	0	0
CASTLEHAVEN ROAD, 22A	4	2	2	0	0
CASTLEHAVEN ROAD, 22B	3	0	3	0	0
CASTLEHAVEN ROAD, 22C	3	0	3	0	0
HAWLEY ROAD, 21	6	0	6	0	0
HAWLEY ROAD, 19	6	0	6	0	0
WELFORD COURT	64	64	0	0	0
BRADFIELD COURT	40	40	0	0	0
QUINN'S PUBLIC HOUSE	4	4	0	0	0
KENTISH TOWN ROAD, 63	5	5	0	0	0
KENTISH TOWN ROAD, 61	7	7	0	0	0
KENTISH TOWN ROAD, 59	7	5	0	0	2
KENTISH TOWN ROAD, 57	5	5	0	0	0
KENTISH TOWN ROAD, 55	12	11	1	0	0
KENTISH TOWN ROAD, 53	6	6	0	0	0
KENTISH TOWN ROAD, 51	13	13	0	0	0
CAMDEN GARDENS, 53-55	8	8	0	0	0
CAMDEN GARDENS, 47-52	6	6	0	0	0
CAMDEN HIGH STREET,248	4	4	0	0	0
CAMDEN HIGH STREET,246	5	5	0	0	0
Total	**272**	**245 (90.1%)**	**25 (9.2%)**	**0 (0%)**	**2 (0.7%)**

17.96. Full details of the VSC, NSL and APSH analysis are provided within Technical Appendix 17.3. A summary of results is provided as follows.

17.97. In order to be regarded as meeting the VSC criteria once the Development is completed, a window to any surrounding residential receptor should either:

- Retain at least 27% VSC in absolute terms; or
- Retain at least 80% of its existing baseline VSC value after the Development is completed

17.98. For the purposes of this ES Chapter, only habitable rooms within residential properties surrounding the site have been assessed.

17.99. 326 windows which serve 272 rooms within 26 properties have been assessed.

17.100. The Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its westernmost allowable position) would result in some VSC alterations which are beyond those recommended by the BRE Handbook, to one or more of the windows serving 272 of the surrounding rooms. Detailed results can be found within Technical Appendix 17.3, a summary of which is presented in Table17.4. These results show that 295 of the 326 windows assessed (90%) would comply with the BRE Handbook recommended VSC levels. The 295 windows that would meet the VSC recommendations serve 245 of the 272 (90.1%) habitable rooms assessed. The effect to these 245 rooms is considered to be **negligible.**

17.101. The following properties where all windows within habitable rooms satisfy the BRE VSC criteria are;

- 10 Chalk Farm Road;
- 11 Chalk Farm Road;
- 12 Chalk Farm Road;
- 13 Chalk Farm Road;
- 1-25 Leybourne Street;
- Welford Court;
- Bradfield Court;
- Quinn's Public House;
- 63 Kentish Town Road;
- 61 Kentish Town Road;
- 57 Kentish Town Road;
- 53 Kentish Town Road;
- 51 Kentish Town Road;
- 53- 55 Camden Gardens;
- 47- 52 Camden Gardens;
- 248 Camden High Street (1st and 2nd floors); and
- 246 Camden High Street (1st and 2nd floors).

17.102. There are 27 rooms served by 30 windows assessed which would not meet recommended BRE Handbook criteria for VSC. These 27 rooms were assessed to establish whether, as a consequence of the alterations in VSC to one or more of their windows, the area of the room which can benefit from direct skylight at working plane height (NSL) would alter beyond the BRE recommended alteration levels.

17.103. In order to be regarded as meeting the NSL criteria once the Development has been completed (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its westernmost allowable position) a room must retain at least 80% of its existing NSL value.

17.104. Of the 27 rooms which would not meet VSC requirements, 25 rooms (93%) would pass the NSL assessment as per BRE recommended levels.

17.105. Those properties which do not entirely comply with VSC levels but where all habitable rooms pass NSL technical assessment are listed as follows:

- 20A Castlehaven Road;
- 22 Castlehaven Road;
- 22A Castlehaven Road;
- 22B Castlehaven Road;
- 22C Castlehaven Road;
- 21 Hawley Road;
- 19 Hawley Road;
- 55 Kentish Town Road.

17.106. The effect of the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its westernmost allowable position) upon these rooms is considered to be a **long-term**, **local** effect of **minor adverse** significance.

17.107. Of the 272 habitable rooms assessed, 2 rooms (0.7%) would not meet VSC or NSL daylight levels as recommended by the BRE Handbook. When a room does not meet VSC or NSL criteria recommended by the BRE Handbook, the ADF of the room can also be considered to assess if there is an acceptable average level of daylight within a room. As such, the two rooms which do not meet VSC or NSL recommendations have been further assessed. The results show that neither of the two rooms are able to achieve the suggested minimum ADF level in the existing baseline condition. The two affected rooms can be seen within window map drawing 2801/32 contained within Technical Appendix 17.2. The window map shows that the two rooms are at ground level within 59 Kentish Town Road. One of the rooms is served by two windows (W1/1800 and W2/1800 as shown within Technical Appendix 17.2). The other room is served by one window (W3/1800 as shown within Technical Appendix 17.2). All three windows are obstructed by an overhang directly above the windows.

17.108. There is an external staircase from the ground to the first floor which becomes a walkway to allow external access to rooms on the first floor. This external first floor walkway is 1300mm deep and oversails the windows below. The staircase has been removed from window map drawing 2801/32 in order to be able to view the windows more easily. However, drawing number 2801/54 (Appendix 17.2) shows both a drawing and a photograph of 59 Kentish Town Road and includes the staircase. The external staircase hinders light from entering the room beneath it. This room is served by one window (W3/1800).

17.109. The other room in the existing scenario that does not comply with the BRE recommended guidelines for daylight is served by two windows. In addition to limitations provided by the walkway above, it is likely that the size of the windows also restricts light penetration. Window 1/1800 is a door window, and window 2/1800 is very narrow.

17.110. In the existing baseline ADF assessment, neither room is able to achieve a minimum ADF level, with actual levels being 0.32% and 0.26%. The ground level location, window size, the walkway

overhang, and the obstructing staircase, are all factors which compromise an acceptable ADF level.

17.111. The Development will have a further effect to these rooms, with ADF levels for both windows falling to 0.11%. The effect of the Development to these two rooms within 59 Kentish Town Road is considered to be a **long- term, local** effect of **substantial adverse** significance**.**

17.112. A summary of the Development's effects (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its westernmost allowable position) to daylight to sensitive receptors surround**ing the Site is** provided as follows:

- **90.1%** of surrounding residential rooms would experience a **negligible** effect;
- **9.2%** of surrounding residential rooms would experience a **long-term**, **local** effect of **minor adverse** significance;
- **0%** of surrounding residential rooms would experience a **long-term**, **local** effect of **moderate adverse** significance and;
- **Less than 1%** of surrounding residential rooms would experience a **long-term**, **local** effect of **substantial adverse** significance.

Daylight to Surrounding Sensitive Receptors (Accounting for the Maximum Allowable Footprint and Height Parameter of School Block S1 and School Block S2 with School Block S2 in its Easternmost Allowable Position)

17.113. When comparing the daylight technical analysis relating to the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 in its easternmost allowable position) with the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 in its westernmost allowable position) (refer to Technical Appendix 17.3), the effects are identical for the following properties:

- 10 Chalk Farm Road;
- 11 Chalk Farm Road;
- 12 Chalk Farm Road;
- 13 Chalk Farm Road;
- 1-25 Leybourne Street;
- 20A Castlehaven Road;
- 22 Castlehaven Road;
- 22A Castlehaven Road;
- 22B Castlehaven Road;
- 22C Castlehaven Road;
- 21 Hawley Road;
- 19 Hawley Road;
- Welford Court;
- 53- 55 Camden Gardens;
- 47- 52 Camden Gardens;
- 248 Camden High Street (1st and 2nd floors); and
- 246 Camden High Street (1st and 2nd floors).

17.114. Consequently, the potential effect of the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its easternmost allowable position), is exactly as per the Western Parameter daylight assessment results outlined in the previous section of this Chapter.

17.115. However, the Proposed Eastern Parameter (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its easternmost allowable position) creates an increased Daylight effect to the following receptors, given their closer proximity to the easterly positioning;

- Bradfield Court
- Quinn's Public House
- 51, 53, 57, 61 and 63 Kentish Town Road

17.116. The Eastern Parameter daylight assessment demonstrates that the alterations experienced within the following properties- compared with the Western Parameter assessment- will be so minor that they may be considered negligible. Therefore, the effect to the following properties are as per the Western Parameter assessment previously outlined;

- Bradfield Court **(negligible)**
- Quinn's Public House **(negligible)**
- 61 Kentish Town Road **(negligible)**
- 63 Kentish Town Road **(negligible)**

17.117. Assessment of the Eastern Parameter shows that there will be alterations to daylight levels that are to a greater extent within the following properties; 51, 53, 55, 57 and 59 Kentish Town Road. These are addressed individually, below.

51 Kentish Town Road

17.118. Whilst there are some slightly increased alterations to ADF levels to 7 of the 13 rooms within this property, all 19 windows (100%) serving 13 rooms will comply with VSC levels recommended by the BRE. Therefore, the effect of the Proposed Eastern Parameter upon this property is considered **negligible**.

53 Kentish Town Road

17.119. There are 8 windows serving 6 rooms within this property. All windows comply (100%) with the BRE Guidelines for VSC in the Proposed Eastern Parameter, therefore the effect is considered **negligible**.

55 Kentish Town Road

17.120. This property contains 12 rooms served by 14 windows which have been assessed for daylight. All windows except 1 will comply with BRE recommended VSC levels, therefore there will be a **negligible** effect to these 13 windows (93%) which are VSC compliant.

17.121. The window which does not comply with VSC, however, serves a room which does pass the NSL test as per the BRE Guidance. Therefore, the effect of the proposed Eastern Parameter upon this

room at 55 Kentish Town Road is considered to be a **long-term, local** effect of **minor adverse** significance.

57 Kentish Town Road

17.122. There are 7 windows serving 5 rooms within this property which have been assessed for daylight. All 7 windows (100%) comply with the vertical sky component criteria as outlined in the BRE Guidelines. Therefore the effect upon this property will be **negligible**.

59 Kentish Town Road

17.123. There are 7 rooms served by 9 windows which were assessed for daylight within this property. 6 of these windows will comply with the BRE Guidelines for VSC under the proposed Eastern Parameter, therefore the effect to these 6 windows (67%) and the rooms they serve, is **negligible**.

17.124. There are 3 windows serving 2 rooms that will not comply with the BRE Guidelines for VSC. Neither of these rooms will comply with the BRE criteria for the NSL test. Similarly, these 2 rooms will not meet recommended ADF levels as per the BRE Guidelines.

17.125. These are the same 2 rooms that were outlined in detail in the Western Parameter daylight assessment (the previous section of this Chapter), as these rooms also did not meet BRE criteria for the 3 daylight tests under the proposed Western Parameter scheme.

17.126. In the Eastern Parameter daylight assessment, however, the effect to these 2 rooms is slightly greater.

17.127. In the existing baseline ADF assessment, neither room is able to achieve a minimum ADF level, with actual levels being 0.32% and 0.26%. The proposed Eastern Parameter will have further effect upon ADF levels, where both rooms will be reduced to an ADF level of 0.03%.

17.128. The effect of the Proposed Eastern Parameter upon these two rooms, therefore, is considered to be a **long-term, local** effect of **substantial adverse** significance.

17.129. In summary, when comparing the Western and Eastern Parameters, there will be an increase in daylight effects to 5 of the 27 residential receptor properties under the Proposed Eastern Scheme. However, the overall summary of daylight effects to surrounding receptors will not materially vary between the Eastern Parameter and the Western Parameter, which can be seen in the full technical analysis found in Appendix 17.4.

17.130. A summary of the Development's effects (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its easternmost allowable position) to daylight to sensitive receptors surrounding the Site is provided as follows:

- **90.1%** of surrounding residential rooms would experience a **negligible** effect;
- **9.2%** of surrounding residential rooms would experience a **long-term**, **local** effect of **minor adverse** significance;
- **0%** of surrounding residential rooms would experience a **long-term**, **local** effect of **moderate adverse** significance and;
- **Less than 1%** of surrounding residential rooms would experience a **long-term**, **local** effect of **substantial adverse** significance.

Sunlight to Surrounding Sensitive Receptors

17.131. Technical assessment shows that there is no difference between the sunlight analysis upon surrounding residential properties of the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its

easternmost allowable position), and the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its westernmost allowable position). Full details of APSH analysis for both parameters are provided within Technical Appendix 17.3.

17.132. This section of the chapter will therefore provide one sunlight assessment on surrounding residential properties, which can be applied to both the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its westernmost allowable position) and the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its easternmost allowable position).

17.133. The 2011 BRE Handbook suggests that in order to be regarded as meeting the APSH criteria once the Development has been constructed, a window should either:

- Retain at least 25% total APSH with 5% in the winter months in absolute terms; or
- Retain at least 80% of its existing total and winter APSH values after the Development has been constructed or
- A reduction in total APSH should not be greater than 4%

17.134. The 2011 BRE Handbook suggests that if this recommended criteria is not met, then occupants of the existing building may experience an adverse effect to the level of sunlight received.

17.135. There are a total of 170 windows serving 19 properties which have been assessed in terms of sunlight.

17.136. Of these windows assessed for total and winter APSH, 160 windows (94%) will comply with the recommendations as per the 2011 BRE Handbook. Therefore the effect to these 160 windows is considered to be **negligible**.

17.137. There are 10 windows remaining which would not comply with 2011 BRE recommended levels for sunlight. These window are located within the following properties;

- 1-25 Leybourne Street- 1 window
- 20A Castlehaven Road- 2 windows
- 22 Castlehaven Road- 1 window
- 21 Hawley Road- 2 windows
- 19 Hawley Road- 2 windows
- Welford Court- 2 windows.

17.138. The total and winter APSH values for these 10 windows, in both the existing and proposed scenario's is presented in the summary table 17.5.

Table 17.5 Summary of Sunlight Effects to Surrounding Sensitive Receptors

Baseline v Proposed- Sunlight Amenity to Neighbouring Residential Receptors

Property Where One or More Windows do not Comply with the 2011 BRE Handbook	Baseline v Proposed										
	Total No. Windows	No. windows that comply with the BRE for Total and Winter APSH	No. windows that would not comply with the BRE for Total and Winter APSH	Window Ref	Baseline Total APSH	Proposed Total APSH	Total APSH Loss	% Change	Baseline Winter APSH	Proposed Winter APSH	% Change
Leybourne Street, 1-25	12	11	1	W3/400	27	20	7	25.93	7	6	14.29
Castlehaven Road, 20A	3	1	2	W1/800	38	30	8	21.05	3	1	66.67
				W1/801	45	37	8	17.78	7	4	42.86
Castlehaven Road, 22	3	2	1	W2/800	45	36	9	20.00	8	4	50.00
Hawley Road, 21	7	5	2	W1/1100	32	19	13	40.63	17	6	64.71
				W2/1100	30	19	11	36.67	15	5	66.67
Hawley Road, 19	6	4	2	W1/1200	31	19	12	38.71	16	5	68.75
				W2/1200	33	23	10	30.30	15	5	66.67
Welford Court	69	67	2	W4/1301	28	21	7	25.00	22	15	31.82
				W5/1301	27	21	6	22.22	21	15	28.57
TOTAL	**100**	**90**	**10**								

1-25 Leybourne Street

17.139. Following completion of the Development, one window within this property will not comply with total APSH levels as per the 2011 BRE recommendations. This window will only just fall short of the BRE recommendations for Total APSH, and will still enjoy a reasonable amount of annual probable sunlight hours (20% total APSH). This window will also receive 6% ASPH during the winter months, which is 1% above the BRE recommendation for winter APSH. Overall, the effect of the Development upon this property is considered to be a **long-term**, **local** effect of **minor adverse** significance.

20A Castlehaven Road

17.140. 2 of the 3 windows within this property that have been assessed for sunlight will not meet BRE recommended levels. Both of these windows (W1/800) and (W1/801) will comply and exceed BRE recommendations for total APSH, receiving 30% and 37% respectively in the proposed scenario. However these two windows will not meet BRE criteria for sunlight during the winter months.

17.141. Both of these windows are below BRE winter guidance in the existing condition. One window which serves a kitchen (W1/800) will fall from 3% to 1% winter APSH after the Development is completed, whilst the other window (W1/801) which serves a living room and is therefore most important will achieve 4% winter APSH and thereby only just fall short of the recommended sunlight level for winter whilst retaining a Total APSH of 37% which is substantially in excess of BRE Guidance. It should be noted that window W1/800 which serves a kitchen, the BRE Handbook deems as less important in terms of receiving sunlight.

17.142. Given that there are low winter sunlight levels in the existing scenario, coupled with the urban environment in which the Site is located, and that this property will still receive very good levels of sunlight throughout the year, the effect to these windows, therefore, is considered to be a **long-term**, **local** effect of **minor adverse** significance.

22 Castlehaven Road

17.143. 1 of 3 windows within this property will only just fall short of meeting BRE recommended levels of sunlight for winter APSH. Whilst this window which serves a kitchen will far exceed the recommended BRE level for total APSH, achieving 36% total APSH, it will fall from 45%total APSH, which is greater than the recommended reduction of no more than 4% total APSH.

17.144. During the winter months, winter APSH is also reduced, falling just 1% below the recommended winter APSH level to 4%. Therefore, given that the principle living room and bedroom meet APSH BRE Guidance, and only 1 window serving a kitchen which the BRE regards as less important, breaches guidance, but that window retains 36% total APSH and 4% winter APSH (compared with the recommended 25%/ 5% ratio), the effect of the Development upon this property is considered to be a **long-term**, **local** effect of **minor adverse** significance.

21 Hawley Road

17.145. 5 of the 7 windows within this property will comply with the 2011 BRE for sunlight, however 2 windows which serve one room on the ground level would not satisfy the BRE criteria for sunlight. Both windows will pass 2011 BRE recommended levels for the winter months, however there is a reduction for both windows which fall from 32% and 30% total APSH respectively, to 19% total APSH, which exceeds the recommended maximum reduction of 4% total APSH. Whilst the retained sunlight levels throughout the year are still considered good for an urban location, the proportional change may be noticeable as sunlight is reduced. Winter APSH levels are also

reduced for both windows, falling from 17% to 6% winter APSH (W1/1100) and from 15% to 5% winter APSH (W2/1100) Given these reductions in sunlight to 2 out of 7 windows, the effect of the Development upon this property is considered to be a **long-term, local** effect of **moderate adverse** significance.

19 Hawley Road

17.146. 2 of the 6 windows assessed for sunlight within this property will not comply with the 2011 BRE recommended levels for sunlight in the proposed scenario. Total sunlight hours throughout the year will remain good for an urban context, however the reduction in total APSH exceeds the recommended maximum of 4%. The two windows serve the same room on the ground floor, window W1/1200 will be reduced from 31% total APSH to 19% whilst W2/1200 will be reduced from 33% total APSH to 23% total APSH. Winter APSH hours will also be reduced for both windows, from 16% to 5% (a 67% reduction), and from 15% to 5% (a 67% reduction). Both windows in the existing situation receive very high levels of winter sunlight and as this property is located within close proximity to the Site it will experience a noticeable effect to the level of sunlight as a result of the Development. The effect of the Development upon this property is therefore considered to be a **long-term, local** effect of **substantial adverse** significance.

Welford Court

17.147. 67of the 69 windows within this property will meet BRE recommended sunlight levels as a result of the Development, and would therefore experience a negligible effect to their level of sunlight amenity. The 2 windows which breach guidance serve 2 separates rooms which are both located on the first floor. Whilst both windows would still receive good levels of total APSH (each achieving 21%) and both windows would exceed the recommended level for winter sunlight by 3 times recommended levels both achieving 15% winter APSH (compared to a recommended 5%), these windows remain below the recommended total APSH of 25%, and experience a loss in total APSH above the recommended 4%. **Therefore, the** effect of t**he Development upon** this property is considered to be a **long term, local** effect of **minor adverse** significance.

17.148. In summary, the effect of the Development (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 in either its westernmost or easternmost allowable positions) upon sunlight within surrounding sensitive r**e**ceptors can be summarised as follows:

- **94%** of surrounding residential windows would experience a **negligible** effect;
- **4%** would experience a **long-term**, **local** effect of **minor adverse** significance;
- **1%** would experience a **long-term**, **local** effect of **moderate adverse** significance;
- **1%** would experience a **long-term**, **local** effect of **substantial adverse** significance.

Daylight and Sunlight to Residential Units within the Development (Accounting for the Maximum Allowable Footprint and Height Parameter of School Block S1 and School Block S2 with School Block S2 in its Westernmost Allowable Position)

17.149. A Daylight and Sunlight Report- Western Parameter, in relation to the residential units within the Development, can be found in Technical Appendix 17.4. The conclusions below have been extracted from this report.

17.150. Internal daylight and sunlight assessments have been undertaken within the Development's residential blocks; Blocks C1, C2, D, W, X, (depicted in drawings page 8- 40 of the Report). Within

these blocks, 512 rooms are habitable and have been considered for the purposes of this ES Chapter. A full summary of ADF results for all Western Parameter habitable rooms can be found in Appendix 17.4.

17.151. Of the 512 rooms assessed for daylight, 475 rooms (93%) will meet or exceed BRE recommended ADF levels.

17.152. The 37 rooms that do not comply with BRE recommended ADF levels sit within the various blocks, set out within the table below;

Block	No. of rooms below recommended ADF level
C1	15
C2	7
D	11
W & X	4

17.153. The Internal Daylight Report- Western Parameter (page 7), states the main reasons for these rooms falling short of recommended average daylight factor levels include; the close proximity to the viaduct, the close proximity of residential blocks to each other, and the inclusion of balconies. All noted factors which decrease the opportunity for sky visibility at the materially affected windows.

17.154. A summary of the rooms that do not comply with the BRE Guidance is listed below in Table 17. 6.

Block	Level	Room Reference	Room Use	ADF Achieved (%)	Amount below recommended ADF	Reason
W & X	0	0	L/K/D	1.4	-0.6	Low Level, faces school
W & X	0	3	L/K/D	1.7	-0.3	Low Level, faces school
W & X	1	17	L/K/D	1.5	-0.5	Low Level, faces viaduct
W & X	2	38	Kitchen	1.6	-0.4	Low level, corner flat with living room compliant
C1	1	147	Bedroom	0.1	-0.9	Low level, faces C2, set back behind balcony
C1	1	148	Bedroom	0.7	-0.3	Low level, faces C2, set back behind balcony
C1	1	149	Living Room	1.3	-0.2	Low level, faces C2
C1	1	150	L/K/D	1.4	-0.6	Low level, faces C2
C1	1	156	Bedroom	0.8	-0.2	Low level, faces C2, set back behind balcony
C1	2	163	L/K/D	1.4	-0.6	Low level, set back behind balcony
C1	2	174	Bedroom	0.2	-0.8	Low level, faces C2, set back behind balcony
C1	2	175	Bedroom	0.8	-0.2	Low level, faces C2, set back behind balcony
C1	2	176	Living Room	1.4	-0.1	Low level, faces C2
C1	2	177	L/K/D	1.6	-0.4	Low level, faces C2
C1	2	181	L/K/D	0.8	-1.2	Low level, faces C2, set back behind balcony
C1	3	192	L/K/D	1.4	-0.6	Set back behind balcony
C1	3	203	Bedroom	0.2	-0.8	Faces C2, set back behind balcony
C1	3	206	L/K/D	1.8	-0.2	Faces C2
C1	3	210	L/K/D	0.9	-1.1	Faces C2, set back behind balcony

C2	3	271	L/K/D	1.1	-0.9	Faces C1, set back behind balcony
C2	3	282	Living Room	1.4	-0.1	Faces C2, set back behind balcony
C2	4	297	L/K/D	1.8	-0.2	Faces C1, set back behind balcony
C2	4	308	L/K/D	1.6	-0.4	Faces C2, set back behind balcony
C2	5	336	L/K/D	1.8	-0.2	Faces C2, set back behind balcony
C2	6	353	L/K/D	1.8	-0.2	Faces C1, set back behind balcony
C2	6	354	L/K/D	1.7	-0.3	Faces C1
D	1	415	Bedroom	0.6	-0.4	Low Level, faces viaduct
D	1	416	Bedroom	0.7	-0.3	Low Level, faces viaduct
D	1	422	Bedroom	0.5	-0.5	Low Level, faces viaduct
D	1	423	Bedroom	0.5	-0.5	Low Level, faces viaduct
D	1	424	Bedroom	0.9	-0.1	Low Level, faces viaduct
D	1	430	L/K/D	1.1	-0.9	Room dimensions, faces courtyard
D	1	434	L/K/D	1.7	-0.3	Room dimensions

17.155. 12 of the 37 residential rooms (32%) within the Development only just fall short of the respective BRE Guidelines for ADF, being just 0.1 or 0.2 below the recommended level.

17.156. The design process of the Development's residential accommodation incorporated a number of strategies aimed at maximising internal daylight and sunlight levels. One aspect of the design process saw living rooms re-positioned within apartments to ensure that the primary living space within a residence met or exceeded BRE recommended levels for daylight.

17.157. Table 17.6 above identifies that only 3 of the 37 rooms (8%) which do not comply with BRE Guidance for ADF are living rooms.

17.158. 22 of the 37 rooms (59%) which do not comply with BRE Guidance for ADF are combined kitchen/ dining/ living rooms. These rooms are required to achieve an ADF value for a kitchen which is 2.0 %, and is the highest minimum ADF level recommended by the BRE.

17.159. Of the 22 kitchen/ dining/ living rooms, 12 rooms (55%) achieve ADF levels above 1.5%, which is the recommended level for living rooms.

17.160. With the exception of one kitchen adjacent to a fully compliant living room, the remaining 11 of the 37 rooms (30%) which do not comply with BRE recommended levels for ADF are bedrooms. Whilst still considered significant, the BRE Handbook considers bedrooms the least important of habitable rooms, in terms of the amount of daylight required.

17.161. In sunlight terms, all windows facing within 90 degrees due south have been assessed for sunlight, with technical results in pages 36 - 43 of the Internal Daylight and Sunlight Report.

17.162. As the images on pages 36- 43 demonstrate, the majority of the windows not located behind balconies meet or exceed the BRE APSH recommendations. The rooms that are BRE compliant for sunlight are shown in yellow.

17.163. Windows which do not comply with BRE recommended levels for sunlight are shown in orange-red (minor/ moderate adverse) and purple- blue (moderate – substantial adverse).

17.164. The conclusion of the Western Parameter Daylight Report is that the Development is considered reasonable given its tight urban location and based on the findings that 475 of the 512 (93%) habitable rooms will achieve or exceed ADF levels as per the BRE Guidelines.

Daylight and Sunlight to Residential Units within the Development (Accounting for the Maximum Allowable Footprint and Height Parameter of School Block S1 and School Block S2 with School Block S2 in its Easternmost Allowable Position)

17.165. The Eastern Parameter daylight assessment for the Development's residential Blocks C1, C2, D, is identical to the assessment of the Western Parameter, outlined above. This is because proposed residential Blocks C1, C2 and D are too far from Area B and will not be affected by an eastern or western shift in the proposed Area B. Therefore the Eastern Parameter daylight assessment results will only vary for Blocks X and W.

17.166. Of the 512 rooms assessed for daylight in relation to the Proposed Eastern Parameter, 475 rooms (93%) will meet or exceed BRE recommended ADF levels. A full summary of all ADF results for all habitable rooms (Eastern Parameter) can be found in Appendix 17.4.

17.167. The internal Daylight and Sunlight assessment of the proposed Eastern parameter shows there will be an alteration to the daylight received within 17 rooms of residential Blocks X and W, when compared to the Western Parameter.

17.168. However, these differences in ADF values are minor (between 0.1 and 0.3), and do not lead to differing levels of compliance from the proposed Western Parameter.

17.169. Internal sunlight assessment for Blocks W and X can be seen in pages 39 and 40 of the Internal Daylight and Sunlight Report- Eastern Parameter. The majority of the windows not located behind balconies meet or exceed the BRE APSH recommendations. The rooms that are BRE compliant for sunlight are shown in yellow.

17.170. Windows which do not comply with BRE recommended levels for sunlight are shown in orange-red (minor/ moderate adverse) and purple- blue (moderate – substantial adverse).

17.171. The conclusion of the Eastern Parameter Daylight Report is that the Development is considered reasonable given its tight urban location and based on the findings that 475 of the 512 (93%) habitable rooms will achieve or exceed ADF levels as per the BRE Guidelines.

Permanent Overshadowing (Sun Hours on Ground)

17.172. The neighbouring amenity space within proximity of the Site has been assessed to establish the extent to which they are in permanent shadow on 21st March, comparing the Current Existing Baseline scenario with the Development.

17.173. The 2011 BRE Handbook suggests that on the 21 March, at least 50% of an existing amenity area should receive at least 2 hours of sunlight on the 21 March, or retain 0.8 times its former value. The 2011 BRE Handbook suggests that if these guidelines are not met then the loss of sunlight amenity is likely to be noticeable. Permanent Overshadowing (Sun Hours on Ground) Assessment has been undertaken for both the Western Parameter and the Eastern Parameter ((drawings 2801/116, 117 and 118, Appendix 17.5)

17.174. There is a negligible and immaterial difference between the technical assessments for the Western and Eastern Parameters. This section of the Chapter will therefore provide one commentary on Permanent Shadow assessment on amenity areas within and surrounding the Development, which can be applied to both the Proposed Western and Eastern Parameter Schemes.

Sun Hours on Ground- Existing Amenity Areas

17.175. The Permanent Shadow study (Sun Hours on Ground Assessment) of the existing scenario and which identifies the location of those amenity areas can be seen in drawing 2801/116 (Appendix 17.5).

17.176. There are 18 amenity areas in the existing scenario which have been assessed for permanent overshadowing. 16 of the 18 amenity areas (89%) in the existing scenario have at least 50% of the area space receiving at least 2 hours of sun on ground on the 21 March and therefore will satisfy BRE 2011 Guidance. This is due to the existing Site being predominately undeveloped and therefore, surrounding amenity areas receive a relatively unobstructed view in the existing condition.

17.177. There are two amenity areas that do not achieve at least 2 hours of sunlight to at least 50% of their amenity space in the existing scenario; the private residential garden at the rear of 20A Castlehaven Road (labelled area 'C', drawing 2801/116, Technical Appendix 17.5), and the private residential garden at the rear of 51 Kentish Town Road (labelled area 'P', drawing 2801/116, Technical Appendix 17.5).

17.178. 36% of the private amenity area at 20A Castlehaven Road (Area C) receives at least 2 hours of sunlight in the existing condition, which is below the 2011 BRE recommended amount of 50%.

17.179. 8.4% of the private residential garden at the rear of 51 Kentish Town Road (Area P) receives at least 2 hours of sunlight in the existing scenario, which is substantially below the BRE recommended level for sun hours on ground.

17.180. In the proposed situation all 16 areas that currently satisfy BRE Guidance will continue to in terms of Permanent Shadow if the scheme (both Eastern and Western Parameter) is implemented. Thereby all 16 amenity spaces will satisfy BRE 2011 Guidance.

17.181. The two amenity areas within existing neighbouring properties which cannot currently satisfy BRE Permanent Shadow guidance continue to experience too little sun on the ground during March.

17.182. In the proposed scenario, 3.1% of the 20A Castlehaven Road (Area C) amenity area would receive at least 2 hours of sun hours on ground. Given that the reduction of amenity space which receives at least 2 hours of sunlight is from 36% to 3.1%, the effect of the Proposed Development upon this amenity space is a **long-term, local effect** of **substantial** significance.

17.183. In the proposed scenario, there is no change to the sun hours on ground that the 51 Kentish Town Road (Area P) amenity area would receive. Therefore the effect of the Proposed Development upon this private amenity area will be **negligible**.

17.184. In summary, with respect to existing amenity areas, the Proposed Development will have a **negligible effec**t to 17 of the 18 amenity areas (94%), and a **long-term, local effect** of **substantial** significance upon 1 amenity area (6%).

Sun Hours on Ground- Proposed Amenity Areas

17.185. There are a total of 15 new proposed amenity areas within the Proposed Development which have been assessed with respect to permanent overshadowing. The proposed amenity areas can be seen in drawings 2801/117 and 2801/118 (Technical Appendix 17.5).

17.186. 9 of the 15 proposed amenity areas (60%) will satisfy the 2011 BRE recommendation that at least 50% of an amenity area should receive at least 2 hours of sunlight on the 21 March. Therefore, there will be a **negligible** effect upon these 9 amenity areas.

17.187. There are 6 amenity areas; labelled 'S', 'T', 'U', 'W', 'AE', and 'Z', in drawings 2801/ 117 and 118 (Technical Appendix 17.5) which will not meet the 2011 BRE recommendations for sun hours on ground, in the proposed scenario.

17.188. Amenity area 'S' is located to the north of the railway line and to the east of Castlehaven Road. This proposed amenity space is a shared private amenity area, and 0% of this amenity space would receive at least 2 hours of sunlight on 21 March. This is a consequence of the presence of the existing raised railway line due south of the amenity space. Therefore, there would be a **long-term**, **local** effect of **substantial adverse** significance upon this amenity area.

17.189. Amenity area 'T' is a designated play space, located to the north of the viaduct and to the north of proposed amenity area 'S'. None of this play space area (0%) would receive at least 2 hours of sunlight on 21 March. Therefore, there will be a **long-term**, **local** effect of **substantial adverse** significance upon this amenity area.

17.190. 14% of the proposed shared private amenity area, 'U', will receive at least 2 hours of sunlight on the 21 March in the proposed scenario. This falls short of the 2011 BRE recommendation that at least 50% of an amenity area should receive at least 2 hours of sunlight, therefore the effect of the Proposed Scheme upon this amenity area would be a **long-term**, **local** effect of **substantial adverse** significance.

17.191. Amenity area 'W' is a private amenity area, and in the proposed scenario, 0.5% of this area would receive at least 2 hours of sun hours on ground on 21 March. This overshadowing assessment result is significantly below the 2011 BRE Handbook recommended level, therefore the effect of the proposed development upon this amenity space would be a **long-term**, **local** effect of **substantial adverse** significance.

17.192. The private roof terrace amenity area 'Z', located at the north of proposed building C2, would only just fall short with 47% of its area in adequate sunlight, of the 2011 BRE recommendation that at least 50% of an amenity area achieve at least 2 hours of sunlight. This breach of the 2011 BRE Handbook is very minor, and therefore the effect of Proposed Development upon this amenity area would be a **long-term**, **local** effect of **minor adverse** significance.

17.193. Amenity area AE is a designated community space amenity area within the proposed scenario. 41.9% of this amenity area would receive at least 2 hours of sunlight following the completion of the Proposed Development, which only marginally falls short of the BRE recommendation of 50%. Therefore, there would be a **long-term**, **local** effect of **minor adverse** significance upon this amenity area.

17.194. In summary, there are 15 new proposed amenity areas that have been assessed for Permanent Overshadowing within the proposed Camden Lock Village Development. The effect of overshadowing upon the proposed amenity areas is summarised;

- **60%** of proposed amenity areas would experience a **negligible** effect;
- **13%** of proposed amenity areas would experience a **long-term**, **local** effect of **minor adverse** significance;
- **0%** of amenity area would experience **a long-term**, **local** effect of **moderate adverse** significance; and
- **27%** of amenity areas would experience a **long-term**, **local** effect of **substantial adverse** significance.

Transient Overshadowing

17.195. Transient overshadowing analysis has been undertaken for both the Western Parameter and the Eastern Parameter. Full details of the transient overshadowing analysis are provided within Appendix 17.6.

17.196. The transient overshadowing analysis illustrates the comparison of the path of the shadows cast by the Current Existing Buildings and the Development (Site wide) on 21 March, 21 June and 21 December.

17.197. The shadows cast by the extant buildings of the Existing Baseline are shown in green, whilst that of the Western Parameter are shown in purple, and the Eastern Parameter are shown in blue. Shadows cast by the existing buildings surrounding the Site are shown in grey.

17.198. The transient shadowing analysis of the Western and Eastern Parameters produce very similar results. There are only a few instances whereby small differences in overshadowing can be seen within Area B of the Development.

Transient Overshadowing- Eastern Parameter

17.199. The Site in its current condition is predominantly undeveloped, therefore any increase in massing is likely to demonstrate a noticeable increase in transient overshadowing.

17.200. Images on pages 3 – 13 of the Transient Overshadowing Assessment, Eastern Parameter (Technical Appendix 17.6) demonstrate that under the Development, the effect of transient overshadowing will be experienced most acutely during early mornings and late afternoons during spring, and throughout much of the day during the winter months.

17.201. During spring, the areas to the west of the Site will experience some transient overshadowing from 08.00 to 10.00, extending along Castlehaven Road to the playground area of Castlehaven Community Foundation. The north east of the site will also experience transient overshadowing during springtime, from 15.00.

17.202. The effect of transient overshadowing will also be experienced in the south east of the site during early evenings in the summer months. From 18.00, the rear of properties 51 – 63 Kentish Town Road, and at 19.00 parts of the Canal will experience some transient overshadowing.

17.203. Analysis demonstrates that the north of the Site will experience some temporary additional shadow during winter months from 11.00 to 12.00, whilst the north east of the site will be effected from 14.00 to 15.00.

17.204. Within Area B of the Development, which would be a school playground amenity area, there would be some temporary shadowing between the hours of 08.00 and 10.00 during spring, and between 16.00 and 19.00 during the summer months. It is probable that this amenity area would be in use at this time.

17.205. The majority of the Site is relatively undeveloped in its existing condition and any Development will result in some additional shadow. The transient overshadowing effects of the Eastern Parameter (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its easternmost allowable position) is considered to be a **long-term**, **local** effect of **moderate adverse** significance.

Transient Overshadowing- Western Parameter

17.206. The effect of transient overshadowing as a result of the Western Parameter can be seen in images on pages 3 – 13 of the Transient Overshadowing Assessment- Western Parameter (Technical Appendix 17.6).

17.207. The effect of the Western Parameter is as per the effect of the Eastern Parameter, outlined above, with some minor additional increases in transient overshadowing in the school playground amenity area, within Area B of the Development.

17.208. In addition to the effects of the Eastern Parameter, there will be very brief intervals of further minor increases in temporary shadow within the school playground amenity area, within Area B as a result of the Western Parameter, at 09.00 14:00 and 15.00 during spring. There will also be a very slight increase in temporary shadow as a result of the Western Parameter at 16.00 during the summer months. It is probable that this amenity area would be in use at this time.

17.209. The majority of the Site is relatively undeveloped in its existing condition and any Development will result in some additional shadow. The transient overshadowing effects of the Western Parameter (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in its westernmost allowable position) are considered to be a **long-term, local** effect of **moderate adverse** significance.

Light Pollution

17.210. At this stage in the design process, a detailed lighting strategy for the Proposed Scheme has not yet been developed. However, an outline lighting strategy has been developed, and this has been comprehensively analysed for the purposes of this Chapter. The outline lighting design strategy is in Technical Appendix 17.7. Similarly, full technical analysis of the Light Pollution assessment can be found in Technical Appendix 17.7.

17.211. There is a negligible difference between the technical assessments for the Development, accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 with School Block S2 in both its westernmost and easternmost allowable positions), therefore this section of the Chapter will only provide commentary on one Light Pollution assessment.

17.212. Key considerations of the outline lighting strategy includes;

- Minimise any light spill to Regents Canal.
- Minimise any light spill to residential receptors
- Minimise any light spill to the train line

17.213. Target illuminance levels for the outline lighting strategy have been derived from BS 5489-1:2003+A2:2008, SLL Guide- LG61992 and ILE Lighting guidelines for the outdoor environment, outlined in the table below;

Area	**Eavg (average maintained illuminaince)**	**Emin (minimum maintained illuminaince)**
Covered canopy walkways (BS 5489 table 3 lighting levels for covered shopping arcades and canopied areas)	75 lux	50 lux
Open Public spaces	10 lux	3 lux
Pedestrian footpath (BS 5489 table B4 lighting classed for subsidiary roads)	5- 7.5 lux	1 lux
Railway bridge pedestrian underpass	50 lux	25 lux
Local services road + pedestrian footway (mixed use)	15 lux	5 lux
Public Terraces	5 lux	1 lux

17.214. The target illuminance levels for each area type (on ground level and at roof and terrace height) within the Proposed Development, can be found in the Light Pollution Report (pages 9 and 10, respectively).

17.215. All relevant sensitive receptors (residential receptors, the railway line, and the Canal) within the Light Pollution Assessment are identified in pink on page 11 of the Report.

17.216. Areas of the Development which can be seen from the sensitive receptors are identified in yellow on pages 10 and 11. The yellow areas identified were all tested for Light Pollution for the purpose of this Chapter.

17.217. Standard practice in the assessment of light spill/ pollution is to consider the potential impacts of a Development in absolute terms, with reference to relevant guidance levels, and not against the existing Baseline conditions.

17.218. However, for completeness, site visits were undertaken to understand the current baseline conditions, with respect to sources and levels of illumination and light spill at and surrounding the Site.

17.219. A night time lighting survey was undertaken on 18 August 2011, between the hours of 11.30pm and 01.00am, in order to evaluate the existing light levels at and surrounding the Site.

17.220. Results for the night time survey of the existing scenario can be seen on page 13 of the Light Pollution report.

17.221. At the time of the night survey, none of the lights along the Canal were on/ working and therefore very low lux readings were produced along the Canal. It is important to note that this area along the Canal sits outside of the boundary of the Development. However, this area was still considered in the night-time survey to ensure that the outline lighting strategy minimises any further light spill to the Canal.

17.222. The night time survey revealed that there are some breaches of ILE Guidance in the existing scenario along Castlehaven Road (measuring 5.6 lux), and on Kentish Town Road (2 readings of 9.5 lux). These lux levels exceed the post- curfew defined by the ILE as 5.0 lux. This demonstrates that the environment of the Development is indeed an urban one.

17.223. With reference to the Table below, the Site and surrounding area has been classified as environmental zone E4, with the following limits for obtrusive light;

Table 1 – Obtrusive Light Limitations for Exterior Lighting Installations

Environmental Zone	Sky Glow ULR [Max %] (1)	Light Trespass (into Windows) Ev [Lux] (2)		Source Intensity I [kcd] (3)		Building Luminance Pre-curfew (4)
		Pre- curfew	Post- curfew	Pre- curfew	Post- curfew	Average, L [cd/m2]
E1	0	2	1*	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5.0	10	2	10	1.0	10
E4	15.0	25	5	25	2.5	25

17.224. A full breakdown of the outline lighting strategy, detailing the various area types, their location on site, their recommended minimum illuminance lux levels, and the achieved lux levels, can be identified in pages 21- 30 of the Light Pollution Report.

17.225. Results of the light trespass assessment can be seen in Figures 12 – 21, on pages 15- 19 of the Light Pollution Report, demonstrating the light trespass upon relevant sensitive receptors.

17.226. Pre-curfew, light trespass results are at 0.5 lux or below, which is well below the ILE standard of 25.0 lux.

17.227. Post curfew, lux readings are no greater than 0.5 lux, which is well below the ILE standard of 5.0 lux.

17.228. All figures, both pre and post curfew, therefore, demonstrate that the outline lighting strategy will have a **negligible** effect upon all surrounding sensitive receptors.

17.229. Figure 11 (page 14) further demonstrates that the effect of light spill upon sensitive receptors will be **negligible**. In the falsecolour view (figure 11), none of the sensitive receptors are visible, thus signifying there is no instance of light trespass at all.

17.230. With respect to Light Pollution upon the Canal, figure 22 (page 20) demonstrates that the effect of Light Spill to the Canal is **negligible**. In the falsecolour view (figure 22), the minute instance of light spill on the northern edge of the Canal measures 1.0 lux (maximum) and falls to 0.4 lux within 1.5 meters from the edge of the toll path, and is therefore well below ILE Guidance levels.

17.231. The third key area to be considered within the outline lighting strategy is the train line.

17.232. In order to assess the effect of the Development upon the train line, a source intensity assessment was undertaken from 3 viewpoints along the viaduct. Source intensity is the measured brightness of a light viewed against a dark background, and is measured in candelas. The ILE Guidelines stipulate that the acceptable levels for source intensity are 25,000 candelas pre-curfew, and 2,500 post curfew, for Environmental Zone 4.

17.233. To ensure a robust assessment, a worst case lighting scenario was implemented, using the highest levels of lighting within the proposed offices (to 500 lux on the working plane, in accordance with British Standard (BS) 12464-2:2002) to determine their light pollution upon the train line.

17.234. Assessment from Viewpoint 1, on the viaduct, can be found on page 31 of the Light Pollution Report. Figure 46 (page 31) demonstrates that the source intensity results from this viewpoint are so minimal, that in order to even be able to identify results, the scale of candelas had to be reduced to just 5.0 cd. This level of candelas is insignificant compared to the levels determined by the ILE Guidelines (25,000 candelas pre-curfew, and 2,500 post curfew.

17.235. Viewpoints 2 and 3 along the viaduct (identified on pages 32 and 33, respectively), also register insignificant readings for source intensity upon the train line.

17.236. The effect of the outline lighting strategy upon the train line, therefore, is **negligible**.

17.237. In summary, the outline lighting strategy was aimed at minimising light spill to; sensitive receptors; along Regents Canal, to the train line.

17.238. All light spill assessments undertaken (light trespass and source intensity tests), demonstrate that the outline lighting design will have a **negligible** effect upon the sensitive receptors; the residential receptors, the Canal, and to the train line.

Solar Glare

17.239. A full report on Solar Glare can be found in Appendix 17.7. The conclusions below have been extracted from this report.

17.240. Solar glare analysis has been undertaken from four viewpoints around the Site. These viewpoints can be seen in Figure 3, page 7, of the Solar Glare Report. The results for the Development, accounting for the maximum allowable footprint and height parameter of School Block S1 and

School Block S2 with School Block S2 in both its westernmost allowable position, and in its easternmost allowable position was identical. Therefore only one Solar Glare report is required.

17.241. Analysis has shown that there is no instance of glare occurring in view position 1 (pages 8 and 9 of the report) and view position 3 (pages 12 and 13).

17.242. In view position 2 (taken from the corner of Hawley Road and Castlehaven Road looking towards properties 20A and 22C Castlehaven Road, see pages 10 and 11), minor instances of solar glare are visible, occurring briefly in winter evenings and in summer mornings. The times where the minor instances of glare are occurring are outlined on page 6 of the Solar Glare report (Appendix 17.8)

17.243. The report indicates that the proposed design represents a typical percentage of glazing and opaque façade, therefore, the minor instances of glare are considered to be non- material.

17.244. In view position 4 (taken from the corner of Camden Gardens and Kentish Town Road, looking towards the Site, see pages 14 and 15), there are instances of solar glare off the Proposed Development during summer and mid-season mornings (between approximately 5am and 7am from 20 March to 23 September).

17.245. The Solar Glare report identifies that the Development is acceptable in this circumstance, because the façade of the building in question, Block D, is very similar to the existing building. This can be recognised in a comparison between the proposed Block D (Solar Glare report, page 15), and a photograph of the existing building (page 17).

17.246. Given that the instances of glare in the Development would also occur in the existing scenario, the Development will not materially increase the potential for solar glare.

17.247. In summary, therefore, the Development is considered to have a **negligible** effect.

Mitigation

Demolition and Construction

Demolition

17.248. As existing buildings are demolished, some temporary improvements to daylight, sunlight and overshadowing are predicted at the closest sensitive receptors to the Site. Given that no adverse effects are predicted during demolition, no mitigation measures are required.

Construction

17.249. Worst-case construction effects would be directly comparable to the effects of the completed Development therefore reference should be made to the sections below.

Completed Development

Daylight and Sunlight to Existing Sensitive Receptors

17.250. Daylight assessment shows that there would be a **negligible** effect to 90.1% of surrounding sensitive receptors, whilst sunlight assessment shows there would be a **negligible** effect to 94% of sensitive receptors. Given the dense urban environment of the Development Site, and that these results are considered acceptable, no mitigation measures are considered to be necessary.

Daylight and Sunlight within Proposed Residential Units of the Development

17.251. Assessment has shown that 93% of the residential units within the Development would receive daylight levels that comply with the BRE Handbook, therefore experiencing a **negligible** effect. Given the dense urban location of the Development, and that daylight to 93% of all residential habitable rooms within the Development would be **negligible,** this is considered acceptable and no further mitigation is suggested.

Permanent Overshadowing (Sun Hours on Ground)

17.252. Permanent Overshadowing Upon Existing Amenity Areas

17.253. Following the completed Development, there would be a **negligible** effect to 94% of existing amenity areas surrounding the Development, and a **long-term, local** effect of **substantial adverse** significance to 6% of existing amenity areas surrounding the Proposed Development.

17.254. Given that the existing Site is predominantly undeveloped in the existing scenario, this is considered acceptable and therefore no mitigation measures are required.

Permanent Overshadowing Upon Proposed Amenity Areas

- **60%** of proposed amenity areas would experience a **negligible** effect;
- **13%** of proposed amenity areas would experience a **long-term**, **local** effect of **minor adverse** significance;
- **0%** of amenity area would experience **a long-term**, **local** effect of **moderate adverse** significance; and
- 27% of amenity areas would experience a **long-term**, **local** effect of **substantial adverse** significance.

Transient Overshadowing

17.255. The effect of the Development would be a **long-term, local** effect of **moderate adverse** significance. A reduction in massing of School Block S1 and School Block S2 may serve as mitigation.

Light Pollution

17.256. The potential effects of Light Pollution are **negligible** therefore no mitigation measures are required.

Solar Glare

17.257. The potential effects of Solar Glare are **negligible** therefore no mitigation measures are required.

Residual Effects

Demolition and Construction

Demolition

17.258. There would be a **local, temporary** effect of **minor to moderate beneficial** significance to the nearest sensitive receptors regarding daylight, sunlight, overshadowing, and light pollution as a result of demolition activities for the Development. This is based on the assumption that an

Environmental Management Plan (EMP) would be adhered to by the main contractor and sub-contractors, to help minimise environmental effects arising from demolition works. One such example would be the usage of external portable lighting in such a way so as to avoid light spill upon sensitive receptors.

17.259. There would be a **negligible** effect to sensitive receptors at a greater distance to the Site.

17.260. Residual effects to solar glare would be of a **negligible** significance.

Construction

17.261. The worst-case residual effects from construction activities would be very similar to the effects of the completed Development. Reference should therefore be made to the following sections below.

Summary and Conclusion

17.262. A summary of potential effects, mitigation measures and resulting residual effects arising from the Development are summarised below.

Table 17.7: Summary of Potential and Residual Effects

Description of Effect	Potential Effect	Mitigation	Residual Effect
Demolition and Construction			
During demolition, temporary improvement to levels of daylight, sunlight, and overshadowing to the closes sensitive receptors.	**Temporary**, **short-term, local** effect of a **minor to moderate beneficial** significance.	None Required.	**Temporary**, **short term, local** effect of a **minor to moderate beneficial** significance.
During demolition, there would be no effect of solar glare	**Negligible**.	None required.	**Negligible**.
During construction, effects are directly comparable to that of the completed development, below.	As per completed Development, below	As per below	As per below
Completed Development			
Daylight to surrounding residential sensitive receptors (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 in its westernmost position)	**Long-term**, **local** effect of a **negligible to substantial adverse** significance	None	**Long-term**, **local** effect of a **negligible** to **substantial adverse** significance.
Daylight to surrounding residential sensitive receptors (accounting	**Long-term**, **local** effect of a **negligible to substantial adverse**	None	**Long-term**, **local** effect of a **negligible** to **substantial adverse**

Description of Effect	Potential Effect	Mitigation	Residual Effect
for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 in its easternmost position)	significance		significance.
Sunlight to surrounding residential sensitive receptors (accounting for the maximum allowable footprint and height parameter of School Block S1 and School Block S2 in its westernmost and easternmost positioning)	**Long-term**, **local** effect of a **negligible to substantial adverse** significance.	None	**Long-term**, **local** effect of a negligible **to substantial adverse** significance
Daylight and Sunlight to Residential Units within the Development	**Long-term**, **local** effect of **negligible** significance	None	**Long-term**, **local** effect of **negligible** significance
Permanent Overshadowing to Existing Amenity areas	**Long-term**, **local** effect of a **negligible to substantial adverse** significance	None	**Long-term**, **local** effect of a **negligible** to **substantial adverse** significance.
Permanent Overshadowing to Proposed Amenity areas	**Long-term**, **local** effect of a **negligible to substantial adverse** significance	Reduction in massing.	**Long-term**, **local** effect of a **negligible** to **substantial adverse** significance.
Transient Overshadowing	**Long-term**, **local** effect of a **negligible to moderate adverse** significance.	Reduction in massing.	**Long-term**, **local** effect of a **negligible to minor adverse** significance
Light Pollution to sensitive receptors	**Negligible**.	None required.	**Negligible**.
Solar Glare	**Negligible**.	None required.	**Negligible**.